



**BUILDING
INNOVATION 2014**

National Institute of
BUILDING SCIENCES

CONFERENCE & EXPO

Case Studies

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Research Civil Engineer
Construction Engineering Research Laboratory



**BUILDING
INNOVATION** 2014

National Institute of
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Agenda

- Norfolk District
- New York District Brigade & Battalion



**BUILDING
INNOVATION 2014**

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Agenda

- Norfolk District
- New York District Brigade & Battalion



Overview

- **Project:** Replacement of the electrical system at the NOAA Wallops Command and Data Acquisition Center (WCDAS)
- **Purpose:** To demonstrate the benefit of the eBook as an alternative to manually created O&M deliverables.





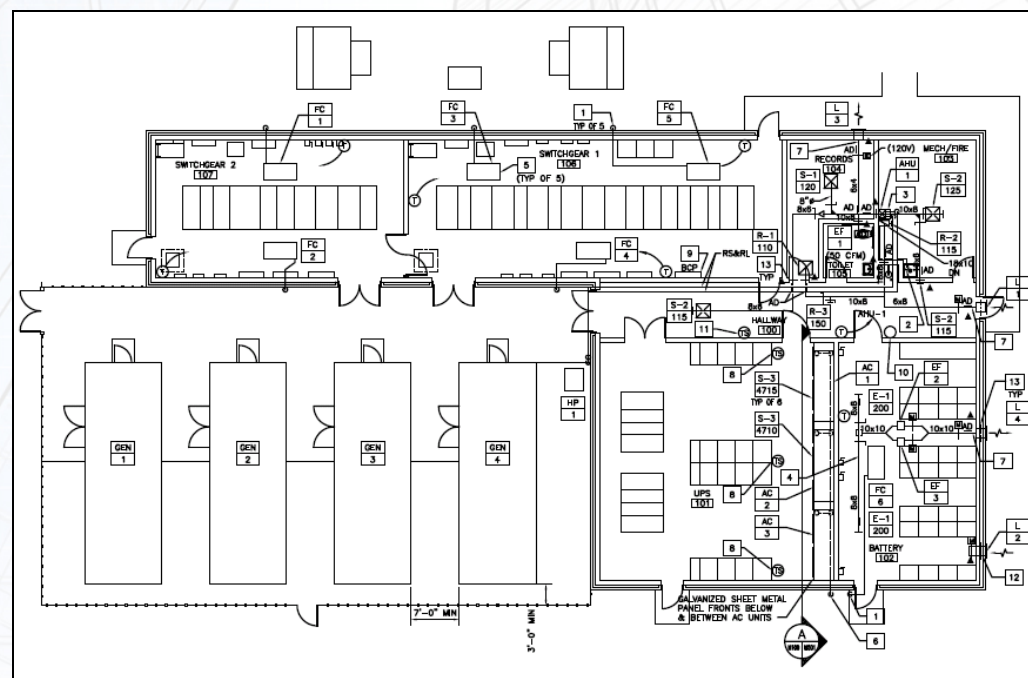
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Description

- **Size:** The project contain 5 buildings, modification/renovation, extensions, and new constructions.
- **DSN – 1B Powerhouse Building**



Approach

INTERIOR FINISH SCHEDULE

ROOM NAME	RM. #	FLOOR	BASE	NORTH WALL		SOUTH WALL		EAST WALL		WEST WALL		CEILING		NOTES	
				MAT.	FINISH	MAT.	FINISH	MAT.	FINISH	MAT.	FINISH	MAT.	FINISH		HEIGHT
HALLWAY	100	CONC	---	CMU	PT	CMU	PT	CMU	PT	CMU	PT	EXPOSED	PT	VARIES	*3,4
UPS	101	CONC	---	CMU	PT	CMU	PT	CMU	PT	CMU	PT	EXPOSED	PT	VARIES	*3,4
BATTERY	102	CONC	---	CMU	PT	CMU	PT	CMU	PT	CMU	PT	EXPOSED	PT	VARIES	*3,4
MECH/ FIRE SPRINKLER	103	CONC	---	CMU	PT	CMU	PT	CMU	PT	CMU	PT	EXPOSED	PT	VARIES	*3,4
RECORDS	104	CONC	---	CMU	PT	CMU	PT	CMU	PT	CMU	PT	GWB	PT	9'-0"	*1,3,5
TOILET	105	CONC	---	CMU	PT	CMU	PT	CMU	PT	CMU	PT	GWB	PT	9'-0"	*1
SWITCHGEAR-1	106	CONC	---	CMU	PT	CMU	PT	CMU	PT	CMU	PT	EXPOSED	PT	VARIES	*3,4
SWITCHGEAR-2	107	FRP GRATING	---	CMU	PT	CMU	PT	CMU	PT	CMU	PT	EXPOSED	PT	VARIES	*2,4

NOTES:

PT = WALL PAINT TO BE SEMI-GLOSS

- *1. WALLS AT TOILETS SHALL BE PAINTED W/ SEMI GLOSS EPOXY PAINT.
- *2. REFER TO SHEET A-402 FOR FIBERGLASS (FRP) GRATING DETAILS
- *3. CONC - EXPOSED CONC FLOORS SHALL RECEIVE CLEAR CONC SEALER
- *4. PAINT EXPOSED ROOF STRUCTURE W/ SEMI GLOSS PAINT
- *5. MOISTURE RESISTANT GWB IN TOILETS

FAN COIL UNIT SCHEDULE

[illegible]

NOTES

1. PROVIDE WALL MOUNTED CONTROL DISPLAY WITH TEMPERATURE SENSOR.
2. DISCONNECT SWITCH BY ELECTRICAL.
3. PROVIDE COPPER DRAIN PIPE CONNECTED TO CONDENSATE DRAIN PAN. PROVIDE A LEVEL DETECTION DEVICE CONFORMING TO UL605 IN THE SECONDARY DRAIN PIPE OR AT A POINT LOWER THAN THE PRIMARY DRAIN LINE IN THE DRAIN PAN WHICH WILL SHUT OFF THE FAN IN THE EVENT THAT THE PRIMARY DRAIN IS BLOCKED.

FAN SCHEDULE

[illegible]

1. PROVIDE MOTOR-MOUNTED SPEED CONTROL SWL.
2. CONTROL BY LIGHT SWITCH.
3. CONTROL BY MECHANICAL DEVICE, 44-1 FREQUENCY

PLUMBING FIXTURE SCHEDULE

[illegible]

DOOR SCHEDULE

DOOR CODED												
DOOR			FRAME				DETAILS					
NO	TYPE	SIZE	LEAF	MAT.	TYPE	MAT.	HEAD	JAMB	SILL	HDW	NOTES	
100	A	3'-0"x7'-0"x1-3/4"	2	HM	I	HM	H2	J2	S1	3	1,2	
101	A	3'-0"x7'-0"x1-3/4"	2	HM	II	HM	H1	J1	S1	6	2	
102	A	3'-0"x7'-0"x1-3/4"	1	HM	I	HM	H2	J2	S1	4	1,2	
103	A	3'-0"x7'-0"x1-3/4"	1	HM	I	HM	H2	J2	S1	4	1,2	
104	A	4'-0"x7'-0"x1-3/4"	1	HM	I	HM	H1	J1	-	10	2	
105	A	4'-0"x7'-0"x1-3/4"	1	HM	I	HM	H1	J1	-	10	2	
106	A	3'-0"x7'-0"x1-3/4"	1	HM	I	HM	H2	J2	S1	4	1,2	
107	A	3'-0"x7'-0"x1-3/4"	1	HM	I	HM	H1	J1	-	5	-	
108	A	3'-0"x7'-0"x1-3/4"	1	HM	I	HM	H1	J1	-	9	-	
109	B	3'-0"x7'-0"x1-3/4"	1	HM	I	HM	H1	J1	-	7	-	
110	A	3'-0"x7'-0"x1-3/4"	1	HM	I	HM	H1	J1	-	10	2	
111	A	3'-0"x7'-0"x1-3/4"	1	HM	I	HM	H2	J2	S1	4	1,2	
112	A	3'-0"x7'-0"x1-3/4"	2	HM	II	HM	H2	J2	S1	1	1,2	
113	A	3'-0"x7'-0"x1-3/4"	2	HM	II	HM	H1	J1	S1	8	2,3	
114	A	3'-0"x7'-0"x1-3/4"	2	HM	II	HM	H2	J2	S1	3	1,2	
115	A	3'-0"x7'-0"x1-3/4"	1	HM	I	HM	H2	J2	S1	2	1,2	

