
USACE / NAVFAC / AFCEC /NASA UFGS-01 35 13 (November 2011)

Preparing Activity: NAVFAC Superseding
UFGS-01 35 13 (July 2006)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated July 2018

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NOTE: This guide specification covers the requirements for airfields, heliports, harbors and repetitive military housing facilities.

Adhere to UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable item(s) or insert appropriate information.

Remove information and requirements not required in respective project, whether or not brackets are present.

Comments, suggestions and recommended changes for this guide specification are welcome and should be submitted as a Criteria Change Request (CCR).

PART 1 GENERAL

1.1 REFERENCES

NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a Reference Identifier (RID) outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically
be deleted from this section of the project
specification when you choose to reconcile
references in the publish print process.

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

U.S. FEDERAL AVIATION ADMINISTRATION (FAA)

FAA AC 150/5300-13	(2012; Rev A; Change 1 2014; Errata 2016; Errata 2 2017; Errata 3 2018) Airport Design
FAA AC 70/7460-1	(2015; Rev L) Obstruction Marking and Lighting

1.2 DEFINITIONS

1.2.1 Landing Areas

"Landing Areas" means:

- a. The primary surfaces, comprising the surface of the runway, runway shoulders, and lateral safety zones. The length of each primary surface is the same as the runway length. The width of each primary surface is 609.6 meters 2000 feet (304.8 meters 1000 feet on each side of the runway centerline). [Exceptions: Some airfields are based on a primary width of 457.2 meters 1500 feet (228.6 meters 750 feet on each side of the runway centerline). In such instances, substitute the proper width in the applicable statements.]
- b. The "clear zone" beyond the ends of each runway is the extension of the primary surface for a distance of 304.8 meters 1000 feet beyond each end of each runway.
- c. All taxiways, plus the lateral clearance zones along each side for the length of the taxiways (the outer edge of each lateral clearance zone is laterally 76.2 meters 250 feet from the far or opposite edge of the taxiway (example: a 22.86 meter 75 foot wide taxiway must have a combined width and lateral clearance zone of 129.54 meters 425 feet.))
- d. All aircraft parking aprons, plus the area 38.1 meters 125 feet in width extending beyond each edge all around the aprons.

1.2.2 Safety Precaution Areas

"Safety Precaution Areas" means those portions of approach-departure clearance zones and transitional zones where placement of objects incident to contract performance might result in vertical projections at or above the approach-departure clearance, or the transitional surface.

- a. The "approach-departure clearance surface" is an extension of the primary surface and the clear zone at each end of each runway, for a distance of 15240 meters 50,000 feet, first along an inclined (glide angle) and then along a horizontal plane, both flaring symmetrically

about the runway centerline extended.

(1) The inclined plane (glide angle) begins in the clear zone 61 meters 200 feet past the end of the runway (and primary surface) at the same elevation as the end of the runway. It continues upward at a slope of 50:1 (0.305 meters 1 foot vertically for each 15.24 meters 50 feet horizontally) to an elevation of 152.4 meters 500 feet above the established airfield elevation. At that point the plane becomes horizontal, continuing at that same uniform elevation to a point 15240 meters 50,000 feet longitudinally from the beginning of the inclined plane (glide angle) and ending there.

(2) The width of the surface at the beginning of the inclined plane (glide angle) is the same as the width of the clear zone. It then flares uniformly, reaching the maximum width of 4876.8 meters 16,000 feet at the end.

b. The "approach-departure clearance zone" is the ground area under the approach-departure clearance surface.

c. The "transitional surface" is a sideways extension of all primary surfaces, clear zones, and approach-departure clearance surfaces along inclined planes.

(1) The inclined plane in each case begins at the edge of the surface.

(2) The slope of the incline plane is 7:1 (.305 meters 1 foot vertically for each 2.13 meters 7 feet horizontally). It continues to the point of intersection with the:

(a) Inner horizontal surface (which is the horizontal plane 45.72 meters 150 feet above the established airfield elevation); or

(b) Outer horizontal surface (which is the horizontal plane 152.4 meters 500 feet above the established airfield elevation), whichever is applicable.

d. The "transitional zone" is the ground area under the transitional surface. (It adjoins the primary surface, clear zone, and approach-departure clearance zone.)

