Statement of Work

Task Order

Capital Project No: 1037119

Repair by Replacement Roof B1955

28 July 2020

**1.0 SCOPE**

1.1 This task order (TO) statement of work (SOW) defines the scope of a single task for construction and engineering activities under the Hill Air Force Base Design-Build Multiple Award Construction Contract III. This SOW is tailored to identify specific Task Order requirements. The Statement of Work for Multiple Award Construction Contract III, (MACC III), dated 1 September 2015, applies to this task order except as specifically altered by reference in this document.

1.2 The D-B MACC Contractor shall function as an integral team member in support of the Hill Air Force Base mission, to include the sharing of information with other Hill Air Force Base contractors and cooperation with communities, and other government entities.

1.3 All design services furnished by the Design-Build MACC Contractor shall be performed under the direct supervision of a licensed Professional Engineer or Architect. The contractor, through its designer, is responsible for the accuracy, adequacy, timeliness and professionalism of the design solutions, the design documents. The contractor shall ensure design solutions meet the requirements of the contract documents.

1.4 Requirements include efficient project management including accurate, on-time submittals of contract deliverables and timely identification and solution of impediments to successful project execution. Technical requirements include early involvement in the process to allow for the development of the most cost-effective and technically sound solution. Hill AFB will rely on the Contractor’s expertise in recognizing and addressing problematic issues and successful execution of this Task Order. The Contractor shall perform all work in accordance with federal, state, and local statutes and regulations.

**1.5 PROJECT DESCRIPTION**

The purpose of this task order is to design and construct a new roof for a portion of the Hill Aerospace Museum located on Hill AFB nearby the Roy Gate. The Hill Aerospace Museum has been in existence for 20+ years and has been added onto at various stages during this time. The project area comprises a south gallery space and a north gallery space. This roof project replaces the roof on both of these gallery space additions (see attachment 001). Both galleries are readily accessible all around the exterior.

The museum is in use year round including this portion of the building where the roof replacement will occur. The area to be re-roofed was constructed in 2 parts (galleries – north & south. See Attach 001). The simple roof construction undertaken at the time provided for a lap seam metal roof directly over metal purlins (see Attach 002). The lap seam metal roof has had many leaks over the years. Hence, the liquid overlay of portions of the roof were installed (see Attach 008). See all Attachments 001 – 010 for complete overview of existing roof system.

This scope of this work calls for the abandonment or removal of the existing lap seam metal roof in its entirety, gutter system, metal fascia and associated appurtenances all the way to the existing metal purlins (see Attach 002 typical). The new work calls for a new roof to replace the old existing lap seam metal roof or a metal roof over existing metal roof. The existing lap seam roof is attached directly to roof purlin (see Attach 007 typical) structure). Batt insulation is beneath the roof. Because the lap seam roof is so dilapidated (see Attach 008 pic) it is assumed the batt insulation is no good. The batt insulation is required to be replaced. Provide a new batt insulation system with a white scrim face barrier with a minimum R-30 roof insulation mechanically attached beneath the structure. The scrim face barrier shall be a fiberglass polyester blend fabric face (0.0015” thick minimum – color: white supported from the roof purlins. The fabric shall be a woven product as generally used in sporting facilities and high traffic areas where walls are exposed to heavy traffic and abuse. Other insulation methods are acceptable as long as the overall insulation R-value = R-30. “Abandonment” means installing a new metal roof over the existing metal roof which would essentially be “abandoning” the existing metal roof in place.

The choices for the new roof system are: 1) Removal of the existing metal roof and replacing with a new standing (machine seamed ) seam ( concealed fastening system with no exposed fasteners. 2) PVC roof membrane 60 mil minimum over a deck substrate acceptable to the PVC manufacturer and in accordance with NRCA standards. 3) Leaving the existing metal roof in place and roofing over (metal over metal) with a new metal standing (machine seamed) seam (concealed fastening system with no exposed fasteners metal roof). Maintain existing roof slope.

It isn’t known from the existing as-built drawings whether the existing metal roof is acting as a diaphragm in addition to being the roof enclosure. This has to be investigated. It isn’t known what the existing structure can support in terms of weight, therefore, the new roof system (to be determined) has to be capable of being supported by the existing metal purlin/rigid frame structure. This must be substantiated by calculations and documented in the design anlysis specifically at the 35% design. Whatever the roof system is, it must be an industry standard system and comply with NRCA standards for roof details and the type roof system. The “system” is defined as the roof membrane or metal as the case may be, the insulation, the flashing, fascia and gutter. These components must all be coherently designed into a coordinated “system” not independent of each other. The existing design “look” of the building fascia’s all around the building must be maintained as is.

The 35% design shall show a site plan, a roof plan and a building section. The 35% design shall clearly show the existing roof system, location of gutters and downspouts and surface drainage. The 35% design shall also show the proposed new roof system in its entirety, gutter system, downspout locations and surface drainage. The proposed new roof system shall be substantiated enough by calculations at the 35% design to account for wind uplift and clearly show that the new roof will stay on the building. The 35% design shall show enough “detail” by the building section and an enlarged detail (1 ½” = 1’-0” minimum) of the fascia, flashing and gutter system in concept and enough for the user and the CE PM to assess constructability, technical merit and acceptance.

The 90% design shall flesh out further the details of the 35% design, complete full calculations for wind uplift, roofing details (in accordance with NRCA). Details not in compliance with NRCA will be rejected. Flashing and sheet metal (gutter sizing) shall be designed in accordance with SMACNA standards. The gutter size must be substantiated thru calculations that it has sufficient capacity (size) to absorb runoff from the roof. These calculations must be in the basis of design. The wind uplift shall stipulate the type of perimeter fastener and spacing for corners, edges, exposed edges and the “field” to insure the new roof will not lift up off the building in high winds. The 90% design shall also provide complete edited specifications (line out parts that are not used or intended, so the reviewers can see what is being lined out). At the 100%, then the lined out parts may be eliminated. Provide a basis of design at the 35%, updated at the 90% and final at the 100%. Provide a specification outline at the 35% i.e. the specs intended to be used for the project. The existing number of gutters/downspouts must be maintained. Additional downspouts can be added on, but not reduced.

The 100% design “for construction” must be dated and approved by the user and the CE PM before any work begins.

The existing gutter and downspout has a heat tape system to some extent. The existing heat tape system shall be removed in its entirety and replace with a new heat tape system (submittal required) complete with new programmable control panel located inside the building in one of the galleries. The heat tape shall continue down the full height of the downspouts to the ground. The heat tape system shall be provided at all gutters and downspouts.

The contractor is required to provide a phasing plan for the work. Since the museum will be occupied and tours are on-going continuously, the work must be staged in such a way to still allow for tours, but accomplish the work at the same time. The contractor is required to provide a sufficient protection barrier for the artifacts (airplanes and associated) on the gallery floors beneath the roof work. Sufficient protection means falling objects (roof debris, tools or otherwise do not fall on the artifacts and damage. Plastic is not sufficient in and of itself as a falling object could penetrate thru the plastic or impound the plastic and cause damage. The barrier shall be capable of arresting any falling objects and stopping short of impacting any artifacts on the gallery floors. Day to day working hours are: 0700 – 1600 and all work must be accomplished during these hours. The contractor shall develop a phasing plan in coordination with the user. The phasing plan shall be approved by the user before any work begins. If work occurs in inclement weather (winter, cold, wind) the contractor is responsible to provide heat, weather protection (plastic) to maintain a weather-tight seal for the interior especially to protect the existing museum artifacts. This contingency plan for this weather protection shall be included in the phasing plan and be accepted and approved by the user and the CE PM before any work begins.

The roof is not accessible by ladder. The roof will have to be accessed by a crane or similar lifting mechanism. As part of this project provide an interior stair ladder (OHSA approved) with a roof accessible hatch.

Landscaping around the building: The existing surface soil and plant life adjacent to the building runs right up next to the building. Therefore, any ground disturbance to these landscape areas by construction equipment shall be restored to the “original landscape” condition at conclusion of the project. Pictures shall be taken to document the existing conditions and referenced at conclusion of the project for compliance. Any irrigation systems shall also be repaired and restored to operable working condition.

In addition to the phasing plan, the contractor shall submit a safety/environment plan. All of these submittals shall be submitted before any work begins. A crane plan may be required for approval depending upon crane height. Regardless, whatever lifting machinery is used, this must be approved for safety by the user, the CE PM and Base Safety Office.

Badging is required as indicated the general specifications. This project is not in the restricted area but DBID badges will still be required. The on-site supervisor must have “sponsor” privilege on his badge to be escort workers on Base. All workers will be vetted. Anyone with a sordid background will not be allowed on Base to work. 75 SFS does a thorough background check on every person who enters the Base. Coordinate required paperwork for badging with the contracting officer. With COVID-19 the lines are long because of social distancing at the badging office. Contractor must account or plan for delays or otherwise to get people on Base in a timely manner.

Maintain existing mechanical penetrations thru the roof. However, provide new flashing at these penetration locations for the new roof system in accordance with NRCA standards.

More pictures of the existing roof and building are available upon request.

Provide a calculation for the “hanging capacity or limit “of the existing roof structure (i.e. purlins & rigid frame for the purpose of “supporting “future artifacts (1,000#’s or less) in the future for display purposes.

No asbestos or lead is anticipated for this project. See report. However, if any asbestos is encountered, then the following shall apply:

Contractor shall hire a Hill AFB “approved” asbestos abatement & LBP contractor to abate for asbestos & lead-based paint for those parts of the building where work occurs (see below for list of approved contractors). An asbestos and LBP survey shall be provided to the contractor. See asbestos report. Regardless of the report, this is not to say there is not asbestos or lead anywhere in the building that the contractor might encounter. If encountered, then the contractor shall hire his Base approved abatement contractor to remove the asbestos or lead paint in accordance with the following:

**Asbestos Abatement:** Any ACM that may be disturbed during the course of this project shall be abated by a certified abatement company that has submitted the required qualification documentation and has been approved to perform abatement work by the 75 CES/CEOHA office. An asbestos work plan must be submitted and approved by the 75 CES/CEOHA office prior to starting any work. Pre and Post abatement visual inspection must be scheduled with the 75 CES/CEOHA office at least 24 hours in advance and any discrepancies found as a result shall be corrected by the contractor, at no additional cost to the government, before proceeding. The contractor will remove the ACM in accordance with 29 CFR 1926.1101, as outlined in DAQ R307-801, as well as base guidelines. Upon completion of the asbestos removal, all surfaces inside the regulated area shall be visibly clean of any debris and or dust. Entire work area will be HEPA vacuumed and wet cleaned prior to the final visual inspection and encapsulation. Critical barriers will cover all openings and penetrations inside the regulated work area and will remain in place until the areas have been released as clean, first by a visual inspection and then by aggressive air clearance sampling. A government representative certified as an asbestos inspector with 75 CES/CEOHA will provide this visual inspection. An independent, third party consulting firm will run the aggressive air clearance samples. A three stage decon unit will be attached to each enclosure/phase prior to starting any asbestos removal. The decon unit will be equipped with hot and cold running water. Shower and or residual water will be filtered down to 5 microns before being discharged into a sanitary sewer drain. Regulated areas will be demarcated with asbestos warning signs and barrier tape. Contractor will remove and properly package the ACM while adequately wet. Daily abatement project documentation/logs and all air monitoring results must be submitted to the 75 CES/CEOHA office at the completion of the project. All asbestos waste shall be disposed of at an approved landfill and all waste manifests shall be signed by the 75 CES/CEOHA office with a signed copy being returned within 30 days of the waste being disposed of.

**LBP Abatement:** Any LBP that may be disturbed during the course of this project shall be abated by a certified abatement company that has submitted the proper qualification documents and has been approved by the 75 CES/CEOHA office. An LBP work plan must be submitted and approved by the 75 CES/CEOHA office prior to starting any work. Pre and Post abatement visual inspection must be scheduled with the 75 CES/CEOHA office at least 24 hours in advance and any discrepancies found as a result shall be corrected by the contractor, at no additional cost to the government, before proceeding. The contractor will remove the LBP in accordance with 29 CFR 1926.62 and base guidelines. Upon completion of the LBP removal, all surfaces inside the regulated area shall be visibly clean of any debris and or dust. Entire work area will be HEPA vacuumed and wet cleaned prior to the final visual inspection. Critical barriers will cover all openings and penetrations inside the regulated work area and will remain in place until the areas have been released as clean by a visual inspection. A government representative certified as an LBP inspector with 75 CES/CEOHA will provide this visual inspection. The contractor shall provide proper hygiene facilities for use by employees when exiting the regulated area. All LBP waste shall be properly packaged and labeled in containers provided and disposed of through the Hill AFB Hazwaste facility (Bldg. 514). Daily abatement project documentation/logs and all air monitoring results must be submitted to the 75 CES/CEOHA office at the completion of the project.

**Specifications for containments requirements can vary depending on the ACM/LBP materials being abated as well as the methods of abatement being used. Work plans shall provide clear explanation of containments to be established and removal methods. Any questions as to acceptable base abatement practices should be submitted in writing to the contracting office to be answered by the 75 CES/CEOHA office.**

NOTE: As of February 3, 2014 the following contractors are approved to perform asbestos and LBP abatement and Hill AFB and associated sites. Any contractors not already approved must submit the required documentation and be approved by the 75 CES/CEOHA office prior to any work being done. A list of requirements needed for submittal may be requested by contacting the 75 CES/CEOHA office; POC Taylor Brimberry 801-777-8006 or taylor.brimberry@us.af.mil.