NOTES:

- NOTES:
 TYP - SEE HEAD, JAMB, SILL DETAILS ON THIS SHEET.
 TYP - PAINT ALL DOORS & FRAMES W/ SEMI-GLOSS PAINT
 TYP - SEE SPECIFICATIONS FOR HARDWARE SCHEDULE

1. ALL EXTERIOR DOORS AND FRAMES RATED FOR CLASS 3 HURRICANE WIND LOADINGS.(WIND & IMPACT)
2. 45 MIN FIRE RATING
3. DOUBLE EGRESS DOORS

LIGHTING FIXTURE SCHEDULE

FUTURE SYMBOL	SKETCH NO. & TYPE	NUMBER AND TYPE OF LAMPS	VOLTAGE	MOUNTING	NOTES
A	PF8	2-PF47SHD	120	SUSPENDED	FOUR FOOT LINEAR INDUSTRIAL FLUORESCENT WITH 100 UPLIGHT-BLANK WHITE ENAMEL REFLECTOR
B	PF6	2-PF47SHD	120	SUSPENDED	SAME AS TYPE "A" WITH EMERGENCY BATTERY PACK MINIMUM 1400 LUMENS OUTPUT
C	EHS	100W MH	120	WALL	BRONZE EXTERIOR WALL PACK WITH INTEGRAL BATTERY
D	XLI	LED	120	WALL	EXIT SIGN, MINIMUM BRIGHTNESS 20 CD/SQ METER ON FACE, DIE CAST ALUMINUM HOUSING
E	EHS	1-250W METAL HALIDE	208	WALL	BRONZE EXTERIOR WALL PACK

ELECTRIC DOMESTIC WATER HEATER

TAG	TYPE	FLOW GPM	TANK RBE SQ. FT.	RBE SIZE	TANK SIZE SQ. FT.	CAPACITY BW	AMPS	VOLTS / PH	NOTES
1001	44-60010	64 - 00	20	7/2" - 00010	12001 - 000	4	18.0	208/1	1
1002	31-50010	87 - 50	22010	7/2" - 00010	12011 - 000	10	20.5	450/3	2

NOTES:

1. SHALL MEET THE REQUIREMENTS OF ASSE 1070.
2. 3 STAGE HOISTING. DELTA WIRING. NO NEUTRAL LEG

AIR DEVICE SCHEDULE

WPT	WPT#	TYPE	MATERIAL	FLAVOR	WGT. (G)	WGT. (G)	WGT. (G)	WGT. (G)	WGT. (G)	WGT. (G)
1-1	SUPPLY	STANDARD	ALUMINUM	SURFACE MOUNT	100	100	100	100	100	100
1-2	SUPPLY	STANDARD	ALUMINUM	SURFACE MOUNT	100	100	100	100	100	100
1-3	SUPPLY	STANDARD	ALUMINUM	SURFACE MOUNT	100	100	100	100	100	100
1-4	RETURN	GRILLE	ALUMINUM	SURFACE MOUNT	100	100	100	100	100	100
1-5	RETURN	GRILLE	ALUMINUM	SURFACE MOUNT	100	100	100	100	100	100
1-6	RETURN	GRILLE	ALUMINUM	SURFACE MOUNT	100	100	100	100	100	100
1-7	DISCHARGE	GRILLE	ALUMINUM	SURFACE MOUNT	100	100	100	100	100	100

[illegible]

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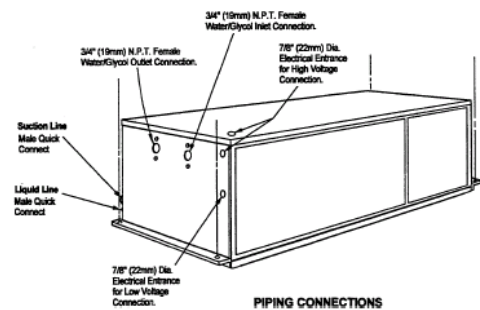
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09 90 00-1.1 Revised Paint Transmittal 2-...	8/29/2013 8:29 AM	Adobe Acrobat D...	910 KB
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10 28 13-1.1 Revised Toilet Accessories Tr...	8/29/2013 10:05 AM	Adobe Acrobat D...	708 KB
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21 22 00 00 40-1 Fire Suppression Transmi...	8/29/2013 10:26 AM	Adobe Acrobat D...	6,321 KB
21 22 00 00 40-3 O M Manual Transmittal...	8/29/2013 10:16 AM	Adobe Acrobat D...	204 KB
21 22 00 00 40-3 O_M	8/29/2013 10:17 AM	Adobe Acrobat D...	3,358 KB
22 00 00-1 Floor Drains, Cleanouts, Below...	8/21/2013 12:19 PM	Adobe Acrobat D...	1,987 KB
22 00 00-2 Wall Hydrants	8/21/2013 12:17 PM	Adobe Acrobat D...	1,447 KB
22 00 00-3 Backflow_Meter_Reducing	8/21/2013 12:16 PM	Adobe Acrobat D...	4,009 KB
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22 00 00-7 Mechanical Supports	8/21/2013 12:29 PM	Adobe Acrobat D...	2,136 KB
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26 23 00 00 41-5 Switchgear O_M Manual...	8/29/2013 1:27 PM	Adobe Acrobat D...	203 KB

Figure 5 Piping Connections



PIPING CONNECTIONS

Table 10 Unit Piping Connections

SIZES: Tube Size inches (mm)/coupling		
Model Number	Liquid Line A	Suction Line B
MMD23E MMD24E MMD35E MMD39E	3/8 in. (9.5) tube/#9 coupling	7/8 in. (22.2) tube/#11 coupling
MMD39C MMD40C	3/4 in. FPT Coolant Supply	3/4 in. FPT Coolant Return

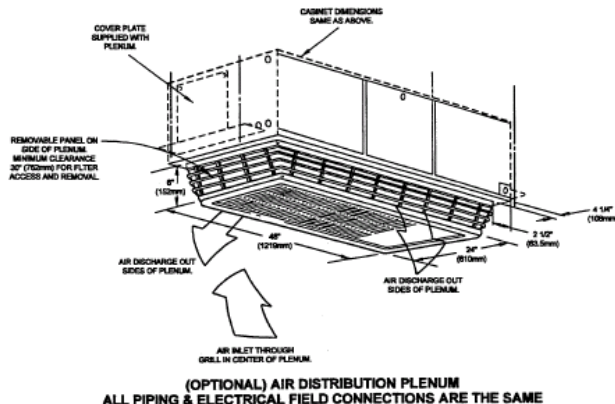
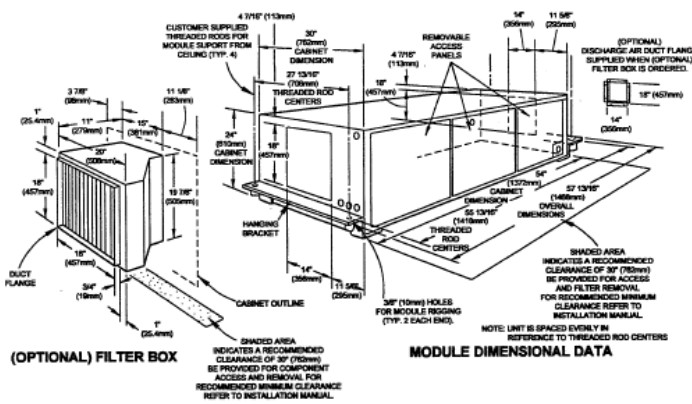


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Figure 4 Unit Installation



(OPTIONAL) AIR DISTRIBUTION PLENUM
ALL PIPING & ELECTRICAL FIELD CONNECTIONS ARE THE SAME

7.0 MAINTENANCE INSPECTION CHECKLIST

Liebert MiniMate2

Date: _____ Prepared By: _____
Model #: _____ Serial Number: _____



NOTE
Reheat element sheaths and fins are manufactured with stainless steel. Regular inspections are necessary to assure proper cleanliness of the reheating element. Should inspection reveal corrosion particles on the reheating element or adjoining surfaces (including ducts and plenums), appropriate cleaning should be performed. Periodic reheating element replacement may be required to meet specific application requirements.

