

6.0 PROJECT SPECIFIC REQUIREMENTS FORT HOOD, TX <VER>(REV 1.3 – 30 APR 2012)</VER>

6.1. GENERAL

The requirements of this paragraph augment the requirements indicated in Paragraphs 3 through 5.

6.2. APPROVED DEVIATIONS

The following are approved deviations from the requirements stated in Paragraphs 3 through 5 that only apply to this project.

NONE

6.3. SITE PLANNING AND DESIGN

6.3.1. General:

6.3.1.1. Site Development Plan (SDP). The SDP provided by the government is included within the Appendices. Bring any discrepancies which are found in the furnished plans to the attention of the Contracting Officer's Representative.

6.3.1.2. Building Setback and Force Protection: Lay the site out based on the facility threat security level to protect against exterior attack by providing standoff distance between an aggressor or bomb, barriers, and to facilitate visual monitoring of the site. See the force protection requirements in UFC 4-010-01.

6.3.1.3. Building Spacing: Fire clearance separations shall be in accordance with UFC 3-600-01 and the International Building Code. Verify that fire clearances and access for equipment is acceptable to the installation's Fire Chief. Separation for buildings shall conform to force protection requirements per UFC 4-010-01.

6.3.1.4. Confine pad preparation operations to the work area defined by the SDP.

6.3.1.5. Walks: Locate walks paralleling buildings beyond the eave drip line and at least 5 feet from the foundation. Walks paralleling parking areas shall be at least 6 feet wide and shall abut the back of the curb.

6.3.1.6. Troop Formation Areas: Walkways for troops marching in formation shall be wide enough to accommodate personnel walking four abreast. The walkways shall be constructed of «WALKWAYS»

6.3.1.7. Parking Areas:

«SITE_PLANNING»

6.3.2. Site Structures and Amenities

6.3.2.1. Dumpsters: Coordinate location of the dumpsters with the Installation. Provide concrete loading aprons for the first 15 feet in front of the dumpster pads to accommodate loading and to avoid rutting of the pavement in front of the dumpsters. Provide the following number of dumpsters:

«SITE_STRUCTURES_AMENITIES»

6.3.3. Site Functional Requirements:

6.3.3.1. Stormwater Management (SWM) Systems.

(a) Comply with the requirements of general permit number

«STORMWATER_MANAGEMENT»

(b) Storm Drainage System Plans are shown within the SDP. Tie into these systems as appropriate for his areas of design responsibility. Design and construction of the storm drainage system shall be in accordance with Federal Aviation Administration Advisory Circular FAA AC 150-5320-5C, Surface Drainage Design; Federal Highway Administration Publication No. FHWA-NHI-01-021, Hydraulic Engineering Circular No. 22, Second Edition, URBAN DRAINAGE DESIGN MANUAL; and 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. Base the design of drainage structures on a 10-year storm frequency. Incorporate the principles of Low Impact Development (LID), as detailed in UFC 3-210-10 DESIGN: LOW IMPACT DEVELOPMENT MANUAL. Construct manholes, surface inlets, and curb inlets of reinforced concrete or pre-cast reinforced concrete. Design structures in pavement to handle H-20 loading. Structures in turfed areas can be constructed for lighter weight loading. Design the storm drainage system to be as economical as possible, while taking into account the topography, drainage area, and outfall locations, as well as coordination with existing drainage systems, and existing and future underground utilities. Profiles are required for underground storm drainage systems and sections are required for culverts.

(c) Underground Systems: Whenever possible, match pipe crowns in elevations. Profiles of pipes shall show all existing and new underground utilities and pertinent surface features. Design the minimum pipe gradient shall be designed to provide a minimum velocity (full flow) of 3.0 fps. Design the new outfall and receiving channel to withstand the shear stress acting on the channel from the runoff to prevent erosion. Size new underground storm drainage pipes by computation of backwater surface profiles. The minimum pipe size shall 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.

(d) Street Drainage: Accomplish street drainage by the use of curb and gutter and curb inlets. Curb gaps can be considered in areas where roadside ditches are used. The center one-third of the street shall not convey runoff during the passing of the design storm. Do not use inverted crown sections for the streets without prior approval. Do not locate curb inlets in the radius of street intersections, at curb returns, or where pedestrian traffic is most likely to occur.

(e) POV Parking and Hardstands: Do not concentrate the flow of storm runoff on asphalt pavement. Convey storm runoff within POV parking areas to perimeter curbs by sheetflow. However, if it is necessary to concentrate flow within a parking area, provide concrete paving at the swale flowline. Concentrated flow will not be permitted to flow from POV parking or hardstand areas onto adjacent gravel areas or turfed slopes. Examine sheetflow from parking areas and hardstands onto adjacent gravel or turfed areas for possible erosive effects.

(f) Ditches and Swales: Use a minimum longitudinal ditch or swale gradient of 0.5% with an absolute minimum of 0.3%. Side slopes on ditches or swales shall be no steeper than 1 vertical on 2-1/2 horizontal. Pave steeper slopes. Use Turf Reinforcement Matting (TRM) in ditches that are subject to high velocity storm runoff. Use erosion control matting as necessary to control erosion on steeper slopes.

(g) Culverts: The recommended gradient of culverts shall be 0.5% with an absolute minimum of 0.3%. Provide concrete headwalls or end sections for all culverts. Design headwalls and end sections to reduce velocities to levels that are non-erosive for the soil types encountered.

6.3.3.2. Erosion and Sediment Control: Prepare and comply with Storm Water Pollution Prevention Plans (SWPPP) for the limits of the entire construction site. Include silt fences, mulch straw/hay bales around inlets, and sediment traps to control erosion during construction.

6.3.3.3. Vehicular Circulation.

(a) Geometric Features: Geometric design of all roads, streets, access drives, and parking areas shall conform to the requirements presented in AASHTO, a Policy of Geometric Design of Highways and Streets. Verify with the local installation that access for fire equipment is adequate. Radii, to back of curb, for intersections are standardized as follows:

Primary and Secondary Intersection - 30 feet
Tertiary intersections - 20 feet
Access drives at end parking space - 5 feet

(b) Parking: Provide perimeter concrete curbs and gutters for all parking areas and access drives in developed areas. In remote or little used areas, use concrete curbs and gutters only when required to control drainage. Where flexible pavements are used, removable prefabricated reinforced concrete wheel stops, as approved, may be used.

