

W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\07\_Electrical\AF1081A-EL001GN.dwg 10/14/2010 11:51:19 AM Barrett, Patrick

### PLAN LEGEND (LIGHTING)

FOR LIGHT FIXTURE SYMBOLS  
REFER TO LIGHT FIXTURE SCHEDULE  
ON DRAWING E-200

SWITCH  
 3-WAY SWITCH  
 4-WAY SWITCH  
 HOMERUN TO PANELBOARD. SYMBOL SHOWN INDICATES CIRCUIT NO. 2 PANEL LPB1. REFER TO PANELBOARD SCHEDULE FOR FURTHER INFORMATION.

### PLAN LEGEND (POWER)

PANELBOARD  
 MOTOR XXXX-## = PANEL AND CIRCUIT NUMBER. ## = MOTOR NUMBER IN MOTOR CONNECTION SCHEDULE.  
 20A, 120V, 60 Hz DUPLEX RECEPTACLE GFI SUBSCRIPT INDICATES GROUND FAULT INTERRUPTER. LABEL RECEPTACLE WITH VOLTAGE, FREQUENCY & BRANCH CIRCUIT CONNECTED.  
 20A, 120V, 60 Hz DOUBLE DUPLEX RECEPTACLE LABEL RECEPTACLE WITH VOLTAGE, FREQUENCY & BRANCH CIRCUIT CONNECTED.  
 TRANSFORMER - # DENOTES DESIGNATION  
 DISCONNECT SWITCH  
 EQUIPMENT CONNECTION - TYPE AS INDICATED.  
 MDP  
 LIGHTNING PROTECTION AIR TERMINAL

### ONE-LINE AND CONTROL SCHEMATIC LEGEND

GENERATOR  
 CIRCUIT BREAKER  
 TRANSFORMER  
 HIGH VOLTAGE FUSE  
 HIGH VOLTAGE SWITCH  
 FUSED DISCONNECT SWITCH

### PLAN LEGEND (SITE)

SITE MAIN DISTRIBUTION PANEL # DENOTES DESIGNATION (PAD MOUNTED)  
 TRANSFORMER (PAD MOUNTED)  
 PULLBOX  
 ELECTRIC MANHOLE  
 NEW UNDERGROUND ELECTRIC

ALLOWABLE AMPACITIES OF CONDUCTORS		
NOT MORE THAN 3 CURRENT-CARRYING CONDUCTORS IN RACEWAY/CABLE/EARTH (30°C)		
SIZE		
AWG (CU)	mm <sup>2</sup>	AMPACITY
12	4	20*
10	6	30*
8	10	40*
6	16	55*
4	25	70*
3	35	85*
2	35	89**
1	50	108**
1/0	70	136**
2/0	70	136**
3/0	95	164**
4/0	120	188**
250	150	216**
300	150	216**
350	185	245**
400	240	286**
500	300	328**
600	300	328**

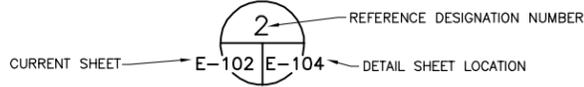
MINIMUM INSIDE DIAMETER EQUIVALENT CONDUIT SIZE	
mm	INCH
20	3/4
25	1
32	1 1/4
38	1 1/2
50	2
64	2 1/2
76	3
90	3 1/2
100	4

\*BASED ON NEC TABLE 310.16  
\*\*BASED ON IEC 60364-5-52 TABLE A.52-4

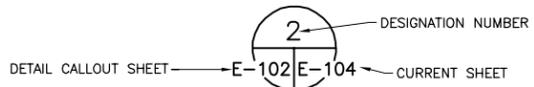
UNLESS NOTED ELSEWHERE ON THE CONTRACT DOCUMENTS, THE FOLLOWING LIST REPRESENTS THE TYPICAL MOUNTING HEIGHTS FOR THE DEVICES SHOWN:

a. SWITCHES 1,220 mm (TO TOP)  
 b. RECEPTACLES 500 mm (TO BOTTOM)  
 c. POWER PANELS 1,830 mm (TO TOP)  
 d. DISCONNECT SWITCHES 1,520 mm (TO TOP)  
 e. MOTOR STARTERS 1,520 mm (TO TOP)

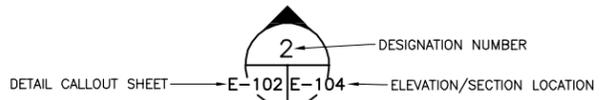
#### DETAIL CALLOUT



#### DETAIL TITLE



#### ELEVATION/SECTION CALLOUT



UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

#### GENERAL NOTES:

- ALL CIRCUITS SHALL CONTAIN AN EQUIPMENT GROUNDING CONDUCTOR SIZED PER N.E.C.
- ALL SERVICE ENTRANCE CONDUITS/DUCTS WITH CABLES SHALL BE SEALED AT BOTH ENDS WITH APPROPRIATE SEALER. EMPTY CONDUITS SHALL BE CLEANED AND CAPPED.
- ALL PANELBOARD DIRECTORIES SHALL BE TYPEWRITTEN AND COMPLETE IN ENGLISH.
- ALL CONDUIT PENETRATIONS THRU 1 HOUR FIRE RATED WALLS SHALL BE SEALED/FIRESTOPPED. SEE SHEET E-204 FOR DETAILS.
- ALL LIGHT SWITCHES SHALL BE RATED 20 AMPERES UNLESS OTHERWISE NOTED.
- FOR ELECTRICAL INSTALLATION SEISMIC REQUIREMENTS, SEE SPECIFICATION SEISMIC PROTECTION FOR ELECTRICAL EQUIPMENT, SECTIONS 26 05 48. 0010.
- FOR ABOVE GRADE FLOOR/WALL PENETRATION DETAILS REFER TO APPROPRIATE DETAILS.
- ALL RACEWAYS CONTAINING CONDUCTORS 25mm<sup>2</sup> OR LARGER SHALL HAVE AN INSULATED BUSHING INSTALLED ON EACH END WHERE ENTERING A CABINET, BOX OR ENCLOSURE, PER NEC 300.4(G) AND 312.16(C).
- ALL ABOVE GRADE RACEWAYS SHALL BE SURFACED MOUNTED.

#### ABBREVIATIONS

- |  |  |
|--|--|
| AFG ABOVE FINISHED GRADE<br>AFF ABOVE FINISHED FLOOR<br>ACCU AIR COOLED CONDENSING UNIT<br>A AMPERE<br>AHU AIR HANDLING UNIT<br>AIC AMPERE INTERRUPTING CAPACITY<br>BFG BELOW FINISHED GRADE<br>BLDG BUILDING<br>CATV CABLE TELEVISION<br>CC COMMUNICATIONS CABINET<br>CKT CIRCUIT<br>C CONDUIT<br>CE CONCRETE ENCASED<br>CND CONDUCTOR<br>COR CONTRACTING OFFICERS REPRESENTATIVE<br>DC DIRECT CURRENT<br>ECP ENTRY CONTROL POINT<br>EDC ELECTRIC DUCT HEATER<br>EF EXHAUST FAN<br>EP EXPLOSION PROOF<br>EPO EMERGENCY POWER OFF<br>ESS ELECTRONIC SECURITY SYSTEM<br>EWH ELECTRIC WATER HEATER<br>FACP FIRE ALARM CONTROL PANEL<br>FO FIBER OPTIC<br>FPP FIRE PUMP PANEL<br>GFI GROUND FAULT INTERRUPTING<br>GFE GOVERNMENT FURNISHED CONTRACTOR INSTALLED<br>GND GROUND<br>GR GROUND ROD<br>GRS GALVANIZED RIGID STEEL CONDUIT<br>HH HANDHOLE<br>HP HORSEPOWER<br>HPS HIGH PRESSURE SODIUM<br>HZ HERTZ<br>IDS INTRUSION DETECTION SYSTEM<br>KV KILOVOLT<br>KW KILOWATT<br>KVA KILOVOLT-AMPERE<br>M METERS<br>MM MULTIMODE<br>MILIMETER<br>MH MANHOLE<br>MDP MAIN DISTRIBUTION PANEL<br>MTD MOUNTED<br>NL NIGHT LIGHT<br>OSP OUTSIDE PLANT<br>PH, φ PHASE<br>P POLE<br>PVC POLYVINYL CHLORIDE<br>RM ROOM<br>SM SINGLEMODE<br>SN SOLID NEUTRAL<br>TBB TELEPHONE BACKBOARD<br>TTC TELEPHONE TERMINAL CABINET<br>TYP. TYPICAL<br>UNO UNLESS NOTED OTHERWISE<br>V VOLT<br>W WIRE<br>WP WEATHERPROOF<br>W/ WITH<br>W/O WITHOUT<br>XFMR, T TRANSFORMER | ABOVE FINISHED GRADE<br>ABOVE FINISHED FLOOR<br>AIR COOLED CONDENSING UNIT<br>AMPERE<br>AIR HANDLING UNIT<br>AMPERE INTERRUPTING CAPACITY<br>BELOW FINISHED GRADE<br>BUILDING<br>CABLE TELEVISION<br>COMMUNICATIONS CABINET<br>CIRCUIT<br>CONDUIT<br>CONCRETE ENCASED<br>CONDUCTOR<br>CONTRACTING OFFICERS REPRESENTATIVE<br>DIRECT CURRENT<br>ENTRY CONTROL POINT<br>ELECTRIC DUCT HEATER<br>EXHAUST FAN<br>EXPLOSION PROOF<br>EMERGENCY POWER OFF<br>ELECTRONIC SECURITY SYSTEM<br>ELECTRIC WATER HEATER<br>FIRE ALARM CONTROL PANEL<br>FIBER OPTIC<br>FIRE PUMP PANEL<br>GROUND FAULT INTERRUPTING<br>GOVERNMENT FURNISHED CONTRACTOR INSTALLED<br>GROUND<br>GROUND ROD<br>GALVANIZED RIGID STEEL CONDUIT<br>HANDHOLE<br>HORSEPOWER<br>HIGH PRESSURE SODIUM<br>HERTZ<br>INTRUSION DETECTION SYSTEM<br>KILOVOLT<br>KILOWATT<br>KILOWATT-AMPERE<br>METERS<br>MULTIMODE<br>MILLIMETER<br>MANHOLE<br>MAIN DISTRIBUTION PANEL<br>MOUNTED<br>NIGHT LIGHT<br>OUTSIDE PLANT<br>PHASE<br>POLE<br>POLYVINYL CHLORIDE<br>ROOM<br>SINGLEMODE<br>SOLID NEUTRAL<br>TELEPHONE BACKBOARD<br>TELEPHONE TERMINAL CABINET<br>TYPICAL<br>UNLESS NOTED OTHERWISE<br>VOLT<br>WIRE<br>WEATHERPROOF<br>WITH<br>WITHOUT<br>TRANSFORMER |
|--|--|

CORRECTED  
FINAL  
DESIGN  
SUBMITTAL

REV	DATE	DESCRIPTION
0	09/15/10	KCT CORRECTED FINAL DESIGN SUBMITTAL
B	09/02/10	KCT FINAL DESIGN SUBMITTAL
A	08/13/10	KCT MID-POINT DESIGN SUBMITTAL