Environmental Abatement Inc.

Eagle Environmental Inc.

**2.0 APPLICABLE DOCUMENTS**

The Contractor shall identify and comply with all applicable federal, state, and local statutes. A partial list is presented in at the end of this document and in the Standard Design Criteria. It is the Contractor’s fundamental responsibility to identify and comply with all mandatory federal and applicable DoD and Air Force requirements whether or not listed specifically in these two documents.

Base Architectural Design Standard – February 2019

Base Facility Standard – (April 2020)

**3.0 GOVERNMENT-FURNISHED INFORMATION, EQUIPMENT, AND PROPERTY (GFI, GFE, GFP)**

**4.1 MANAGEMENT, PLANNING, AND REPORTING REQUIREMENTS**

The Contractor shall implement the range of construction and engineering activities specified in this Task Order and in accordance with all applicable compliance documents. The Contractor shall supply all labor, equipment, and materials necessary to accomplish the work assigned unless otherwise specified in this Task Order. The Contractor shall perform management and planning functions, including performance measurement and fund status reporting, through the course of this effort.

**4.2 Schedule**

The contractor shall maintain a detailed working schedule that facilitates the management of the project work and provides the capability for early identification of potential schedule impacts. The schedule shall include negotiated baseline dates and current schedule projections. The current schedule shall be maintained and updated at least monthly to accurately reflect program progress and provide realistic forecast projections. The contractor shall provide schedule updates at either a detailed level or a summary level as requested by the Contracting Officer (CO) or Project Manager (PM). Additionally, schedule updates that reflect actual schedule progress shall be submitted on AF IMT 3064 or as approved by the CO. Specific schedule and report requirements will be identified in each TO. Unless approved by the Contracting Officer the Contractor shall not begin construction on site until the 100% design package has been approved. For this delivery order the Project Superintendent may act as the Construction Quality Control Manager. A SSHO shall be assigned to the project and visit the site at least weekly and report any issues.

**4.3 Project Schedule and Planning Requirements.**

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| **DESIGN STAGES** | **DESIGN SCHEDULE TIMELINES** |
| **Design Concept/Design Charrette, visit the site, ask questions, take pictures, measure, query the user, make sketches, conceptually.**  **Sketch a layout on site.** | **1 Calendar Day** |
| **35% Design Submittal**  **Government Review**  **35% Design Review Meeting (4 hours max)** | **24 Calendar Days**  **5 Calendar Days**  **1 Calendar Day** |
| **90% Design Submittal**  **Government Review**  **90% Design Review Meeting** | **30 Calendar Days**  **10 Calendar days**  **1 Calendar Day** |
| **100% Design Submittal** | **5 Calendar Days** |
| **Government Backcheck** | **1 Calendar Day** |
| **Final Design Submittal (For Construction)** | **3 Calendar Days** |
| **Mobilization on site** | **5 Days** |
| **Actual construction duration** | **210 Days** |
| **Project closeout/final inspections**  **TOTAL PERFORMANCE PERIOD** | **4 Days**  **300 Calendar Days** |

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| **Item:** | **Remarks:** |
| **GENERAL PLANNING CONSIDERATIONS** |  |
| Project Funding: | Funding is availible |
| Contractor access, staging, storage areas, dumpster locations, chutes and covers for debris removal | Access is available around the building. Typical outages required w/21 day advance notice. Dumpster locations available. Refer to Staging Map |
| Availability of Reference Materials: Site survey, Platt, Operation and maintenance manuals, building as-built drawings, HVAC control drawings/sequences, etc. | As built drawings are available upon request. |

**4.4 Meeting and Conference Requirements**

The Contractor shall perform a site visit and attend a pre-performance conference, preconstruction conference, and/or other meetings necessary to support construction activities. The Contractor also shall attend and support meetings and teleconferences to discuss technical or regulatory issues and project progress and status. The Contractor shall prepare, and submit for review, presentation materials and minutes for meetings and an agenda.

**4.5 Contractor Documentation**

The Contractor shall create and maintain a Master Document List and/or Submittal Register, i.e. AF Form 66, that includes all documents, whether the document is a deliverable or not, which are prepared during the course of this Task Order. The Master Document List and its documents shall be maintained in libraries readily available for submittal to the Government. All Material Submittals shall be accomplished in accordance with the instructions pertaining to AF Form 3000, Material Approval Submittal.

**4.6 Notification Requirements**

The Contractor is required to notify the Contracting Officer and the Air Force Project Manager of critical issues that may affect the contract performance and/or human health and the environment. The types of issues that require notification include, but are not limited to, health risks, spills, changes in critical personnel, and finding unexploded ordnance (UXO). As an example, if UXO were discovered during field activities, the Contractor must immediately stop work, report the discovery to each of the following: the facility Point of Contact (POC), Contracting Officer and the Air Force Project Manager. The Contractor must implement appropriate safety precautions. Field activities shall not continue until clearance is received from the Contracting Officer. On critical issues, verbal notification should be made immediately, followed by written notification as soon as practical.

**4.7 Permits**

The contractor shall develop, coordinate, and assist in applying for and obtaining all, federal, state, local, and other applicable permits, access (including off-base easements and leases), agreements, licenses, and certifications required to perform and complete each TO. The Contractor shall maintain a library of these documents at the contractor’s site office on base as well as the corporate facility handling each TO. The Contractor shall comply with all applicable permit conditions.

Red Stake Permit - no

SWEPP - no

Erosion sedimentation control – no

Phasing plan for construction - yes

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| **ENVIRONMENTAL** | Remarks |
| Hazardous materials present(e.g. asbestos, PCBs, lead-based paint) | The Contractor is cautioned that materials in and around this project may contain asbestos or be coated with Lead-Based Paint (LBP). The government will make every effort to locate and identify and remove all Asbestos Containing Materials (ACM) and LBP prior to bidding; however, this is not always possible. These materials are often hidden and cannot be discovered until after demolition has begun. The failure of the government to identify all ACM and LBP in no way relieves the Contractor from his legal obligation to comply with state and federal regulations regarding the handling of asbestos, lead, or LBP. |
| Known geo-technical issues (e.g. contaminated soil, ground water, etc.)  Historical Preservation  Clean Air Emissions Permits | Nothing known |

**4.8 Photo Documentation**

The Contractor shall prepare digital photo documentation, including site(s) and building(s) affected by the construction, field activities, and sample locations if applicable - weekly. Digital photos will be submitted using a minimum 5 mega pixel camera in JPEG format unless otherwise specified in this Task Order. Photography of any kind must be coordinated through the installation, customer, or facility POC. The contractor shall furnish to the CE PM upon request at any time during construction all photo documentation to date.

**5.0 SITE WORK**

The Contractor shall coordinate work site activities to ensure the protection of human health and the environment; the prevention of damage to property, utilities, materials, supplies, and equipment; and the avoidance of work interruptions.

The Contractor shall perform site work required under this Task Order incompliance with the following.

**5.1 Conservation**

Activities shall be planned and implemented in a manner that protects existing site utilities, structures, surface features, service operations, monitoring and other types of wells, and the general site environment. This includes the protection of trees, shrubs, and other vegetation not in the affected zone from dust damage, soil compaction, and physical contact with machines and equipment. If appropriate, the Contractor shall conserve uncontaminated topsoil by removal, storage, or redistribution. All reasonable measures shall be taken to minimize and suppress fugitive emissions of dust, vapors, and other site materials during site work. All fill materials shall be non-contaminated. The Contractor shall conduct all operations and activities with the intent of reducing the amount of pollution generated. Specific areas to be focused on are generation of solid waste, use of hazardous materials, use of ozone-depleting chemicals, generation of hazardous waste, and use of energy and water. The Contractor shall plan, construct, operate, maintain, optimize, and decommission systems necessary to control storm water run-on and runoff; and transport surface water drainage to a treatment plant, discharge location, or any other destination.

**5.2 Site Preparation**

The Contractor shall perform site work as necessary to prepare sites for construction activities. Security and access controls shall be implemented to prevent unauthorized entry to sites and to protect wildlife from site exposure. The Contractor shall survey existing utilities to determine adequacy and need for modifications to support site activities. The Contractor shall obtain appropriate approvals and shall construct connections or new systems for electrical power, water, sewer, gas distribution, telephone, and other utilities, as required, to accomplish the activities specified in each TO.

**5.3 Demobilization**

The Contractor shall decommission facilities as necessary, and restore the site. The Contractor shall remove any temporary facilities and implement erosion control measures such as seeding, mulching, sodding, and erosion control fabrics; restore roads, structures, and utilities; and plant trees, shrubbery, grasses, and other vegetation. The Contractor shall document and report on activities and train Government personnel to perform required maintenance, as requested.

**6.0 CONSTRUCTION DOCUMENT PREPARATION.**

6.1 The project design Architect-Engineer shall be an individual or firm, professionally engaged in the practice of architecture and/or engineering, qualified by registration and experience, and licensed to offer to the public the services hereinafter specified and as described in contractors DB MACC Proposal.

6.2 The Architect-Engineer shall be responsible for the professional quality, technical accuracy, and the coordination of all designs, drawings, specifications, and other services furnished under this contract. The A-E shall, without additional compensation, correct or revise any errors or deficiencies in its design drawings, specifications and other services. The design of architectural, structural, mechanical, fire protection, electrical, civil, or other engineering features of the work shall be accomplished by - or under the direct supervision of - architects and engineers licensed in the respective disciplines. All designs, drawings, specifications, notes and other works developed in the performance of this contract shall become the sole property of the Government and may be used on any other design or construction without additional compensation to the Contractor. The Government shall be considered the “person for whom the work was prepared” for the purpose of authorship in any copyrightable work under 17 U.S.C. 201(b). With respect thereto, the Contractor agrees not to assert or authorize others to assert any rights nor establish any claim under the design patent or copyright laws. The Contractor for a period of three (3) years after completion of the project agrees to furnish all retained works on the request of the Contracting Officer. Unless otherwise provided in this contract, the Contractor shall have the right to retain copies of all works beyond such period. (DFARS 252.227-7023)

6.3 Design Analysis: The design analysis shall be prepared on standard 8 ½ X 11 sheets. The design analysis shall incorporate all engineering computations, seismic analysis, test and survey results, building code review, fire protection analysis and calculations, structural load analysis and calculations, cooling and heating load analysis and calculations, energy code compliance documentation, life cycle cost analysis, USGBC “LEED” check list preparation if required, all other similar pertinent information to clearly define the scope of the project and to express the designer’s intent and methods. The author of each section shall include professional seals and signatures when appropriate. HVAC load calculations shall comply with the latest ASHRAE guidelines, with all assumptions, areas, and material properties clearly stated. Suggested HVAC load calculation software are BLAST, DOE2.1E, Energy-Plus or ASEAM. All seismic bracing of equipment and piping shall be designed and stamped by a licensed engineer. Performance specifications for seismic bracing must include a design intent for all conditions and sample details of the intended design. Fire protection designs shall be performed by and sealed by a qualified Fire Protection Engineer include conceptual hydraulic calculations and design intent which will allow the design build contractor to proceed with a complete shop drawing and sealed design in accordance with “Planning and Programming Fire Safety Deficiency Correction Projects”, attachment 3, AFI 32-10141.

6.4 The A-E is responsible for validating all AF provided as-built information included but not limited to locating surface features for utility designation, landscaping room dimensions, existing operable mechanical equipment, abandoned equipment and piping.

6.5 Drawings. Full size prints shall be ANSI standard D size (22’ x 34”). All drawings shall comply with Hill Air Force Base CADD Standards which include ADEPT template requirements. **Drawing text size shall be 1/8” minimum (1/16” when reduced to half-size, 11 x 17 prints).** The A-E may access the USACE CADD Standards via http://cadbim.usace.army.mil/CAD. The government will provide the templates for the cover sheet, index sheet etc. Digital file names shall follow the Hill Air Force Base naming conventions. All drawings shall be accurate, professional, and in sufficient detail, including all required schedules, tables, details, sections, plans, elevations, and general notes to enable proper and satisfactory construction of the entire project. Final prints shall be sealed and signed by a principal of each discipline in each of the firms. The A-E shall be able to demonstrate a capability for using “REVIT”, AutoDesk software for individual tasks which may require this capability. Provide other 3D modeling software capabilities such as clash detection using “Navisworks”. 3D modeling will be specified as a specific requirement on an as need basis by task. Provide at the 35% or at latest the 65%, a digital copy of the AutoCAD drawings to verify compliance with naming conventions and ADEPT template requirements. Provide pdf’s at each submittal stage. Final submission shall convert all Revit files to the latest edition of AutoCAD. All drawings shall be “bound” – meaning all X references shall be incorporated into the final drawing. Drawings which are blank or incomplete or which do not display properly (full screen and drawing size) when activated in AutoCAD will be rejected and the D/B will be required to fix until correct and acceptable.