Monthly

Filters

- ___ 1. Check for restricted airflow.
- ___ 2. Check for filter.
- ___ 3. Wipe section clean.

Fan Section

- ___ 1. Impellers free of debris
- ___ 2. Bearings in good condition

Humidifier

- ___ 1. Check canister for mineral deposits.
- ___ 2. Check condition of electrodes.
- ___ 3. All hoses and fittings tight.
- ___ 4. Check water make-up valve for leaks.

Semi-annually

Compressor Section

- ___ 1. Signs of oil leaks
- ___ 2. Vibration isolation

Refrigeration Cycle

- ___ 1. Suction pressure
- ___ 2. Head pressure
- ___ 3. Superheat
- ___ 4. Evaporator coil clean
- ___ 5. Insulation intact

Air Cooled Condensing Unit (if applicable)

- ___ 1. Condenser coil clean
- ___ 2. Motor mount tight
- ___ 3. Bearings in good condition
- ___ 4. Refrigerant lines properly supported

Flood Back Head Pressure Control (if applicable)

- ___ 1. Check refrigerant level

Water or Glycol Cooled Condensing

- ___ 1. Water valve adjustment
- ___ 2. Water flow
- ___ 3. Water leaks

Glycol Pump (if applicable)

- ___ 1. Glycol leaks
- ___ 2. Pump operation
- ___ 3. Glycol solution
- ___ 4. pH level

Electric Panel

- ___ 1. Check electrical connections
- ___ 2. Operational sequence

Notes:

Signature: _____

Make photocopies of this form for your records



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Wallops Island COBie Powerhouse Building, Construction 12-2.xlsx - Microsoft Excel

Door-Type B						
Name	Created On	Category	Description	Asset Type	Manufacturer	
8 Door-Type B	2013-03-02 23:30 10: Doors		Hollow Metal Door With Glazing	Fixed	Steelcraft	n/a
9 Electric Water Heater-Type 01	2013-03-02 23:65 35 11: Supply Water Heaters		Instant-Flow SR-Low Flow Electric Domestic Water Heater	Fixed	info@chronomite.com	SR-20L/208
10 Electric Water Heater-Type 02	2013-03-02 23:65 35 11: Supply Water Heaters		Electric tankless hot water Heater	Fixed	info@chronomite.com	SR-20L/208
11 Exhaust Air Device	2013-04-02 23:75 70 21 27 11: Diffusers: Registers: and Grilles		Air Devices - Grille	Fixed	n/a	n/a
12 Exhaust Fan-Type01	2013-04-02 23:75 35 17: Fans		Ceiling Fan	GC-122	Loren Cook Co.	Gemini 100 Series
13 Exhaust Fan-Type02	2013-04-02 23:75 35 17: Fans		Inline Centrifugal Fan	GN-720	Loren Cook Co.	Gemini 200-700 Series
14 Fan Coil Unit - Type 01	2013-04-02 23:75 70 17 27: Fan Coil Units		BCXC Blower Coil Air Handler	Fixed	wilmington-trane@trane.com	BVCHC0360G2FOA1M02
15 Fan Coil Unit - Type 02	2013-04-02 23:75 70 17 27: Fan Coil Units		BCXC Blower Coil Air Handler	Fixed	wilmington-trane@trane.com	BVCHC0360G2FOA1M01
16 Flow Switch	2013-05-02 23:15 30 14: Waterflow Controls		Flow Switch	Fixed	Honeywell	LFS-5
17 Fuel Tank	2013-05-02 23:15 30 27 11 11: Elevated Storage Tanks		7200 Gal Fuel Tank - Serving Generator	Fixed	n/a	n/a
18 Generator	2013-05-02 23:80 10 11 14 14: Electricity Generation Units		CAT C32 Acert Diesel Generator Set	Fixed	Caterpillar	C32
19 Lighting Fixture-Type01	2013-04-12 23:80 70: Lighting		1'x4' Fluorescent Suspended Light Fixture	Fixed	Columbia	n/a
20 Lighting Fixture-Type02	2013-04-12 23:80 70: Lighting		1'x4' Emergency Fluorescent Suspended Light Fixture	Fixed	Columbia	n/a
21 Lighting Fixture-Type03	2013-04-12 23:80 70: Lighting		Outdoor Wall Mounted Emergency Light Fixture	Fixed	Hubbell	n/a
22 Lighting Fixture-Type04	2013-04-12 23:80 70: Lighting		Wall Mounted, Single-Faced EXIT Sign	Fixed	Dual Lite	n/a
23 Lighting Fixture-Type05	2013-04-12 23:80 70: Lighting		Outdoor Wall Mounted Light Fixture	Fixed	Hubbell	n/a
24 Louver	2013-04-02 23:40 10 24 14: Screens and Louvers		Wind Driven Rain Louver	Fixed	n/a	n/a
25 Plumbing Fixture - Capped Floor Drain	2013-03-02 23:45 55 21: Drains (Wastes)		5" Adjustable Polished Bronze Strainer and Solid Cover, Primer Tap, and P-Trap	Fixed	Jay R. Smith Mfg. Co.	Figure 2005
26 Plumbing Fixture - Combination Emergency Shower and Eye	2013-03-02 23:45 05 14 17: Showers		ADA Compliant	Fixed	uscanadasales@bradleycorp.com	S19314
27 Plumbing Fixture - Floor Cleanout	2013-03-02 23:45 55 21: Drains (Wastes)		Adjustable Satin Finished Nikaloy Top	Fixed	Jay R. Smith Mfg. Co.	Figure 4031
28 Plumbing Fixture - Floor Drain	2013-03-02 23:45 55 21: Drains (Wastes)		5" Adjustable Nikaloy Strainer, Primer Tap, and P-Trap	Fixed	Jay R. Smith Mfg. Co.	Figure 2005
29 Plumbing Fixture - Frost Proof Wall Hydrant	2013-03-02 23:65 70 17 11 11: Fire Hydrants		Vacuum Breaker-Backflow Preventer with Pressure Relief Valve	Fixed	Jay R. Smith Mfg. Co.	Figure 5619
30 Plumbing Fixture - Mop Service Sink	2013-03-02 23:45 05 14 14: Sinks/Lavatories		Floor Mounted	Fixed	FIAT Products LTD	MSB 2424
31 Plumbing Fixture - Wall Hung Lavatory	2013-03-02 23:55 50 21 14: Lavatory Units		Lucerine Wall-Hung Lavatory	Fixed	customerservice@americanstandard.com	355.012
32 Plumbing Fixture - Water Closet	2013-03-02 23:45 05 21 11: Water Closets		Madera FloWise Elongated Flushometer Toilet	Fixed	customerservice@americanstandard.com	3043.001
33 Pump - Submersible	2013-03-02 23:60 30 21: Pumps		Submersible Sump Pump	Fixed	Bell & Gossett	2EC0311L-2EC
34 Return Air Device	2013-04-02 23:75 70 21 27 11: Diffusers: Registers: and Grilles		Air Devices - Grille	Fixed	n/a	n/a
35 Split System Air Conditioning Unit	2013-03-02 23:75 35 14: Air Handling Units		1 - 6 Ton Unitary Split Systems	Fixed	wilmington-trane@trane.com	4TWR5018G1000-TAM
36 Supply Air Device	2013-04-02 23:75 70 21 27 11: Diffusers: Registers: and Grilles		Air Devices - Registers	Fixed	n/a	n/a
37 Tap Primer	2013-05-02 23:45 05 14: Plumbing Fixtures - Sanitary Washing Units		Tap Primer	Fixed	Precision Plumbing Products	PTS-4
38 UPS Unit	2013-06-11 10:02:56		Liebert NXL uninterruptible power supply (UPS)	Fixed	General Electric	NP-0282A3117
39 Valve - Mixing	2013-05-02 23:65 55 14 24: Mixline Valves for Liquid Services		Emergency (Tseid Water) Thermostatic Mixing Valve	Fixed	uscanadasales@bradleycorp.com	519-2200