(c) Service Drives: Widths of drives to unloading ramps or docks for usual types of trucks or tractor trailers are:

Trucks, Single-Unit - 12 feet
Semi-trailers - 16 feet

6.4. SITE ENGINEERING

6.4.1. Existing Topographical Conditions: The government furnished survey Horizontal and Vertical control complies with EM 1110-1-8005, Table 2-1, Military Construction, Building or Structure Design.

«SITE_EXIST_TOPO»

6.4.2. Existing Geotechnical conditions: See Appendix A for a preliminary geotechnical report.

6.4.2.1. Existing Subsurface Conditions: A Government Preliminary Geotechnical Report has been prepared, and is appended to these specifications (Appendix A). The Government Geotechnical Report provides a general overview of the areal geologic conditions with detailed descriptions of the subsurface strata encountered during the Government geotechnical field investigation. Based on the results of the field investigation, laboratory testing program, and engineering analyses, the Government Geotechnical Report further provides parameters and minimum foundation design requirements. However, as stated in the Government Geotechnical Report, the Contractor is responsible for drilling additional borings at the site, and performing additional laboratory testing (specified in the Government Geotechnical Report). The Contractor's additional geotechnical field investigations shall be ONLY for the purpose of supplementing the data regarding subsurface conditions provided by the Government geotechnical field investigation, as presented in the Government Geotechnical Report.

6.4.3. Fire Flow Tests: See Appendix D for results of fire flow tests to use for basis of design for fire flow and domestic water supply requirements.

«SITE_FIREFLOW»

6.4.4. Pavement Engineering and Traffic Estimates:

6.4.4.1. Pavements: Geometric design of roads and streets shall follow the guidance provided in AASHTO - A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS and GUIDELINES FOR GEOMETRIC DESIGN OF VERY LOW-VOLUME LOCAL ROADS (ADT≤400). Design pavement structures in accordance with criteria contained in AASHTO - GUIDE FOR DESIGN OF PAVEMENT STRUCTURES. Vehicle types expected to occupy the pavements and their frequency of use are as follows:

«SITE_PAVEMENT_ENGINEERING_AND_TRAFFIC»

Paved access is required to mechanical rooms/yards. New curb and gutter shall be concrete paved.

6.4.4.2. Emergency Vehicle Access: Provide access drives to allow access for fire trucks and emergency vehicles in accordance with NFPA and UFC 3-600-1. Emergency access drives shall have minimum turning radii of 45 feet to accommodate fire vehicles. Access to the emergency drive(s) shall be restricted by using removable bollards or metal pipe swing gates with a removable center bollard. Refer to the gate detail in the drawings.

6.4.4.3. Concrete Hardstands for Vehicle Parking and Storage Areas: Develop a joint pattern plan showing locations of each type of joint to be used. Spot elevations are required at the intersection of each joint to facilitate placement of forms during construction.

6.4.5. Traffic Signage and Pavement Markings

6.4.5.1. Permanent and construction roadway signs shall be as required by the FHWA MUTCD and FHWA Standard Highway Signs.

Comment [sdn1]: NOTE TO SPECIFIER:
Describe the performance requirements for roadways, parking and other pavements, including classification, vehicle types, loadings, design volume, climatic conditions, frost penetration Zones, etc.

6.4.5.2. Pavement markings and striping shall be in accordance with state DOT standards and the Manual of Uniform Traffic Control Devices (MUTCD). Channelization and pavement markings shall be as required by the FHWA MUTCD and FHWA Standard Highway Signs.

6.4.6. Base Utility Information

(a) Do not place underground utility lines such as sanitary sewer, water, and gas under existing or proposed pavements. Place the utility between the back slope of a road ditch and building, or back of curb. Coordinate deviations to the aforementioned requirements with the COR. Do not locate above ground utility features in front of, or in such a manner as to detract from the facility, make landscaping more difficult, or restrict or negate close-in recreational areas. Do not locate high pressure gas lines closer than 100 feet from an occupied building without special protective provisions and COR approval.

(b) Coordinate and plan utility information with the Installation's DPW through the COR. The SDP provides existing utility routing and general orientation for points of connection. Specific connection locations not shown are noted hereinafter.

6.4.6.1. Connect all utilities from the building to the service connection points shown on the SDP or listed herein. Coordinate between the SDP and utility providers, as well as coordinating utility outages with the installation and service provider.

6.4.6.2. Water Distribution System: The water distribution system is shown on the SDP. Coordinate points of connection through the COR with the American Water Operations and Maintenance, Inc. Design and construction of potable water service between the main line and the facility shall be the responsibility of the Contractor. Design and install the water system and meter in accordance with the requirements of the American Water Operations and Maintenance, Inc. Install valves 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. Velocities in water lines shall be less than 7 feet per second (fps) to prevent possible water hammer effects.

(a) Potable Water Disinfection – Verify water line disinfection per AWWA C651-05. Analyze the samples by an analytical lab that holds a current state license and certification. Repeating disinfection protocols per AWWA C651-05 is required until satisfactory results are obtained (two consecutive sets of acceptable samples taken 24 hours apart). Collect water samples in proper sterilized containers, and perform a bacterial examination in accordance with state approved methods. As a minimum, collect one water sample from each 1000 linear feet segment of disinfected water line. The water supply system disinfection is not approved for usage until each test result is negative for bacteriological examination. Provide the water sample analytical results to the DPW's Environmental Office for record keeping. The commercial laboratory shall be certified by the state's approving authority for examination of potable water.

6.4.6.3. Natural Gas Distribution: Natural Gas distribution lines are shown on the SDP. Coordinate points of connection to the facility with the installation DPW. The Installation DPW will provide natural gas service to the face of the building and shall install the site gas distribution piping. The Installation DPW shall install the gas meter and connect the meter to the building stub out. The contractor shall stub the gas feed out of the building. The Contractor is not responsible for costs incurred for services provided by the Installation DPW. Design and construct the natural gas service lines with ANSI B31.8, Gas Transmission Distribution and Piping Systems. Natural gas shall be provided to the building. Provide a meter/regulator assembly for the facility with a valved bypass.

