

Fort Example
CONUS

UAS Maintenance Hangar

211 15 95479 16,500

PRIMARY FACILITY				14,881
UAS Maintenance Hangar	SF	52,100	275.84	(14,371)
POL Storage Building	SF	180	167.00	(30)
Hazardous Waste Storage Building	SF	120	167.00	(20)
Container Storage Shed	SF	2,250	70.00	(158)
ISU-90 Pad	SY	200	2.50	(1)
Total from Continuation page(s)				(301)
SUPPORTING FACILITIES				

ESTIMATED CONTRACT COST	14,881
CONTINGENCY (5.00%)	744
SUBTOTAL	<u>15,625</u>
SUPERVISION, INSPECTION & OVERHEAD (5.70%)	891
TOTAL REQUEST	<u>16,516</u>
TOTAL REQUEST (ROUNDED)	16,500
INSTALLED EQT-OTHER APPROPRIATIONS	(272)

Construct a standard design Unmanned Aircraft Systems Hangar. Project includes an operations and limited maintenance hangar, Paint Oil Lubricants (POL) and other Hazardous Material storage, and an aircraft container storage shed. Project also includes information systems, fire protection and alarm systems, Intrusion Detection System (IDS) installation and Energy Monitoring Control Systems (EMCS) connection. Provide access roads, earthwork, grading, concrete pads, electrical and communication utilities, and security fencing required to support the UAS Support Equipment placement on the airfield. [THE PREPARER TO SEE SPECIAL USER GUIDANCE BLOCK 7 AT END OF THIS 1391 TEMPLATE FOR THE SITE SUPPORT EQUIPMENT TO INCLUDE GCS, GDT, SGDT, RLMS and TALS-TS]. Provide hangar access apron, and [INCLUDE ANY ADDITIONAL REQUIRED AIRFIELD PAVEMENTS: i.e. runway, taxiways etc.] Supporting facilities include site development, security fencing, utilities and connections, exterior lighting, paving, access roads, parking, walks, curbs and gutters, storm drainage, information systems, landscaping and signage. Heating and air conditioning will be provided by [self-contained system OR connection to the existing energy plant OR etc.]. Measures in accordance with the Department of Defense (DoD) Minimum Antiterrorism for Buildings standards will be provided. Comprehensive building and furnishings related interior design services are required. Access for individuals with disabilities will be provided. Facilities will be designed to a minimum life of 50 years in accordance with DoD's Unified Facilities Code (UFC 1-200-02) including energy efficiencies, building envelope and integrated building systems performance.

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9. COST ESTIMATES (CONTINUED)

ITEM	UM	QUANTITY	UNIT COST	COST (\$000)
PRIMARY FACILITY (CONTINUED)				
Aircraft Container Storage	SY	1,135	1.00	(1)
GCS Pads	SY	143	3.50	(1)
GDT Pads	SY	41	12.24	(1)
TALS-TS Pads	SY	22	23.00	(1)
SGCS Pads	SY	137	3.70	(1)
Hangar Access Apron	SY	1,779	.29	(1)
IF REQUIRED - Unmanned Aircraft Taxiway	SY	1	500.00	(1)
IF REQUIRED - Unmanned Aircraft Runway	SY	1	506.00	(1)
IF REQUIRED - Security Fencing Per Airfiel	LF	1	500.00	(1)
Sustainability/Energy Measures	LS	--	--	(292)
			Total	301

11. REQ: NONE ADQT: NONE SUBSTD: NONE

PROJECT:

Construct a standard design Unmanned Aircraft Systems Hangar.

ADDITIONAL:

The Deputy Assistant Secretary of the Army (Installations, Housing and Partnerships) certifies that this project has been considered for joint use potential. The facility will be available for use by other components.

ESTIMATED CONSTRUCTION START: MAR 2017 INDEX: 2845
 ESTIMATED MIDPOINT OF CONSTRUCTION: OCT 2017 INDEX: 2878
 ESTIMATED CONSTRUCTION COMPLETION: MAY 2018 INDEX: 2912