1.3 SUBMITTALS

NOTE: Review Submittal Description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project.

The Guide Specification technical editors have designated those items that require Government approval, due to their complexity or criticality, with a "G". Generally, other submittal items can be reviewed by the Contractor's Quality Control System. Only add a "G" to an item, if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army

projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

The "S" following a submittal item indicates that the submittal is required for the Sustainability eNotebook to fulfill federally mandated sustainable requirements in accordance with Section 01 33 29 SUSTAINABILITY REPORTING. Locate the "S" submittal under the SD number that best describes the submittal item.

Choose the first bracketed item for Navy, Air Force and NASA projects, or choose the second bracketed item for Army projects.

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.][for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submittals with an "S" are for inclusion in the Sustainability eNotebook, in conformance to Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

- [Heavy Equipment and Vehicle List]
- [Existing Conditions Survey]
- Construction Operations Plan
- Safety Plan
- Schedule of Work
- [Watercraft list]
- [SD-04 Samples
- Model Unit]

PART 2 PRODUCTS

2.1 AIRFIELD OBSTRUCTION LIGHTS

Airfield obstruction lights must conform to FAA AC 70/7460-1 and have red or white lenses.

PART 3 EXECUTION

3.1 [HAZARDS TO [AIRFIELD][HELIPORT] OPERATION

NOTE: Include these paragraphs in projects where work will occur on or near aircraft runways, taxiways, or similar aircraft operational facilities. Use the term ["landing strip"]["landing pad"] when dealing with heliports. Use the term "landing area(s)" when dealing with airplanes. Use the term "Operations Officer," except as directed otherwise.

In addition to "DFARS 252.236-7005, Airfield Safety Precautions," the following paragraphs apply.

3.1.1 Work in Proximity to [Landing Areas][Landing Strips][Landing Pad(s)]

Place nothing upon the landing area or applicable portions of safety precaution areas without authority of the Contracting Officer.

Use of [landing areas][landing strips][landing pads] for purposes other than aircraft operation, is prohibited without permission of the Contracting Officer, and the [landing area][landing strip][landing pad] is closed by order of the Contracting Officer and marked as indicated herein.

Accomplish all construction work on [the runways, taxiways, and parking aprons and in the end zones of the runways and 23 m 75 feet to each side of the runways and taxiways][the landing strip, 23 m 75 feet to each side thereof, and on the taxiways and parking aprons][the landing pad(s)] with extreme care regarding the operation of aircraft. Cooperate closely, and coordinate with [the Operations Officer and] the Contracting Officer. Park equipment in an area designated by the Contracting Officer. Parking of equipment, vehicles, or any type of storage overnight or for any extended period of time in the proximity of the [landing areas or taxiways][landing strip][landing pad] is strictly prohibited. Leave no material in areas where extreme care is to be taken regarding the operation of aircraft.

During periods of active performance of work on the airfield by the Contractor, govern all operations of mobile equipment per the safety provisions.

3.1.2 Schedule of Work/Aircraft Operating Schedules

Schedule work to conform to aircraft operating schedules. The Government will exert every effort to schedule aircraft operations so as to permit the maximum amount of time for the Contractor's activities; however, in the event of emergency, intense operational demands, adverse wind conditions, and other such unforeseen difficulties, the Contractor must cease operations at the specified locations in the aircraft operational area for the safety of the Contractor and military personnel and Government property. Submit a schedule of the work to the Contracting Officer [for transmittal to the Operations Officer] describing the work to be accomplished; the location of the work, noting distances from the ends of [landing areas, taxiways][landing strips][landing pads] and buildings and other structures as necessary; and dates and hours during which the work is to be accomplished. Keep the approved schedule of work current, and notify

the Contracting Officer of any changes prior to beginning each day's work.