6.6 Specifications: The specifications shall be complete and amplify all information shown on the drawings and include detailed requirements for materials and equipment. The specifications shall be descriptive in nature so as to permit full and free competition among bidders and equipment suppliers. Specifications in hard copy shall be on 8-1/2" x 11" paper. Specifications, including all technical and special conditions, shall utilize the Unified Facility Guide Specifications (UFGS) and Specs Intact. Free software is available at <http://www.wbdg.org> which are based on Construction Specifications Institute (CSI) format modified for Air Force construction and shall be prepared by the A-E to meet government standards. All paragraphs shall be numbered and lettered. References will be made to Federal Specifications, ASTMs, and trade standards when applicable to establish a uniform standard. All references to Military and Federal Specifications or Standards at the beginning of each section must be dated with the latest revisions annotated. All standards and specifications used in the text will be listed in the opening reference paragraph. Proprietary specifications are to be avoided. Whenever it is necessary to use a manufacturer's name to describe a type of product, at least three manufacturers shall be named, if possible, and shall include the words "or approved equal." When “brand name or equal” descriptions are necessary, specifications must clearly identify and describe the salient physical, functional, or performance characteristics of the brand-name items that are considered essential to satisfying the requirement. Materials, components, and equipment shall be designated for submittal to the Contracting Officer for approval. The term "Contracting Officer" shall be used in all specification sections in place of references to "owner" or "Architect /Engineer." The specifications shall include the Hill AFB General Conditions sections including:

SECTION 01 00 00 - GENERAL REQUIREMENTS

SECTION 01 32 00 - PROJECT SCHEDULE

SECTION 01 35 26 - GOVERNMENTAL SAFETY REQUIREMENTS

SECTION 01 57 20 - ENVIRONMENTAL PROTECTION

6.7 Real Property Documentation:

6.7.1 Each task shall require the A-E to prepare Real Property Data utilizing the DD1354 Form. A draft DD Form 1354 and the “Building Information Checklist shall be developed in accordance with UFC 1-300-08 at the 90% design. An interim DD Form 1354 is required to be submitted by the contractor 30 days prior to pre-final inspection. The CE PM will provide a spreadsheet to the contractor to assist in identifying line items with corresponding category codes that must be quantified on the 1354. The contractor shall furnish the required costs for each of the category codes as identified by the CE PM. Beneficial Occupancy will not be granted until the Contractor has submitted an acceptable DD Form 1354.

6.7.2 Before Beneficial Occupancy the contractor shall provide detailed information of real property assets of all the building systems as required by the attached Builder Input template. The contractor is responsible for completing the “Builder Template” (see attachment). The template shall be complete before pre-final inspection of the project.

**7.0 SUBMITTAL REQUIREMENTS**

The A-E is responsible for validating all Government provided as-built information included, but not limited to: locating surface features for utility designation, landscaping, room dimensions, existing operable mechanical equipment, abandoned equipment and piping. The A-E shall recommend SOW adjustments as part of initial design programming if necessary.

**Drawings:**

All drawings shall comply with Hill AFB Computer-Aided Drafting and Design (CADD) Standards and the US Army Corps of Engineers standards. The A-E may access the U. S. Army Corps of Engineers (USACE) CADD Standards via http://cadbimcenter.erdc.dren.mil. The Government will provide templates for the cover sheet, index sheet, etc. Electronic file names shall follow the Hill Air Force Base naming conventions. All drawings shall be accurate, professional, and in sufficient detail, including all required schedules, tables, details, sections, plans, elevations, and general notes to enable proper and satisfactory construction of the entire project. Final prints shall have a digital seal of the principal of each discipline from each of the firms involved in preparation. The A-E shall have the licensing required to use “REVIT” software for individual tasks which require this capability.

## Specifications

The hard copy Specifications shall be prepared on standard 8½” x 11” sheets. Specifications shall be as brief as possible, definitive, and free of ambiguities and omissions that may result in controversy and A-E claims for additional compensation, and include detailed requirements for materials and equipment. Specifications, including all technical and special conditions, shall utilize the Unified Facility Guide Specifications (UFGS) and SpecsIntact. This free software is available at http://www.wbdg.org and is based on Construction Specifications Institute (CSI) format that has been modified for Air Force construction.

All paragraphs shall be numbered and lettered. References to Federal Specifications, American Society for Testing and Materials (ASTM) Standards, and trade standards shall be made when applicable to establish a uniform standard. All references to Military and Federal Specifications or Standards at the beginning of each section must be dated with the latest revisions annotated. All standards and specifications used in the text will be listed in the opening reference paragraph. Proprietary specifications are to be avoided.

Wherever a manufacturer's name, or brand name, is used to identify a product, the identification shall include verbiage similar to: “Brand Name, Part ABC, or equal (see Specification # for salient characteristics).” The referenced specification must clearly identify and describe the salient physical, functional, and/or performance characteristics of the brand name item that is considered essential to satisfying the requirement.

Materials, components, and equipment shall be designated for submittal to the CO for approval. The term "Contracting Officer or CO" shall be used in all specification sections in place of references to "owner" or "Architect/Engineer."

The Architect/Engineer shall complete the designs for each task order and deliver the submittals to the Base Civil Engineer in accordance with the following submittal requirements. The Schedule for submittals, in calendar days, will be indicated for each project with the individual task Statement of Work.

7.1 Concept design (15% or on-site meeting): The purpose of the concept design meeting shall be to verify design requirements and explain the designer’s approach to a solution. The concept design submittal shall include descriptions of the architectural, mechanical, electrical, and structural systems proposed. A building code survey, discussion of applicable codes, single line floor plan sketches as necessary and any potential conflicts shall be included. The concept review may be presented by a design meeting and shall consist of the following as a minimum:

7.1.1 Description of the A-E’s understanding of the project requirements, description of the proposed architectural, mechanical, electrical structural systems, civil features and site utilities. Building code survey, description of the existing facility, and any other information needed to clearly express the designer’s intentions and methods.

7.1.2 Floor plans, concept roof design, diagrams as needed and sketches as required expressing the roof concept design.

7.2 Preliminary design submittal (35%): the general direction and details of the design shall be firmly established and clearly indicated at this design level. Drawings shall include basic floor plan, roof plan, rough architectural details, and other information required to clearly illustrate the roof design. The preliminary design submittal shall include, at a minimum, the following information:

7.2.1 Test and survey results for wind uplift, complete design calculations, product and equipment data, and any other information required to clearly illustrate and describe the design.

7.2.2 Drawings to include basic floor plan and roof plan, rough architectural and structural sections and details, preliminary mechanical and electrical equipment preliminary elevations, schedules, and tables. Clearly show at this stage that the Hill AFB CADD standards are being followed.

7.2.3 Specifications, unedited but indicating which sections will be used.

7.2.4 Preliminary Design Submittal Requirements:

7.2.4.1 Six (3) compact discs of the complete drawing set, specifications, design analysis in only three separate files in adobe acrobat (pdf) format.

7.2.4.2 One complete drawing set in AutoCAD format on compact disc and Revit file if required, to evaluate compliance with Hill AFB CADD standards.

7.2.4.3 Three (3) sets, in three ring (straight ring, not curved) binders as needed with 11” x 17” drawings, specifications, and design analysis.

7.2.4.4 Drawings: Three (3) additional ½ size sets 11” x 17” fastened together in proper order.

7.3 Pre-final design submittal (90%): at this submittal stage all work shall be complete. This submittal is intended for approval only. The pre-final submittal shall include the following as a minimum:

7.3.1 Final design analysis including calculations as required. Include also a completed Reliability & Maintainability (R&M) Design Checklist Air Force ETL 01-1.

7.3.2 Final drawings with all sections, details, elevations, schedules and tables completed.

7.3.3 A basis for design clearly described on first sheet of each discipline.

7.3.4 Final edited specifications (lined thru at this review)

7.3.5 The 75 CEG/CEN Plan Review Checklists which consist of: Architectural checklist, constructability checklist & the storm-water SWPPP checklist.

7.3.6 Preliminary review comments, annotated with actions or responses.

7.3.7 Pre-final design reproduction requirements.

7.3.7.1 Six (3) compact discs of the complete drawing set (pdf and AutoCAD), specifications, design analysis in three separate files in adobe acrobat (pdf) format. Include the 75 CEG/CEN Plan Review Checklist.

7.3.7.2 Drawings: Three (3) sets ½ size prints 11” x 17” fastened together in order.

7.3.7.3 Three (3) sets, in three ring binders to comprise: 11” x 17” drawings, specifications, preliminary design review comments response, calculations, material cut sheets of key components, design analysis and the completed 75 CEG/CEN Plan Review Checklist.

7.3.7.4 One complete drawing set in AutoCAD format on compact disc and Revit file if required, to evaluate compliance with CADD standards.

7.3.7.5 Color board for exterior finishes as required, may not be required, but may be requested.

7.4 Corrected final design submittal (100%) requirements. Unless otherwise approved the contractor shall not mobilize or start construction until the 100% (For Construction) submittal has been approved by the CE PM and the customer (Museum Curator) and construction Notice to Proceed has been authorized by the CE project manager.

7.4.1 Drawings: AutoCAD format for all drawings - bound. Mixed formats will not be accepted. Files must be fully editable and match the drawings submitted and display properly when activated. Referenced files shall be permanently bound to the drawing files. Partial files, files with missing attachments or layers or files formatted as read only or in other ways protected will not be accepted. Provide the following for the final “For Construction Set.”

7.4.1.1 Provide (3) 11” x 17” hardcopy prints, fastened together in order. Copy of full size sealed and dated by appropriate engineer or architect.

7.4.2 Three Ring Binders. Provide the following:

7.4.2.1 Provide (3) three ring (straight, not curved) binders as needed with 11” x 17” drawings, specifications (indexed double sided), pre-final design review comments and response, calculations, material cut sheets of key components, design analysis and the75 CEG/CEN Plan Review Checklists.

7.4.3 Compact Discs. Provide the following:

7.4.3.1 Provide (3) compact discs of the complete drawing set in one adobe acrobat (pdf) file (each dwg shall be a separate pdf), all AutoCAD (dwg) sheets in individual drawing files and Revit file if required, to evaluate compliance with CADD standards. Each sheet shall be a unique file per Hill AFB naming convention in bound format only. The bound drawings are intended to simplify inclusion of all x-references from formatting problems.

7.4.3.2 Compact discs to include specifications in Microsoft Word, the design analysis, and the 75 CEG/CEN Plan Review Checklists. Equipment cut sheets will be submitted in adobe acrobat (pdf).

7.5 As-built Documents. Provide the following:

7.5.1 Final as-built drawings showing the as-built revision date. Revisions to the approved construction drawings shall be shown using a clouded symbol.

7.5.2 Final as-built specifications.

7.5.3 Final DD Form 1354 in compliance with UFC 1-300-08.

7.5.4 Final Shop Drawings – Digital copies specified in para. 7.5.6.4.

7.5.4 Builder required (template will be provided to the contractor)

7.5.5 As-built Reproduction Requirements.

7.5.5.1 As-built Drawings: One 22” X 34” set bound together copy of site trailer detailed construction redlines.

7.5.5.2 As-built Drawings: Two (2) compact disc of all digital drawing files in bound AutoCAD (dwg) format including one (1) file of the complete drawing set in pdf format. AutoCAD Files must be fully editable and match the drawings submitted. Partial files, files with missing attachments or layers or files formatted as read only or protected will not be accepted.

7.5.5.3 Specifications: One (1) set of revised specifications in Microsoft Word format on compact disc.

7.5.5.4 As-built Shop Drawings: One digital copy of structural steel and fire suppression shop drawings in AutoCAD (dwg) and pdf formats**.**

7.5.5.5 DD Form 1354: One digital copy and one (1) hard copy.

7.5.5.6 Provide two (2) 11 x 17 prints of the as-built drawings

7.6 Equipment submittals. Provide two copies and contain sufficient literature, catalog cuts, brochures, etc., to show compliance with the contract specifications and plans. Submit with standard AF form 3000, dated, signed and identify by individual specification section the item submitting for. This should correlate to the submittal registrar at project inception. Incomplete AF3000 or sloppy documentation of submittal items on same will be rejected and have to be re-submitted~~.~~ Items of related equipment or materials shall be submitted at one time. Each copy shall be in a separate binder. Mark all submittals to show choices and applicable options. Equipment submittals shall be given to the Project Manager as soon as possible, but in no case shall submittals exceed twenty one (21) days after the construction start date. No payments will be authorized for materials or work, which do not have approved submittal requirements.

7.6.1 **The government will within 14 calendar** days return a minimum of one copy of the submittal marked to indicate approval or disapproval or approved as noted.The Contractor shall make any corrections indicated on the submittals. If the Contractor considers any correction to constitute a change to the contract drawings or specifications, written notice will be given to the Contracting Officer. Disapproved items will require **resubmission for approval within 14 calendar days of Contractor’s receipt**. The Contractor will not be allowed to claim for time because of disapproved submittals.

7.6.2 Submittals approved by the Air Force shall not relieve the Contractor from responsibility for complying with the requirements of this contract (See FAR 52.236-5). No substitutions for approved items, which meet contract requirements, will be allowed without approval of the Contracting Officer. If submittals show variations from the contract requirements, the Contractor shall describe such variations in writing at the time of submission.