Ready | Count: 70 | 100%



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Status

Task	Status
Create Design COBie	Completed
Collect & Format Submittals	In Process
Create Handover COBie Model	In Process
Create eBook for the project	-
Method comparison and lessons learned	-



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Agenda

- Norfolk District
- New York District Brigade & Battalion





**BUILDING
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Overview

- **Project:** CAB Battalion & Brigade Headquarter
- **Purpose:** Assist owner and contractor fulfilling the COBie requirement on the project.
- **Location:** Ft. Drum, NY
- **Size:** 2 buildings
 - Battalion Headquarter
 - Brigade Headquarter



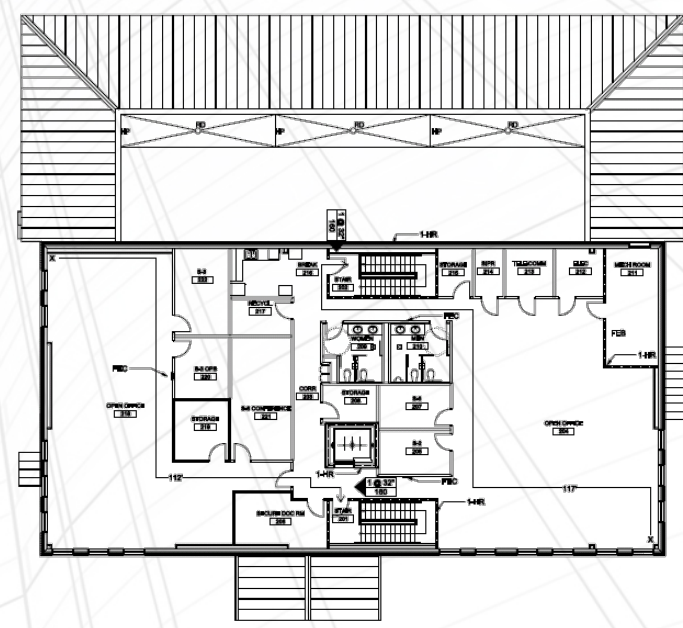
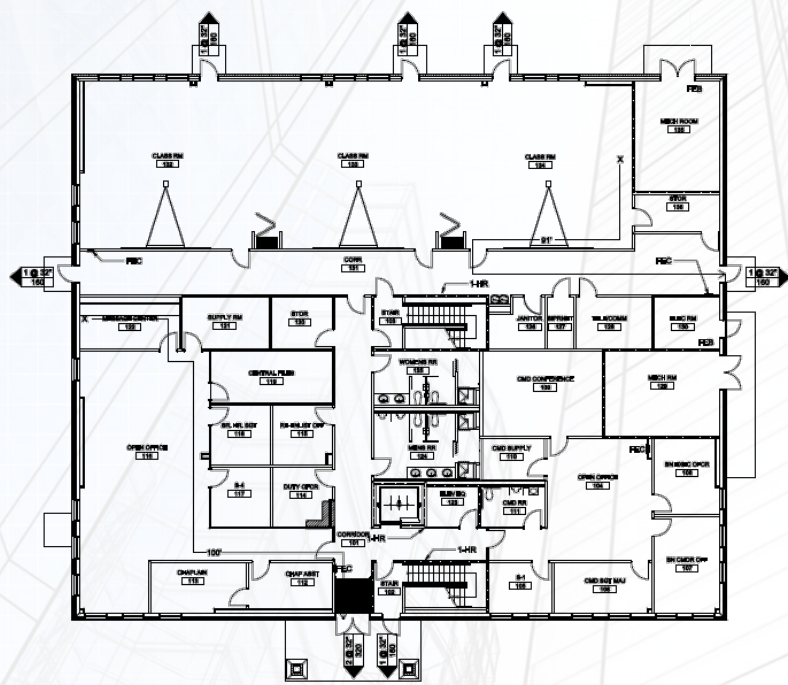
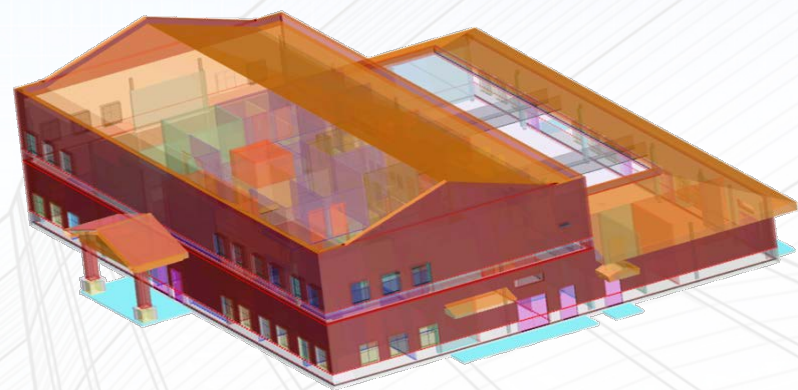
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Battalion

Building Area = 17,941 SF
 1st Floor = 11,213 SF
 2nd Floor = 6,728 SF





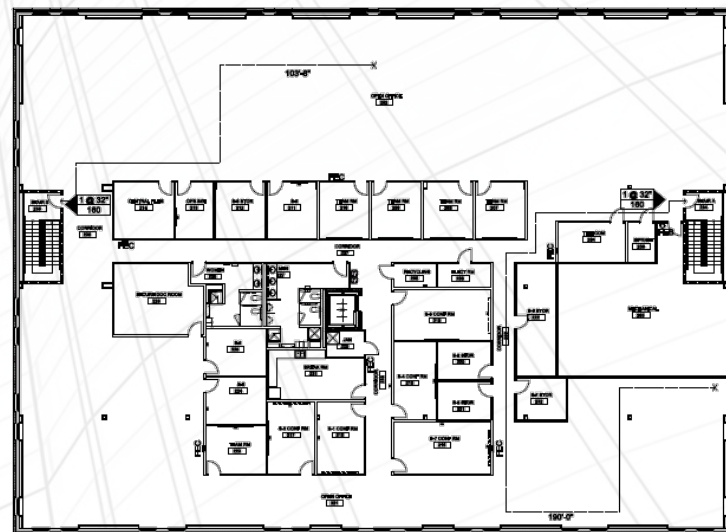
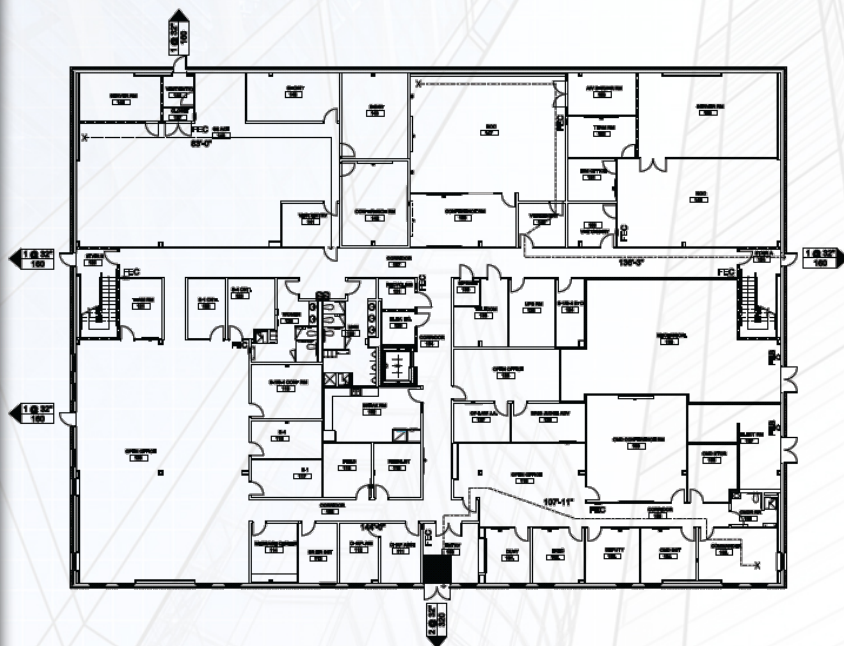
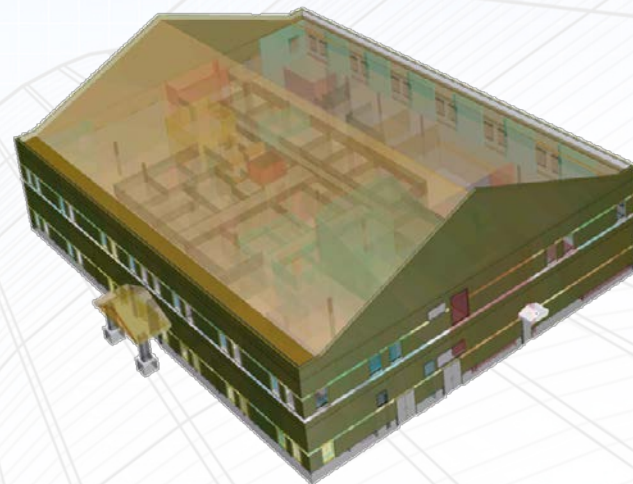
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Building Area = 39,963.72 SF