DESIGNED BY: JAS DATE: 09/15/10  
 DRAWN BY: SES SUBMITTED BY: TETRA TECH  
 CHECKED BY: KCT FILE NO.: AF1081A-EL001GN

**US Army Corps of Engineers**  
 Middle East District  
**TETRA TECH**

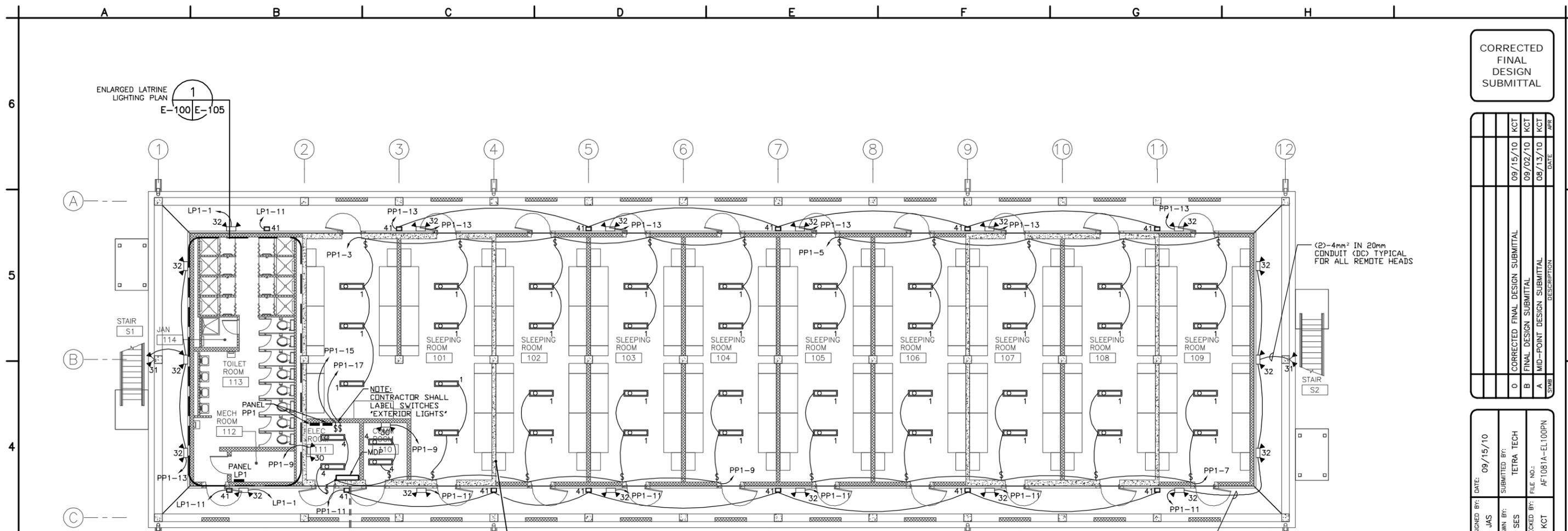
THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



AUSTERE STANDARD DESIGNS - PHASE 4  
 FY11 BARRACKS - PN74127 - CLN03  
 KANDAHAR AIR BASE, AFGHANISTAN  
 ELECTRICAL  
 LEGEND, ABBREVIATIONS,  
 SYMBOLS AND GENERAL NOTES

SHEET  
 REFERENCE  
 NUMBER:  
**AF1081A**  
**E-001**

W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\07\_Electrical\AF1081A-EL100PN.dwg 10/14/2010 11:51:30 AM Barrett, Patrick



**GROUND FLOOR PLAN**  
SCALE = 1:100

TYPICAL OF ALL CONDUIT PENETRATIONS OF RATED WALLS. SEE LS SERIES DRAWINGS FOR RATED WALL LOCATIONS.

CONNECT EMERGENCY LIGHTING BATTERY UNIT TO UNSWITCHED PHASE CONDUCTOR OF CIRCUIT INDICATED (TYPICAL).

(2)-4mm<sup>2</sup> IN 20mm CONDUIT (DC) TYPICAL FOR ALL REMOTE HEADS



THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



CORRECTED FINAL DESIGN SUBMITTAL

NO.	DESCRIPTION	DATE	BY
0	CORRECTED FINAL DESIGN SUBMITTAL	09/15/10	KCT
B	FINAL DESIGN SUBMITTAL	09/02/10	KCT
A	MID-POINT DESIGN SUBMITTAL	08/13/10	KCT

DESIGNED BY:	JAS	DATE:	09/15/10
DRAWN BY:	SES	SUBMITTED BY:	TETRA TECH
CHECKED BY:	KCT	FILE NO.:	AF1081A-EL100PN

**US Army Corps of Engineers**  
Middle East District

**TETRA TECH**

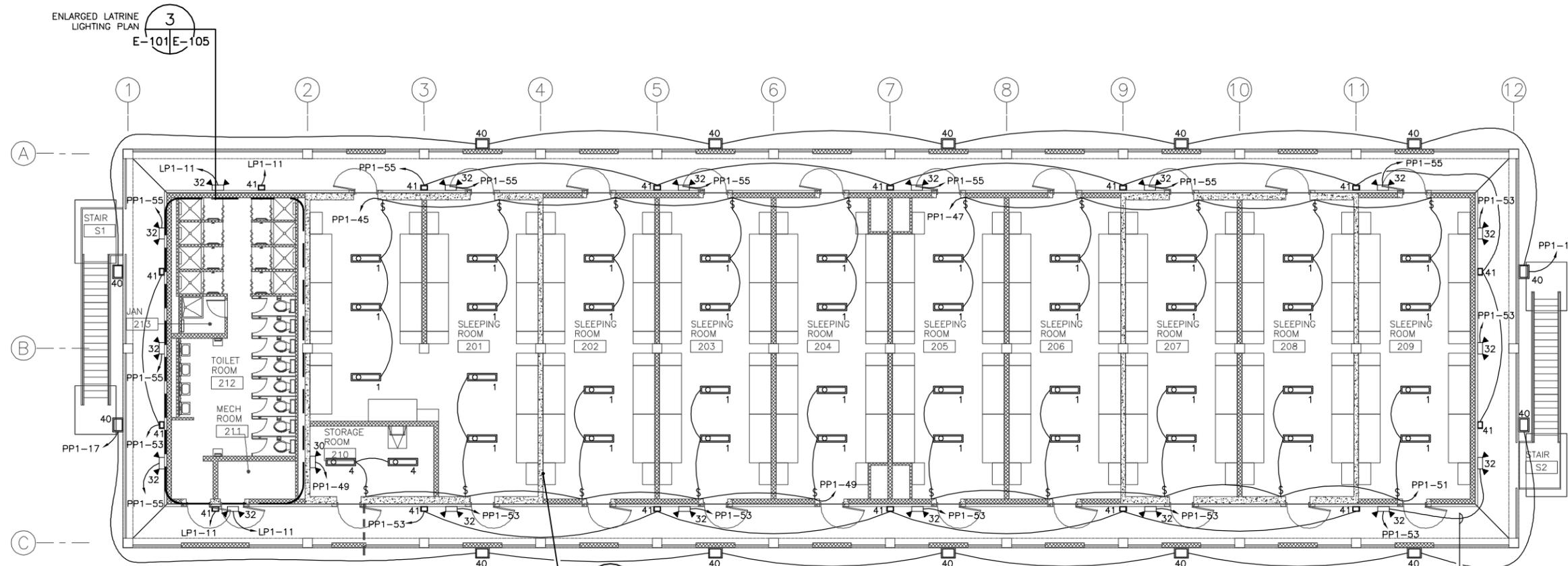
AUSTERE STANDARD DESIGNS - PHASE 4  
FY11 BARRACKS - PN74127-CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

GROUND FLOOR LIGHTING PLAN

SHEET REFERENCE NUMBER:  
**AF1081A**  
**E-100**

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\07\_Electrical\AF1081A-EL101PN.dwg 10/14/2010 11:51:44 AM Barrett, Patrick



ENLARGED LATRINE LIGHTING PLAN  
E-101E-105

2  
E-101E-204

FIRST FLOOR PLAN 1  
SCALE = 1:100 E-100 E-100

TYPICAL OF ALL CONDUIT PENETRATIONS OF RATED WALLS. SEE LS SERIES DRAWINGS FOR RATED WALL LOCATIONS.

CONNECT EMERGENCY LIGHTING BATTERY UNIT TO UNSWITCHED PHASE CONDUCTOR OF CIRCUIT INDICATED (TYPICAL).



THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



CORRECTED FINAL DESIGN SUBMITTAL

SYMB	DESCRIPTION	DATE	APP
D	CORRECTED FINAL DESIGN SUBMITTAL	09/15/10	KCT
B	FINAL DESIGN SUBMITTAL	09/02/10	KCT
A	MID-POINT DESIGN SUBMITTAL	08/13/10	KCT

DESIGNED BY:	JAS	DATE:	09/15/10
DRAWN BY:	SES	SUBMITTED BY:	TETRA TECH
CHECKED BY:	KCT	FILE NO.:	AF1081A-EL101PN

US Army Corps of Engineers  
Middle East District

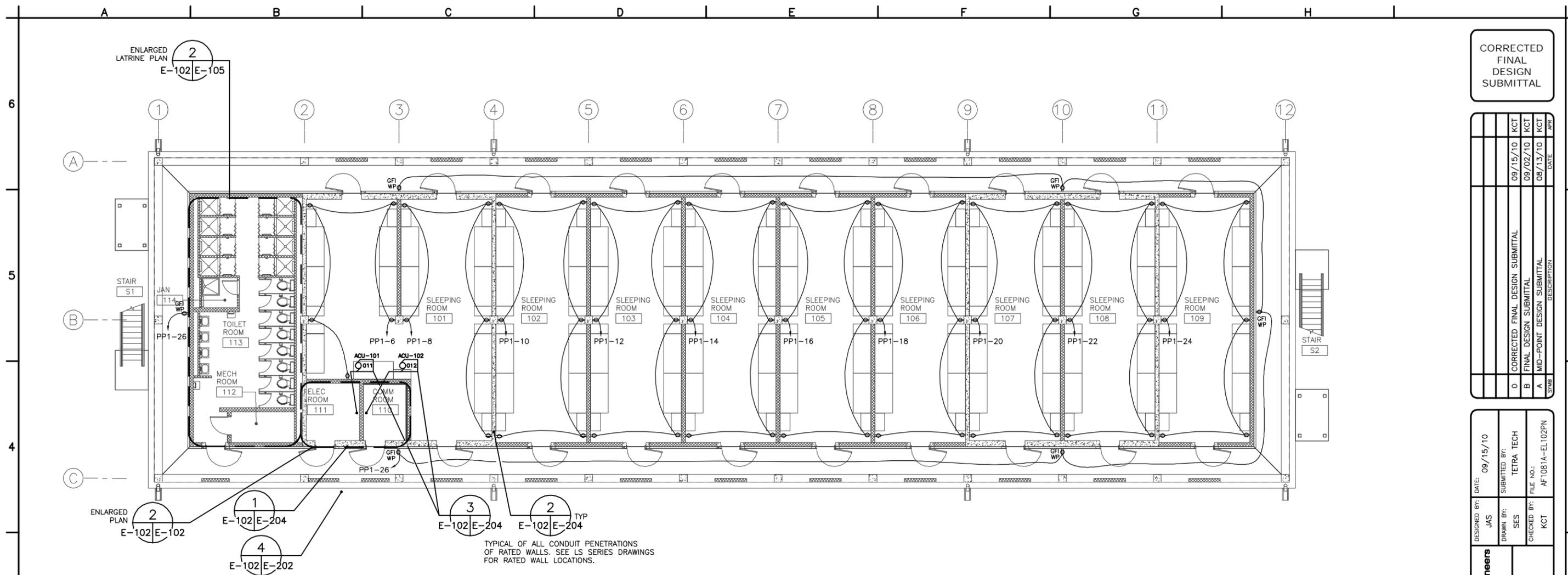
AUSTERE STANDARD DESIGNS - PHASE 4  
FY11 BARRACKS - PN74127-CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