**8.0 Standard Design Criteria:**

The references listed below include the common criteria that may be applicable. Other technical documents and publications, which are deemed applicable for a particular project, will be made identified in the Statement of Work. Use the latest edition of references unless specified otherwise.

**Building Codes:**

International Building Code

International Mechanical Code

International Plumbing Code

International Energy Conservation Code

International Fuel Gas Code

Fire Safety Code, NFPA 1

Life Safety Code, National Fire Protection Association, NFPA 101

National Electric Code, NFPA 70

National Electric Safety Code, ANSI C2

Council of American Building Officials (CABO) One and Two Family Dwelling Code

**Design Standards:**

Base Facility Design Standard

Base Architectural Compatibility Standard

Tab K, Telecommunications Installation Criteria for Facility Design and Renovation

Air Installation Compatible Use Zone (AICUZ), Hill AFB, Amended April 1982

ASCE/SEI 7-05 Minimum Design Loads for Buildings and Other Structures

ASHRAE Standard 62.1-2007 2010, Ventilation for Acceptable Indoor Air Quality

ASHRAE Standard 90.1-2007, Energy Standard for Buildings except Low Rise Residential Buildings

Illuminating Engineering Society of North America, Reference and Application Lighting Handbook, 2008

ICSSC RP6 - Standards of Seismic Safety for Existing Federally Owned and Leased Buildings

Architectural Barriers Act (ABA) Accessibility Standard for Department of Defense Facilities

**Regulations:**

10 CFR 435 Energy Conservation Voluntary Performance Standards for New Buildings (Mandatory for Federal Buildings)

Energy Policy Act

**Air Force Engineering Technical Letters:**

Current AF ETLs are found on the <http://www.wbdg.org/> web site as applicable.

See Appendix 1.

**Air Force Instruction (AFI):**

AFI 32-10141, “Planning and Programming Fire Safety Deficiency Correction Projects”, attachment 3

**Air Force Design Guides (AFDG) and Standards:**

Current AFDGs as found on the <http://www.wbdg.org/> web site as applicable.

Temporary Lodging Facilities Design Guide

USAF Dining Facilities Design Guide

US Air Force Interior Design Standards

**Military Handbook:**

MIL-HDBK 1004/6 Lightning Protection 1988

MIL HDBK 1013-1A, Design Guidelines for Physical Security of Facilities

MIL HDBK 1013-10, Design Guidelines for Security Fencing, Gates, Barriers, and Guard Facilities

**Air Force Handbook:**

Air Force Handbook 32-1084, Facility Requirements

**Unified Facilities Criteria:**

Current AF UFCs as found on the <http://www.wbdg.org/> web site as applicable.

See Appendix 2

Other:

DD Form 1354, “Transfer and Acceptance of DoD Real Property”

DD Form 1354 Master Checklist Excel Spread Sheet

APPENDIX 1- ENGINEERING TECHNICAL LETTERS

(ETL) 1/15/13

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| **Number** | **Title** | **Status** | **Date** |
| 82-1 | Energy Budget Figures | Superseded by ETLs 83-10, 86-  1, 87-4 | 10 Nov 82 |
| 82-2 | Energy Efficient Equipment | Superseded by AFEPPM 88-10 | 10 Nov 82 |
| 82-3 | Computer Energy Analyses – New Facilities | Superseded by ETLs 83-5, 84-2 | 10 Nov 82 |
| 82-4 | Energy Conservation Investment Program  (ECIP) | Superseded by ETL 84-7 | 10 Nov 82 |
| 82-5 | Solar Applications | Superseded by ETLs 84-1, 86-  13, 86-14 | 10 Nov 82 |
| 82-6 | Normal Passive Solar Applications | Canceled | 30 Dec 82 |
| 82-7 | Unique Passive Solar Applications | Canceled | 30 Nov 82 |
| 83-1 | Design of Control Systems for HVAC | Superseded by ETL 83-1 (Change 1) | 16 Feb 83 |
| 83-1 (Chg 1) | U.S. Air Force Standardized Heating, Ventilating & Air Conditioning (HVAC) Control Systems | Superseded by UFC 3-410-02 | 22 Jul 87 |
| 83-2 | Supplemental Design Guidance to AF Standards – Pressurized Hydrant Fueling Systems | Superseded by ETL 84-3 | 16 Feb 83 |
| 83-3 | Interior Wiring Systems, AFM 88-15, Para  7-3 | Canceled | 2 Mar 83 |
| 83-4 | EMCS Data Transmission Media  Considerations | Canceled | 3 Apr 83 |
| 83-5 | Computer Energy Analyses | Superseded by ETL 84-2 | 5 May 83 |
| 83-6 | Solar Applications in Medical Facilities | Canceled | 24 May 83 |
| 83-7 | Plumbing – AFM 83-8, Chapter 4 | Canceled | 30 Aug 83 |
| 83-8 | Use of Air-to-Air Unitary Heat Pumps | Canceled | 15 Sep 83 |
| 83-9 | Insulation | Superseded by ETL 94-4 | 14 Nov 83 |
| 83-10 | Energy Budget Figure (EBF) | Superseded by ETL 86-1 | 28 Nov 83 |
| 84-1 | Solar Applications | Superseded by ETL 86-14 | 18 Jan 84 |
| 84-2 | Computer Energy Analysis | Superseded by ETL 94-4 | 27 Mar 84 |
| 84-3 | AF Petroleum Fuel Facility Criteria and  Standards | Canceled | 21 Mar 84 |
| 84-4 | Meters in New Facilities | Superseded by ETLs 86-7, 86-  15, 87-5 | 10 Apr 84 |
| 84-5 | Heat Distribution Systems Outside of  Buildings | Superseded by ETLs 84-8, 86-  11, 86-18, 88-6 | 7 May 84 |
| **Number** | **Title** | **Status** | **Date** |
| 84-7 | MCP Energy Conservation Investment  Program (ECIP) | Superseded by AFEPPM 96-4 | 13 Jun 84 |
| 84-8 | Heat Distribution Systems Outside of  Buildings | Superseded by ETL 86-11 | 19 Jun 84 |
| 84-9 | TEMPEST/EMP Shielding for Facilities | Superseded by ETL 88-7 | 5 Jul 84 |
| 84-10 | AF Building Construction and the Use of  Termiticides | Canceled | 1 Aug 84 |
| 86-1 | Energy Budget Figures (EBFs) for Facilities in the Military Construction Program | Superseded by ETL 87-7 | 3 Feb 86 |
| 86-2 | Energy Management and Control Systems  (EMCS) | Canceled | 5 Feb 86 |
| 86-3 | Paints and Protective Coatings | Superseded by ETL 86-4 | 21 Feb 86 |
| 86-4 | Coating Systems and Specifications for  Exterior and Interior of Steel Tanks | Canceled | 12 May 86 |
| 86-5 | Fuels Use Criteria for Air Force  Construction | Canceled | 22 May 86 |
| 86-6 | Heat Distribution Systems Outside of  Buildings | Superseded by ETLs 86-11, 86-  18, 88-6 | 3 Jun 86 |
| 86-7 | Utility Meters in New and Renovated  Facilities | Superseded by ETL 86-15 | 3 Jun 86 |
| 86-8 | Aqueous Film Forming Foam Waste  Discharge Retention and Disposal |  | 4 Jun 86 |
| 86-9 | Lodging Facility Design Guide | Superseded by AFCEE Temporary Lodging Facilities Design Guide | 4 Jun 86 |
| 86-10 | Antiterrorism Planning and Design  Guidance | Superseded by AFCEE Design Guide, Installation Force Protection Guide | 13 Jun 86 |
| 86-11 | Heat Distribution Systems Outside of  Buildings | Superseded by ETL 88-6 | 3 Jul 86 |
| 86-12 | Prewired Workstations and Systems  Furniture | Superseded by ETL 90-2 | 3 Jul 86 |
| 86-13 | Solar Applications | Superseded by ETL 86-14 | 18 Aug 86 |
| 86-14 | Solar Applications | Canceled | 15 Oct 86 |
| 86-15 | Utility Meters in New and Renovated  Facilities | Superseded by ETL 87-5 | 13 Nov 86 |
| 86-16 | Direct Digital Control of Heating, Ventilation, and Air Conditioning Systems | Superseded by UFC 3-410-02 | 9 Dec 86 |
| 86-17 | Power Conditioning and Continuation  Interfacing Equipment (PCCIE) | Superseded by ETL 89-6 | 17 Dec 86 |
| 86-18 | Heat Distribution Systems Outside of  Buildings | Superseded by ETL 88-6 | 18 Dec 86 |

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| **Number** | **Title** | **Status** | **Date** |
| 87-1 | Lead Ban Requirements of Drinking Water | Superseded by AFI 32-1067 | 15 Jan 87 |
| 87-2 | Volatile Organic Compounds | Canceled | 4 Mar 87 |
| 87-3 | Cathodic Protection | Superseded by ETLs 87-6, 88-5 | 12 Mar 87 |
| 87-4 | Energy Budget Figures (EBFs) for Facilities in the Military Construction Program | Superseded by ETL 94-4 | 13 Mar 87 |
| 87-5 | Utility Meters in New and Renovated  Facilities | Superseded by ETL 94-2 | 13 Jul 87 |
| 87-6 | Cathodic Protection | Superseded by ETL 88-5 | 21 Aug 87 |
| 87-7 | 1987 Energy Prices and Discount Factors for Life-Cycle Cost Analysis | Superseded by ETL 89-1 | 14 Oct 87 |
| 87-8 | Built-Up Roof Repair/Replacement Guide  Specifications | Superseded by ETL 90-1 | 19 Oct 87 |
| 87-9 | Prewiring | Superseded by ETL 02-12 | 21 Oct 87 |
| 88-1 | Standard Guidelines for Submission of Facility Operating and Maintenance Manuals | Superseded by ETL 89-2 | 5 Jan 88 |
| 88-2 | Photovoltaic Applications | Superseded by AFCESA Tech Data Bulletin, Photovoltaic Concept, Design, and Application | 21 Jan 88 |
| 88-3 | Design Standards for Critical Facilities | Superseded by AFMAN 32-  1146(I) | 15 Jun 88 |
| 88-4 | Reliability & Maintainability (R&M) Design  Checklist | Superseded by ETL 01-1 | 24 Jun 88 |
| 88-5 | Cathodic Protection | Superseded by ETL 91-6 | 2 Aug 88 |
| 88-6 | Heat Distribution Systems Outside of  Buildings | Superseded by AFI 32-1068 | 1 Aug 88 |
| 88-7 | TEMPEST and High-Altitude Electromagnetic Pulse (HEMP) Protection for Facilities | Superseded by ETLs 90-3, 91-2 | 24 Aug 88 |
| 88-8 | Chlorofluorocarbon (CFC) Limitation in Heating, Ventilating, and Air-Conditioning (HVAC) Systems | Superseded by ETL 91-7 | 4 Oct 88 |
| 88-9 | Radon Reduction in New Facility  Construction | Canceled | 7 Oct 88 |
| 88-10 | Prewired Work Station Guide Specifications | Canceled | 29 Dec 88 |
| 89-1 | 1988 Energy Prices and Discount Factors for Life-Cycle Cost Analysis | Superseded by ETL 90-4 | 6 Feb 89 |
| 89-2 | Standard Guidelines for Submission of Facility Operating and Maintenance Manuals |  | 23 May 89 |

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| **Number** | **Title** | **Status** | **Date** |
| 89-3 | Fire Protection Engineering Criteria for  Electronic Equipment Installations | Superseded by ETL 93-5 | 9 Jun 89 |
| 89-4 | Systems Furniture Guide Specification | Canceled | 6 Jul 89 |
| 89-6 | Power Conditioning and Continuation Interfacing Equipment (PCCIE) in the Military Construction Program (MCP) | Canceled | 7 Sep 89 |
| 89-7 | Design of Air Force Courtrooms | Superseded by Air Force Base  Legal Facilities Design Guide | 29 Sep 89 |
| 90-1 | Built-Up Roof (BUR) Repair/Replacement  Guide Specification | Superseded by UFGS 07 51  13, Built-up Asphalt Roofing | 23 Jan 90 |
| 90-2 | General Policy for Prewired Workstations and Systems Furniture | Canceled | 26 Jan 90 |
| 90-3 | TEMPEST Protection for Facilities | Canceled |  |
| 90-4 | 1990 Energy Prices and Discount Factors for Life-Cycle Cost Analysis | Canceled | 24 May 90 |
| 90-5 | Fuel and Lube Oil Bulk Storage Capacity for  Emergency Generators | Superseded by AFI 32-1062, Electrical Power Plants and Generators | 26 Jul 90 |
| 90-6 | Electrical System Grounding, Static  Grounding and Lightning Protection | Canceled | 3 Oct 90 |
| 90-7 | Air Force Interior Design Policy | Canceled | 12 Oct 90 |
| 90-8 | Guide Specifications for Ethylene Propylene  Diene Monomer (EPDM) Roofing | Superseded by UFGS 07 53  23, Ethylene Propylene Diene  Monomer Roofing | 17 Oct 90 |
| 90-9 | Fire Protection Engineering Criteria for Aircraft Maintenance, Servicing, and Storage Facilities | Superseded by ETL 96-1 | 2 Nov 90 |
| 90-10 | Commissioning of Heating, Ventilating, and Air Conditioning (HVAC) Systems Guide Specification | Canceled | 17 Oct 90 |
| 91-1 | Fire Protection Engineering Criteria - Testing Halon Fire Suppression Systems |  | 2 Jan 91 |
| 91-2 | High Altitude Electromagnetic Pulse  (HEMP) Hardening in Facilities | Canceled | 4 Mar 91 |
| 91-3 | Water Supply for Fire Protection | Superseded by MIL-HDBK-  1008B, Jan 94 | 14 Jun 91 |
| 91-4 | Site Selection Criteria for Fire Protection  Training Areas |  | 14 Jun 91 |
| 91-5 | Fire Protection Engineering Criteria – Emergency Lighting and Marking of Exits | Superseded by ETL 94-5 |  |