Prior to commencement of work, submit the following to the Contracting Officer [for transmittal to the Operations Officer]:

- Existing Conditions Survey
- Construction Operations Plan
- Safety Plan
- Heavy Equipment and Vehicle List

Where flying is controlled, additional permission must be obtained from the control tower operator to enter a landing area unless such area is marked as hazardous to aircraft.

3.1.3 Daytime Markings

During daylight, mark stationary and mobile equipment with international orange and white checkered flags, mark the material, and work with yellow flags.

Vehicles operating in the landing area, must be identified by means of a flag on a staff attached to and flying above the vehicle. Flag size must be not less than 1 meter 3 feet square and consist of a checkered pattern of international orange and white squares not less than 300 millimeter 1 foot on each side. Flags varying in any dimension by not more than 10 percent of the specified dimensions are considered to comply with the stated requirements.

3.1.4 Nighttime Markings

During nighttime, which begins 2 hours before sundown and ends 2 hours after sunrise, mark stationary and mobile equipment and material, and work with [red lanterns][battery-operated, low-intensity, red flasher lights]. Where the [Operations Officer][Contracting Officer] determines that the [red lanterns][red flasher lights] may confuse pilots approaching for landings, the [Operations Officer][Contracting Officer] may direct that the [red lanterns][red flasher lights] be left off or that the color of the [globes][lights] be changed.

Light construction and installation must comply with FAA AC 70/7460-1. Lights must be operational during periods of reduced visibility, darkness, and as directed by the Contracting Officer.

No separate payments will be made for lighting and protection necessitated by the safety provisions.

3.1.5 [Excavation

Open only those trenches for which material is on hand and ready for placing therein. As soon as possible after the material has been placed and work approved, backfill and compact the trenches as specified.

Maintain [landing areas][landings strips][landing pads] at all times free from hazards, holes, material piles, or projecting shoulders that might damage tires or landing gear. Paved surfaces must be kept clean at all times and free from small stones or other objects which could cause damage to propellers, craft, and personnel.

]3.1.6 [Contractor Safety Precautions

The Contractor is advised that aircraft operations will produce extremely high noise levels and will induce vibrations in pavements, structures, and equipment in the vicinity, and may result in high velocity flying debris in the area. The Contractor is responsible for providing all necessary protective eye and ear gear and other safety devices for his personnel, for insuring protection of his equipment, and for scheduling the work to eliminate hazards to his personnel and equipment and to prevent damage to work performed by him.

Boundary areas for hazardous work locations and restrictions are defined in FAA AC 150/5300-13. Construction activity within the limits of the boundary areas without approval of the Contracting Officer is prohibited.

Provide a minimum of 2 aviation red or high intensity white obstruction lights on temporary structures (including cranes) over 30 meter 100 feet above ground level.

]3.1.7 [Base Civil Engineering (BCE) Work Clearance Request

NOTE: Include for Air Force projects.

Obtain an approved BCE Work Clearance Request, AF Form 103, prior to the start of excavation, digging work, or work that disrupts aircraft or vehicular traffic flow, base utility services, fire and intrusion alarm system, or routine activities of the Activity.

]3.1.8 Radio Contact

Provide necessary battery powered portable radios, including one radio for the tower. During work within the landing area, have an operator (who speaks fluent English) available for radio contact with the tower at all times. Radio frequency must be approved by the tower.

]3.2 [HARBOR WATERWAYS

In addition to "DFARS 252.236-7002, Obstruction of Navigable Waterways," obtain from the [Operations Officer at the Naval Base, Pearl Harbor via the][_____] Contracting Officer, permission to use [Pearl Harbor][_____] waterways and the regulations and directives governing such usage. Submit a watercraft list with a description of crafts, including sizes, types, numbers and boat crew for approval.

3.2.1 [Hazards to Navigation

Maintain complete control of the movement of floating equipment and material. Loose floating equipment and material are not permitted. Keep in readiness at all times a powered craft capable of moving, securing and disposing of floating equipment which may get loose and become a hazard to navigation.