1st Floor = 20,068.61 SF

2nd Floor = 19,895.72 SF





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Approach

- COBie Design Model
- Provide COBie Server Templates
- Collect construction information
- Merge information
- COBie Handover Model
- eBook





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	A	D	E	F	G	H	I	J	K	L	M
	Name	Category	Description	AssetType	Manufacturer	ModelNumber	WarrantyGuarantorParts	WarrantyDurationParts	WarrantyGuarantorLabor	WarrantyDurationLabor	WarrantyDurationUnit
1											
2	Air Handling Unit - Type 01	23-75 35 14 17: Modular Indoor Air Handling Units	Air Handling Unit 9,200 CFM Capacity	Fixed	n/a	n/a	n/a	n/a	n/a	n/a	n/a
3	Air Handling Unit - Type 02	23-75 35 14 17: Modular Indoor Air Handling Units	Air Handling Unit 6,415 CFM Capacity	Fixed	n/a	n/a	n/a	n/a	n/a	n/a	n/a
4	AirSeparator-Type01	23-75 35 11: Air Injectors/Ejectors	Air Separator Size 4" X 4"	Fixed	n/a	n/a	n/a	n/a	n/a	n/a	n/a
5	AirSeparator-Type02	23-75 35 11: Air Injectors/Ejectors	Air Separator Size 3" X 3"	Fixed	n/a	n/a	n/a	n/a	n/a	n/a	n/a
6	Boiler	23-75 10 11 14: Hot Water Heat Generators	Hot Water Boiler	Fixed	n/a	n/a	n/a	n/a	n/a	n/a	n/a
7	CeilingDiffuser Type B4	23-80 70 24 14: Lighting Diffusers	Ceiling Diffuser	Fixed	n/a	n/a	n/a	n/a	n/a	n/a	n/a
8	CeilingDilfuser-Type CD1-4	23-80 70 24 14: Lighting Diffusers	Ceiling Diffuser	Fixed	n/a	n/a	n/a	n/a	n/a	n/a	n/a
9	CeilingDiffuser-Type CD1-6	23-80 70 24 14: Lighting Diffusers	Ceiling Diffuser	Fixed	n/a	n/a	n/a	n/a	n/a	n/a	n/a
10	CeilingDiffuser Type CD2-4	23-80 70 24 14: Lighting Diffusers	Ceiling Diffuser	Fixed	n/a	n/a	n/a	n/a	n/a	n/a	n/a
11	CeilingDilfuser-Type CD2-6	23-80 70 24 14: Lighting Diffusers	Ceiling Diffuser	Fixed	n/a	n/a	n/a	n/a	n/a	n/a	n/a
12	CeilingDiffuser-Type CD2-8	23-80 70 24 14: Lighting Diffusers	Ceiling Diffuser	Fixed	n/a	n/a	n/a	n/a	n/a	n/a	n/a
13	CeilingDiffuser Type CG1-4	23-80 70 24 14: Lighting Diffusers	Ceiling Diffuser	Fixed	n/a	n/a	n/a	n/a	n/a	n/a	n/a
14	CeilingDilfuser-Type ER-6	23-80 70 24 14: Lighting Diffusers	Ceiling Diffuser	Fixed	n/a	n/a	n/a	n/a	n/a	n/a	n/a
15	CompactfluorescentFixture	23-80 70 11 21: Emergency Lighting	H.I.D. or Compact Fluorescent Fixture-Wall Mounted	Fixed	n/a	n/a	n/a	n/a	n/a	n/a	n/a
16	Door-F	23-30 10: Doors	Single Wood Door with Louver	Fixed	n/a	n/a	n/a	n/a	n/a	n/a	n/a
17	Door-F Exterior Single	23-30 10: Doors	Exterior Single Metal Door	Fixed	n/a	n/a	n/a	n/a	n/a	n/a	n/a
18	Door-F ExteriorDouble	23-30 10: Doors	Exterior Double Metal Door	Fixed	n/a	n/a	n/a	n/a	n/a	n/a	n/a
19	Door-FG Exterior	23-30 10: Doors	Single Wood Door with Laminated Insulated Safety Glass	Fixed	n/a	n/a	n/a	n/a	n/a	n/a	n/a
20	Door-FG	23-30 10: Doors	Exterior Double Metal Door	Fixed	n/a	n/a	n/a	n/a	n/a	n/a	n/a
21	Door-N	23-30 10: Doors	Single Wood Door with 8"X32" Fixed Glass	Fixed	n/a	n/a	n/a	n/a	n/a	n/a	n/a
22	Door-N Exterior	23-30 10: Doors	Exterior Single Metal Door	Fixed	n/a	n/a	n/a	n/a	n/a	n/a	n/a
23	Door-P	23-30 10: Doors	Single Metal Door with 4"X24" Fixed Glass	Fixed	n/a	n/a	n/a	n/a	n/a	n/a	n/a



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SERVICE DISABLED VETERAN OWNED BUSINESS

VETCO
CONTRACTING SERVICES
CAB Brigade & Battalion Headquarters
19900 Munns Corner Road (Brigade)
19925 MSR Tampa (Battalion)
Ft. Drum, NY 13602
Contractor W912DS-09-D-0007 / 0005
Project Number: 71472

COBie - Installation

This COBie MiniApp has been prepared for the CAB Brigade & Battalion Headquarters Project in Ft. Drum, NY. It has been populated with equipment data obtained from design.

Can't be Modify Represent equipment general information obtained from Design
Modify Represent installation information to be fill out by the party responsible to complete this form