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| **Number** | **Title** | **Status** | **Date** |
| 91-6 | Cathodic Protection | Superseded by MIL-HDBK-  1136 (now UFC 3-570-06) and  MIL-HDBK-1004/10 (now UFC  3-570-02N) | 3 Jul 91 |
| 91-7 | Chlorofluorocarbon (CFC) Limitation in Heating, Ventilating, and Air-Conditioning (HVAC) Systems | Canceled | 21 Aug 91 |
| 91-8 | Facility Electrical Power for Aircraft Ground Support Equipment (Hangars, Aprons, and Ramps) | Canceled | 24 Sep 91 |
| 93-1 | Construction Signs | Superseded by ETL 02-9 | 11 Mar 93 |
| 93-2 | Dormitory Criteria for Humid Areas | Superseded by ETL 03-2 | 13 Jul 93 |
| 93-3 | Inventory, Screening, Prioritization, and Evaluation of Existing Buildings for Seismic Risk | Canceled | 18 Aug 93 |
| 93-4 | Fire Protection Engineering Criteria - Automatic Sprinkler Systems in Military Family Housing (MFH) | Superseded by UFC 3-600-01 | 11 Aug 93 |
| 93-5 | Fire Protection Engineering Criteria - Electronic Equipment Installations | Superseded by ETL 01-18 |  |
| 94-1 | Standard Airfield Pavement Marking  Schemes | Superseded by ETL 04-2 | 5 Apr 94 |
| 94-2 | Utility Meters in New and Renovated  Facilities | Superseded by UFC 3-400-01 | 10 Jun 94 |
| 94-3 | Air Force Carpet Standard | Superseded by ETL 00-6 | 10 Jun 94 |
| 94-4 | Energy Usage Criteria for Facilities in the  Military Construction Program | Superseded by UFC 3-400-01 | 19 Aug 94 |
| 94-5 | Fire Protection Engineering Criteria and  Technical Guidance | Superseded by ETL 99-4 | 8 Nov 94 |
| 94-6 | Fire Protection Engineering Criteria and Technical Guidance - Removal of Halogenated Agent Fire Suppression Systems |  | 5 Dec 94 |
| 94-7 | EPA Guideline Items in Construction and  Other Civil Engineering Specifications | Superseded by ETL 00-1 | 14 Dec 94 |
| 94-8 | Design in Metric | Canceled | 14 Dec 94 |
| 94-9 | Silicone Joint Sealants for Pavements | Superseded by ETL 96-4 | 14 Dec 94 |
| 95-1 | Halon 1301 Management Planning  Guidance |  | 12 May 95 |
| 95-2 | Preparation of Requirements and Management Plan (RAMP) Packages for Military Construction Program Projects | Superseded by AFCEE *Project Managers Guide For Design And Construction* | 26 Oct 95 |

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| **Number** | **Title** | **Status** | **Date** |
| 95-3 | Planning Guide for Installation of Ultra-High- Molecular-Weight (UHMW) Polyethylene Panels Under Aircraft Arresting System Cables (CONUS Installations) | Superseded by AFI 32-1043 | 26 Oct 95 |
| 95-4 | Mandatory Energy/Water Performance Standards for Replaced or Modified Equipment | Superseded by UFC 3-400-01 | 31 Oct 95 |
| 96-1 | Fire Protection Engineering Criteria - New  Aircraft Facilities | Superseded by ETL 98-7 | 22 Jan 96 |
| 96-2 | Elimination of Liquid Polychlorinated  Biphenyls (PCBs) Prioritization Guidance | Canceled | 2 May 96 |
| 96-3 | Typical Statement of Work for Airfield  Pavement Condition Survey | Canceled | 26 Jun 96 |
| 96-4 | Temporary Joint Sealing Details and  Procedures for Pavements |  | 9 Jul 96 |
| 96-5 | Hangar Concrete Floor Reflective Coating  Criteria |  | 26 Aug 96 |
| 97-1 | National Primary Drinking Water Regulations: Lead and Copper Rule (LCR) Corrosion Control Desk-Top Report Statement of Work (SOW) | Canceled | 29 Jan 97 |
| 97-2 | Maintenance and Repair of Rigid Airfield  Pavement Surfaces, Joints, and Cracks |  | 28 Jul 97 |
| 97-3 | Base Course Proof Rolling Requirements |  | 25 Mar 97 |
| 97-4 | Expedient Trim Pad Anchoring | Superseded by ETL 06-4 | 2 Jun 97 |
| 97-5 | Proportioning Concrete Mixtures with Graded Aggregates for Rigid Airfield Pavements |  | 25 Apr 97 |
| 97-8 | Building Manager Energy Conservation  Handbook | Superseded by ETL 98-4 | 9 Jun 97 |
| 97-9 | Criteria and Guidance for C-17 Contingency  Operations on Semi-Prepared Airfields |  | 25 Nov 97 |
| 97-10 | Structural Evaluation of Existing Buildings for Seismic and Wind Loads | Superseded by ETL 00-5 | 30 Oct 97 |
| 97-11 | Mitigation of Non-Structural Seismic and High Wind Deficiencies for Existing Buildings | Superseded by ETL 00-5 | 30 Oct 97 |
| 97-12 | Mitigation of Existing Building Structural Deficiencies for Seismic and High Wind Loads | Superseded by ETL 00-5 | 30 Oct 97 |
| 97-13 | Dormitory Ventilation and Exhaust System  Design Criteria | Superseded by ETL 03-2 | 7 Aug 97 |

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| **Number** | **Title** | **Status** | **Date** |
| 97-14 | Procedures for Airfield Pavement Condition  Index Surveys | Superseded by UFCs 3-270-  05/06 | 15 Sep 97 |
| 97-16 | Pavement Marking Systems for Low  Temperature Applications |  | 25 Nov 97 |
| 97-17 | Paint and Rubber Removal from Roadway and Airfield Pavements |  | 1 Dec 97 |
| 97-18 | Guide Specification for Airfield and  Roadway Marking |  | 5 Dec 97 |
| 97-22 | Competing Facility Keying Systems |  | 5 Dec 97 |
| 98-1 | Design Criteria for Aggregate Surfaced  Helicopter Slide Areas and Heliports |  | 14 Jan 98 |
| 98-2 | Clean Air Act Amendments Requirements for Electric Generators and Power Plants | Canceled | 1 Jun 98 |
| 98-4 | Building Manager Energy Conservation  Handbook |  | 16 Jan 98 |
| 98-5 | C-130 and C-17 Contingency and Training  Airfield Dimensional Criteria | Superseded by ETL 04-7 | 19 Oct 98 |
| 98-7 | Fire Protection Engineering Criteria - New  Aircraft Facilities | Superseded by ETL 01-2 | 29 Apr 98 |
| 98-8 | Fire Protection Engineering Criteria – Existing Aircraft Facilities |  | 25 Jun 98 |
| 98-10 | Installation and Operation Guide for the Stanley Hydraulic Power Unit (HPU) (M (MAAS) Upgrade) |  | 5 Nov 98 |
| 99-1 | Treatment and Disposal of Aircraft  Washwater Effluent |  | 7 Jan 99 |
| 99-4 | Fire Protection Engineering Criteria - Emergency Lighting and Marking of Exits |  | 9 Nov 99 |
| 99-6 | Programming Fuels Projects | Superseded by ETL 01-15 | 10 Dec 99 |
| 99-7 | Airfield Pavement Condition Index Survey | Superseded by ETL 02-13 | 27 Sep 99 |
| 00-1 | EPA Guideline Items in Construction and  Other Engineering Specifications |  | 5 Jan 00 |
| 00-2 | Inspection and Testing of Trim Pad  Anchoring Systems |  | 1 Feb 00 |
| 00-4 | Small Arms Range Design and Construction | Superseded by ETL 01-13 |  |
| 00-5 | Seismic Design for Buildings and Other  Structures | Canceled | 5 Jun 00 |
| 00-6 | Air Force Carpet Standard | Superseded by ETL 03-3 | 11 May 00 |
| 00-7 | Fire Protection Engineering Criteria — Correlation of US and Host Nation Codes and Criteria |  | 10 May 00 |

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| **Number** | **Title** | **Status** | **Date** |
| 00-8 | Airfield Pavement Design Criteria | Superseded by UFC 3-260-02 | 28 Apr 00 |
| 00-9 | Airblast Protection Retrofit for Unreinforced  Concrete Masonry Walls |  | 8 Aug 00 |
| 00-12 | Fire Protection Engineering Criteria — Conversion of Fire Alarm Radio Systems to Narrowband Technology | Superseded by ETL 03-5 | 19 Dec 00 |
| 01-1 | Reliability and Maintainability (R&M) Design  Checklist |  | 11 Oct 01 |
| 01-2 | Fire Protection Engineering Criteria - New  Aircraft Facilities | Superseded by ETL 02-15 | 1 Apr 01 |
| 01-4 | Fire Protection Engineering Criteria - Protective and Hardened Aircraft Shelters |  | 31 Dec 01 |
| 01-5 | Jet Engine Thrust Standoff Requirements for Airfield Asphalt Edge Pavements | Superseded by ETL 07-3 | 24 May 01 |
| 01-6 | Contingency Airfield Pavement  Specifications | Superseded by ETL 09-2 | 12 Jun 01 |
| 01-7 | Large Aggregate Asphalt Mixtures |  | 5 Jun 01 |
| 01-8 | Resin Modified Pavement Design and  Application Criteria |  | 25 Sep 01 |
| 01-9 | Procedures to Retard Reflective Cracking |  | 17 Jul 01 |
| 01-10 | Design and Construction of High-Capacity  Trim Pad Anchoring Systems |  | 24 Jul 02 |
| 01-13 | Small Arms Range Design and Construction | Superseded by ETL 02-11 | 31 Dec 01 |
| 01-15 | Programming Fuels Projects | Canceled | 5 Jun 01 |
| 01-18 | Fire Protection Engineering Criteria – Electronic Equipment Installations |  | 24 Oct 01 |
| 01-20 | Guidelines for Airfield Frangibility Zones | Superseded by UFC 3-260-01 | 17 Nov 08 |
| 02-1 | Design of Drainage Structures for Heavy  Aircraft Loading | Superseded by UFC 3-260-01 | 1 Aug 02 |
| 02-4 | Airblast Protection Polymer Retrofit of  Unreinforced Concrete Masonry Walls |  | 12 Jun 02 |
| 02-5 | Guidance for Energy Savings Performance  Contracts | Superseded by ETL 04-12 | 31 Oct 02 |
| 02-7 | Preventing Concrete Deterioration Under B-  1 Aircraft |  | 7 Aug 02 |
| 02-8 | Silicone Joint Sealant Specification for  Airfield Pavements |  | 5 Sep 02 |
| 02-9 | Construction Signs |  | 15 May 02 |
| 02-10 | Airblast Protection Retrofit of Lightweight  Manufactured Structures |  | 12 Jun 02 |
| 02-11 | Small Arms Range Design and Construction | Superseded by ETL 05-5 | 22 Nov 02 |
| **Number** | **Title** | **Status** | **Date** |
| 02-12 | Communications and Information System  Criteria for Air Force Facilities |  | 27 Jun 02 |
| 02-13 | Pavement Engineering Assessment  Standards | Superseded by ETL 04-9 | 5 Sep 02 |
| 02-14 | Determining the Need for Runway Rubber  Removal | Superseded by ETL 04-10 | 4 Sep 02 |
| 02-15 | Fire Protection Engineering Criteria – New  Aircraft Facilities |  | 3 Dec 02 |
| 02-16 | Design, Construction, Maintenance, and Evaluation of the Pegasus Glacial Ice Runway for Heavy Wheeled Aircraft Operations |  | 16 Oct 02 |
| 02-17 | Use of Non-Potable Water to Replace  Potable Water | Superseded by ETL 08-10 | 25 Oct 02 |
| 02-19 | Airfield Pavement Evaluation Standards and  Procedures |  | 12 Nov 02 |
| 03-1 | Storm Water Construction Standards |  | 24 Mar 03 |
| 03-2 | Design Criteria for Prevention of Mold in Air  Force Facilities | Superseded by ETL 04-3 | 12 Aug 03 |
| 03-3 | Air Force Carpet Standard | Superseded by ETL 07-4 | 16 Apr 03 |
| 03-4 | Alternate Fuels E85 and B20 |  | 21 Oct 03 |
| 03-5 | Converting Civil Engineering Radio Frequency Devices to Narrowband Technology |  | 21 Oct 03 |
| 03-8 | Rejuvenation of Hot-Mix Asphalt (HMA) Pavements | Superseded by UFGS 32 01 22 | 19 Dec 03 |
| 04-2 | Standard Airfield Pavement Marking  Schemes |  | 19 Jul 04 |
| 04-3 | Design Criteria for Prevention of Mold in Air  Force Facilities |  | 6 Apr 04 |
| 04-4 | Trenchless Technology (TT) for Crossing  Air Force Pavements |  | 31 Mar 04 |
| 04-5 | Design Recommendations for Potable  Water System Security (FOUO) |  | 20 Aug 04 |
| 04-6 | Inspection of Drainage Systems |  | 8 Jan 04 |
| 04-7 | C-130 and C-17 Landing Zone (LZ) Dimensional, Marking, and Lighting Criteria | Superseded by ETL 09-6 | 29 Mar 04 |
| 04-8 | Stone Matrix Asphalt (SMA) for Air Force  Pavements | Superseded by UFGS 32 13 17 | 9 Jan 04 |
| 04-9 | Pavement Engineering Assessment (EA) Standards |  | 29 Apr 04 |