FIRST FLOOR LIGHTING PLAN

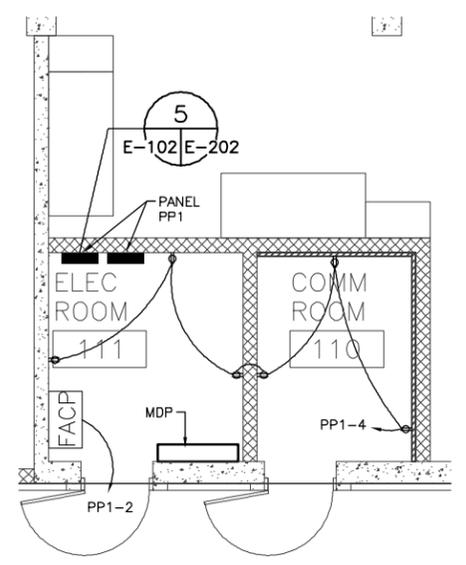
SHEET REFERENCE NUMBER:  
AF1081A  
E-101

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\07\_Electrical\AF1081A-EL102PN.dwg 10/14/2010 11:51:53 AM Barrett, Patrick

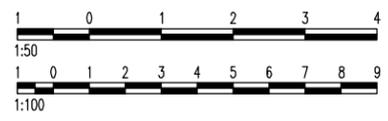


**GROUND FLOOR PLAN** 1  
SCALE = 1:100 E-102 | E-102



**ENLARGED PLAN** 2  
SCALE = 1:50 E-102 | E-102

TYPICAL OF ALL CONDUIT PENETRATIONS OF RATED WALLS. SEE LS SERIES DRAWINGS FOR RATED WALL LOCATIONS.



THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



CORRECTED FINAL DESIGN SUBMITTAL

SYMB	DESCRIPTION	DATE	APP
D	CORRECTED FINAL DESIGN SUBMITTAL	09/15/10	KCT
B	FINAL DESIGN SUBMITTAL	09/02/10	KCT
A	MID-POINT DESIGN SUBMITTAL	08/13/10	KCT

DESIGNED BY:	JAS	DATE:	09/15/10
DRAWN BY:	SES	SUBMITTED BY:	TETRA TECH
CHECKED BY:	KCT	FILE NO.:	AF1081A-EL102PN

US Army Corps of Engineers  
Middle East District

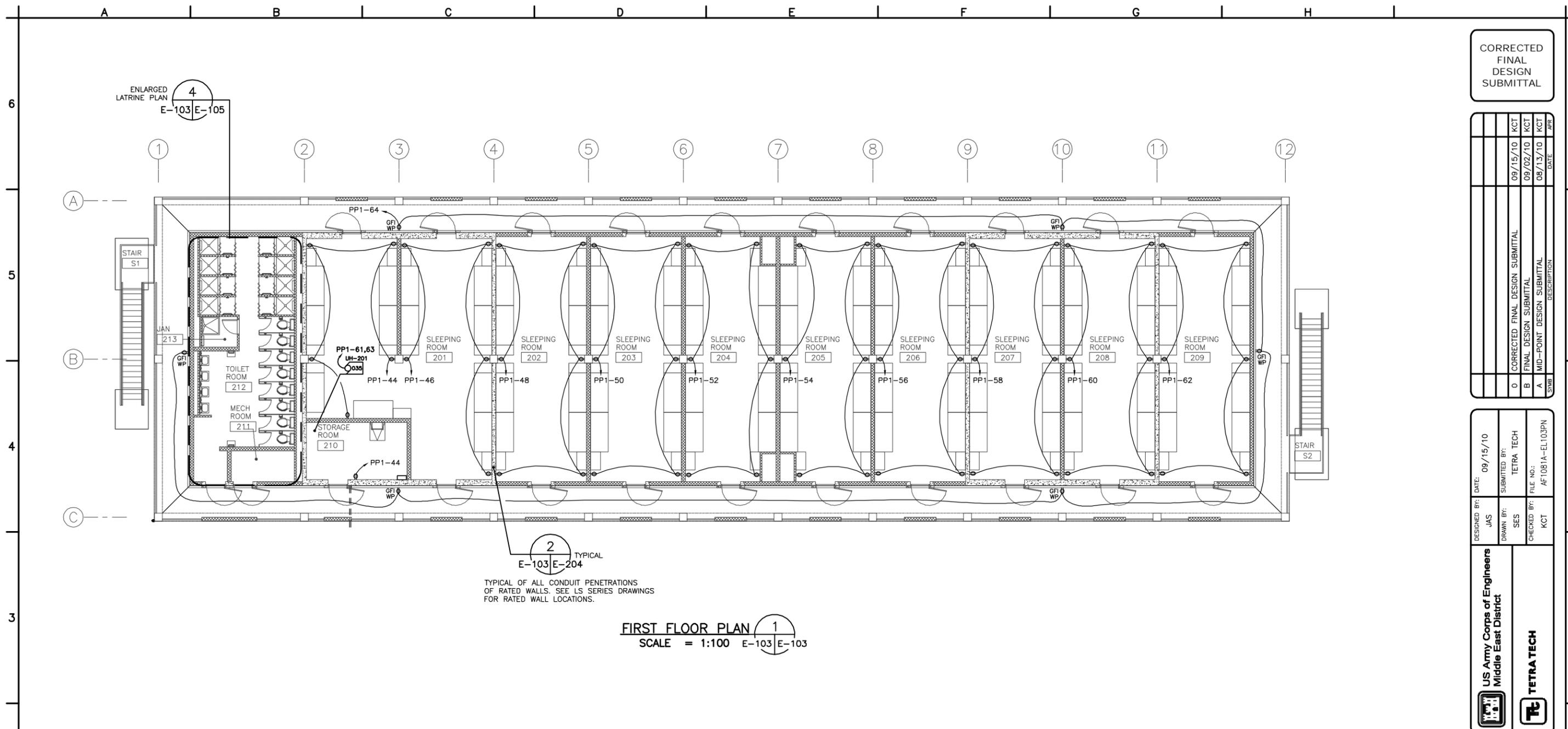
TETRA TECH

AUSTERE STANDARD DESIGNS - PHASE 4  
FY11 BARRACKS - PN74127-CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

GROUND FLOOR POWER PLAN

SHEET REFERENCE NUMBER:  
**AF1081A E-102**

W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\07\_Electrical\AF1081A-EL103PN.dwg 10/14/2010 11:52:04 AM Barrett, Patrick



**FIRST FLOOR PLAN**  
SCALE = 1:100 E-103 E-103

TYPICAL OF ALL CONDUIT PENETRATIONS OF RATED WALLS. SEE LS SERIES DRAWINGS FOR RATED WALL LOCATIONS.



THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



CORRECTED FINAL DESIGN SUBMITTAL

REV	DATE	DESCRIPTION
0	09/15/10	KCT CORRECTED FINAL DESIGN SUBMITTAL
B	09/02/10	KCT FINAL DESIGN SUBMITTAL
A	08/13/10	KCT MID-POINT DESIGN SUBMITTAL

DESIGNED BY:	JAS	DATE:	09/15/10
DRAWN BY:	SES	SUBMITTED BY:	TETRA TECH
CHECKED BY:	KCT	FILE NO.:	AF1081A-EL103PN

US Army Corps of Engineers  
Middle East District

TETRA TECH

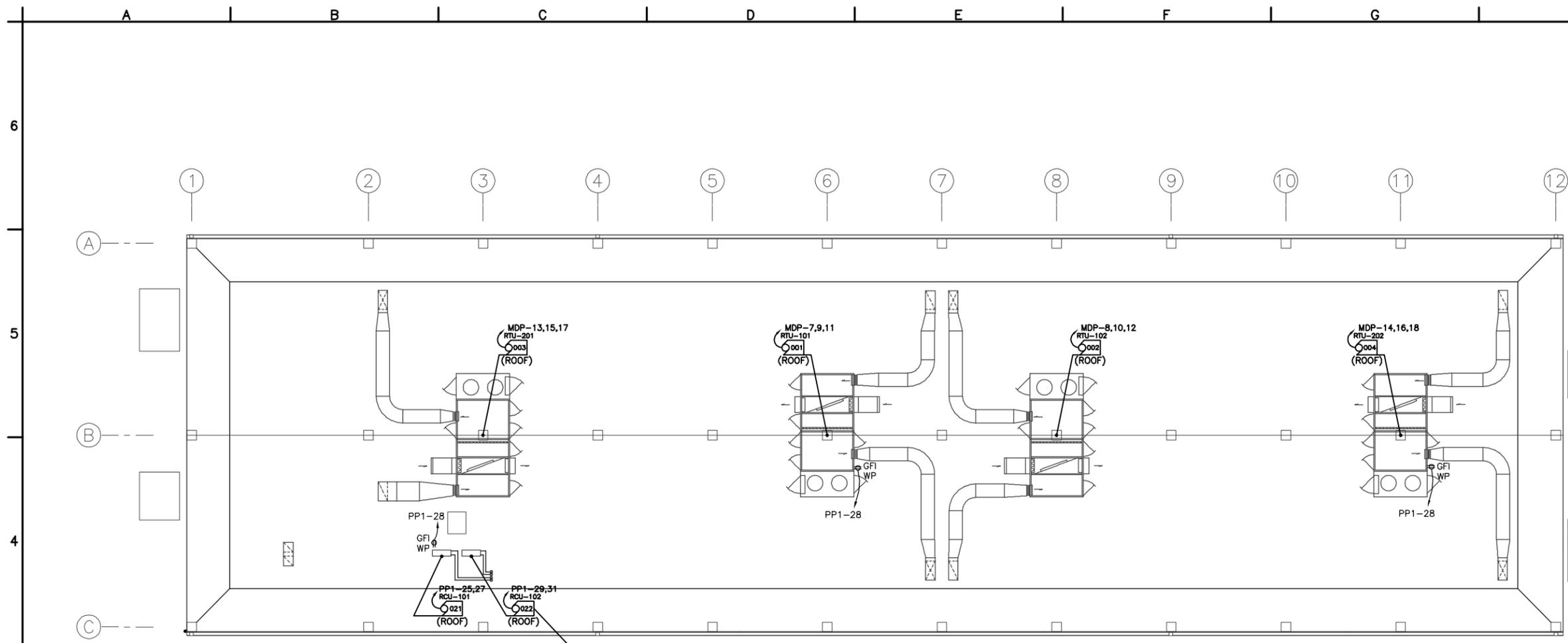
AUSTERE STANDARD DESIGNS - PHASE 4  
FY11 BARRACKS - PN74127-CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

FIRST FLOOR POWER PLAN

SHEET REFERENCE NUMBER:  
**AF1081A E-103**

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\07\_Electrical\AF1081A-EL104PN.dwg 10/14/2010 11:52:13 AM Barrett, Patrick



**ROOF POWER PLAN**  
SCALE = 1:100



THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



CORRECTED  
FINAL  
DESIGN  
SUBMITTAL

SYMB	DESCRIPTION	DATE	APP
D	CORRECTED FINAL DESIGN SUBMITTAL	09/15/10	KCT
B	FINAL DESIGN SUBMITTAL	09/02/10	KCT
A	MID-POINT DESIGN SUBMITTAL	08/13/10	KCT