6.4.6.4. Sanitary Sewer System: The sanitary sewer system is shown on the SDP. Coordinate points of connection through the COR with the DPW. Design and construct the sanitary sewer system in accordance with American Society of Civil Engineers (ASCE) and the Water Environment Federation (WEF), Gravity Sanitary Sewer Design and Construction, Second Edition (ASCE Manuals and Reports on Engineering Practice No. 60 / WEF Manual of Practice No. FD-5). Provide sanitary sewer service to the building. Install two-way cleanouts and all structures required by criteria, as well as, all piping between the designated point of connection and the building. Minimize the use of lift stations. If a lift station is required, provide a packaged unit assembled of coated materials that do not easily corrode. Provide an audible and visible alarm. Ensure location of lift station is accessible by service vehicles. Provide manholes at every change of direction and every 400 feet. Provide drop manholes if pipe elevations differ more than 18 inches. The minimum sewer main size shall be 8-inch. Provide 6-inch minimum sewer connections to buildings. Provide two-way cleanouts every 100 feet along a sewer branch connection from a building, and provide two-way cleanouts at the building connection. Construct manhole inlets

of reinforced concrete or pre-cast reinforced concrete. Design structures in pavement to handle H-20 loading. Structures in turfed areas can be constructed for lighter weight loading. Profiles are required for underground sanitary sewer systems.

6.4.6.5. Oil-Water Separators: Provide oil-water separators for the pretreatment of wastewater containing free-floating oils and grease prior to discharge into sanitary sewers. Additionally, determine the pretreatment limits required by the receiving wastewater utility and select or design a system to meet these discharge limits and to resist buoyant forces acting on the structure.

(a) Prepackaged Separators: The design shall consider the anticipated flow rate and the quantity of dirt and grit contained in the wastewater. High-volume wastewater containing large amounts of solids will usually require design of a cast-in-place separator.

(b) Cast-in-Place Separators: Cast-in-place reinforced concrete separators are required for the pretreatment of wastewater generated at outdoor facilities such as washracks. Provide a grit chamber either upstream of the separator, or integrally with the separator at the upstream end of the separator when large quantities of sediments are expected. In all cases, when the flow rate resulting from storm runoff significantly exceeds the normal operating flow rate, include a bypass in order to divert the storm water into the storm drainage system instead of allowing it to flow into the treatment system. Design cast-in-place oil/water separators to conform to Chapters 5 and 6 of the American Petroleum Institute's Manual on Disposal of Refinery Wastes. This manual provides minimum detention times. Provide slotted, rotation-type or belt type oil skimmer and waste oil storage tanks in accordance with user requirements.

6.4.6.6. Cable TV (CATV) Cable TV is privatized and provided by others. Privatized utility will provide design and service to the building(s) and is not in this contract.

6.4.7. **Cut and Fill**

6.4.7.1. Strive to achieve a balanced cut and fill for earthwork. Do not waste excess soil within the SDP work area without the written approval of the Contracting Officer's Representative (COR).

6.4.7.2. Grading Requirements:

(a) Finished Floor Elevations: A building's finished floor elevation shall be a minimum of 12 inches above the highest point of the adjacent outside finished grade, unless there is an overriding technical reason to deviate. Slope the finished grade a minimum of 5% for the first 10 feet away from the building.

(b) Turfed Areas Adjacent to Buildings: Slope outside finished grade away from the building at a 5% grade for the first 10 feet. Extend the 5% grade to 20 to 30 feet in areas with expansive soils. When site conditions require the use of steep slopes near buildings, provide a berm that is a minimum of 6 feet wide at a 5% grade adjacent to the building. Indicate these requirements on the grading plan with critical spot elevations.

(c) Lawn Areas: Lawn areas beyond the 5% finished grade stated above shall have a 1% minimum slope and a desirable maximum slope of 25%. If it becomes necessary to use slopes steeper than 25%, provide slope protection, but in no case shall the slope exceed 33%. Base the type and amount of slope protection provided on the soil type, slope length, and aesthetic, environmental, and economic considerations.

(d) Roads, Streets, and Access Drives: Gradients for roads, streets and access drives shall be as outlined in AASHTO, A Policy of Geometric Design of Highways and Streets. Accomplish grade changes in excess of 1% by means of vertical curves. Determine the length of vertical curves in accordance with the aforementioned AASHTO criteria. Profiles are mandatory for vertical control of centerline gradients. Show roads, streets and highways using of half-plan/half-profile type drawings.

(e) Parking Areas: Pavement grades shall provide positive surface drainage with a 1 percent minimum slope in the direction of drainage. Provide a maximum slope within a 90-degree parking space of 5 percent from front to rear end and 1-½ percent from side to side. Provide a maximum slope within a 45-degree or 60-degree parking space of 5 percent from front to rear end and 1 percent from side to side. Slope grade perpendicular to direction of parking 5 percent maximum for bituminous or concrete surfaces and 3 percent for other surfaces.

(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. Provide spot elevations

Comment [sdn2]: NOTE TO SPECIFIER: DO NOT SPECIFY MINIMUM COMPACTION REQUIREMENTS. THE IBC COVERS THIS AND THE GEOTECH REPORT MUST INCLUDE THE COMPACTION REQUIREMENTS.

where grade changes a minimum of 1 percent and use at point of tangency for curbs on end islands and at corners of parking lots.

«SITE_CUT»

6.4.8. Borrow Material

«BORROW_MATERIAL»

6.4.9. Haul Routes and Staging Areas

6.4.9.1. See Appendix J, DRAWINGS for the project location and the location of haul routes and Contractor's staging area. Construction limits shall be confined to the construction site boundaries as shown on the Site Development Plan (SDP) within the Appendices.