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Item	U/M	Qty	Unit Cost	Cost (\$000)
PRIMARY FACILITY.				
GENERAL.				
1.0) 21115 UAS Maintenance Hangar	SF	52,100	275.84	(14,371)
2.0) 21470 POL Storage Building	SF	180	167.00	(30)
3.0) 21470 Hazardous Waste Storage Building	SF	120	167.00	(20)
4.0) 44222 Container Storage Shed	SF	2,250	70.00	(158)
5.0) 85210 ISU-90 Pad	SY	200	2.50	(1)
6.0) 85210 Aircraft Container Storage	SY	1,135	1.00	(1)
7.0) 85225 GCS Pads	SY	143	3.50	(1)
8.0) 85225 GDT Pads	SY	41	12.25	(1)
9.0) 85225 TALS-TS Pads	SY	22	23.00	(1)
10.0) 85225 SGCS Pads	SY	137	3.70	(1)
11.0) 11340 Hangar Access Apron	SY	1,779	0.29	(1)
1) Apron (Size/material) PCC Surf	SY	1	32.00	1
2) Apron (Size/material) Base	SY	1	32.00	1
3) Apron (Size/material) Subbase	SY	1	32.00	1
4) Drainage Layer	SY	1	32.00	1
5) Subdrain System	LF	1	32.00	1
6) Apron Shldr (Size/material) Surf	SY	1	32.00	1
7) Apron Shldr (Size/material) Base	SY	1	32.00	1
8) Apron Shldr (Size/material) Subb	SY	1	32.00	1
9) Mooring/Tiedown Anchors	EA	4	32.00	1
10) Grounding Pts	EA	1	32.00	1
11) Apron Pvmt Marking	SF	1	32.00	1
12) Apron Lighting (Flood)	LF	1	32.00	1
13) Apron Lighting (Edge)	LF	1	32.00	1
12.0) 11121 IF REQUIRED - Unmanned Aircraft	SY	1	500.00	(1)
1) Taxiway (Size/material) HMA Surf	SY	1	50.00	1
2) Taxiway (Size/material) Base	SY	1	50.00	1
3) Taxiway (Size/material) Subbase	SY	1	50.00	1
4) Drainage Layer	SY	1	50.00	1
5) Subdrain System	LF	1	50.00	1
6) Twy Shldr (Size/material) HMA Su	SY	1	50.00	1
7) Twy Shldr (Size/material) Base	SY	1	50.00	1
8) Twy Shldr (Size/material) Subbas	SY	1	50.00	1
9) Taxiway Pvmt Marking	SF	1	50.00	1
10) Taxiway Signage	EA	1	50.00	1
13.0) 11120 IF REQUIRED - Unmanned Aircraft	SY	1	506.00	(1)

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	Item	U/M	Qty	Unit Cost	Cost (\$000)
1)	Runway (Size/material) Surface	SY	1	46.00	1
2)	Runway (Size/material) Base	SY	1	46.00	1
3)	Runway (Size/material) Subbase	SY	1	46.00	1
4)	Drainage Layer	SY	1	46.00	1
5)	Subdrain System	LF	1	46.00	1
6)	Rwy Shldr (Size/material) HMA Su	SY	1	46.00	1
7)	Rwy Shldr (Size/material) Base	SY	1	46.00	1
8)	Rwy Shldr (Size/material) Subbas	SY	1	46.00	1
9)	Runway Pvmt Marking	SF	1	46.00	1
10)	Runway Signage	EA	1	46.00	1
11)	Electronic Nav aids (Type & Numbe	EA	1	46.00	1
14.0)	87224 IF REQUIRED - Security Fencing P	LF	1	500.00	(1)
15.0)	00005 Sustainability/Energy Measures	LS	--	--	(292)
1)	Sustainability/Energy Measures	LS	--	--	292

INFO SYS & ANTITERRORISM MEASURES.

The following Building Information Systems cost can be found only in Tab F: \$0

SUPPORTING FACILITIES.

PREP DATE: 08 JAN 2016 ACF=1.00 UM=E
FORM/PROJECT NUMBER: 95479
PROJECT TITLE: UAS Maintenance Hangar
INSTALLATION: Fort Example
LOCATION: CONUS

TAB C - GENERAL JUSTIFICATION DATA

Criteria for Proposed Construction

The hangar placement allows for side entry to utilize the hangar to shield the UAS aircraft from rotary and prop wash. See Airfield -NOTIONAL AREA PLAN. Only day-to-day bench stock of POL and HazMat material are to be maintained in the hangar. Utilize Exterior Modular Storage Building for longer term storage. Smaller approved storage cabinets are required for day-to-day bench stock.