* Rows can be add to the bottom if necessary

Battalion HQ



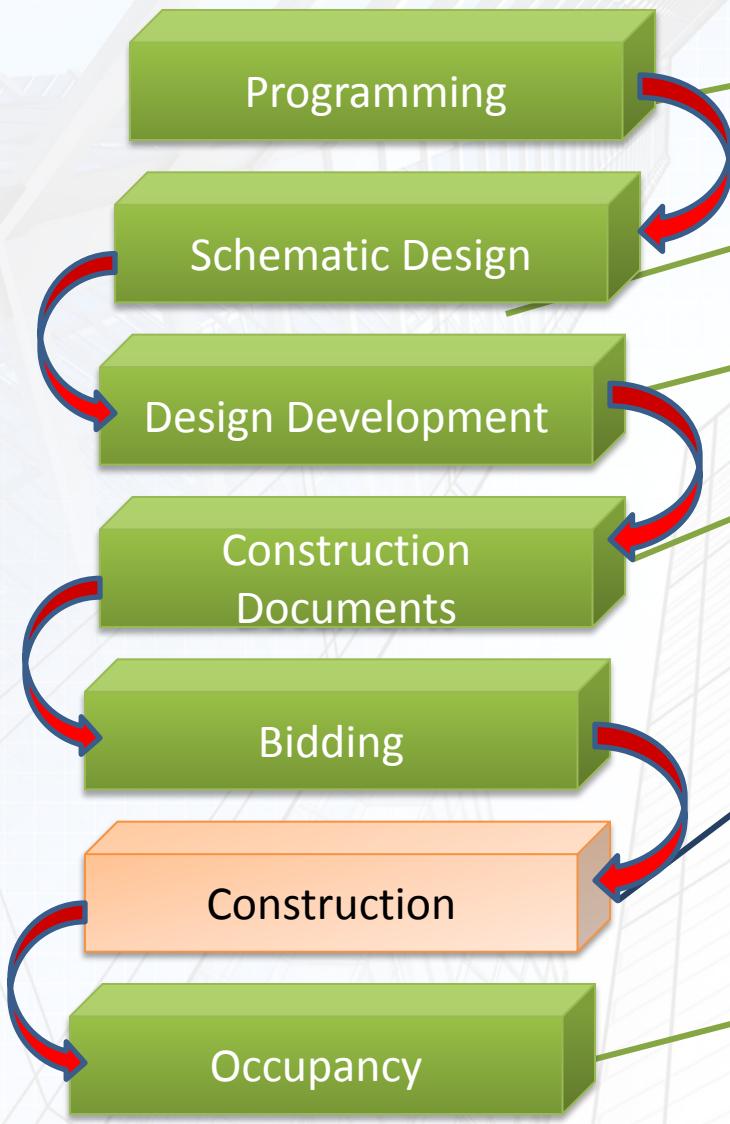
Installation MEB Battalion HQ																
General Information			Installed Equipment													
Name	Location	Type	Spec Section & Paragraph	Manufacturer	Model	S/N	Installed	Voltage (V)	Current (A)	Phase	Power (HP)	RPM	BTU	CFM	Capacity (Gal)	Other
AHU-1	129	AHU-Type01	23.00.00-2.11	Trans	CSAA017UAC00	K1C28986	6-Aug-12	460	n/a	3	n/a	n/a	n/a	3200	n/a	n/a
AHU-1 Motor	129	AHU-Type01	23.00.00-2.11	Baldor Reliance	EHM2523T	39R006V916G1	6-Aug-12	208-230V460	37.4-35.4H7.7	3	6	1765	n/a	n/a	n/a	n/a
AHU-2	211	AHU-Type02	23.00.00-2.11	Trans	CSAA017UAC00	K1C28793	6-Aug-12	460	n/a	3	n/a	n/a	n/a	6000	n/a	n/a
AHU-2 Motor	211	AHU-Type02	23.00.00-2.11	Baldor Reliance	EHM2523T	37K6375520G1	6-Aug-12	208-230V460	20.4-19.4H7.7	3	7.5	1770	n/a	n/a	n/a	n/a
AS-2	211	AirSeparator-Type01	23.11.00.20-2.2.3	Veneta Co.	CBT-300-3F	202252	17-Sep-12	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
AS-3	129	AirSeparator-Type02	23.11.00.20-2.2.3	Rollamot	RL3F	22155	17-Sep-12	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
AS-1	129	AirSeparator-Type02	23.11.00.20-2.2.3	Rollamot	RL3F	22157	17-Sep-12	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
B-1	125	Boiler	23.12.00-2.2	HydroTherm	KN-4 Boiler	KN-4-12-8870	17-Sep-12	120	n/a	1	30.4	n/a	400,000	n/a	7	n/a
B-2	125	Boiler	23.12.00-2.2	HydroTherm	KN-4 Boiler	KN-4-12-8880	17-Sep-12	120	n/a	1	30.4	n/a	400,000	n/a	7	n/a
AC-WHP-1	124	DuctlessSplitUnit-Type 01	23.11.23.00.20	Mitsubishi Electric	MSZ-GE09NA	2005032	17-Sep-12	208V230	8 FLA / R/A FUS	1	n/a	n/a	3000 COOLING/ 7200 HEATING	145-400	n/a	n/a
AC-WHP-1	127	DuctlessSplitUnit-Type 01	23.11.23.00.20	Mitsubishi Electric	MSZ-GE09NA	2007123	17-Sep-12	208V230	8 FLA / R/A FUS	1	n/a	n/a	3000 COOLING/ 6900 HEATING	145-400	n/a	n/a
AC-WHP-1	128	DuctlessSplitUnit-Type 01	23.11.23.00.20	Mitsubishi Electric	MRZ-FE-9NA	2002329	17-Sep-12	208V230	8 FLA / R/A FUS	1	n/a	n/a	3000 COOLING/ 6900 HEATING	145-400	n/a	n/a
AC-WHP-1	213	DuctlessSplitUnit-Type 01	23.11.23.00.20	Mitsubishi Electric	MSZ-GE09NA	2005032	17-Sep-12	208V230	8 FLA / R/A FUS	1	n/a	n/a	3000 COOLING/ 7200 HEATING	145-400	n/a	n/a
AC-WHP-2	214	DuctlessSplitUnit-Type 02	23.11.23.00.20	Mitsubishi Electric	SLZ-KA09NA	27M00254	17-Sep-12	208V230	8	1	n/a	n/a	3000 COOLING/ 6900 HEATING	145-400	n/a	n/a
ERV-1	129	EnergyRecoveryVentilator-Type01	23.00.00-2.12	PanewaAke	HE3XINH	F1D0949C	6-Aug-12	460	14.6	3	2805	1843	n/a	3300	n/a	n/a
ERV-2	129	EnergyRecoveryVentilator-Type02	23.00.00-2.12	PanewaAke	HE3XINH	F1D0949C	6-Aug-12	460	15	3	2802	1670	n/a	2200	n/a	n/a
EF-1	130	Fan-Exhaust	23.00.00-2.11	Loren Cook	100SQN-B	0245F19984-00/0000701	6-Aug-12	115	n/a	1	0.333	1725	n/a	1620	n/a	n/a
EF-2	129	Fan-Exhaust	23.00.00-2.11	Loren Cook	100SQN-B	0245F19984-00/0001901	6-Aug-12	115	n/a	1	0.25	1725	n/a	970	n/a	n/a
EF-3	129	Fan-Exhaust	23.00.00-2.11	Loren Cook	100SQN-B	0245F19984-00/0003101	6-Aug-12	115	n/a	1	0.333	1725	n/a	560	n/a	n/a
EF-5	129	Fan-Exhaust	23.00.00-2.11	Loren Cook	100SQN-B	0245F19984-00/0005501	6-Aug-12	115	n/a	1	1.667	1725	n/a	880	n/a	n/a
EF-6	211	Fan-Exhaust	23.00.00-2.11	Loren Cook	100SQN-B	0245F19984-00/0006701	6-Aug-12	115	n/a	1	0.25	1725	n/a	500	n/a	n/a
GF-1	123	GlycolPSystem-Type01	23.12.00.20	Goulds Vane Technology	LB05RTTE	C1251492	17-Sep-12	115V208-230	7.6H4.3.8	1	0.5	3450	n/a	50	n/a	n/a
GF-2	129	GlycolPSystem-Type02	23.12.00.20	Goulds Vane Technology	LB05RTTE	C1251493	17-Sep-12	115V208-230	7.6H4.3.8	1	0.5	3450	n/a	50	n/a	n/a
GF-2-Boiler Loop	129	GlycolPSystem-Type02	23.12.00.20	Goulds Vane Technology	LB05RTTE	C1251493	17-Sep-12	115V208-230	7.6H4.3.8	1	0.5	3450	n/a	50	n/a	n/a
GF-2-Heat Pump	129	GlycolPSystem-Type02	23.12.00.20	Goulds Vane Technology	LB05RTTE	C1251493	17-Sep-12	115V208-230	7.6H4.3.8	1	0.5	3450	n/a	50	n/a	n/a
CUB-0	901	Cabinet Unit Heater-Type 02	23.12.00-2.7.2	Trans	FFEB0201A-COF30AH2M0000D20W0200											



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Project	Phase	Start Date	End Date	Status	Owner	Design Firm	Construction Firm	Occupancy Date
1	Programming	2010-01-01	2010-03-31	Complete	US Army	XYZ Design	ABC Construction	2010-06-01
2	Schematic Design	2010-04-01	2010-06-30	In Progress	US Army	XYZ Design	ABC Construction	2010-09-01
3	Design Development	2010-07-01	2010-09-30	In Progress	US Army	XYZ Design	ABC Construction	2010-12-01
4	Construction Documents	2010-10-01	2010-12-31	In Progress	US Army	XYZ Design	ABC Construction	2011-03-01
5	Bidding	2011-01-01	2011-03-31	In Progress	US Army	XYZ Design	ABC Construction	2011-06-01
6	Construction	2011-04-01	2011-09-30	In Progress	US Army	XYZ Design	ABC Construction	2011-12-01
7	Occupancy	2012-01-01	2012-03-31	In Progress	US Army	XYZ Design	ABC Construction	2012-06-01

Project Name	Location	Status
Colorado Springs Army Reserve Center	Colorado Springs, CO	In Progress
Fort Carson Army Reserve Center	Fort Carson, CO	Complete
Fort Collins Army Reserve Center	Fort Collins, CO	In Progress





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Status

Task	Battalion	Brigade
Create Design COBie	Completed	Completed
Collect Submittals	In Process	In Process
Capture information using templates	In Process	In Process
Installation	Completed	In Process
Testing	In Process	In Process
Start up	-	-
Warranty	-	-
Create eBook for the project	-	-
Lessons Learned	In Process	In Process



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Lessons in progress...