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| **Number** | **Title** | **Status** | **Date** |
| 04-10 | Determining the Need for Runway Rubber  Removal |  | 12 May 04 |
| 04-11 | Recommendations for Incorporating Water System Emergency Response Plan (ERP) Requirements (FOUO) | Superseded by ETL 12-1 | 18 Oct 04 |
| 04-12 | Energy Savings Performance Contracts  (ESPC) | Superseded by ETL 06-8 | 13 Oct 04 |
| 04-15 | Electrical Safety Guidance | Superseded by UFC 3-560-01 | 30 Sep 04 |
| 05-1 | Use of Acrylic Diffusers with Metal Halide  Fixtures |  | 5 Feb 05 |
| 05-2 | Design, Construction, Maintenance, and Evaluation of the McMurdo Sound Sea Ice Runway for Heavy Wheeled Aircraft Operations | Superseded by ETL 06-7 | 6 Jun 05 |
| 05-5 | Small Arms Range Design and Construction | Superseded by ETL 06-11 | 8 Nov 05 |
| 05-8 | Use of Off-the-Shelf Concrete Admixtures as Cold Weather Admixture Systems (CWAS) |  | 4 Nov 05 |
| 06-1 | Arc Flash Personal Protective Equipment (PPE) Requirements for High-Voltage Overhead Line Work at 69 kV (nominal) or Less | Superseded by ETL 06-9 | 5 Jan 06 |
| 06-2 | Alkali-Aggregate Reaction in Portland  Cement Concrete (PCC) Airfield Pavements |  | 9 Feb 06 |
| 06-4 | Expedient Trim Pad Anchoring Systems |  | 8 May 06 |
| 06-6 | Interim Swaged End Inspection Criteria for  Aircraft Arresting System (AAS) Pendants |  | 16 Jun 06 |
| 06-7 | Design, Construction, Maintenance, and Evaluation of the McMurdo Sound Sea Ice Runway for Heavy Wheeled Aircraft Operations | Superseded by ETL 07-12 | 19 Jul 06 |
| 06-8 | Energy Savings Performance Contracts  (ESPC) | Superseded by ETL 08-5 | 19 Sep 06 |
| 06-9 | Arc Flash Personal Protective Equipment (PPE) Requirements for High-Voltage Overhead Line Work at 69 kV (nominal) or Less | Superseded by UFC 3-560-01 | 15 Aug 06 |
| 06-11 | Small Arms Range Design and Construction | Superseded by ETL 08-11 | 28 Nov 06 |
| 07-1 | Design Criteria for Underground Electrical Distribution Systems Using Directional Boring (DB) Installation Methods for Installing High Density Polyethylene Electrical (HDPE) Conduit |  | 9 Feb 07 |

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| **Number** | **Title** | **Status** | **Date** |
| 07-2 | Anchoring a Fiberglass Mat Assembly in  Asphalt Concrete (AC) Pavement |  | 19 Dec 07 |
| 07-3 | Jet Engine Thrust Standoff Requirements for Airfield Asphalt Edge Pavements |  | 14 Feb 07 |
| 07-4 | Air Force Carpet Standard |  | 28 Mar 07 |
| 07-5 | Bridge Inspections | Superseded by UFC 3-310-08 | 18 Apr 07 |
| 07-6 | Risk Assessment Procedure for Recycling Portland Cement Concrete (PCC) Suffering from Alkali-Silica Reaction (ASR) in Airfield Pavement Structures |  | 14 Aug 07 |
| 07-7 | Compact Fluorescent Lamp (CFL) Applications (FOUO) |  | 6 Nov 07 |
| 07-8 | Spall Repair of Portland Cement Concrete (PCC) Airfield Pavements in Expeditionary Environments |  | 27 Jul 07 |
| 07-10 | Evaluation and Restoration of Folded  Fiberglass Mats (FFM) |  | 19 Dec 07 |
| 07-11 | Evaluation of Aged Asphalt Concrete  Surfaces | Superseded by ETL 08-1 | 25 Sep 07 |
| 07-12 | Design, Construction, Maintenance, and Evaluation of the McMurdo Sound Sea Ice Runway for Heavy Wheeled Aircraft Operations |  | 24 Sep 07 |
| 08-1 | Evaluation Criteria for Aged Asphalt  Concrete (AC) Surfaces |  | 8 Feb 08 |
| 08-2 | Testing Protocol for Rigid Spall Repair  Materials |  | 30 Jan 08 |
| 08-3 | Crater Repair Methods Using Rapid-Setting  (RS) Materials (FOUO) |  | 4 Apr 08 |
| 08-4 | Testing Protocol for Polymeric Spall Repair  Materials |  | 10 Apr 08 |
| 08-5 | Energy Savings Performance Contracts | Superseded by ETL 11-24 | 14 Apr 08 |
| 08-6 | Design of Surface Drainage Facilities |  | 5 Feb 08 |
| 08-10 | Alternative Water Sources - Use of Non- Potable Water |  | 10 Jul 08 |
| 08-11 | Small Arms Range Design and Construction | Superseded by ETL 11-18 | 20 Oct 08 |
| 08-13 | Incorporating Sustainable Design and Development (SDD) and Facility Energy Attributes in the Air Force Construction Program |  | 14 Sep 08 |
| 08-14 | Structural Evaluation Procedure for  Stabilized Soil-Surfaced Airfields |  | 28 Aug 08 |

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| **Number** | **Title** | **Status** | **Date** |
| 08-15 | Utilities Privatization (UP) Service Contract  Post-Award Management | Superseded by Air Force  Utilities Privatization Playbook | 14 Sep 08 |
| 09-1 | Airfield Planning and Design Criteria for  Unmanned Aircraft Systems (UAS) |  | 28 Sep 09 |
| 09-2 | Contingency Airfield Pavement  Specifications |  | 11 Mar 09 |
| 09-3 | Chemical Dust Control for Contingency Roads, Base Camps, Helipads, and Airfields |  | 3 Mar 09 |
| 09-4 | Fire Protection Engineering Criteria – Expeditionary and Force Projection Operational Theaters |  | 9 Feb 09 |
| 09-6 | C-130 and C-17 Landing Zone (LZ) Dimensional, Marking, and Lighting Criteria (FOUO) |  | 17 Aug 09 |
| 09-8 | Resource Efficiency Manager (REM) Tracking and Results Verification | Canceled | 3 Mar 09 |
| 09-9 | Connection Methods For Standby  Generators - 600 Volts or Less | Superseded by ETL 10-7 | 18 May 09 |
| 09-10 | Aurora Electrical System Vulnerability  Assessment and Mitigation Actions (FOUO) |  | 16 Apr 09 |
| 09-11 | Civil Engineering Industrial Control System  Information Assurance Compliance | Superseded by ETL 11-1 | 26 Oct 09 |
| 09-12 | Use of Light-Emitting Diode (LED) Fixtures in Airfield Lighting Systems on Air Force Installations and Expeditionary Locations | Superseded by ETL 10-15 | 18 Aug 09 |
| 09-13 | Irrigation of Installation Turfgrass and  Landscaping |  | 23 Oct 09 |
| 09-15 | External Foam Insulation of Temporary  Structures | Superseded by ETL 09-18 | 19 Oct 09 |
| 09-18 | External Foam Insulation of Temporary  Structures | Superseded by ETL 10-6 | 18 Nov 09 |
| 10-2 | Light-Emitting Diode (LED) Fixture Design and Installation Criteria for Interior and Exterior Lighting Applications | Superseded by ETL 10-18 | 18 Mar 10 |
| 10-3 | Procedures and Acceptance Criteria for Protective Materials Resistant to 155 mm and Smaller Fragmenting Munitions |  | 1 Mar 10 |
| 10-4 | Joint Strike Fighter (JSF) F-35B Vertical  Landing (VL) Pad Design (FOUO) | Canceled | 8 Jul 10 |
| 10-5 | Self-Help Pest and Vegetation Management  Program |  | 30 Aug 10 |

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| **Number** | **Title** | **Status** | **Date** |
| 10-6 | External Foam Insulation of Temporary  Structures |  | 22 Feb 10 |
| 10-7 | Connection Methods For Standby  Generators - 600 Volts or Less |  | 3 Mar 10 |
| 10-15 | Use of Light-Emitting Diode (LED) Fixtures in Airfield Lighting Systems on Air Force Installations and Expeditionary Locations | Superseded by ETL 11-13 | 24 Sep 10 |
| 10-18 | Light-Emitting Diode (LED) Fixture Design and Installation Criteria for Interior and Exterior Lighting Applications | Superseded by ETL 12-4 | 13 Dec 10 |
| 11-1 | Civil Engineer Industrial Control System  Information Assurance Compliance |  | 30 Mar 11 |
| 11-3 | Warm Mix Asphalt (WMA) |  | 8 Aug 11 |
| 11-4 | Airfield Pavement Drainage Layers |  | 13 Dec 11 |
| 11-6 | Utilities Reporting for Air Force Facilities |  | 21 Jun 11 |
| 11-7 | Nuclear Weapons-Capable Maintenance and Storage Facilities |  | 1 Sep 11 |
| 11-8 | Decision Criteria for Installing Vegetative  Green Roofs at CONUS Installations |  | 13 Jan 11 |
| 11-9 | Electrical Manhole Entry and Work  Procedures |  | 19 Jan 11 |
| 11-10 | Electrical Manhole Design Considerations |  | 19 Jan 11 |
| 11-12 | Grounding, Bonding, Testing, and Recordkeeping for Communications Facilities |  | 24 Feb 11 |
| 11-13 | Use of Light-Emitting Diode (LED) Fixtures in Airfield Lighting Systems on Air Force Installations and Expeditionary Locations | Superseded by ETL 11-29 | 14 Apr 11 |
| 11-15 | Repairing and Backfilling Earthen  Structures with Flowable Fill |  | 1 Aug 11 |
| 11-18 | Small Arms Range Design and Construction |  | 19 Apr 11 |
| 11-21 | Emergency and Standby Generator Design, Maintenance, and Testing Criteria | Superseded by ETL 11-21 (Chg  1) | 31 Oct 11 |
| 11-21 (Chg 1) | Emergency and Standby Generator Design, Maintenance, and Testing Criteria | Superseded by ETL 11-21 (Chg  2) | 16 Feb 12 |
| 11-21 (Chg 2) | Emergency and Standby Generator Design, Maintenance, and Testing Criteria |  | 16 Mar 12 |
| 11-22 | Water Distribution Lines Leak Detection |  | 21 Jun 11 |
| 11-24 | Energy Savings Performance Contracts  (ESPC) |  | 18 Jul 11 |

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| **Number** | **Title** | **Status** | **Date** |
| 11-25 | Implementation of Major and Area Source Rules as Applied to Boiler Tune-ups and Energy Assessments for the Boiler MACT Rule |  | 8 Aug 11 |
| 11-26 | Using Asphalt Surface Treatments as Preventive Maintenance on Asphalt Airfield Pavements |  | 21 Dec 11 |
| 11-27 | Solar Lighting for Airfields |  | 7 Dec 11 |
| 11-28 | Mandatory Review and Update of Record Drawings for Nuclear-Capable Weapons and Munitions Storage and Maintenance Facilities |  | 7 Dec 11 |
| 11-29 | Use of Light-Emitting Diode (LED) Fixtures in Airfield Lighting Systems on Air Force Installations and Enduring/Contingency Locations |  | 22 Dec 11 |
| 12-1 | Recommendations for Incorporating Water System Emergency Response Plan Requirements (FOUO) |  | 13 Jan 12 |
| 12-4 | LED Fixture Design and Installation Criteria for Interior and Exterior Lighting Applications | Superseded by ETL 12-4 (Chg  1) | 9 Jan 12 |
| 12-4 (Chg 1) | LED Fixture Design and Installation Criteria for Interior and Exterior Lighting  Applications | Superseded by ETL 12-15 | 17 Feb 12 |
| 12-7 | Repair of Cement-Stabilized Soil (CSS) Surfaces |  | 7 Feb 12 |
| 12-8 | Contingency Aircraft Mooring Points in  Portland Cement Concrete Pavements |  | 18 Jan 12 |
| 12-9 | Personnel Certification Requirements for Inspection of Lightning Protection Systems (LPS) on Nuclear Weapons Maintenance, Handling, and Storage Facilities |  | 13 Apr 12 |
| 12-10 | Utility Energy Service Contracts (UESC) |  | 3 Apr 12 |
| 12-12 | Solar-Powered Light-Emitting Diode (LED) Fixture Design and Installation Criteria for Exterior Lighting Applications in Contingency Environments |  | 27 Jul 12 |
| 12-15 | LED Fixture Design and Installation Criteria for Interior and Exterior Lighting Applications | Superseded by ETL 12-15 (Chg  1) | 22 Aug 12 |
| 12-15 (Chg 1) | LED Fixture Design and Installation Criteria for Interior and Exterior Lighting  Applications |  | 22 Oct 12 |