DESIGNED BY:	JAS	DATE:	09/15/10
DRAWN BY:	SES	SUBMITTED BY:	TETRA TECH
CHECKED BY:	KCT	FILE NO.:	AF1081A-EL104PN

US Army Corps of Engineers  
Middle East District

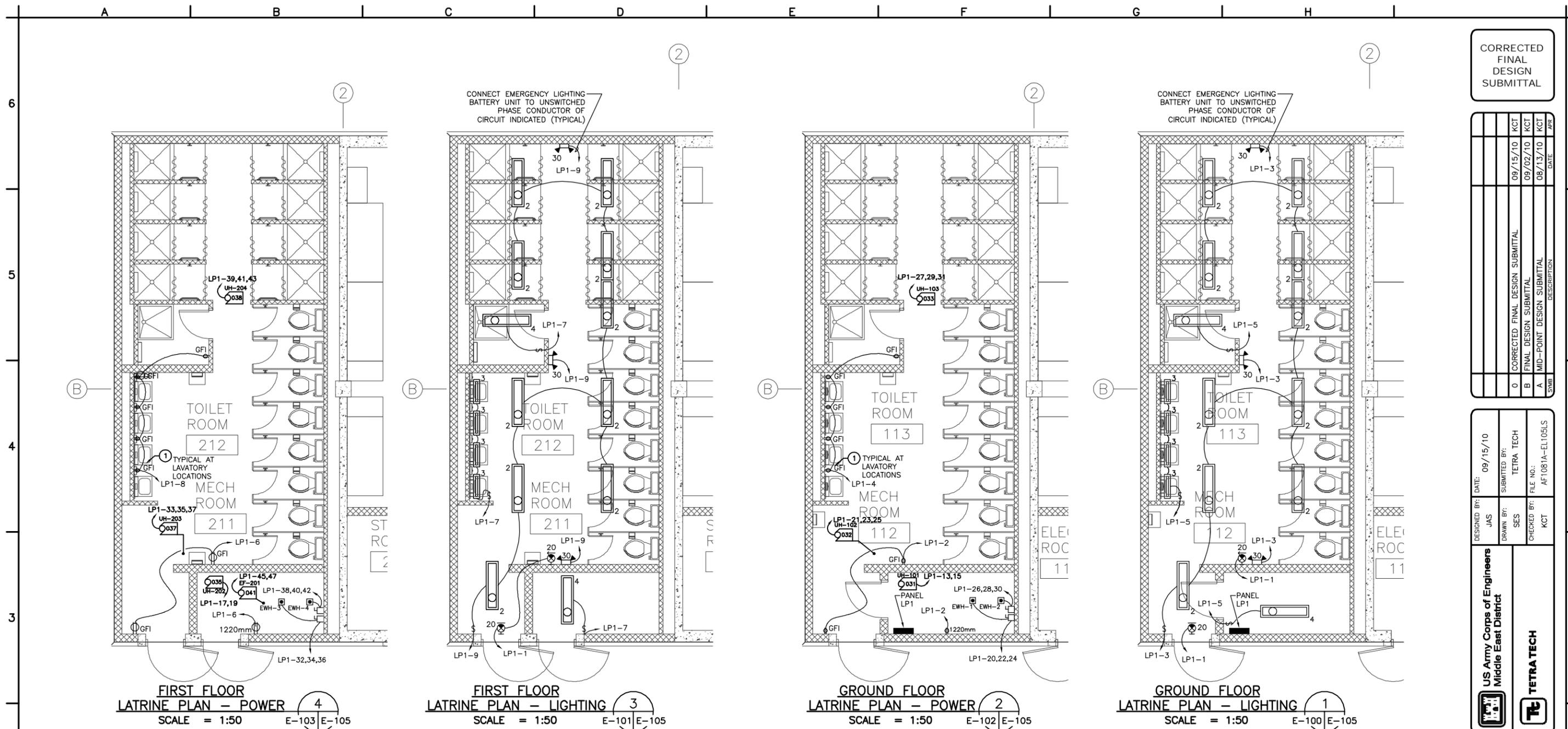
AUSTERE STANDARD DESIGNS - PHASE 4  
FY11 BARRACKS - PN74127-CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

ROOF  
POWER PLAN

SHEET  
REFERENCE  
NUMBER:  
**AF1081A  
E-104**

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\07\_Electrical\AF1081A-EL105LS.dwg 10/14/2010 2:17:24 PM Barrett, Patrick



**KEY NOTES:**  
 ① MOUNT RECEPTACLES HORIZONTAL, 1205mm AFF. SEE A-300 FOR DETAILS.

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

CORRECTED FINAL DESIGN SUBMITTAL

SYMB	DESCRIPTION	DATE	APP
0	CORRECTED FINAL DESIGN SUBMITTAL	09/15/10	KCT
B	FINAL DESIGN SUBMITTAL	09/02/10	KCT
A	MID-POINT DESIGN SUBMITTAL	08/13/10	KCT

DESIGNED BY:	JAS	DATE:	09/15/10
DRAWN BY:	SES	SUBMITTED BY:	TETRA TECH
CHECKED BY:	KCT	FILE NO.:	AF1081A-EL105LS

**US Army Corps of Engineers**  
 Middle East District

**TETRA TECH**



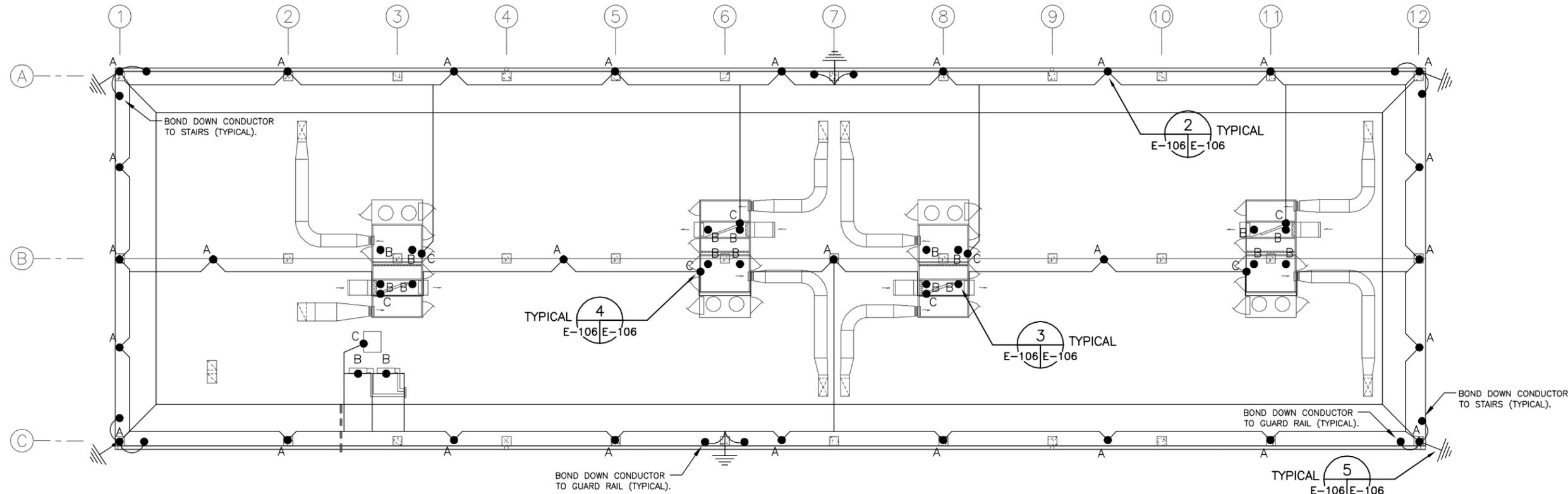
THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



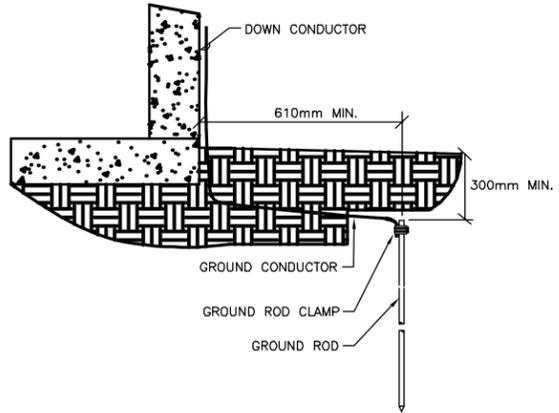
AUSTERE STANDARD DESIGNS - PHASE 4  
 FY11 BARRACKS - PN74127-CLN03  
 KANDAHAR AIR BASE, AFGHANISTAN  
 ENLARGED ELECTRICAL PLANS  
 LATRINE AREA  
 LIGHTING AND POWER

SHEET REFERENCE NUMBER:  
**AF1081A**  
**E-105**

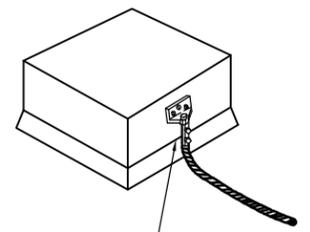
W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\07\_Electrical\AF1081A-EL106DT.dwg 10/14/2010 11:52:39 AM Barrett, Patrick



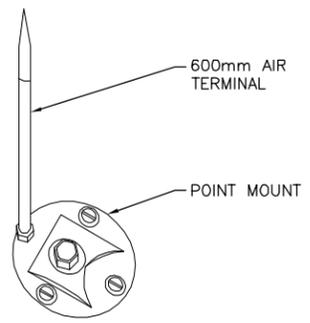
**ROOF LIGHTNING PROTECTION PLAN**  
SCALE = 1:100



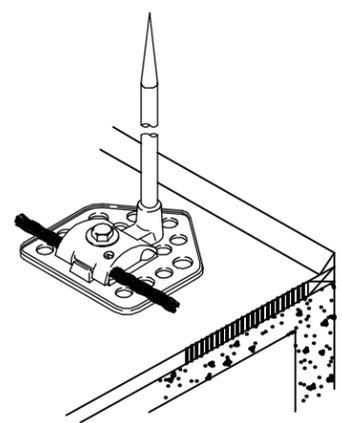
**TYPICAL GROUND DETAIL**  
N.T.S.