6.4.9.2. The Contractor will be allotted an area as shown on the SDP for the placement of a construction trailer complex and storage for the Contractor and respective Subcontractors. Permanent Trailers are not permitted within the building envelope work areas. Trailers within the work area may be required to be relocated at no additional cost to the Government to accommodate site activities. The Contractor shall be responsible for the site preparation, fencing, access drives, and maintenance of the compound at all times. Upon completion of the project and after removal of trailers, materials, and equipment from within the fenced area, remove the fence. Restore areas used by the Contractor for the storage of equipment or material, or other use, to the original or better condition. Remove gravel used to traverse grassed areas and restore the area to its original condition, including top soil and seeding as necessary.

6.4.9.3. For proposal purposes, assume Contractor will be responsible for providing temporary utilities (water, sewer, and electricity, etc.) during construction at the project site. A water fill point will be provided as indicated on the SDP. It may be necessary, initially, for the Contractor to truck water to the project site until new utilities are constructed. Contractor is responsible for installation and maintenance of the haul road from the water fill point to the entrance of the construction site. Coordinate routing of haul roads with the COR.

6.4.10. Clearing and Grubbing:

«SITE_CLEAR_GRUB»

6.4.11. Landscaping:

(a) Provide native or well adapted species of plants in the landscaping plan. Choose trees, shrubs, and ground covers from the preferred plant list included in Appendix I. Provide shade trees. Use flowering vegetation at focal points to provide visual interest. All landscaping within 33 feet of the facility shall adhere to force protection clear zone requirements as specified in UFC 4-010-01.

(b) The landscaping integrated design shall emphasize the goal to achieve energy efficiency and water conservation. Select vegetation based on hardiness, availability, and drought tolerance, which aids in the conservation of water, as well as, maintenance resources. Locate the trees to optimize shading opportunities, which aids in energy efficiency of the buildings by cooling during the summer.

(c) Landscape Irrigation.

«LANDSCAPING»

6.4.12. Turf:

«TURF»

6.5. ARCHITECTURE

6.5.1. General: To the maximum extent possible within the contract cost limitation, the buildings shall conform to the look and feel of the architectural style and shall use the same colors as adjacent facilities as expressed herein <IMCOM_APPROVED> and shall conform with the Fort Hood's Real Property Master

Comment [sdn3]: NOTE TO SPECIFIER:
DESCRIBE SOURCES OF ACCEPTABLE
BORROW, OR STATE THAT NO BORROW IS
AVAILABLE ON THE INSTALLATION, ETC.

Plan</IMCOM_APPROVED>. The Government will evaluate the extent to which the proposal is compatible with the architectural theme expressed in the RFP during the contract or task order competition. The first priority in order of importance is that the design provides comparable building mass, size, height, and configuration compared to the architectural theme expressed herein. The second priority is that design is providing compatible exterior skin appearance based upon façade, architectural character (period or style), exterior detailing, matching nearby and installation material/color pallets, as described herein.

6.5.2. Design

6.5.2.1. Appendix F is provided "For Information Only", to establish the desired site and architectural themes for the area. Appendix F identifies the desired project look and feel based on **Fort Hood's** Installation Architectural Theme from existing and proposed adjacent building forms; i.e. building exterior skin, roof lines, delineation of entrances, proportions of fenestration in relation to elevations, shade and shadow effects, materials, textures, exterior color schemes, and organizational layout.

6.5.2.2. The design should address Fort Hood's identified preferences. Implement these preferences considering the following:

- (a) Achievable within the Construction Contract Cost Limitation (CCL)
- (b) Meets Milestones within Maximum Performance Duration.
- (c) Achieves Full Scope indentified in this Solicitation
- (d) Best Life-Cycle Cost Design
- (e) Meets the Specified Sustainable Design and LEED requirements.
- (f) Complies with Energy Conservation Requirements Specified in this RFP.

6.5.2.3. Priority #1. Visual Compatibility: Facility Massing (Size, Height, Spacing, Architectural Theme, etc.) Exterior Aesthetic Considerations: The buildings massing, exterior functional aesthetics, and character shall create a comprehensive and harmonious blend of design features that are sympathetic to the style and context of the Installation. The Installation's intent for this area is:

«THEME_DESCRIPTION»

6.5.2.4. Priority #2. Architectural Compatibility: Exterior Design Elements (Materials, Style, Construction Details, etc.) Roofs, Exterior Skin, and Windows & Door Fenestrations should promote a visually appealing compatibility with the desired character while not sacrificing the integrity and technical competency of building systems.

6.5.2.5. See Appendix F for exterior colors that apply to Architectural character at Fort Hood. The manufacturers and materials referenced are intended to establish color only, and are not intended to limit manufacturers and material selections.

6.5.2.6. Additional architectural requirements:

- (a) Install fall protection anchor points on all roofs with a slope greater than 2:12

6.5.3. </UEPH>Not Used</UEPH></UEPH_NO>Programmable Electronic Key Card Access Systems:

«PROGRAMMABLE_KEY_CARD»</UEPH_NO>

6.5.4. INTERIOR DESIGN

«INTERIORS»

Interior building signage requirements:

«INTERIOR_SIGNAGE»

6.6. STRUCTURAL DESIGN

Comment [sdn4]: NOTE TO SPECIFIER: For non-UEPH type facilities only. If the installation has information on brand names of existing key card access system, identify here and coordinate with paragraph 3. For UEPH type Facilities NOT USED

Comment [sdn5]: NOTE TO SPECIFIER: PROVIDE SITE SPECIFIC STRUCTURAL LOADING DATA FROM UFC 3-310-01.

6.6.1. General

Analyze, design, and detail each building as a complete structural system. Design structural elements to preclude damage to finishes, partitions, and other frangible, nonstructural elements; to prevent impaired operability of moveable components; and to prevent cladding leakage and roof ponding. Limit deflections of structural members to the allowable of the applicable material standard, e.g. ACI, AISC, Brick Industry Association (BIA).

Place floor mounted mechanical and electrical equipment on a 4" minimum concrete pad.

6.6.2. Project Specific Design Loads:

6.6.2.1. Wind Speed: 90 mph

6.6.2.2. Seismic Design Data: The mapped maximum considered earthquake (MCE) spectral response accelerations for site class B are:

S_s (at short periods) = 8% g

S_1 (at 1-second period) = 4% g.