**CONSTRUCTION TECHNICAL LETTERS (CTL)**

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| **Number** | **Title** | **Status** |
| 87-1 | [Construction Signs] | Superseded by CTL 88-3 |
| 88-1 | [Management of the MILCON Planning and  Execution Process] | Superseded by CTL 90-1 |
| 88-2 | DD Form 1354 Checklist | Canceled |
| 88-3 | [Construction Signs] | Superseded by ETL 93-1 |
| 88-4 |  | Replaced by Electronic Data File and  Documentation in PDC/WIMS |
| 88-5 | [Definitions for Design Milestones] | Superseded by CTL 90-2 |
| 88-6 |  | Canceled |
| 88-7 | Constructability Review Checklist | Superseded by AFPAM 32-1005 |
| 89-1 | Thirty-Percent Design Submittal | Canceled |
| 89-2 | MAJCOM Construction Management | Superseded by AFPAM 32-1005 |
| 89-3 | Warranty and Guarantee Program | Superseded by AFPAM 32-1005 |
| 90-1 | Management of the MILCON Planning and  Execution Process | Superseded by ETL 95-2 and USAF Project  Manager’s Guide for Design and Construction |
| 90-2 | Definitions for Design Milestones | Canceled |

APPENDIX 2

UNIFIED FACILITY CRITERIA

JANUARY 24, 2013

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| **Title** | **Date** | | **Downloads** | | **CCR** | |
| **SERIES 1: POLICY, PROCEDURES AND GUIDANCE** | | | | | | |
| **SERIES 1-200: POLICY** | | | | | | |
| UFC 1-200-01 General Building Requirements, with Change 2 | 08-16-2010 | | [158 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_1_200_01.pdf) | |  | |  |  | |  |  |  |  |
| UFC 1-201-01 Non-Permanent DoD Facilities in Support of Military Operations NEW | 01-01-2013 | | [318 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_1_201_01.pdf) | |  | |  |  | |  |  |  |  |
| **SERIES 1-300: PROCEDURES AND GUIDANCE** | | | | | | |
| UFC 1-300-01 Criteria Format Standard, with Change 2 | 02-28-2006 | | [290 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_1_300_01.pdf) | |  | |  |  | |  |  |  |  |
| UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard, with Changes 1-4 | 09-01-2004 | | [116 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_1_300_02.pdf) | |  | |  |  | |  |  |  |  |
| UFC 1-300-07A Design Build Technical Requirements | 03-01-2005 | | [210 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_1_300_07a.pdf) | |  | |  |  | |  |  |  |  |
| UFC 1-300-08 Criteria for Transfer and Acceptance of DoD Real Property, with Change 2 | 04-16-2009 | | [672 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_1_300_08.pdf) | |  | |  |  | |  |  |  |  |
| UFC 1-300-09N Design Procedures, with Change 8 | 05-25-2005 | | [454 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_1_300_09n.pdf) | |  | |  |  | |  |  |  |  |
| **SERIES 1-900: MISCELLANEOUS** | | | | | | |
| UFC 1-900-01 Selection of Methods for the Reduction, Reuse and Recycling of Demolition Waste | 12-01-2002 | | [319 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_1_900_01.pdf) | |  | |  |  | |  |  |  |  |
| **SERIES 2: MASTER PLANNING** | | | | | | |
| [UFC 2-000-05N (P-80) Facility Planning Criteria for Navy/Marine Corps Shore Installations](https://portal.navfac.navy.mil/portal/page/portal/navfac/navfac_ww_pp/navfac_hq_pp/navfac_bdd_pp/au_criteriamgmt) | 01-31-2005 | |  | |  | |  |  | |  |  |  |  |
| UFC 2-100-01 Installation Master Planning Revised | 05-15-2012 | | [2.6 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_2_100_01.pdf) | |  | |  |  | |  |  |  |  |
| **SERIES 3: DISCIPLINE-SPECIFIC CRITERIA** | | | | | | |
| **SERIES 3-100: ARCHITECTURE AND INTERIOR DESIGN** | | | | | | |
| UFC 3-101-01 Architecture | 11-28-2011 | | [450 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_101_01.pdf) | |  | |  |  | |  |  |  |  |
| UFC 3-110-03 Roofing | 05-01-2012 | | [866 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_110_03.pdf) | |  | |  |  | |  |  |  |  |
| UFC 3-110-04 Roofing Maintenance and Repair | 01-11-2007 | | [88 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_110_04.pdf) | |  | |  |  | |  |  |  |  |
| UFC 3-120-01 Air Force Sign Standard | 02-06-2003 | | [8.4 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_120_01.pdf) | |  | |  |  | |  |  |  |  |
| UFC 3-120-10 Interior Design, with Change 1 | 06-15-2006 | | [644 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_120_10.pdf) | |  | |  |  | |  |  |  |  |
| UFC 3-130-01 General Provisions - Arctic and Subarctic Construction | 01-16-2004 | | [1.1 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_130_01.pdf) | |  | |  |  | |  |  |  |  |
| UFC 3-130-02 Site Selection and Development - Arctic and Subarctic Construction | 01-16-2004 | | [816 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_130_02.pdf) | |  | |  |  | |  |  |  |  |
| UFC 3-130-03 Runway and Road Design - Arctic and Subarctic Construction | 01-16-2004 | | [324 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_130_03.pdf) | |  | |  |  | |  |  |  |  |
| UFC 3-130-04 Foundations for Structures - Arctic and Subarctic Construction | 01-16-2004 | | [3.4 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_130_04.pdf) | |  | |  |  | |  |  |  |  |
| UFC 3-130-05 Utilities - Arctic and Subarctic Construction | 01-16-2004 | | [1 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_130_05.pdf) | |  | |  |  | |  |  |  |  |
| UFC 3-130-06 Calculation Methods for Determination of Depths of Freeze and Thaw in Soil - Arctic and Subarctic Construction | 01-16-2004 | | [1.3 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_130_06.pdf) | |  | |  |  | |  |  |  |  |
| UFC 3-130-07 Buildings - Arctic and Subarctic Construction | 01-16-2004 | | [1.4 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_130_07.pdf) | |  | |  |  | |  |  |  |  |
| UFC 3-190-06 Protective Coatings and Paints | 01-16-2004 | | [953 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_190_06.pdf) | |  | |  |  | |  |  |  |  |
| **SERIES 3-200: CIVIL / GEOTECHNICAL / LANDSCAPE ARCHITECTURE** | | | | | | |
| UFC 3-201-02 Landscape Architecture, with Change 1 | 02-23-2009 | | [2.9 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_201_02.pdf) | |  | |  |  | |  |  |  |  |
| UFC 3-210-01A Area Planning, Site Planning, and Design | 01-16-2004 | | [1.6 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_210_01a.pdf) | |  | |  |  | |  |  |  |  |
| UFC 3-210-02 POV Site Circulation and Parking, with Change 1 | 01-16-2004 | | [325 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_210_02.pdf) | |  | |  |  | |  |  |  |  |
| UFC 3-210-03A Planning of Outdoor Recreation Facilities | 01-16-2004 | | [798 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_210_03a.pdf) | |  | |  |  | |  |  |  |  |
| UFC 3-210-06A Site Planning and Design | 01-16-2006 | | [1.9 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_210_06a.pdf) | |  | |  |  | |  |  |  |  |
| UFC 3-210-10 Low Impact Development | 11-15-2010 | | [725 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_210_10.pdf) | |  | |  |  | |  |  |  |  |
| UFC 3-220-01 Geotechnical Engineering NEW | 11-01-2012 | | [208 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_220_01.pdf) | |  | |  |  | |  |  |  |  |
| UFC 3-220-04FA Backfill for Subsurface Structures | 01-16-2004 | | [585 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_220_04fa.pdf) | |  | |  |  | |  |  |  |  |
| UFC 3-220-05 Dewatering and Groundwater Control | 01-16-2004 | | [2.8 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_220_05.pdf) | |  | |  |  | |  |  |  |  |
| UFC 3-220-06 Grouting Methods and Equipment | 01-16-2004 | | [1.6 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_220_06.pdf) | |  | |  |  | |  |  |  |  |
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| UFC 3-230-06A Subsurface Drainage, with Changes 1-2 | 01-16-2004 | | [559 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_230_06a.pdf) | |  | |  |  | |  |  |  |  |
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| UFC 3-250-03 Standard Practice Manual for Flexible Pavements | 05-15-2001 | | [798 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_250_03.pdf) | |  | |  |  | |  |  |  |  |
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| UFC 3-250-08FA Standard Practice for Sealing Joints and Cracks in Rigid and Flexible Pavements | 01-16-2004 | | [1.3 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_250_08fa.pdf) | |  | |  |  | |  |  |  |  |
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| UFC 3-270-06 Paver Asphalt Surfaced Airfields Pavement Condition Index (PCI) | 03-15-2001 | | [3.9 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_270_06.pdf) | |  | |  |  | |  |  |  |  |
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| **SERIES 3-700: COST ENGINEERING** | | | | | | |
| UFC 3-701-01 DoD Facilities Pricing Guide, with Change 3; see also [FY12 Supplemental Documentation (zip, 165MB)](http://wbdg.org/ccb/DOD/UFC/ufc_3_701_01_FY12_supplement.zip) and [FY12 Unabridged Area Cost Factors (zip, 3MB)](http://wbdg.org/ccb/DOD/UFC/ufc_3_701_01_FY12_acf.zip) | 03-2011 | | [608 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_701_01.pdf) | |  | |  |  | |  |  |  |  |
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| UFC 3-740-05 Handbook: Construction Cost Estimating, with Change 1 | 11-08-2010 | | [1.1 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_740_05.pdf) | |  | |  |  | |  |  |  |  |
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| UFC 4-020-02FA Security Engineering: Concept Design (FOUO) | 03-01-2005 | | [70 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_020_02fa.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-020-03FA Security Engineering: Final Design (FOUO) | 03-01-2005 | | [70 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_020_03fa.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-020-04A Electronic Security Systems: Security Engineering, with Change 2 | 03-01-2005 | | [2.7 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_020_04a.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-021-01 Design and O&M: Mass Notification Systems, with Change 1 | 04-09-2008 | | [396 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_021_01.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-021-02NF Security Engineering Electronic Security Systems, Change 1 | 09-27-2006 | | [2.1 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_021_02nf.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-022-01 Security Engineering: Entry Control Facilities / Access Control Points | 05-25-2005 | | [2.1 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_022_01.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-022-02 Selection and Application of Vehicle Barriers, with Change 1 | 06-08-2009 | | [1.4 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_022_02.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-023-03 Design of Buildings to Resist Progressive Collapse with Change 1 | 07-14-2009 | | [3.7 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_023_03.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-023-07 Design to Resist Direct Fire Weapons Effects | 07-07-2008 | | [1.4 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_023_07.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-024-01 Security Engineering: Procedures for Designing Airborne Chemical, Biological, and Radiological Protection for Buildings | 06-10-2008 | | [1.2 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_024_01.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-025-01 Securing Engineering:  Waterfront Security NEW | 11-01-2012 | | [1.6 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_025_01.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-030-01 Sustainable Development | 12-21-2007 | | [1.3 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_030_01.pdf) | |  | |  |  | |  |  |  |  |
| **SERIES 4-100: OPERATIONAL AND TRAINING FACILITIES** | | | | | | |
| UFC 4-121-10N Design: Aircraft Fixed Point Utility Systems | 01-16-2004 | | [520 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_121_10n.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-133-01N Navy Air Traffic Control Facilities, with Changes 4-5 | 02-24-2005 | | [709 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_133_01n.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-141-04 Emergency Operations Center Planning and Design, Change 1 | 07-15-2008 | | [546 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_141_04.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-141-10N Design: Aviation Operation and Support Facilities | 01-16-2004 | | [1.4 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_141_10n.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-150-02 Dockside Utilities for Ship Service, with Change 5 Revised | 05-12-2003 | | [8.6 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_150_02.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-150-06 Military Harbors and Coastal Facilities, with Change 1 | 12-12-2001 | | [2.1 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_150_06.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-150-07 Maintenance and Operation: Maintenance of Waterfront Facilities, with Change 1 Revised | 06-19-2001 | | [2.5 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_150_07.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-150-08 Inspection of Mooring Hardware | 04-01-2001 | | [350 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_150_08.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-151-10 General Criteria for Waterfront Construction, with Change 1 Revised | 09-10-2001 | | [190 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_151_10.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-152-01 Design: Piers and Wharves; with Change 1 Revised | 07-28-2005 | | [5.9 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_152_01.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-152-07 Design: Small Craft Berthing Facilities; with Change 1 Revised | 07-14-2009 | | [2.5 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_152_07.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-159-01N Design: Hyperbaric Facilities | 01-16-2004 | | [1.6 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_159_01n.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-159-03 Design: Moorings, with Change 1 Revised | 10-03-2005 | | [3.4 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_159_03.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-171-01N Design: Aviation Training Facilities | 01-16-2004 | | [1.6 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_171_01n.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-171-04AN Band Training Facilities | 03-01-2005 | | [17 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_171_04an.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-171-05 Army Reserve Facilities, with Change 3 | 01-01-2005 | | [5.2 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_171_05.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-179-01 Design: Navy Firefighting School Facilities | 01-16-2004 | | [1.8 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_179_01.pdf) | |  | |  |  | |  |  |  |  |
| **SERIES 4-200: MAINTENANCE AND PRODUCTION FACILITIES** | | | | | | |
| UFC 4-211-01N Aircraft Maintenance Hangars: Type I, Type II and Type III, with Change 3; also see the Supplement [ITG FY10-01](http://www.wbdg.org/ccb/NAVFAC/INTCRIT/fy10_01.pdf) | 10-25-2004 | | [1.7 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_211_01n.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-211-02 Aircraft Corrosion Control and Paint Facilities NEW | 12-01-2012 | | [986 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_211_02.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-212-01N Navy Engine Test Cells, with Changes 1-4 | 07-27-2006 | | [1.1 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_212_01n.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-213-10 Design: Graving Drydocks, with Change 1Revised | 08-15-2002 | | [1.7 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_213_10.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-213-12 Drydocking Facilities Characteristics | 06-19-2003 | | [4.2 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_213_12.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-214-03 Central Vehicle Wash Facilities | 01-16-2004 | | [871 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_214_03.pdf) | |  | |  |  | |  |  |  |  |
| **SERIES 4-300: RESEARCH, DEVELOPMENT, TEST AND EVALUATION FACILITIES** | | | | | | |
| UFC 4-310-02N Design: Clean Rooms | 01-16-2004 | | [2.6 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_310_02n.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-390-01 O&M: Unmanned Pressure Test Facilities Safety Certification Manual | 07-23-2003 | | [928 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_390_01.pdf) | |  | |  |  | |  |  |  |  |
| **SERIES 4-400: SUPPLY FACILITIES** | | | | | | |
| UFC 4-440-01A Storage Depots | 03-01-2005 | | [891 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_440_01a.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-442-01N Design: Covered Storage | 01-16-2004 | | [2.5 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_442_01n.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-451-10N Design: Hazardous Waste Storage | 01-16-2004 | | [149 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_451_10n.pdf) | |  | |  |  | |  |  |  |  |
| **SERIES 4-500: HOSPITAL AND MEDICAL FACILITIES** | | | | | | |
| UFC 4-510-01 Design:  Medical Military Facilities NEW | 11-01-2012 | | [5.4 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_510_01.pdf) | |  | |  |  | |  |  |  |  |
| **SERIES 4-600: ADMINISTRATIVE FACILITIES** | | | | | | |
| UFC 4-610-01 Administrative Facilities | 05-06-2008 | | [481 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_610_01.pdf) | |  | |  |  | |  |  |  |  |
| **SERIES 4-700: HOUSING AND COMMUNITY FACILITIES** | | | | | | |
| UFC 4-711-01 Family Housing; see also [Unified Facilities Spreadsheet](http://www.wbdg.org/references/pa_dod_sps.php) | 07-13-2006 | | [700 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_711_01.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-720-01 Lodging Facilities | 02-13-2012 | | [1.6 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_720_01.pdf) | |  | |  |  | |  |  |  |  |
| FC 4-721-10N Facilities Criteria Navy and Marine Corps:  Unaccompanied Housing, with Change 1 NEW | 11-01-2012 | | [2.1 MB](http://www.wbdg.org/ccb/DOD/UFC/fc_4_721_10n.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-722-01 Dining Facilities | 07-02-2007 | | [202 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_722_01.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-730-01 Family Service Centers, with Change 1; see also [Unified Facilities Spreadsheet](http://www.wbdg.org/references/pa_dod_sps.php) | 04-07-2006 | | [782 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_730_01.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-730-04AN Military Police Facilities | 03-01-2005 | | [3 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_730_04an.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-730-10 Fire Stations; see also [Unified Facilities Spreadsheet](http://www.wbdg.org/references/pa_dod_sps.php) | 06-15-2006 | | [1.8 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_730_10.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-740-01NF Design: Bowling Centers | 04-16-2004 | | [4 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_740_01nf.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-740-02 Fitness Centers; see also [Unified Facilities Spreadsheets](http://www.wbdg.org/references/pa_dod_sps.php) | 09-26-2006 | | [2.3 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_740_02.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-740-03 Design: Navy and Marine Corps Outdoor Adventure Centers and Rental Centers | 11-01-2002 | | [719 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_740_03.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-740-06 Youth Centers; see also [Unified Facilities Spreadsheet](http://www.wbdg.org/references/pa_dod_sps.php) | 01-12-2006 | | [1.3 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_740_06.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-740-14 Design: Child Development Centers | 08-01-2002 | | [1.9 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_740_14.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-740-15 Continuous Child Care Facilities; see also [Unified Facilities Spreadsheet](http://www.wbdg.org/references/pa_dod_sps.php) | 04-14-2011 | | [580 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_740_15.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-740-16 Design: Military Recreation Centers; see also [Unified Facilities Spreadsheet](http://www.wbdg.org/references/pa_dod_sps.php) | 05-25-2005 | | [618 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_740_16.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-740-20 Libraries | 05-01-2006 | | [2.2 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_740_20.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-750-01NF Design: Golf Clubhouses | 04-16-2004 | | [4.7 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_750_01nf.pdf) | |  | |  |  | |  |  |  |  |
| UFC 4-750-02N Design: Outdoor Sports and Recreational Facilities | 12-04-2003 | | [5.4 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_750_02n.pdf) | |  | |  |  | |  |  |  |  |
| **SERIES 4-800: UTILITIES AND GROUND IMPROVEMENTS** | | | | | | | | |
| UFC 4-826-10 Design: Refrigeration Systems for Cold Storage | | 07-10-2002 | | [180 KB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_826_10.pdf) | |  | | |
| UFC 4-832-01N Design: Industrial and Oily Wastewater Control | | 01-16-2004 | | [1.2 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_832_01n.pdf) | |  | | |
| UFC 4-860-03 Railroad Track Maintenance and Safety Standards | | 02-13-2008 | | [2.1 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_860_03.pdf) | |  | | |
| UFC 4-860-01FA Railroad Design and Rehabilitation | | 01-16-2004 | | [1 MB](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_860_01fa.pdf) | |  | | |