Remarks and/or Preparer Notes for Standard Facilities

1. The UAS Aircraft Maintenance Hangar Complex typically includes the following: Hangar for a Tactical Unmanned Aerial Vehicle (TUAV) (FCC 21115), Aircraft Container Storage Shed (FCC 44222) or (FCC44224 in cold climates for a total approximate size 2,700 GSF), POL Storage Building (FCC 21470), Hazardous Material Storage Building (FCC 21470), Hangar Access Apron (FCC 11340), Service access roads, Loadout areas, and GOV/ACCESSIBLE/POV parking.
2. The UAS Aircraft Maintenance Hangar includes space for aircraft maintenance, a shop, parts storage, maintenance and flight operations admin, and storage spaces. Company operation functional spaces are included internal to this hangar. Therefore a separate Company Operations Facility (COF) is not required to support the Standard Army Gray Eagle UAS Aviation Company. Numerous outbuildings and supporting site requirements are required to complete the mission associated with the primary facility. For extreme climate conditions the Aircraft Container Storage Shed may be enclosed. Projects requesting enclosure should contact the Mobile Center of Standardization (CoS) to determine requirements and specific square footage for the facility. The hangar facility size will not exceed 52,100 SF per the standard design. The hangar unit price includes cost for the 5-ton bridge crane.
3. The hangar apron size is 1,779 SY and the shoulders are 370 SY. Pavement markings will need to be determined and quantified for each project. The unit pricing will need to be adjusted with project/location specific data.
4. Furnishings and equipment requirements for this hangar have been development by the Center of Standardization. Slight adjustments may be made for each project as required and approved by CoS. Intrusion Detection Systems (IDS) and Electronic Security Systems (ESS) are required for this facility. The IDS and ESS installations costs are included in the hangar unit price, but an individual line item for IDS and ESS must be included in Tab E Furnishings and Equipment Data. The PDT must consult with the Electronic Security Mandatory Center of Expertise (ESS MCX) to develop complete requirements.
5. The inclusion of other validated airfield pavement requirements (aprons, runway, taxiways, etc) will be determined based on the individual sites and/or unit mission. The appropriate text selection in "Description and the cost line items for these pavement features should be included or eliminated based on the project specific requirements. The cost line items included in the template currently are labeled as "IF REQUIRED" and shown as a placeholder with a quantity of 1 and unit cost of \$1. The quantity and unit price will need to be adjusted with project/location specific data. The preparer should ensure that all ancillary features (shoulders, lighting, utilities, signage, NAVAIDS, markings, drainage layers and subdrains) are included as sublines for each type of airfield pavement (taxiway, runway, aprons, etc). In addition, the preparer should include the typical pavement section as part of these entries. An example of the level of detail required for these pavements is shown below.

CATEGORY	DESCRIPTION	UM	QUANTITY	UNIT COST	TOTAL COST
CODE					

PREP DATE: 08 JAN 2016 ACF=1.00 UM=E
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TAB C - GENERAL JUSTIFICATION DATA

Remarks and/or Preparer Notes for Standard Facilities (CONTINUED)

					(\$000)	
1.0)	11221	Rotary Wing Taxiway, Paved	SY	10,299	55.79	(891)
1)	11221	Taxiway 3" High Stab Conc	SY	6,059	13.93	84.4
2)	11221	Taxiway 6" Agg Base Course	SY	6,059	22.05	133.6
3)	11221	Taxiway 4" Drainage Layer	SY	6,059	18.15	110.0
4)	11221	Txwy Subdrainage Col Syst	LF	5,177	8.50	44.0
5)	11221	Taxiway 11" Subbase	SY	6,059	26.70	161.8
6)	11221	Taxiway 12" Subgrade	SY	6,059	15.26	92.4
7)	11221	Shoulder 2" Asphalt	SY	4,240	9.58	40.6
8)	11221	Shoulder 6" Agg Base Crs	SY	4,240	25.02	106.0
9)	11221	Shoulder 6" Subbase Crs	SY	4,240	15.54	65.8
10)	11221	Taxiway Pavement Marking	LF	2,338	.81	1.8
11)	13620	Taxiway Lighting	LF	20	2,500.00	50.0

NOTE: Note that taxiway in the example above and the template are for rotary wing pavements. If fixed wing pavement is required replace the category code to reflect fixed wing.

* The Transportation Systems Mandatory Center of Expertise, Omaha District should be contacted for assistance in determining airfield pavement requirements.

6. Provisions for UAS support equipment (GCS, GDT, TALS, RLM, and SGGT) that will be fielded with the UAS packages need to be included. All of these equipment items require MILCON funded foundation slabs as listed in the Primary Facilities and as described below plus utilities, grounding, access roads, earthwork and grading required to site GCSs, GDTs, and TALS "level" with the runway per the UAS Hangar Standard Design. The utilities, grounding points, access roads, and earthwork are to be included as Supporting Facilities line items in the 1391. See the Standard Design Paras. 3.3.F, 3.9.C and 3.10.C. for criteria.