The acceleration values identified are for the general location of the facility. Verify and use site specific criteria based on the final site location of the facility. Adjust site class per IBC to match specific site information in geotechnical report.

6.6.2.3. For design of structural components subjected to dynamic loads, the U.S. Army Corps of Engineers Protective Design Center (PDC) developed SBEDS, Single-Degree-of-Freedom Blast Effects Design Spreadsheets (SBEDS). SBEDS is available at the software tab of the PDC website, <https://pdc.usace.army.mil/>.

6.6.3. Foundation

Coordinate the need for a vapor barrier with the architectural floor finishes and requirements of the geotechnical report. Use a vapor barrier system with a minimum 10-mil polyethylene membrane under all slab-on-grade to receive a coating (e.g. epoxy) or to receive an overlaying finish (e.g. carpet or tile).

6.6.4. Site Features – Retaining Walls/Bridges/etc.

Design site features, e.g. retaining walls, culverts, bridges, in accordance with the appropriate American Association of State Highway and Transportation Officials (AASHTO) criteria including AASHTO LRFD Bridge Design Specifications, AASHTO Standard Specifications for Highway Bridges, and AASHTO Guide Specifications for Design of Pedestrian Bridges. Consider operation and maintenance requirements, e.g. painting, mowing, inspecting, routine maintenance. Design site features to drain properly in order to meet loading assumptions.

6.7. THERMAL PERFORMANCE

Consider moisture protection. Consider protection from damage to flooring and wall finishes when designing floor slabs and walls. This could be as simple as placing a vapor barrier under the floor slab, building wrap, or vapor barrier on the walls.

6.8. PLUMBING

«PLUMBING»

6.9. SITE ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

6.9.1. Derive electrical service from the existing aerial 7200/12,470 Volt primary service located as shown on the exterior power plans in Appendix J. Primary service shall be 3-phase. Coordinate construction associated with the removal of the existing and the installation of the new primary electrical system and communication systems at the site with the Fort Hood DPW. Perform all work on existing systems "hot" unless permission is

obtained in advance from the contracting officer and Fort Hood DPW. Obtain permission for any connections a minimum of 72 hours in advance from the contracting officer and Fort Hood DPW. All underground electrical shall be in conduit, and all underground primary shall be concrete encased with red concrete. For secondary system, utilize marker tape – minimum 12 inches below finished grade – except in isolated areas.

- (a) Jack and bore all road crossings . Open cuts are not permissible.
- (b) If outages are unavoidable, schedule them with the DPW no less than two weeks in advance.
- (c) Coordinate all communications work through the Ft. Hood DOIM.
- (d) Transformers shall be pad mounted and loop fed with load break switches (3-2 position).

6.9.2. Install an aerial to underground transition with fused cutout switch at the power riser pole. Use 15 KV primary conductors for primary service. Provide one spare 4" conduit for future primary.

- (a) Use armor rods rather than ties for connection of conductors to pin insulators.
- (b) Use heavy air switches with arc snuffers for all branch distribution circuits that serve multiple buildings.
- (c) Provide fiberglass guy insulators for all guys that come in proximity to phase conductors.
- (d) Use three quarter inch minimum size bolts for pole hardware.
- (e) Use spring washers under all hardware bolts including cross-arms.
- (f) Use flat metal braces or wood braces for #4 ACSR conductors and smaller. Use angle braces for conductors larger than #4 ACSR.
- (g) Provide at least one thru-bolt for all pole-mounted floodlights. Do not use lag bolts.
- (h) Use metal gains for all cross-arms that do not come pre-gained.
- (i) Use arm construction rather than armless construction for phase 3 aerial lines and equipment poles.
- (j) Use minimum three quarter inch ground rods.
- (k) Use ACSR aluminum rather than copper for all aerial conductors with minimum size of #4 AWG.
- (l) At the pole mounted overhead to underground transition, use wet process porcelain terminators rather than elastomeric terminators.
- (m) Use the two bushing aerial pole mount transformers rather than the self-protected (lightning arrestor) terminators,
- (n) Connect line to lightning arrestor to cutout rather than from line to cutout and jumper to lightning arrestor.
- (o) Provide 29 foot clearance of electrical high voltage lines at street crossing.

6.9.3. Lighting: Provide power for all required site lighting to include parking lot lighting from the new facility. Site lighting shall be pulse-start metal-halide (PSMH) or induction type. Operate lighting off of a lighting contactor and shall be 480 volt where available.

6.9.4. Provide for demolition (if necessary) as noted on the exterior power plans in Appendix J.

6.9.5. Provide electric meter mounted to the pad mounted transformer. Electrical watt-hour demand meters at Ft. Hood shall be encoded type, electromechanical type conforming to ANSI C12.10 and equipped with an electronic pulse initiator, or an electronic type meter with pulse output. Pulse type meters shall be capable of operating at speeds up to 500 pulses per minute with no false pulses and shall provide a pulse output of one pulse per kilowatt-hour. Supply all programming device or software required for programming with the meter. Further requirements for metering are included in the appendices for Metering Requirements.

6.9.6. Telecommunications Install all communications cabling in ducts as shown on the exterior communications plans in Appendix J. Where 1" inner duct is required per the drawings, do not extend the inner duct more than 4" beyond the entrance and exit ducts within manholes. Install nylon pull cord in all empty conduits. Outside plant cables to the new facility shall consist of 1-12 strand single mode fiber optic cable installed in a 1" inner duct and 150 pairs copper cabling in a 4" duct. Coordinate all associated work and requirements

including final location of duct banks and manholes with Fort Hood DOIM thru the contracting officer's representative and Fort Hood DPW.

6.9.6.1. Use concrete encased duct banks.

6.9.6.2. Core drill existing MHs.

6.9.6.3. Ducts entering MHs shall start at the bottom of the wall and work up.

6.10. FACILITY ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

6.10.1. Telecommunications:

6.10.2. Cable TV (CATV):

6.10.2.1. Leave ten feet of slack cable in the telecommunications room at a location designated for the CATV box. Homerun all cabling throughout the building back to the main telecommunications room to allow for just one connectivity point to the outside cable provided by the local CATV company. All CATV cabling shall be RG6 Quad shield, and all CATV cabling shall be tested for operability.