- Input/feedback on template design
- Validation of template's usefulness
- Feedback on process improvement

Requirement to capture assets information



Shortest Time = 10.5 hrs
Longest Time = 18.5 hrs
Average Time = 14.5 hrs

Requirement fulfilled

Contractor

0.5 hrs



2 hrs

Sub-Contractors

8-16 hrs

Resident contractor provided authorization to use VETCO form for example purposes.

Process to get Install Equipment Information into RMS



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USACE

Requirement to capture assets information



Asset ID	Asset Name	Asset Type	Asset Location	Asset Status	Asset Owner	Asset Manager	Asset Date	Asset Notes
1	Asset 1	Asset Type 1	Asset Location 1	Asset Status 1	Asset Owner 1	Asset Manager 1	Asset Date 1	Asset Notes 1
2	Asset 2	Asset Type 2	Asset Location 2	Asset Status 2	Asset Owner 2	Asset Manager 2	Asset Date 2	Asset Notes 2
3	Asset 3	Asset Type 3	Asset Location 3	Asset Status 3	Asset Owner 3	Asset Manager 3	Asset Date 3	Asset Notes 3
4	Asset 4	Asset Type 4	Asset Location 4	Asset Status 4	Asset Owner 4	Asset Manager 4	Asset Date 4	Asset Notes 4
5	Asset 5	Asset Type 5	Asset Location 5	Asset Status 5	Asset Owner 5	Asset Manager 5	Asset Date 5	Asset Notes 5

Shortest Time = 11.5 hrs
Longest Time = 19.5 hrs
Average Time = 15.5 hrs
Saved Time = -1 hrs

Requirement fulfilled

Contractor

0.5 hrs

Installed Property / Equipment Form

Photo from HQ Photo from HQ

Section 1: General Information

1. Equipment Name (Required)
2. Equipment Location (Required)
3. Equipment Description (Required)

Section 2: Equipment Details

1. Unit Type
2. Unit ID (Required)
3. Manufacturer
4. Model Number
5. Serial Number

Section 3: Equipment Information

1. Material
2. Weight
3. Dimensions
4. Volume
5. Capacity
6. Other

Section 4: Contact Information

1. Name
2. Title
3. Phone
4. Email
5. Address

Section 5: Other Information

1. Other
2. Other
3. Other
4. Other
5. Other

Section 6: Other Information

1. Other
2. Other
3. Other
4. Other
5. Other

Section 7: Other Information

1. Other
2. Other
3. Other
4. Other
5. Other

Section 8: Other Information

1. Other
2. Other
3. Other
4. Other
5. Other

Section 9: Other Information

1. Other
2. Other
3. Other
4. Other
5. Other

Section 10: Other Information

1. Other
2. Other
3. Other
4. Other
5. Other

2 hrs

Installed Property / Equipment Form

Photo from HQ Photo from HQ

Section 1: General Information

1. Equipment Name (Required)
2. Equipment Location (Required)
3. Equipment Description (Required)

Section 2: Equipment Details

1. Unit Type
2. Unit ID (Required)
3. Manufacturer
4. Model Number
5. Serial Number

Section 3: Equipment Information

1. Material
2. Weight
3. Dimensions
4. Volume
5. Capacity
6. Other

Section 4: Contact Information

1. Name
2. Title
3. Phone
4. Email
5. Address

Section 5: Other Information

1. Other
2. Other
3. Other
4. Other
5. Other

Section 6: Other Information

1. Other
2. Other
3. Other
4. Other
5. Other

Section 7: Other Information

1. Other
2. Other
3. Other
4. Other
5. Other

Section 8: Other Information

1. Other
2. Other
3. Other
4. Other
5. Other

Section 9: Other Information

1. Other
2. Other
3. Other
4. Other
5. Other

Section 10: Other Information

1. Other
2. Other
3. Other
4. Other
5. Other

1 hr



Installation	Equipment Type	Asset ID	Asset Name	Asset Location	Asset Status	Asset Owner	Asset Manager	Asset Date	Asset Notes
1	Asset Type 1	Asset ID 1	Asset Name 1	Asset Location 1	Asset Status 1	Asset Owner 1	Asset Manager 1	Asset Date 1	Asset Notes 1
2	Asset Type 2	Asset ID 2	Asset Name 2	Asset Location 2	Asset Status 2	Asset Owner 2	Asset Manager 2	Asset Date 2	Asset Notes 2
3	Asset Type 3	Asset ID 3	Asset Name 3	Asset Location 3	Asset Status 3	Asset Owner 3	Asset Manager 3	Asset Date 3	Asset Notes 3
4	Asset Type 4	Asset ID 4	Asset Name 4	Asset Location 4	Asset Status 4	Asset Owner 4	Asset Manager 4	Asset Date 4	Asset Notes 4
5	Asset Type 5	Asset ID 5	Asset Name 5	Asset Location 5	Asset Status 5	Asset Owner 5	Asset Manager 5	Asset Date 5	Asset Notes 5

Sub-Contractors

8-16 hrs

Installed Property / Equipment Form

Photo from HQ Photo from HQ

Section 1: General Information

1. Equipment Name (Required)
2. Equipment Location (Required)
3. Equipment Description (Required)

Section 2: Equipment Details

1. Unit Type
2. Unit ID (Required)
3. Manufacturer
4. Model Number
5. Serial Number

Section 3: Equipment Information

1. Material
2. Weight
3. Dimensions
4. Volume
5. Capacity
6. Other

Section 4: Contact Information

1. Name
2. Title
3. Phone
4. Email
5. Address

Section 5: Other Information

1. Other
2. Other
3. Other
4. Other
5. Other

Section 6: Other Information

1. Other
2. Other
3. Other
4. Other
5. Other

Section 7: Other Information

1. Other
2. Other
3. Other
4. Other
5. Other

Section 8: Other Information

1. Other
2. Other
3. Other
4. Other
5. Other

Section 9: Other Information

1. Other
2. Other
3. Other
4. Other
5. Other

Section 10: Other Information

1. Other
2. Other
3. Other
4. Other
5. Other

Process Adding COBie requirement to get Install Equipment Information

Paper Forms

Paper Forms

USACE

COBie Templates Requirement to capture assets information

Shortest Time = 11 hrs
Longest Time = 17 hrs
Average Time = 14 hrs
Saved Time = 1.5 hr

Requirement fulfilled

Contractor

2 hrs

1 hr

Sub-Contractors

8-14 hrs

Process Adding COBie small templates to get Install Equipment Information



Owner

Requirement to capture assets information



Asset ID	Asset Name	Asset Type	Asset Status	Asset Location	Asset Date
1	Asset 1	Asset Type 1	Asset Status 1	Asset Location 1	Asset Date 1
2	Asset 2	Asset Type 2	Asset Status 2	Asset Location 2	Asset Date 2
3	Asset 3	Asset Type 3	Asset Status 3	Asset Location 3	Asset Date 3
4	Asset 4	Asset Type 4	Asset Status 4	Asset Location 4	Asset Date 4
5	Asset 5	Asset Type 5	Asset Status 5	Asset Location 5	Asset Date 5
6	Asset 6	Asset Type 6	Asset Status 6	Asset Location 6	Asset Date 6
7	Asset 7	Asset Type 7	Asset Status 7	Asset Location 7	Asset Date 7
8	Asset 8	Asset Type 8	Asset Status 8	Asset Location 8	Asset Date 8
9	Asset 9	Asset Type 9	Asset Status 9	Asset Location 9	Asset Date 9
10	Asset 10	Asset Type 10	Asset Status 10	Asset Location 10	Asset Date 10