**BONDING LUG DETAIL 'C'**  
N.T.S.



**EQUIPMENT AIR TERMINAL AND FLAT SURFACE MOUNTING PLATE DETAIL 'B'**  
N.T.S.



**AIR TERMINAL DETAIL 'A'**  
N.T.S.



THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



CORRECTED FINAL DESIGN SUBMITTAL

SYMBOL	DESCRIPTION	DATE	APP
D	CORRECTED FINAL DESIGN SUBMITTAL	09/15/10	KCT
B	FINAL DESIGN SUBMITTAL	09/02/10	KCT
A	MID-POINT DESIGN SUBMITTAL	08/13/10	KCT

DESIGNED BY:	JAS	DATE:	09/15/10
DRAWN BY:	SES	SUBMITTED BY:	TETRA TECH
CHECKED BY:	KCT	FILE NO.:	AF1081A-EL106DT

**US Army Corps of Engineers**  
Middle East District

**TETRA TECH**

AUSTERE STANDARD DESIGNS - PHASE 4  
FY11 BARRACKS - PN74127-CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

ROOF LIGHTNING PROTECTION PLAN AND DETAILS

SHEET REFERENCE NUMBER:  
**AF1081A E-106**

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\07\_Electrical\AF1081A-EL200SC.dwg 10/14/2010 11:52:46 AM Barretti, Patrick

### CONNECTION SCHEDULE

MTR NO.	DESCRIPTION	HP (KW)	CIRCUIT	LOCATION	VOLTAGE	WIRE AND CONDUIT	STARTER					DISCONNECT				CIRCUIT BREAKER	NOTES/ ADDITIONAL REQUIREMENTS	MTR NO.
							TYPE	BY	LOC.	NEMA ENCL.	AUX.	BY	LOC.	NEMA ENCL.	SIZE			
001	RTU-101	(31)	MDP-7,9,11	BARRACKS ROOF	208V	SEE FEEDER SCHEDULE	--	MFR	UNIT	--	--	MFR	UNIT	4	--	175A 3P	--	001
002	RTU-102	(31)	MDP-8,10,12	BARRACKS ROOF	208V	SEE FEEDER SCHEDULE	--	MFR	UNIT	--	--	MFR	UNIT	4	--	175A 3P	--	002
003	RTU-201	(31)	MDP-13,15,17	BARRACKS ROOF	208V	SEE FEEDER SCHEDULE	--	MFR	UNIT	--	--	MFR	UNIT	4	--	175A 3P	--	003
004	RTU-202	(31)	MDP-14,16,18	BARRACKS ROOF	208V	SEE FEEDER SCHEDULE	--	MFR	UNIT	--	--	MFR	UNIT	4	--	175A 3P	--	004
011	ACU-101	--	--	ELEC ROOM	208V	(3) 4mm <sup>2</sup> , (1) 4mm <sup>2</sup> G, 20mm C	--	--	--	--	--	EC	UNIT	1	30A	--	CONNECTED TO RCU-101	011
012	ACU-102	--	--	COMM ROOM	208V	(3) 4mm <sup>2</sup> , (1) 4mm <sup>2</sup> G, 20mm C	--	--	--	--	--	EC	UNIT	1	30A	--	CONNECTED TO RCU-102	012
021	RCU-101	(1.3)	PP1-25	ELEC ROOM	208V	(3) 4mm <sup>2</sup> , (1) 4mm <sup>2</sup> G, 20mm C	--	--	--	--	--	EC	UNIT	4	30A	15A 2P	CONNECTED TO ACU-101	021
022	RCU-102	(1.3)	PP1-27	COMM ROOM	208V	(3) 4mm <sup>2</sup> , (1) 4mm <sup>2</sup> G, 20mm C	--	--	--	--	--	EC	UNIT	4	30A	15A 2P	CONNECTED TO ACU-102	022
031	UH-101	(2.6)	LP1-13,15	LATRINE (GROUND FLOOR)	208V	(3) 4mm <sup>2</sup> , (1) 4mm <sup>2</sup> G, 20mm C	--	--	--	--	--	MFR	UNIT	1	--	20A 2P	--	031
032	UH-102	(10)	LP1-21,23,25	LATRINE (GROUND FLOOR)	208V	(3) 16mm <sup>2</sup> , (1)10mm <sup>2</sup> G, 25mm C	--	--	--	--	--	MFR	UNIT	1	--	35A 3P	--	032
033	UH-103	(10)	LP1-27,29,31	LATRINE (GROUND FLOOR)	208V	(3) 16mm <sup>2</sup> , (1)10mm <sup>2</sup> G, 25mm C	--	--	--	--	--	MFR	UNIT	1	--	35A 3P	--	033
035	UH-201	(2.6)	PP1-61,63	STORAGE (FIRST FLOOR)	208V	(3) 4mm <sup>2</sup> , (1) 4mm <sup>2</sup> G, 20mm C	--	--	--	--	--	MFR	UNIT	1	--	20A 2P	--	035
036	UH-202	(2.6)	LP1-17,19	MECHANICAL (FIRST FLOOR)	208V	(3) 4mm <sup>2</sup> , (1) 4mm <sup>2</sup> G, 20mm C	--	--	--	--	--	MFR	UNIT	1	--	20A 2P	--	036
037	UH-203	(10)	LP1-33,35,37	LATRINE (FIRST FLOOR)	208V	(3) 16mm <sup>2</sup> , (1)10mm <sup>2</sup> G, 25mm C	--	--	--	--	--	MFR	UNIT	1	--	35A 3P	--	037
038	UH-204	(10)	LP1-39,41,43	LATRINE (FIRST FLOOR)	208V	(3) 16mm <sup>2</sup> , (1)10mm <sup>2</sup> G, 25mm C	--	--	--	--	--	MFR	UNIT	1	--	35A 3P	--	038
041	EF-201	(8.3)	LP1-45,47	MECHANICAL (FIRST FLOOR)	208V	(3) 4mm <sup>2</sup> , (1) 4mm <sup>2</sup> G, 20mm C	--	--	--	--	--	MFR	UNIT	1	--	15A 2P	* SEE NOTE	041
051	EWH-1	(9)	LP1-20,22,24	MECH ROOM 112	208V	(3) 4mm <sup>2</sup> , (1) 4mm <sup>2</sup> G, 20mm C	--	--	--	--	--	EC	UNIT	1	60A	35A 3P	--	051
052	EWH-2	(9)	LP1-26,28,30	MECH ROOM 112	208V	(3) 4mm <sup>2</sup> , (1) 4mm <sup>2</sup> G, 20mm C	--	--	--	--	--	EC	UNIT	1	60A	35A 3P	--	052
053	EWH-3	(9)	LP1-32,34,36	MECH ROOM 212	208V	(3) 4mm <sup>2</sup> , (1) 4mm <sup>2</sup> G, 20mm C	--	--	--	--	--	EC	UNIT	1	60A	35A 3P	--	053
054	EWH-4	(9)	LP1-38,40,42	MECH ROOM 212	208V	(3) 4mm <sup>2</sup> , (1) 4mm <sup>2</sup> G, 20mm C	--	--	--	--	--	EC	UNIT	1	60A	35A 3P	--	054

\*NOTE:  
CONTROL VIA LIGHT SWITCHES IN TOILET ROOMS 113 AND 212, SUITABLE CONTACTOR AND RELAYS.  
FAN SHALL RUN IF THE LIGHT SWITCH IN EITHER TOILET TROOM IS TURNED ON.

### LIGHT FIXTURE SCHEDULE

TYPE	SYMBOL	ITEM	LAMPS			MANUFACTURERS (OR EQUAL) *	
			NO.	WATTAGE	TYPE	NAME	MODEL OR SERIES
1		COMMERCIAL 133mm X 1231mm, LOW-PROFILE WRAP AROUND WITH STEEL HOUSING, WHITE ENAMEL, SURFACE MOUNT, 2-LAMP, MOUNTING HEIGHT 3600mm AFF	2	32 (64)	F32T8	LITHONIA	CA-2-32-AR-MVOLT-GEB10IS 120V 60HZ
2		COMMERCIAL 206mm X 1270mm ENCLOSED AND GASKETED INDUSTRIAL WITH FIBERGLASS REINFORCED POLYESTER HOUSING, SURFACE MOUNTING, 2 LAMP, MOUNTING HEIGHT 3600mm AFF	2	32 (64)	F32T8	LITHONIA	DMW232MVOLT-GEB10IS 120V 60HZ SURFACE MOUNT
3		COMMERCIAL 182mm X 610mm WALL BRACKET WITH STEEL HOUSING, WHITE ENAMEL, 2 LAMP, MOUNTING HEIGHT 2300mm AFF	2	17 (34)	F17T8	LITHONIA	WP117MVOLT-GEB10IS 120V 60HZ
4		COMMERCIAL 300mm X 1220mm INDUSTRIAL REFLECTOR W/STEEL HOUSING, WHITE ENAMEL, SURFACE MOUNT, 2 LAMP, WIRE GUARD, MOUNTING HEIGHT 3600mm AFF	2	32 (64)	32 (64)	LITHONIA	L232MVOLT-GEB10IS 120V 60HZ SURFACE MOUNT
20		EXIT LIGHT (SINGLE FACE WALL MOUNTED) WITH BATTERY BACKUP, MOUNTING HEIGHT 2400mm AFF	-	-	LED	LITHONIA	LQC1RELN 120V 60HZ
30		BATTERY PACK EMERGENCY LIGHT, WHITE, MOUNTING HEIGHT 2300mm AFF	2	12 (24)	HALOGEN	LITHONIA	ELT50MTH1212 120V 60HZ
31		EMERGENCY SEALED REMOTE FIXTURE, EXTERIOR NEMA 4, MOUNTING HEIGHT 2300mm AFF	2	12 (24)	HALOGEN	LITHONIA	ELATNXH1212
32		BATTERY PACK EMERGENCY LIGHT, EXTERIOR NEMA 4, MOUNTING HEIGHT 2300mm AFF	2	12 (24)	HALOGEN	LITHONIA	INDX1236WH1212PREM 120V 60HZ
40		BUILDING MOUNTED WALL PACK TYPE FIXTURE WITH PHOTOCCELL, SEE ARCHITECTURAL ELEVATION FOR MOUNTING HEIGHT	1	150	MH	LITHONIA	TWR1C-150MTB-PE-LPI 120V 60HZ
41		BUILDING MOUNTED WALL PACK TYPE FIXTURE WITH PHOTOCCELL, SEE ARCHITECTURAL ELEVATION FOR MOUNTING HEIGHT	1	50	MH	LITHONIA	TWRC-42TRT-MVOLT-PE-LPI 120V 60HZ

\* MANUFACTURER AND MODEL NUMBER ARE PROVIDED TO SHOW BASIS OF DESIGN ONLY.

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

CORRECTED  
FINAL  
DESIGN  
SUBMITTAL

0	CORRECTED FINAL DESIGN SUBMITTAL	09/15/10	KCT
1	FINAL DESIGN SUBMITTAL	09/02/10	KCT
2	MID-POINT DESIGN SUBMITTAL	08/13/10	KCT
3	DATE		

DESIGNED BY:	JAS	DATE:	09/15/10
DRAWN BY:	SES	SUBMITTED BY:	TETRA TECH
CHECKED BY:	KCT	FILE NO.:	AF1081A-EL200SC

**US Army Corps of Engineers**  
Middle East District

**TETRA TECH**

AUSTERE STANDARD DESIGNS - PHASE 4  
FY11 BARRACKS - PN74127-CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

LIGHT FIXTURE SCHEDULE AND  
CONNECTION SCHEDULE

SHEET  
REFERENCE  
NUMBER:  
**AF1081A  
E-200**

THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



9/15/10

W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\07\_Electrical\AF1081A-EL201SC.dwg 10/14/2010 11:52:55 AM Barretti, Patrick

LOCATION: ELEC ROOM 111 PANELBOARD PP1 SURFACE MOUNTED 45,000 SYM. A.I.C. MIN.  
 - AMP. MAIN LUGS (OR) 300 AMP. MAIN BREAKER W/ 300 AMP. TRIP  
 CIRCUIT BREAKER TYPE 208Y/120 VOLTS 3 PHASE 4 WIRE 60 HZ 400 AMP. BUS