]3.2.2 [Submarine Cables or Underwater Utilities

NOTE: Include whenever dredging and submarine cables or underwater utilities involved.

Physically locate submarine cables or underwater utilities as indicated prior to performance of work.

]3.2.3 [RIMPAC Operational Exercises

NOTE: Use when Pearl Harbor waterways involved.

Due to the RIMPAC exercises conducted every even numbered years, the Contractor must anticipate delays and disruption in construction activities for a period of 60 consecutive calendar days during the contract. Disruption may range from complete shutdown of construction activity for a prolonged period of time or periodic short term shutdown of less than a full day, but in no event will all such shutdowns in the aggregate exceed 60 calendar days per calendar year. This affected period is anticipated between 1 April and 31 July of every even numbered year. Bidders must take into consideration such delays when preparing their bids.

]3.2.4 [December 7, 1941 Commemorative Ceremonies

To minimize disturbances during Pearl Harbor's December 7, 1941 Commemorative Ceremonies, the Contractor must shut down all construction activities on the day that ceremonies are held.

]3.3 [MODEL UNIT

NOTE: Use the following paragraphs on projects with repetitious unit construction. Require the Contractor to complete a model unit to various levels, and have the materials and workmanship approved prior to proceeding with the remainder of the project. Examples of such projects are BEQ's, BOQ's, and family housing units, both renovations and new construction.

Prior to placement of material orders for components of the [BEQ living suites][BOQ living suites][family housing units][_____] and the installation of those components throughout the project, the Contractor must complete the construction of the components of the model unit, and gain the approval of the Contracting Officer for the materials and workmanship therein.

NOTE: Edit the following paragraph to describe the extents of the model unit(s), and delineate whether each is a housing unit building, or a multiple resident living unit within a multi-unit building.

NOTE: Choose housing unit and the last bracketed option in the paragraph for family housing projects.

3.3.1 Model Unit Description

Provide a model unit made up of enough [living suites consisting of two bedrooms and an interconnecting bathroom][single family housing units][_____] to show all of the different levels of completion required below. [The model unit must have enough [suites][housing units] to show all level of completion simultaneously[, except for foundation and floor slab levels which are approved by the Contracting Officer and covered by following levels].] The model unit must be [living suites][family housing units][_____] constructed at the location agreed upon with the Contracting Officer and [a part of the permanent structure as indicated] [a temporary structure constructed to full scale at the location indicated, and demolished at the completion of the contract].

3.3.2 Model Unit Requirements

Adhere to the following requirements for model construction:

- a. Provide materials in model unit identical to those actually approved in submittals. The QC Manager and Organization must be in place to approve and process submittals in accordance with Section 01 33 00 SUBMITTAL PROCEDURES. Do not procure, fabricate, or install materials prior to approval by the Contracting Officer.
- b. The Contracting Officer retains the right to disapprove and reject materials or items which are not in compliance with the project drawings and specifications.
- c. After approval of initial product submittals, provide full size samples of these components in the required color, and in sufficient quantity to completely outfit the model unit. Provide full size samples as dictated by the construction schedule for installation of those components in the model unit. Do not order or approve production of any materials beyond those required for the model unit, until the full size samples have been installed in the model unit and approved by the Contracting Officer.
- d. Proceed immediately with construction of the model unit after the Contracting Officer acknowledges the required product submittals are approved.
- e. Provide all temporary utilities and climate control necessary to construct, inspect, approve, and maintain the model unit.
- f. Provide and maintain the following throughout the construction period of the entire project: Temporary parking at the model unit; signage from the temporary parking to the model unit; the visual approach to the unit including trash removal, lawn [and landscaping]maintenance.
- g. Locate the model unit in an easily accessible location for public tours. The Government retains the right to use the model unit for supervised tours and public relations activities following each level of completion. Tours will take place during normal working hours.
- [h. Prior to completion and approval of the model unit, and with written permission to start from the Contracting Officer, the Contractor may perform general sitework and run major utility lines for the rest of the project.]