Shortest Time = 8.25 hrs
Longest Time = 14.25 hrs
Average Time = 11.25 hrs (2.1 days)
Saved Time = 4.25 hrs

Requirement fulfilled

Contractor

1 hr

Paper Form

2 hr

Sub-Contractors

8-14 hrs

Paper Form

8-14 hrs

Electronic Form

Ideal scenario to get install equipment information



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Owner

Requirement to capture assets information



Asset ID	Asset Name	Asset Type	Asset Location	Asset Status	Asset Owner
1	Asset 1	Asset Type 1	Asset Location 1	Asset Status 1	Asset Owner 1
2	Asset 2	Asset Type 2	Asset Location 2	Asset Status 2	Asset Owner 2
3	Asset 3	Asset Type 3	Asset Location 3	Asset Status 3	Asset Owner 3
4	Asset 4	Asset Type 4	Asset Location 4	Asset Status 4	Asset Owner 4
5	Asset 5	Asset Type 5	Asset Location 5	Asset Status 5	Asset Owner 5
6	Asset 6	Asset Type 6	Asset Location 6	Asset Status 6	Asset Owner 6
7	Asset 7	Asset Type 7	Asset Location 7	Asset Status 7	Asset Owner 7
8	Asset 8	Asset Type 8	Asset Location 8	Asset Status 8	Asset Owner 8
9	Asset 9	Asset Type 9	Asset Location 9	Asset Status 9	Asset Owner 9
10	Asset 10	Asset Type 10	Asset Location 10	Asset Status 10	Asset Owner 10

Shortest Time = 8.25 hrs
Longest Time = 14.25 hrs
Average Time = 11.25 hrs (2.1 days)
Saved Time = 4.25 hrs

Requirement fulfilled

Contractor

1 hr

Paper Form

2 hr

Sub-Contractors

8-14 hrs

Paper Form

8-14 hrs

Electronic Form

Improve templates



Owner

Requirement to capture assets information

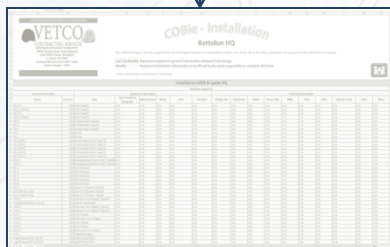


Asset ID	Asset Name	Asset Type	Asset Location	Asset Status	Asset Owner
101	Building A	Office	101 Main St	Active	Owner A
102	Building B	Office	102 Main St	Active	Owner A
103	Building C	Office	103 Main St	Active	Owner A
104	Building D	Office	104 Main St	Active	Owner A
105	Building E	Office	105 Main St	Active	Owner A
106	Building F	Office	106 Main St	Active	Owner A
107	Building G	Office	107 Main St	Active	Owner A
108	Building H	Office	108 Main St	Active	Owner A
109	Building I	Office	109 Main St	Active	Owner A
110	Building J	Office	110 Main St	Active	Owner A

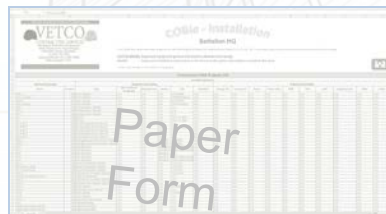
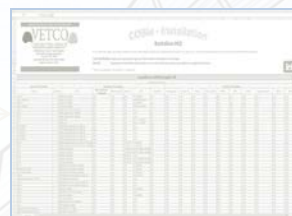
Shortest Time = 8.25 hrs
Longest Time = 14.25 hrs
Average Time = 11.25 hrs (2.1 days)
Saved Time = 4.25 hrs

Requirement fulfilled

Contractor



1 hr



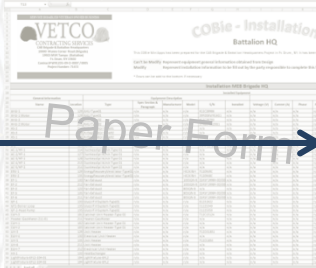
Paper Form



2 hr

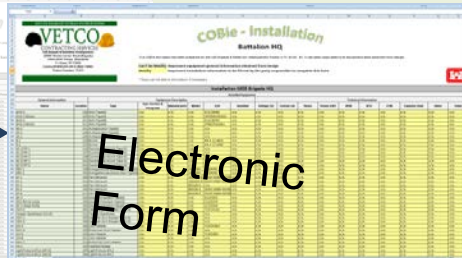
Sub-Contractors

8-14 hrs



Paper Form

8-14 hrs



Electronic Form

Get electronic information directly from the field



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Link between eSubmittal and RMS

Owner

Requirement to capture assets information



Asset ID	Asset Name	Asset Type	Asset Location	Asset Status	Asset Date
101	Asset 1	Asset Type 1	Asset Location 1	Asset Status 1	Asset Date 1
102	Asset 2	Asset Type 2	Asset Location 2	Asset Status 2	Asset Date 2
103	Asset 3	Asset Type 3	Asset Location 3	Asset Status 3	Asset Date 3
104	Asset 4	Asset Type 4	Asset Location 4	Asset Status 4	Asset Date 4
105	Asset 5	Asset Type 5	Asset Location 5	Asset Status 5	Asset Date 5
106	Asset 6	Asset Type 6	Asset Location 6	Asset Status 6	Asset Date 6
107	Asset 7	Asset Type 7	Asset Location 7	Asset Status 7	Asset Date 7
108	Asset 8	Asset Type 8	Asset Location 8	Asset Status 8	Asset Date 8
109	Asset 9	Asset Type 9	Asset Location 9	Asset Status 9	Asset Date 9
110	Asset 10	Asset Type 10	Asset Location 10	Asset Status 10	Asset Date 10

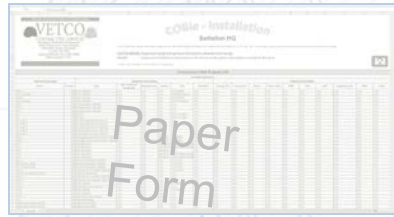
Shortest Time = 8.25 hrs
Longest Time = 14.25 hrs
Average Time = 11.25 hrs (2.1 days)
Saved Time = 4.25 hrs

Requirement fulfilled

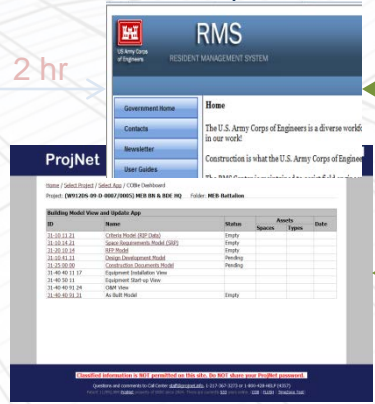
Contractor



1 hr

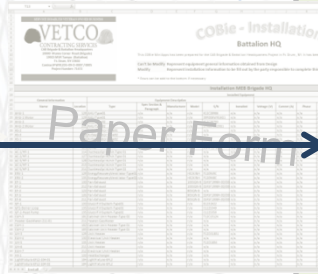


2 hr



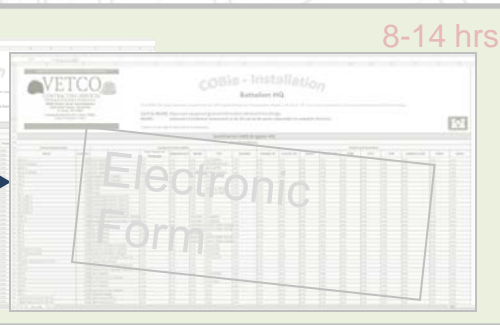
Sub-Contractors

8-14 hrs



Paper Form

8-14 hrs



Electronic Form



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Thank You

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