CKT. NO.	NO. POLES	TRIP AMPS	WIRE MM <sup>2</sup>	GND MM <sup>2</sup>	CONDUIT MM	LOAD SERVED	LOAD-V.A.			LOAD-V.A.			LOAD SERVED	CONDUIT MM	GND MM <sup>2</sup>	WIRE MM <sup>2</sup>	TRIP AMPS	NO. POLES	CKT. NO.	
							AO	BO	CO	AO	BO	CO								
1	1	20	4	4	20	EMERGENCY EXIT LIGHTS	650			300			FACP	20	4	4	20	1	2	
3	1	20	4	4	20	LTG: 101,102,103,104		704			1200		RECEPTS: 110, 111	20	4	4	20	1	4	
5	1	20	4	4	20	LTG: 105,106,107,108,109			640		1000		RECEPTS: 101	20	4	4	20	1	6	
7	1	20	4	4	20	LTG: 101,102,103,104,110,111	768				1000		RECEPTS: 101	20	4	4	20	1	8	
9	1	20	4	4	20	LTG: 105,106,107,108,109		640			1200		RECEPTS: 102	20	4	4	20	1	10	
11	1	20	4	4	20	LTG: EXTERIOR (EGRESS)			500		1200		RECEPTS: 103	20	4	4	20	1	12	
13	1	20	4	4	20	LTG: EXTERIOR (EGRESS)	450				1200		RECEPTS: 104	20	4	4	20	1	14	
15	1	20	4	4	20	LTG: EXTERIOR (BUILDING)		1350			1200		RECEPTS: 105	20	4	4	20	1	16	
17	1	20	4	4	20	LTG: EXTERIOR (BUILDING)			1350		1200		RECEPTS: 106	20	4	4	20	1	18	
19	1	20	-	-	-	SPARE				1200		RECEPTS: 107	20	4	4	20	1	20		
21	1	20	-	-	-	SPARE				1200		RECEPTS: 108	20	4	4	20	1	22		
23	1	20	-	-	-	SPARE				1200		RECEPTS: 109	20	4	4	20	1	24		
25	2	15	4	4	20	RCU/ACU-101	336				1200		RECEPTS: EXTERIOR	20	4	4	20	1	26	
27	↓	↓	↓	↓	↓	↓				336		600	RECEPTS: EXTERIOR ROOF	20	4	4	20	1	28	
29	2	15	4	4	20	RCU/ACU-102		336					SPARE				20	1	30	
31	↓	↓	↓	↓	↓	↓				336			SPARE				20	1	32	
33	1	-	-	-	-	SPACE							SPARE				20	1	34	
35	1	-	-	-	-	SPACE							SPARE				20	1	36	
37	1	-	-	-	-	SPACE							TVSS				***	3	38	
39	1	-	-	-	-	SPACE													40	
41	1	-	-	-	-	SPACE													42	
							2540	3030	2823	4900	5400	4600								

\*\*\*=SIZED PER MANUFACTURER'S RECOMMENDATION  
 TOTAL CONN. LOAD PER PHASE (KVA): AO 7.4 BO 8.4 CO 7.4  
 SUPPLIED FROM: MDP

TOTAL CONN. LOAD 43.2 KVA. - % DEMAND = ESTIMATED DEMAND LOAD - KVA

LOCATION: ELEC ROOM 111 PANELBOARD PP1 (SECTION 2) SURFACE MOUNTED 45,000 SYM. A.I.C. MIN.  
 - AMP. MAIN LUGS (OR) 300 AMP. MAIN BREAKER W/ 300 AMP. TRIP  
 CIRCUIT BREAKER TYPE 208Y/120 VOLTS 3 PHASE 4 WIRE 60 HZ 400 AMP. BUS

CKT. NO.	NO. POLES	TRIP AMPS	WIRE MM <sup>2</sup>	GND MM <sup>2</sup>	CONDUIT MM	LOAD SERVED	LOAD-V.A.			LOAD-V.A.			LOAD SERVED	CONDUIT MM	GND MM <sup>2</sup>	WIRE MM <sup>2</sup>	TRIP AMPS	NO. POLES	CKT. NO.	
							AO	BO	CO	AO	BO	CO								
43	1	20	4	4	20	EMERGENCY EXIT LIGHTS	650			1200			RECEPTS: 201, 210	20	4	4	20	1	44	
45	1	20	4	4	20	LTG: 201,202,203,204		704			1000		RECEPTS: 201	20	4	4	20	1	46	
47	1	20	4	4	20	LTG: 205,206,207,208,209			640		1200		RECEPTS: 202	20	4	4	20	1	48	
49	1	20	4	4	20	LTG: 201,202,203,204,210	768				1200		RECEPTS: 203	20	4	4	20	1	50	
51	1	20	4	4	20	LTG: 205,206,207,208,209		640			1200		RECEPTS: 204	20	4	4	20	1	52	
53	1	20	4	4	20	LTG: EXTERIOR (EGRESS)			500		1200		RECEPTS: 205	20	4	4	20	1	54	
55	1	20	4	4	20	LTG: EXTERIOR (EGRESS)	450				1200		RECEPTS: 206	20	4	4	20	1	56	
57	1	20	-	-	-	SPARE				1200		RECEPTS: 207	20	4	4	20	1	58		
59	1	20	-	-	-	SPARE				1200		RECEPTS: 208	20	4	4	20	1	60		
61	2	20	4	4	20	UH-201	1300				1200		RECEPTS: 209	20	4	4	20	1	62	
63	↓	↓	↓	↓	↓	↓				1300			RECEPTS: EXTERIOR	20	4	4	20	1	64	
65	1	20	-	-	-	SPACE							SPARE				20	1	66	
67	1	20	-	-	-	SPACE							SPARE				20	1	68	
69	1	-	-	-	-	SPACE							SPARE				20	1	70	
71	1	-	-	-	-	SPACE							SPARE				20	1	72	
73	1	-	-	-	-	SPACE							SPARE				20	1	74	
75	1	-	-	-	-	SPACE							SPARE				20	1	76	
77	1	-	-	-	-	SPACE							SPARE				20	1	78	
79	1	-	-	-	-	SPACE							TVSS				***	3	80	
81	1	-	-	-	-	SPACE													82	
83	1	-	-	-	-	SPACE													84	
							3168	2644	1140	4800	4600	3600								

\*\*\*=SIZED PER MANUFACTURER'S RECOMMENDATION  
 TOTAL CONN. LOAD PER PHASE (KVA): AO 8.0 BO 7.2 CO 4.7  
 SUPPLIED FROM: MDP

TOTAL CONN. LOAD 20.0 KVA. - % DEMAND = ESTIMATED DEMAND LOAD - KVA

LOCATION: ELEC ROOM 111 PANELBOARD MDP SURFACE MOUNTED 45,000 SYM. A.I.C. MIN.  
 - AMP. MAIN LUGS (OR) 600 AMP. MAIN BREAKER W/ 600 AMP. TRIP  
 CIRCUIT BREAKER TYPE 208Y/120 VOLTS 3 PHASE 4 WIRE 60 HZ 600 AMP. BUS

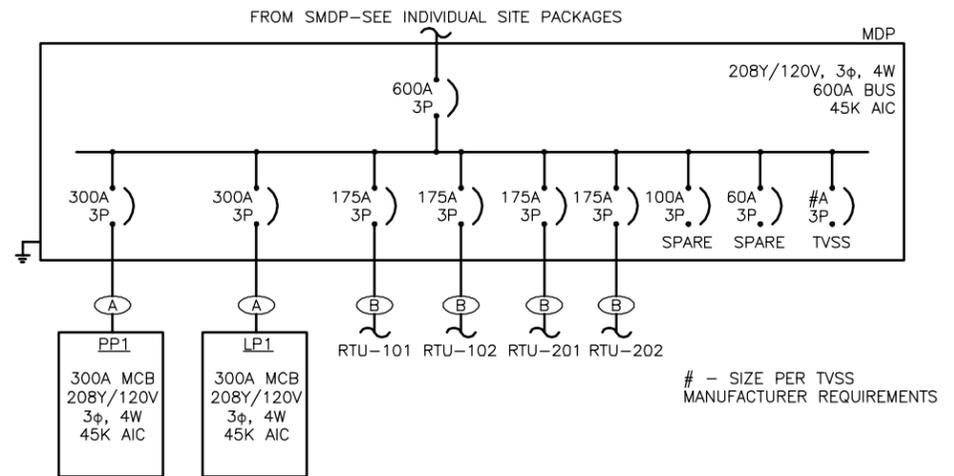
CKT. NO.	NO. POLES	TRIP AMPS	WIRE MM <sup>2</sup>	GND MM <sup>2</sup>	CONDUIT MM	LOAD SERVED	LOAD-V.A.			LOAD-V.A.			LOAD SERVED	CONDUIT MM	GND MM <sup>2</sup>	WIRE MM <sup>2</sup>	TRIP AMPS	NO. POLES	CKT. NO.
							AO	BO	CO	AO	BO	CO							
1	3	-	-	-	-	PANEL PP1	15408			30256			PANEL LP1					3	2
3	↓	↓	↓	↓	↓	↓			15674			28886	↓						4
5	↓	↓	↓	↓	↓	↓				12166			28986	↓					6
7	3	175	70	16	50	RTU-101	10376					10376	RTU-102					3	8
9	↓	↓	↓	↓	↓	↓				10376			10376	↓					10
11	↓	↓	↓	↓	↓	↓				10376			10376	↓					12
13	3	175	70	16	50	RTU-201	10376					10376	RTU-202					3	14
15	↓	↓	↓	↓	↓	↓				10376			10376	↓					16
17	↓	↓	↓	↓	↓	↓				10376			10376	↓					18
19	3	-	-	-	-	SPARE							SPARE					3	20
21	↓	↓	↓	↓	↓	↓													22
23	↓	↓	↓	↓	↓	↓													24
25	3	-	-	-	-	SPARE												3	26
27	↓	↓	↓	↓	↓	↓													28
29	↓	↓	↓	↓	↓	↓													30
31	3	-	-	-	-	TVSS												#	32
33	↓	↓	↓	↓	↓	↓													34
35	↓	↓	↓	↓	↓	↓													36

\*=GFI \*\*=SHUNT TRIP # - PROVIDE BREAKER AS REQUIRED BY MANUFACTURER FOR TVSS  
 TOTAL CONN. LOAD PER PHASE (KVA): AO 87.2 BO 86.1 CO 82.7  
 SUPPLIED FROM: SERVICE

TOTAL CONN. LOAD 255.9 KVA. - % DEMAND = ESTIMATED DEMAND LOAD - KVA

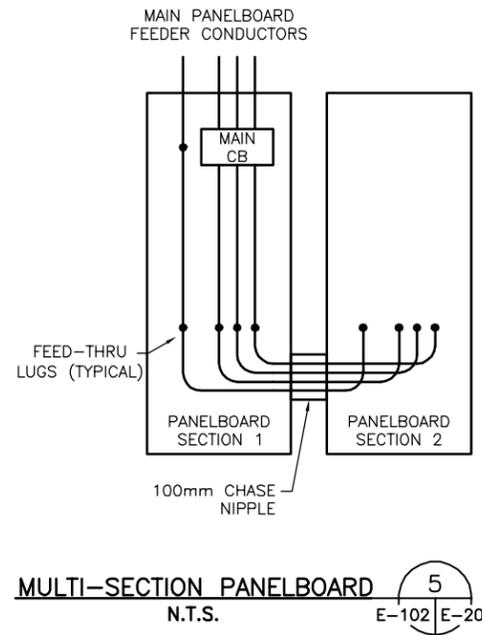
LOCATION: MECH ROOM 112 PANELBOARD LP1 SURFACE MOUNTED 45,000 SYM. A.I.C. MIN.  
 - AMP. MAIN LUGS (OR) 300 AMP. MAIN BREAKER W/ 300 AMP. TRIP  
 CIRCUIT BREAKER TYPE 208Y/120 VOLTS 3 PHASE 4 WIRE 60 HZ 400 AMP. BUS