NOTE: Include the next item when construction time is limited. Confirm with Contracting Officer and Activity User that they can consistently inspect and approve the model unit's different levels of completion before adding this option.

- [i. As each model unit's level of completion is approved by the Contracting Officer, construction of that level's components throughout the remainder of the project may proceed.]

3.3.3 Model Unit Levels of Completion

NOTE: Choose one of the three model unit completion paragraphs below and confirm the selection with the Using Activity and Contracting Officer. The first bracketed option requiring the model unit to be complete before starting the construction of the facilities should only be used when delivery time of the facility is not critical. This option will delay the construction of the facility(s) until the model unit is constructed and approved. The second bracketed option using two levels of completion is most effective on BEQ construction but can be used on housing. The third bracketed option using multiple levels of completion should be used when time is a critical issue, especially on housing. This option sets incremental approval of multiple levels allowing contractor to proceed quickly into the construction of the facility(s). In the third option verify with the Contracting Officer the number of approval stages needed. In this option, levels may be combined if confirmed with Contracting Officer.

[The completed model unit must be exhibited for approval. Upon completion, the model unit must be available to the Government for a period of fifteen (15) working days for inspection after notification is received by Contracting Officer.]

[Exhibit and secure approval of model unit at the following levels of completion:

- a. Level 1 (Pre-Finished Level) - Model unit construction within a completed building exterior must exhibit plumbing, ductwork, electrical locations, exposed framing, and windows. Leave walls and floors unfinished but ready for application of final finish. Upon completion of this level, model unit must be available to the Government for a period of five (5) working days for inspection.
- b. Level 2 (Finished Level) - Model unit construction must exhibit all materials, completely finished as specified, including fixtures, wall and floor finishes, cabinets, and shelving. Upon completion, the model unit must be available to the government for a period of fifteen (15) working days for inspection.]

[Model unit must be exhibited and approved at the following [7] [_____] levels of completion:

Level 1, model must be available for government inspection for 28 calendar days.

Levels 2 through 7, model unit must be available for government inspection for 10 calendar days per level.

- a. Level 1 (Foundation & Floor Slab Level) - Clearly demonstrate treatment of earth excavation, testing of underslab mechanical piping, earth compaction, assembly and support of concrete reinforcing, technique of concrete movement and placement, framing of foundation steps, placement of insulation, final exposed concrete finished surface treatment, location outlines of all walls, all slab penetrations, and structural support points.
- b. Level 2 (Framing Level) - Clearly exhibit all load bearing and non-load bearing framing, sheathing, anchorage for exterior shell materials, and pre-trim frame-out.
- c. Level 3 (Exterior Shell Level) - Exhibit all exterior finishes, windows and doors with temporary hardware, caulking, sealant, sheathing paper, wall ties, locations of mechanical equipment, roofing, louvers, vents and trim.
- d. Level 4 (Plumbing, Mechanical and Electrical rough-in Level) - Exhibit electrical conduit and box location for switches, outlets fixtures, cable and data collection, ductwork, built-in plumbing fixtures, plumbing piping, and water pressure test of all plumbing pipe.
- e. Level 5 (Interior Finishes-rough Level) - Exhibit non-veneer plaster, unspackled and uncaulked wall and ceiling finishes, insulation, interior doors, final locations of all outlets and fixtures.
- f. Level 6 (Interior Finishes & Fixtures-final Level) - Exhibit final interior finishes, veneer plaster, painting, caulking, built-in shelving, cabinetwork, cabinet supported sinks, final door hardware, mechanical louvers, final electrical equipment connections, electrical fixtures, freestanding bathroom fixtures, properly functioning appliances, and operation of mechanical and electrical systems.
- [g. Level 7 (Site Finishes Level) - Exhibit final driveway, walks, exterior stairs, final concrete and asphalt finished surface treatment, topsoil quality and application, sodding/seeding of lawn, tree and shrub planting, landscaping beds, playground fall areas and playground equipment. Contracting Officer retains the right to inspect all preparation and installation of pavings. Provide adequate notice to the Contracting Officer prior to commencing paving work.]]

] -- End of Section --