6.10.2.2. Covers for CATV outlets shall match electrical and other outlet plates; either white or ivory plastic. Mismatched colors are unacceptable.

6.10.3. Metering: All electrical and water meters shall include ability to interface and connect to the installation's existing LonWorks network. The controls contractor is responsible for final connection of the gas, water, and electric meters to the ILON 600 – making data points available to the EMCS.

6.10.4. Mount motor starters at 4 foot above flood level for ease of maintenance.

6.11. HEATING, VENTILATING, AND AIR CONDITIONING

The existing UMCS is LonWorks.

6.11.1. Supply Building Point of Connection to Base-wide UMCS: A Building Point of Connection (BPOC) in accordance with ANSI/EIA 709.1 B. Routers (including routers configured as repeaters) shall meet the requirements of ANSI/EIA 709.1B and shall provide connection between two or more ANSI/EIA 709.3 TPIFT-10 channels. The building point of connection (BPOC) router shall be iLon 600 TP/FT -10 24v ac/dc Model 72603R which is required for proper integration to the existing UMCS head-end and insure maintaining Networkiness/ DIACAP" certifications (security of the DOIM/basewide LAN). Integration of building into base-wide UMCS is not a part of this contract (NIC).

6.11.2. UMCS Interoperability: Be fully compatible for future interface with the existing Fort Hood base-wide LonWorks UMCS. Utility meters shall be LonWorks certified.

6.11.3. DDC Panels: DDC panels shall include a Local Display Panel (LDP) that provides an operator interface with the control system (mainly to view LonWorks I/O and change setpoints). The LDP shall reside as a node on the building LON bus.

6.11.4. Required Additional Deliverables to Government upon acceptance of system: XIF files and plug-ins.

6.11.5. Programmable Controllers:

6.11.5.1. Programmable Controllers shall have a fixed Program ID and shall be programmable over the network using an LNS Plug-in. Programmable controllers shall have a fixed XIF file (the XIF file shall not change when the controller programming changes).

6.11.5.2. Analog outputs and binary outputs (also known as "digital outputs") of programmable controllers which are connected to another device shall have a hardware manual override. Analog outputs and binary outputs

of application specific controllers used for non-terminal unit control and that are connected to an output device shall have a hardware manual override.

- (a) The manual override switch for binary outputs shall provide for overriding the output open or closed.
- (b) The manual override switch for analog outputs shall either provide for overriding the output to 0% or 100% or provide for overriding through the range of 0% to 100%.
- (c) The manual override shall be integrated with the controller hardware or an external override co-located with the controller (in the same enclosure).

6.11.6. HVAC Refrigerants: HVAC equipment shall use non-R22 refrigerants.

6.11.7. Outdoor Design Conditions

«HVAC»

Comment [sdn6]: NOTE TO SPECIFIER: In accordance with paragraph 5.9.2, provide the outdoor design conditions that are referred to in paragraph 2.2 in UFC 3-410-01FA.

6.12. ENERGY CONSERVATION

6.12.1. Inclusion of Renewable Energy Features. The following renewable energy features have been determined lifecycle cost effective, are included in the project budget and shall be provided:

«RENEWABLE ENERGY FEATURES»

Comment [sdn7]: Indicate here all renewable energy features that are included in project DD1391 and supported by LCCA. Be specific in description of features.

6.13. FIRE PROTECTION

6.13.1. Verify the hydrant flow test data listed in Appendix D prior to design of the building fire protection sprinkler system.

6.13.2. DELETED

6.13.3. Fire Alarm System: Fire alarm systems shall be Class A looped.

6.13.3.1. The RF Transceiver shall be compatible with the Fire Department receiving system.

- (a) The receiver shall be equivalent to a Monaco BT-XM operating on a frequency of 139.3750 MHz.
- (b) The installation fire alarm receiving system is a Monaco D-21 system.
- (c) All applicable ZIDs shall report fire alarm system Alarm, Supervisory and Trouble conditions to the central reporting station by from the following choices: a) Individual fire sprinkler riser flow switches identified by location. b) Room smoke detectors as a supervisory upon activation. c) Elevator smoke detectors by floor, machine room, and hoist-way. d) Elevator machine room tamper switch. e) Elevator machine room flow switch. f) Elevator pit tamper switch. g) Fire Suppression tamper switches grouped by room identified by location. h). Exterior PIV. I) Supervisory low temperature for fire sprinkler systems not in controlled environments. j) Manual pull stations by floor and wing. k) Fire alarm panel general trouble. l) Fire alarm panel general alarm. m) Each knock-box identified by location at location(s) preferred by FHFD. n) AC failure. o) Fire Pump running. p) Fire Pump trouble.

6.13.3.2. Key all fire alarm pull stations to single bitted, 5 disc keyway based on the Fort Lock KS00V key blank, key coded to CAT 15.

6.13.3.3. Key the fire alarm control panel(s) to single bitted, 5 disc keyway based on the Fort Lock KS00V key blank, key coded to CAT 15.

6.13.3.4. Fire Lanes shall be in accordance with applicable building codes, ADA, UFAS and Force Protection UFC and NFPA 1 and the striping and signage scheme provided.

6.13.3.5. All special tools, software, connecting cables, and proprietary equipment necessary for the maintenance, testing, and reprogramming of the equipment shall be furnished to the Contracting Officer Representative.

6.13.4. Mass Notification System (MNS)

6.13.4.1. Key to single bitted, 5 disc keyway based on the Fort Lock KS00V key blank key coded to CAT 15.

6.13.4.2. Program the following 4 messages into the system:

(a) FIRE (Siren X 5 Seconds) (Female voice) "ATTENTION, ATTENTION, A FIRE EMERGENCY HAS BEEN REPORTED. PLEASE REMAIN CALM AND EXIT THE BUILDING USING THE NEAREST EXIT".

(b) WEATHER (100 KHZ Steady tone X 5 Seconds) (Female voice) "THE NATIONAL WEATHER SERVICE HAS ISSUED A SEVERE WEATHER ALERT FOR THIS AREA. TUNE TO LOCAL RADIO AND TELEVISION STATIONS FOR FURTHER GUIDANCE".