***Instructions - This checklist should be used by the design engineer to determine the necessary design considerations and the submittals for a Stormwater Pollution Prevention Plan (SWPPP) and/or Erosion Control Plan (ECP) review. Once submitted by the Hill AFB PM, it will be used by 75 CEG/CEIE to review and approve these documents. (\*\*This checklist is not all inclusive; consult with CEIE for site-specific issues.)***

***General***

* ***The attached form is a list of typical stormwater review criteria for all construction projects.***
  + ***The Design Engineer should check each item on the list; if an item is not applicable to this project, the item should be noted as N/A***
  + ***Upon submittal for plan review, the Design Engineer should sign this form indicating the checklist and all required documents have been submitted***
  + ***Hill Air Force Base (AFB) Project Manager (PM) must review documents from the Design Engineer and check what is included with the packet and sign this checklist prior to submittal to 75 CEG/CEIE***
  + ***A copy of this checklist must accompany the plans with all subsequent reviews, 75 CEG/CEIE will not accept plans for review without this signed checklist.***
  + ***In providing approvals, 75 CEG/CEIE assumes that applicants have not made any errors and have complied with all applicable regulations. If after an approval, an error is discovered, or it is discovered that some aspect of approved drawings does not comply with applicable regulations, the applicant shall, at his own expense, revise the drawings and modify any infrastructure as necessary to correct the problem. Applicants and their design professionals shall remain responsible for their projects at all times.***
* ***The Hill AFB PM is responsible for compliance with all Department of Defense (DoD), Air Force Instruction (AFI), Unified Facilities Criteria (UFC), and State of Utah Division of Water Quality (DWQ) requirements. In addition, the Hill AFB PM is responsible for compliance with the DoD Implementation of Stormwater Requirements under Section 438 of the Energy Independence and Security Act (EISA) and obtaining all necessary permits and approvals.***
* ***Permit Requirements***
* ***Utah Pollutant Discharge Elimination System (UPDES) Municipal Separate Storm Sewer System (MS4) Permit (UTR090000) Part 4.2.4 and Part 4.2.5***
* ***UPDES Construction General Permit (CGP) (UTRC00000)***

***PROJECT NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

***PROJECT ADDRESS/LOCATION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

***I have personally reviewed this submittal and verify that it is complete and that all items have been addressed and comply with current Base Codes and Requirements.***

***Design Engineer Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

***Print Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

***Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

**Hill AFB Project Manager Signature: Date: Hill AFB SWPPP Reviewer Signature: Date:**

**CEIE USE ONLY:**



**Municipal**





**Industrial**

**High Priority Area?**





**YES**



**NO**

**COMMENTS (see attached)**

**PROCEED**

|  |  |
| --- | --- |
| ***Suggested Resources:*** | * ***HAFB Guidance Document for Stormwater Management, 2006*** * ***Utah DWQ Construction Activities Stormwater Permit: 801-536-4391*** [***https://deq.utah.gov/Permits/water/updes/stormwatercon.htm***](https://deq.utah.gov/Permits/water/updes/stormwatercon.htm) |
| ***Contact Information:*** | * ***Davis Weber Canal Company: 801-774-6973*** * ***Fife’s Ditch Company: 801-540-0571*** * ***American Water:***   ***o Mark Persico – 801-940-6998***  ***o Matthew Meyer – 801-678-4945 or 801-831-3926***   * ***Corps of Engineers: 801-295-8380*** * ***75 CEG/CENMP: Dave Murray – 801-777-2118*** * ***SABER: Cody Duncan – 801-777-8489*** * ***75 CEG/CEIE: B Hall – 801-777-0493*** |

**PROJECT NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **DESIGN ENGINEER** | | | |  | **Hill AFB PM USE ONLY** | | |
| **INCLUDED** | **N/A** | **ANTICIPATED SUBMITTAL DATE** | **SUBMITTAL ITEM** | **YES** | **NO** | **N/A** |
| **DESIGN** | | | |  | | |
|  |  |  | Project name/title |  |  |  |
|  |  |  | Coordination with American Water for sanitary sewer discharges |  |  |  |
|  |  |  | Coordination with IWTP for industrial wastewater discharges |  |  |  |
|  |  |  | Permit/coordination with Army Corps of Engineers, if impacting wetlands |  |  |  |
|  |  |  | Permit/coordination with Davis/Weber Canal Co, if applicable |  |  |  |
|  |  |  | Coordination letter from water users, if impacting Fife’s Ditch |  |  |  |
|  |  |  | Easement/covenant documents, if needed |  |  |  |
|  |  |  | Storm drainage calculations (separate document) for pipe system, surface route, and/or detention/retention ponds. Stamped and certified by a Utah-licensed professional engineer (PE), with the following statement:  “I hereby certify that this report for the onsite drainage of the project was prepared by me (or under my direct supervision) in accordance with the provisions of Specification Section 01 57 20 Environmental Protection and Section 438 of the EISA, and was designed to comply with the provisions thereof. I understand that the Hill AFB project manager does not, and will not, assume liability for drainage facility designs.” |  |  |  |
|  |  |  | Rationale for long-term BMP selection to include an evaluation of LID methods |  |  |  |
|  |  |  | Final stabilization plan |  |  |  |
| **STORMWATER POLLUTION PREVENTION PLAN** | | | |  | | |
|  |  |  | SWPPP prepared using the Utah DWQ Construction General Permit (CGP) template |  |  |  |
|  |  |  | Copy of UPDES NOI (required prior to pre-construction meeting) |  |  |  |
|  |  |  | Vicinity map with project location identified |  |  |  |
| **EROSION CONTROL PLAN** | | | |  | | |
|  |  |  | Existing contour lines (gray scale) at one-foot (1’) intervals |  |  |  |
|  |  |  | Proposed contour lines at one-foot (1’) intervals |  |  |  |
|  |  |  | Locations of materials/equipment/stockpile storage |  |  |  |
|  |  |  | Storm drain system clearly identified (existing and proposed) |  |  |  |
|  |  |  | Direction of stormwater flow |  |  |  |
|  |  |  | Limits of disturbance |  |  |  |
|  |  |  | Locations/details for all erosion & sediment control BMPs |  |  |  |
| **POST-CONSTRUCTION STORMWATER CONTROLS** | | | |  | | |
|  |  |  | Rationale for BMP selection |  |  |  |
|  |  |  | Anticipated BMP pollutant removal |  |  |  |
|  |  |  | Impacts to water quality |  |  |  |
|  |  |  | Maintenance plan for each long-term BMP to include recommended routine maintenance, recommended inspection schedule, inspection requirements |  |  |  |