* GCS - There are four (4) Ground Control Stations that need concrete pads. Each pad is programmed to be 16-foot by 20-foot in size for a total of 320 SF x 4 = 1280 GSF = 142.22 SY as shown under the Primary Facility. These are placed at various locations around the airfield and near the hangar as per the official UAS Runway Operational Site Survey and the Standard Design Para 3.3.F.1).

* GDT - There are four (4) Ground Data Terminals, each requiring a 30-foot diameter concrete or aggregate pad. The footprint = 41 SY as shown under the Primary Facility. See the Standard Design Para 3.3.F.2).

* TALS TS Antenna - There are two (2) Takeoff and Landing Systems each requiring either a 22-foot by 4-foot or 16-foot by 4-foot plus 8-foot by 4-foot T-shaped concrete pad. The footprint = NMT 22 SY as shown under the Primary Facility. See Para 3.3.F.4) and Attachment A, Sheet C103 in the UAS Hangar Standard Design.

* RLM Unit - If the Remote Link Units are placed on the ground, as required by the official UAS Runway Operational Site Survey, additional SY of concrete is to be added to the Primary Facility. The footprint for each concrete pad is 3-foot by 2-foot in size. See the Standard Design Para 3.3.F.3).

* SGGT unit - The Satellite GDT will require an aggregate pad. The footprint for this pad is 35ft wide by 35ft long footprint = 136 SY. See the Standard Design Para 3.3.F.6).

7. Hangars commonly require significant water flows for fire protection systems and commonly these flows cannot be accomplished with the existing infrastructure. Water requirements must be verified at time of 1391 preparation so that adequate infrastructure

FY 2017

95479 W

REVISION DATE: 08 JAN 2016

MCA (AS OF 01/08/2016 AT 09:23:17)

PREP DATE: 08 JAN 2016

ACF=1.00

UM=E

FORM/PROJECT NUMBER: 95479

PROJECT TITLE: UAS Maintenance Hangar

INSTALLATION: Fort Example

LOCATION: CONUS

TAB C - GENERAL JUSTIFICATION DATA

Remarks and/or Preparer Notes for Standard Facilities (CONTINUED)

can be planned. Space for fire pumps is not included internal to the standard design hangar. The design intent is for a separate Fire Pump Building and water storage tanks to serve multiple hangars at the Air Installation. Provisions shall be made to expand the system for follow on projects and or expansion of the distribution system. Water Storage tanks, Fire Pump House, piping infrastructure, and containment of fire suppression discharge are all potential project requirements for a complete and usable facility. Fire protection criteria and guidance for Army Aircraft Hangars is currently being developed by USACE-HQ, FP-TCX, and the CoS. Contact the CoS for the most current guidance. For programming purposes assume a 1,600 sf pump house, three (3) 2,000 GPM fire pumps, and two (2) 60,000 gal. water storage tanks.

PREP DATE: 08 JAN 2016 ACF=1.00 UM=E
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TAB E - FURNISHINGS AND EQUIPMENT

Furnishings and Equipment

Item Description	Total Proc Cost Appr Proc (\$000) FY Appr	Est Delivery Date	Proc Status	Est Instl		
				Cost Instl (\$000) FY	Instl Appr	Instl Appr
1 Furnishings - Hangar Footnote: Source of furniture pricing data is the Centralized Furniture Program Office, Huntsville Center (USACE)	661 2018 OMA					
2 Fire Extinguishers Footnote: Source of furniture pricing data is the Centralized Furniture Program Office, Huntsville Center (USACE)	5 2018 OMA					
3 IDS Equipment Footnote: Source of furniture pricing data is the Centralized Furniture Program Office, Huntsville Center (USACE)	25 2018 OPA					
4 Equipment - Hangar Footnote: Source of furniture pricing data is the Centralized Furniture Program Office, Huntsville Center (USACE)	247 2018 OPA					

Information Systems Equipment

Item Description	Total Proc Cost Appr Proc (\$000) FY Appr	Est Delivery Date	Proc Status	Est Instl		
				Cost Instl (\$000) FY	Instl Appr	Instl Appr
1 Info Sys - ISC	0 2018 OPA					
2 Info Sys - PROP	0 2018					

Totals by Appropriation Type (\$000)
Total OMA/OMN/3400/OM DHP: 666
Installed Equipment - Other Appropriations: 272
Total Related Furniture & Equipment Amount: 938