(c) SUSPICIOUS ACTIVITY (Fast whoop X 5 Seconds) (Female voice) "MAY I HAVE YOUR ATTENTION PLEASE! A POSSIBLE BREACH IN SECURITY HAS BEEN REPORTED. PLEASE REMAIN CALM. YOU ARE INSTRUCTED TO TAKE APPROPRIATE SECURITY MEASURES AND TO REPORT SUSPICIOUS PERSONNEL, VEHICLES, PACKAGES OR ACTIVITIES TO SECURITY PERSONNEL".

(d) TOXIC CHEMICAL HAZARD EMERGENCY (Chime tone X 5 Seconds) (Female Voice) "MAY I HAVE YOUR ATTENTION PLEASE! A TOXIC CHEMICAL HAZARD HAS BEEN REPORTED, PLEASE REMAIN CALM AND TAKE APPROPRIATE MEASURES TO AVOID THE HAZARD".

6.14. SUSTAINABLE DESIGN

6.14.1. LEED Rating Tool Version. This project shall be executed using «LEED_VERSION».

6.14.2. <ONLY_EXEMPT>LEED Minimum Rating. This project includes no facilities that are required to achieve a specific LEED achievement level. Project shall achieve and document all points required by other portions of the RFP and all points that are feasible, but there is no minimum required LEED achievement level.<ONLY_EXEMPT><NOT_ONLY_EXEMPT> The minimum requirement for this project is to achieve LEED «LEED_MIN» level. Each non-exempt facility (building plus sitework) must achieve this level. In addition to any facilities indicated as exempt in paragraph 3, the following facilities are exempt from the minimum LEED achievement requirement: «SD_EXEMPT_FACILITIES».<NOT_ONLY_EXEMPT>

6.14.3. <SINGLECO>Credit Validation: LEED registration, compiling of documentation at LEED OnLine and use of the LEED Letter Templates is required. Registration and payment of registration fees will be by the «FEES_PAID_BY». Administration/team management of the online project will be by the «ADMIN_PERFORMED_BY». <USGBC>Validation of credits will be accomplished by the Government. LEED certification of the project by the Contractor is required. The Contractor will obtain LEED certification prior to project closeout. Application, payment of certification of fees and all coordination with USGBC during the certification process will be by the Contractor. GBCI Interim review of design phase data is not required by the Government but is recommended. Government validation during project execution does not relieve or modify in any way the Contractor's responsibility to satisfy all requirements for certification as defined by LEED and GBCI. Contractor is not responsible for design phase LEED documentation of any unaltered portion of the design that is accomplished by others. If the project includes unaltered complete design by others, during the certification process Contractor will coordinate all GBCI comments on LEED credits that fall outside Contractor's scope of responsibility with the Government for coordination with the Designer of Record, and Contractor will not be penalized if project fails to achieve certification at the minimum required level due to loss of credits that are the responsibility of others.<USGBC><USGBC_NO>Validation of credits will be accomplished by the Government. LEED certification of the project by the Contractor is not required. The Government may choose to seek LEED certification of the project, in which case the Government will pay certification fees and coordinate with the GBCI and the Contractor will furnish audit data as requested at no additional cost.<USGBC_NO>

</SINGLECO><SITE_BLDGOTHER>Credit Validation: The project is the site work <ADDITIONAL>and building(s)</ADDITIONAL> portion of a multiple contractor Combined Project. LEED registration, compiling of documentation at LEED OnLine and use of the LEED Letter Templates is required Registration and payment of registration fees will be by the «FEES_PAID_BY». <ADMININGOV>Administration/team management of the online project will be by the Government.</ADMININGOV><ADMINSHARED>Administration/team management of the online project will be shared between the Contractor and the Government per Appendix LEED Requirements for Multiple Contractor Combined Projects.</ADMINSHARED> <ADMINCONTRACTOR>Administration/team management of the online project will be by the Contractor per Appendix LEED Requirements for Multiple

Comment [sdn8]: [LEED-NC Version 2.2][LEED-NC Version 3][text block for other to be filled in by specifier]

Comment [sdn9]: [Silver][Gold][Platinum]

Comment [sdn10]: Select paragraph below if the project includes COS standard design buildings and a single contractor is doing all buildings and site work in the project. Edit for either Contractor or Government fees and administration (PDT choice). Registration is required.

Comment [sdn11]: Select paragraph below if the project includes the site work for COS standard design buildings by others. Include bracketed text in first sentence as applicable if project also includes standard design and/or non-standard design buildings in addition to site work for COS buildings by others. Registration and fees may be either by Contractor or Government (PDT choice). Administration may be by Government or shared - Contractor administers until construction phase, when Government must take over administration in order to compile and summarize data from the other contractors (PDT choice).

Contractor Combined Projects. </ADMINCONTRACTOR>Validation of credits will be accomplished by the Government. LEED certification of the project by the Contractor is not required. The Government may choose to seek LEED certification of the project, in which case the Government will pay certification fees and coordinate with GBCI and the Contractor will furnish audit data as requested at no additional cost. </SITE_BLDGOTHER><STDANDSITE>Credit Validation: The project is a standard design building(s) portion of a multiple contractor Combined Project. LEED registration, compiling of documentation at LEED OnLine and use of the LEED Letter Templates is required. Registration and payment of registration fees will be by the «FEES_PAID_BY». Administration/team management of the online project will be by the «ADMIN_PERFORMED_BY». See Appendix LEED Requirements for Multiple Contractor Combined Projects for information about registered standard designs. Validation of credits will be accomplished by the Government. LEED certification of the project by the Contractor is not required. The Government may choose to seek LEED certification of the project, in which case the Government will pay certification fees and coordinate with GBCI and the Contractor will furnish audit data as requested at no additional cost. </STDANDSITE><NSTDMULTI>Credit Validation: The project is a non-standard design building(s) portion of a multiple contractor Combined Project. LEED registration, compiling of documentation at LEED OnLine and use of the LEED Letter Templates is required. Registration and payment of registration fees will be by the «FEES_PAID_BY». Administration/team management of the online project will be by the «ADMIN_PERFORMED_BY». Validation of credits will be accomplished by the Government. LEED certification of the project by the Contractor is not required. The Government may choose to seek LEED certification of the project, in which case the Government will pay certification fees and coordinate with GBCI and the Contractor will furnish audit data as requested at no additional cost. </NSTDMULTI><ONLY_EXEMPT>Credit Validation: LEED registration, compiling of documentation at LEED OnLine and use of the LEED Letter Templates is <CREDIT_NO>not required. Contractor has the option to register the project, compiling of documentation at LEED OnLine and use the LEED Letter Templates. In this case, payment of registration fees and administration/team management of the online project will be by the Contractor. </CREDIT_NO><CREDIT>required. Registration and payment of fees will be by the «FEES_PAID_BY». Administration/team management of the online project will be by the «ADMIN_PERFORMED_BY». </CREDIT></ONLY_EXEMPT>

6.14.4. Commissioning: See Appendix M for Owner's Project Requirements document(s).

6.14.5. LEED Credits Coordination. The following information is provided relative to Sustainable Sites and other credits. <MULTI_NOT>

SS Credit 1 Site Selection:

Project site «FARMLAND» considered prime farmland.

<FLOOD1>Project site is five feet or more above 100-year flood elevation. </FLOOD1><FLOOD2>Delineation of 100-year flood elevation is shown on site drawings provided in this CONTRACT. </FLOOD2>

<HABITAT1>Project site contains no habitat for threatened or endangered species. </HABITAT1><HABITAT2>Delineation of threatened or endangered species habitat is shown on site drawings provided in this CONTRACT. </HABITAT2>

<WETLAND1>No portion of project site lies within 100 feet of any water, wetlands or areas of special concern. </WETLAND1><WETLAND2>Delineation of water, wetlands and areas of special concern is shown on site drawings provided in this CONTRACT. </WETLAND2>

Project site «PARKLAND» previously used as public parkland.

SS Credit 2 Development Density & Community Connectivity.

Project site «DENSITY» meets the criteria for this credit.

SS Credit 3 Brownfield Redevelopment.

Project site «BROWN» meets the criteria for this credit.

Comment [sdn12]: Select paragraph below if the project includes COS standard design building(s) only and site work is by others. If only a single contractor will ever be working on all the projects for a particular standard design, the COS may require the Contractor to register the standard design as part of the initial project and administer the online standard design on all subsequent projects. If multiple contractors will be working on projects for a particular standard design, registration and administration must be by the Government (COS).

Comment [sdn13]: Select paragraph below if the project includes non-standard design building(s) only and site work and COS standard design buildings are by others. Edit for either Contractor or Government fees and administration (PDT choice).

Comment [sdn14]: Select paragraph below if the project ONLY has exempt facilities and is not required to achieve LEED Silver.

Comment [sdn15]: Attach Owner Project Requirements (OPR) document for each climate controlled facility/facility type in the project. Obtain OPR for Standard Designs from COS. Develop OPR for each non-standard facility using USACE template at <http://en.sas.usace.army.mil>. Refer to SOW whenever possible in this document to avoid conflict with SOW.

Comment [sdn16]: If site work and building(s) are by separate contractors, this is a MULTIPLE CONTRACTOR COMBINED PROJECT and you should skip to the MR2 section (edit to indicate whether buildings or site is by others and identify the buildings by others).

SS Credit 4.1 Public Transportation Access.

Project site «TRANS» meets the criteria for this credit.

EA Credit 6 Green Power.

35% of the project's electricity «GREEN» be provided through an Installation renewable energy contract. Do not purchase Renewable Energy Credits (REC's) to earn this credit.

</MULTI_NOT>MR Credit 2 Construction Waste Management.

The Installation <DOESNOT>does not have an on-post recycling facility available for Contractor's use.</DOESNOT><DOES>has an on-post recycling facility.</DOES> <CONTACT_KNOWN>Contact «CONSTRUCTION_WASTE_CONTACT» for information about materials accepted.</CONTACT_KNOWN><LEED3>

Regional Priority Credits (Version 3 only)

The project zip code is «ZIP_CODE».<LEED3>

<MULTIPLE>See LEED Multiple Contractor Responsibilities Table(s) for additional information.</MULTIPLE>

6.14.6. LEED Credit Preferences, Guidance and Resources. See Appendix L LEED Project Credit Guidance for supplemental information relating to individual credits.

6.14.7. <MULTI_NOT>Not Used</MULTI_NOT><MULTIPLE>Multiple Contractor Combined Project. When site work and building(s) are accomplished by separate contractors, it is a Multiple Contractor Combined Project for purposes of LEED scoring and documentation. This project is part of a Multiple Contractor Combined Project that includes site work and building(s) accomplished by separate contractors. See Appendix LEED Requirements for Multiple Contractor Combined Projects and Appendix LEED Multiple Contractor Responsibilities Table(s) for special requirements for this project.</MULTIPLE>

6.14.8. Additional Information

«MR2»

6.15. ENVIRONMENTAL

NO ADDITIONAL REQUIREMENTS

6.16. PERMITS

«PERMITS»

6.17. DEMOLITION

«DEMOLITION»

6.18. ADDITIONAL FACILITIES

«ADDITIONAL_FACILITIES»

End of Section 01 10 00<TO>.«TONUM»</TO>

Comment [sdn17]: If site work and building(s) are accomplished by separate contractors, identify the project as a Combined Project

If site work and building(s) are accomplished by separate contractors, include general instructions on how LEED is handled for Combined Projects (standard text appendix LEED Requirements for Multiple Contractor Combined Projects), (STANDARD APPENDIX "N" IN WIZARD)

If site work and building(s) are accomplished by separate contractors, include LEED Strategy Tables (STANDARD APPENDIX "O" IN WIZARD), which indicate the status of site selection points, establish the number of points each contractor must earn relative to each building, and establish each contractor's requirements for shared building/site points.

If site work and building(s) are by separate contractors, add the MULTIPLE CONTRACTOR COMBINED PROJECT paragraph below.

Comment [sdn18]: Indicate here all project-specific differences from the default assumptions in Appendix L. For Multiple Contractor Combined Projects, describe here the other contacts and buildings in the combined project.