CKT. NO.	NO. POLES	TRIP AMPS	WIRE MM <sup>2</sup>	GND MM <sup>2</sup>	CONDUIT MM	LOAD SERVED	LOAD-V.A.			LOAD-V.A.			LOAD SERVED	CONDUIT MM	GND MM <sup>2</sup>	WIRE MM <sup>2</sup>	TRIP AMPS	NO. POLES	CKT. NO.
							AO	BO	CO	AO	BO	CO							
1	1	20	4	4	20	EMERGENCY EXIT LIGHTS	324			800			RECEPTS: 112, 113, EXT.	20	4	4	20	1	2
3	1	20	4	4	20	LTG: 112, 113, 114		200			1000		RECEPTS: 113, 114	20	4	4	20	1	4
5	1	20	4	4	20	LTG: 112			640		800		RECEPTS: 211, 212, EXT.	20	4	4	20	1	6
7	1	20	4	4	20	LTG: 211, 212, 213	200				1000		RECEPTS: 212, 213	20	4	4	20	1	8
9	1	20	4	4	20	LTG: 212			640				SPARE					20	10
11	1	20	4	4	20	LTG: EXTERIOR (EGRESS)				500			SPARE					20	12
13	2	20	4	4	20	UH-101	1300						SPARE					20	14
15	↓	↓	↓	↓	↓	↓				1300			SPARE					20	16
17	2	20	4	4	20	UH-202				1300		1300	SPARE					20	18
19	↓	↓	↓	↓	↓	↓				1300		3000	SPARE					20	20
21	3	35	10	10	20	UH-102					3333	3000	SPARE					20	22
23	↓	↓	↓	↓	↓	↓					3333	3000	SPARE					20	24
25	↓	↓	↓	↓	↓	↓					3333	3000	SPARE					20	26
27	3	35	10	10	20	UH-103					3333	3000	SPARE					20	28
29	↓	↓	↓	↓	↓	↓					3333	3000	SPARE					20	30
31	↓	↓	↓	↓	↓	↓					3333	3000	SPARE					20	32
33	3	35	10	10	20	UH-203					3333	3000	SPARE					20	34
35	↓	↓	↓	↓	↓	↓					3333	3000	SPARE					20	36
37	↓	↓	↓	↓	↓	↓					3333	3000	SPARE					20	38
39	3	35	10	10	20	UH-204					3333	3000	SPARE					20	40
41	↓	↓	↓	↓	↓	↓					3333	3000	SPARE					20	42

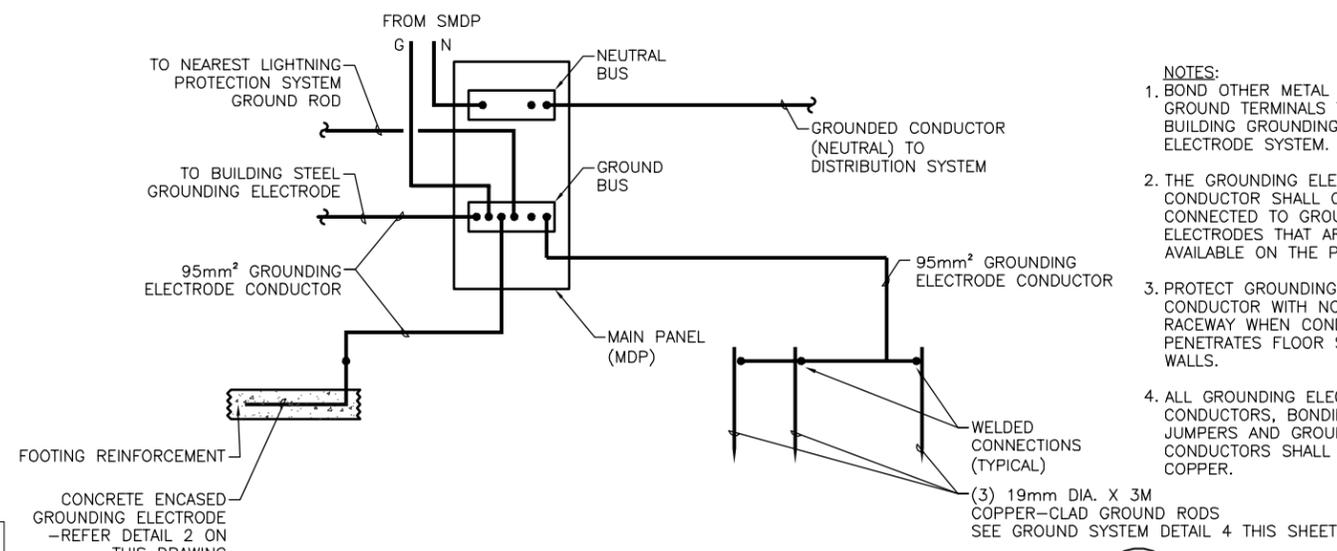


FEEDER ID	AMPS	SETS PARALLEL CONDUCTORS AND RACEWAYS	PHASE CONDUCTOR	NEUTRAL	GROUND	RACEWAY SIZE	NOTES
(A)	300	1	(3)-300mm <sup>2</sup>	(1)-300mm <sup>2</sup>	(1)-35mm <sup>2</sup>	100mm	--
(B)	175	1	(3)-70mm <sup>2</sup>	(1)70mm <sup>2</sup>	(1)-16mm <sup>2</sup>	50mm	--

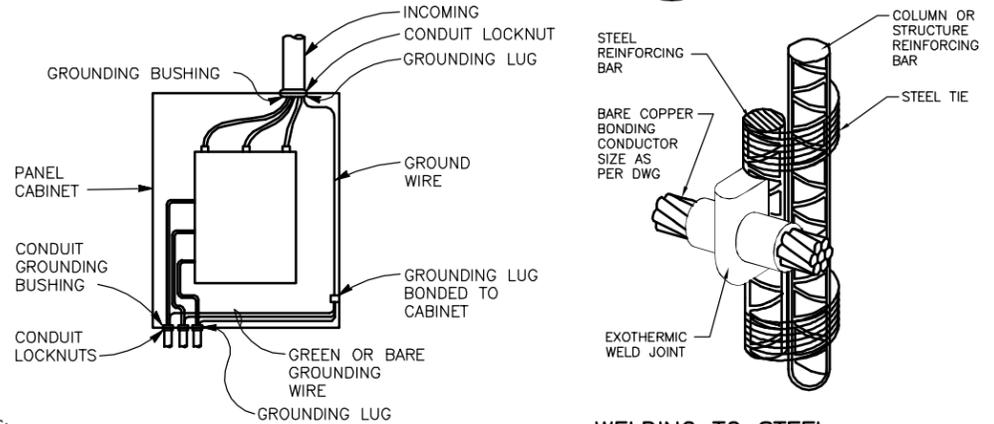
**ELECTRICAL ONE-LINE DIAGRAM**  
N.T.S.



**MULTI-SECTION PANELBOARD**  
N.T.S. E-102 E-202

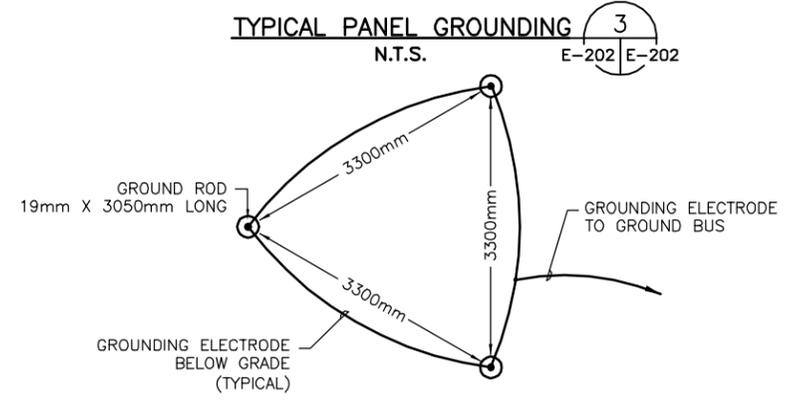


**BUILDING GROUNDING ELECTRODE CONNECTION**  
N.T.S. E-202 E-202



**WELDING TO STEEL REINFORCING BAR DETAIL**  
N.T.S. E-202 E-202

- NOTES:
1. ALL WIRES TO BE NEATLY LACED.
  2. AT THE POINT OF ATTACHMENT OF THE GROUNDING LUG TO THE CABINET, THE SURFACES SHALL BE SCRAPED FREE OF PAINT AND THOROUGHLY CLEANED TO INSURE PROPER BONDING.
  3. NEUTRAL CONDUCTOR NOT SHOWN FOR CLARITY.
  4. ALL GROUNDING LUGS AND CONDUCTORS SHALL BE COPPER.



**TYPICAL PANEL GROUNDING**  
N.T.S. E-202 E-202

**GROUND SYSTEM**  
N.T.S. E-102 E-202

THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



CORRECTED FINAL DESIGN SUBMITTAL

SYMB	DESCRIPTION	DATE	PREP
0	CORRECTED FINAL DESIGN SUBMITTAL	09/15/10	KCT
B	FINAL DESIGN SUBMITTAL	09/02/10	KCT
A	MID-POINT DESIGN SUBMITTAL	08/13/10	KCT

DESIGNED BY:	DATE:	SUBMITTED BY:	DATE:
JAS	09/15/10	TETRA TECH	
DRAWN BY:	FILE NO.:	CHECKED BY:	DATE:
SES	AF1081A-EL202DT	KCT	

**US Army Corps of Engineers**  
Middle East District

**TETRA TECH**

**AUSTERE STANDARD DESIGNS - PHASE 4**  
FY11 BARRACKS - PN74127-CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

BUILDING ONE-LINE DIAGRAM AND GROUNDING DETAILS

SHEET REFERENCE NUMBER:  
**AF1081A E-202**

W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\07\_Electrical\AF1081A-EL203DT.dwg 10/14/2010 11:53:15 AM Barret, Patrick

**LUMINAIRE REQUIREMENTS:**

- HOUSING - DIE-FORMED, COLD-ROLLED STEEL, WITH REINFORCEMENT RIBS FOR RIGIDITY. ENDCAPS SECURED WITH TABS, SCREWS OR RIVETS. FIXTURE SHALL NOT PERMANENTLY DEFORM OUT OF "SQUARE" WHEN PICKED UP FROM ANY CORNER.
- FINISH - MULTI-STAGE PHOSPHATE BONDING TREATMENT FINISHED WITH HIGH REFLECTANCE (MINIMUM 85%), BAKED WHITE ENAMEL FINISH.
- LAMP HOLDERS - PRESSURE-LOCKED TYPE ENCLOSED IN TURRET HOUSING.
- REFLECTOR - DIE-FORMED, COLD-ROLLED STEEL WITH TRANSVERSE RIBS FOR RIGIDITY. SOLID, 10% UPLIGHT APERTURE OR 20% UPLIGHT APERTURE AS INDICATED IN LIGHTING FIXTURE SCHEDULE.
- LAMPS - LINEAR FLUORESCENT T8, TYPICALLY WITH WATTAGES AS INDICATED. SEE LIGHTING FIXTURE SCHEDULE.
- BALLAST - CLASS P, THERMALLY-PROTECTED, HIGH POWER FACTOR ( $\geq 95$ ), ELECTRONIC TYPE WITH SOUND RATING A. SEE SPECIFICATION OR LIGHTING FIXTURE SCHEDULE FOR BALLAST OPTIONS AND SPECIFICS.
- CERTIFICATION - UL LISTED AND LABELED.
- OPTIONS - CHAIN HANGER AND PLATED STEEL WIRE GUARD.
- PHOTOMETRICS - MINIMUM VALUE OF COEFFICIENT OF UTILIZATION (CU) AND EFFICIENCY, GIVEN INTERIOR CAVITY REFLECTANCES OF 80-50-20:

2 LAMP (F32/T8)

RCR	CU
1	90
2	79
3	69
4	61

EFFICIENCY - 90%

**INDUSTRIAL FLUORESCENT**  
N.T.S. (TYPE 4)

**LUMINAIRE REQUIREMENTS:**

- HOUSING - DIE-FORMED, HEAVY-GAUGE, COLD-ROLLED STEEL WITH ENDCAPS MADE FROM THE SAME MATERIAL AS HOUSING.
- FINISH - MULTI-STAGE PHOSPHATE BONDING TREATMENT FINISHED WITH HIGH REFLECTANCE (MINIMUM 85%), BAKED WHITE ENAMEL FINISH. DARK BRONZE OR BLACK FINISH AVAILABLE. SEE LIGHTING FIXTURE SCHEDULE.
- LENSES - 100% ACRYLIC, HIGH-IMPACT, CLEAR PRISMATIC DIFFUSER.
- LAMPS - LINEAR FLUORESCENT T8, TYPICALLY WITH WATTAGES AS INDICATED. SEE LIGHTING FIXTURE SCHEDULE.
- BALLAST - CLASS P, THERMALLY-PROTECTED, HIGH POWER FACTOR ( $\geq 95$ ), ELECTRONIC TYPE WITH SOUND RATING A. SEE SPECIFICATION OR LIGHTING FIXTURE SCHEDULE FOR BALLAST OPTIONS AND SPECIFICS.
- CERTIFICATION - UL LISTED AND LABELED.
- FIXED UP AND DOWN LIGHT SWITCHED UP AND/OR DOWN LIGHT DOWN LIGHT ONLY WITH SOLID TOP

**WALL MOUNTED FLUORESCENT**  
N.T.S. (TYPE 3)

**LUMINAIRE REQUIREMENTS:**

- HOUSING - ONE-PIECE, IMPACT-RESISTANT, FIBERGLASS REINFORCED POLYESTER WITH ENCLOSED COLD-ROLLED STEEL WIREWAY.
- FINISH - STEEL REFLECTOR WITH MULTI-STAGE PHOSPHATE BONDING TREATMENT FINISHED WITH HIGH REFLECTANCE (MINIMUM 85%), BAKED WHITE ENAMEL FINISH.
- LENSE - 100% CLEAR ACRYLIC/DR OPTICAL DIFFUSER. STIPPLED INTERIOR SURFACES AND SMOOTH EXTERIOR. CLOSED CELL NEOPRENE GASKET WITH CAPTIVE NONMETALLIC, SNAP ACTION CAM LATCHES TO SECURE LENS TO HOUSING.
- LAMPS - LINEAR FLUORESCENT T8, TYPICALLY WITH WATTAGES AS INDICATED. SEE LIGHTING FIXTURE SCHEDULE.
- BALLAST - CLASS P, THERMALLY-PROTECTED, HIGH POWER FACTOR ( $\geq 95$ ), ELECTRONIC TYPE WITH SOUND RATING A. SEE SPECIFICATION OR LIGHTING FIXTURE SCHEDULE FOR BALLAST OPTIONS AND SPECIFICS.
- CERTIFICATION - UL LISTED AND LABELED. SUITABLE FOR DAMP OR WET LOCATION AS DESIGNATED IN LIGHTING FIXTURE SCHEDULE.
- PHOTOMETRICS - MINIMUM VALUE OF COEFFICIENT OF UTILIZATION (CU) AND EFFICIENCY, GIVEN INTERIOR CAVITY REFLECTANCES OF 80-50-20:

**FIBERGLASS HOUSING DAMP/WET FLUORESCENT**  
N.T.S. (TYPE 2)

**LUMINAIRE REQUIREMENTS:**

- HOUSING - ONE-PIECE, 16 GAUGE COLD ROLLED STEEL. DIE FORMED AND WELDED TOGETHER WITH REINFORCING MEMBERS FOR STRENGTH.
- FINISH - METAL PARTS ARE POST PAINTED IN WHITE POLYESTER POWDER COAT FOR SMOOTH FINISHED EDGES AND CORROSION RESISTANCE.
- LENSE - PRIMATIC HIGH IMPACT ACRYLIC.
- LAMPS - LINEAR FLUORESCENT T8, TYPICALLY WITH WATTAGES AS INDICATED. SEE LIGHTING FIXTURE SCHEDULE.
- BALLAST - ELECTRONIC,  $\geq 10\%$  THD, INSTANT START.
- CERTIFICATION - UL LISTED FOR 25°C AMBIENT AS DESIGNATED IN LIGHTING FIXTURE SCHEDULE.
- PHOTOMETRICS - MINIMUM VALUE OF COEFFICIENT OF UTILIZATION (CU) AND EFFICIENCY, GIVEN INTERIOR CAVITY REFLECTANCES OF 80-50-20:

**ROUGH SERVICE WRAP AROUND**  
N.T.S. (TYPE 1)

**LUMINAIRE REQUIREMENTS:**

- HOUSING - DIE-CAST ALUMINUM OR HIGH-IMPACT, UV-STABILIZED, INJECTION-MOLDED THERMOPLASTIC. SINGLE OR DOUBLE-FACED AS INDICATED.
- FINISH (ON CAST ALUMINUM HOUSING ONLY) - TEXTURED POWDER COAT FINISH OPTIONS INCLUDE WHITE, WHITE WITH BRUSHED ALUMINUM FACE, BLACK, OR BLACK WITH BRUSHED ALUMINUM FACE.
- LETTERS/CHEVRONS - MINIMUM 150mm HIGH WITH 19mm STROKE. RED OR GREEN LETTERS AS INDICATED. PROVIDE CHEVRONS AS INDICATED EITHER LEFT, RIGHT OR BOTH DIRECTIONS AS INDICATED. CHEVRONS PUNCHED OUT THROUGH HOUSING AS REQUIRED.
- EMERGENCY PACK - SOLID-STATE, CONSTANT-CURRENT TYPE BATTERY CHARGER WITH MAINTENANCE-FREE, NICKEL-CADMIUM BATTERY, AC-ON INDICATOR LAMP AND TEST SWITCH.
- MOUNTING - UNIVERSAL MOUNTING KIT FOR CEILING, WALL OR END-OF-FIXTURE MOUNTING.
- ILLUMINATION - PROVIDED BY RED, GREEN OR WHITE HIGH-OUTPUT LEDS INSIDE OF FIXTURE HOUSING. PROVIDE POLYSTYRENE DIFFUSER IN COLOR INDICATED WITH FREQUENCY-MATCHED SILKSCREEN COATING FOR MAXIMUM LED LIGHT OUTPUT.
- CERTIFICATION - UL LISTED AND CERTIFIED FOR DAMP LOCATIONS.

**LED STENCIL FACE EXIT SIGN**  
N.T.S. (TYPE 20)

**LUMINAIRE REQUIREMENTS:**

- HOUSING - RUGGED, HEAVY - DUTY POLYCARBONATE, SEALED, GASKETED AND CORROSION RESISTANT. NEMA 4 RATED.
- INTERNAL COMPONENTS - FULLY AUTOMATIC, SOLID STATE, CONSTANT VOLTAGE, CURRENT-LIMITED BATTERY CHARGER; MAINTENANCE-FREE LEAD-ACID BATTERY; AND BUILT-IN OVERLOAD PROTECTION; TIME-DELAY.
- FACEPLATE INDICATORS - LED AC-ON INDICATOR AND INTEGRAL TEST SWITCH.
- LAMP HEADS - UL FLAME RATED THERMOPLASTIC; FULLY ADJUSTABLE HORIZONTALLY AND VERTICALLY. SEALED BEAM, PAR 36 HALOGEN LAMPS SHALL BE 12 WATTS OR AS INDICATED IN LIGHTING FIXTURE SCHEDULE.
- MOUNTING - DIRECTLY TO WALL USING MOUNTING HOLES IN REAR OF CABINET, ACCESSORY WALL BRACKETS, OR MOUNTING SHELF.
- CERTIFICATION - UL LISTED AND LABELED. COMPLIES WITH UL 924 AND NFPA 101 REQUIREMENTS.

**EMERGENCY LIGHTING UNIT**  
N.T.S. (TYPE 32)

**TYPE A - TWIN ROUND SWIVEL HEAD**

**REQUIREMENTS:**

- LAMPS SHALL BE COMPATIBLE WITH PRIMARY POWER SOURCE USED.
- FIXTURE HOUSING AND FINISH SHALL BE AS SPECIFIED IN LIGHTING FIXTURE SCHEDULE.

**EM DOUBLE HEAD**  
N.T.S. (TYPE 31)

**LUMINAIRE REQUIREMENTS:**

- HOUSING - HEAVY-GAUGE STEEL WITH BAKED-ON DARK BROWN ENAMEL FINISH. ACCESS INTO TOP OF FIXTURE BY FULL PIANO HINGE COVER. NON-METALLIC HOUSING OPTIONAL AS INDICATED.
- INTERNAL COMPONENTS - FULLY AUTOMATIC, SOLID STATE, CONSTANT VOLTAGE, CURRENT-LIMITED BATTERY CHARGER; MAINTENANCE-FREE LEAD-ACID BATTERY; AND BUILT-IN OVERLOAD PROTECTION; TIME-DELAY.
- FACEPLATE INDICATORS - LED AC-ON INDICATOR AND INTEGRAL TEST SWITCH.
- LAMP HEADS - UL FLAME RATED THERMOPLASTIC; FULLY ADJUSTABLE HORIZONTALLY AND VERTICALLY. SEALED BEAM, PAR 36 HALOGEN LAMPS SHALL BE 12 WATTS OR AS INDICATED IN LIGHTING FIXTURE SCHEDULE.
- MOUNTING - DIRECTLY TO WALL USING MOUNTING HOLES IN REAR OF CABINET, ACCESSORY WALL BRACKETS, OR MOUNTING SHELF.
- CERTIFICATION - UL LISTED AND LABELED. COMPLIES WITH UL 924 AND NFPA 101 REQUIREMENTS.
- OPTIONS - VOLTMETER, AMMETER, THREE-CONDUCTOR CORD SET, OR WIRE GUARD.

**EMERGENCY LIGHTING UNIT**  
N.T.S. (TYPE 30)

**LUMINAIRE REQUIREMENTS:**

- HOUSING - ONE-PIECE, DIE-CAST ALUMINUM WITH BAKED-ON POLYESTER POWDER COAT FINISH IN BLACK.
- DIFFUSER - CLEAR PRISMATIC, UV-STABILIZED, INJECTION-MOLDED POLYCARBONATE WITH MINIMUM 3mm THICKNESS. DIFFUSER SECURED WITH TAMPER-RESISTANT STAINLESS STEEL SCREWS.
- GASKET - ONE-PIECE, CLOSED-CELL NEOPRENE TO DISCOURAGE MOISTURE, INSECTS AND DEBRIS.
- CERTIFICATION - UL LISTED AND LABELED FOR WET LOCATIONS.
- FIXTURE TYPE - COMPACT FLUORESCENT (42 TRT WATT), 120 VOLT AC, 60HZ.
- DIMENSIONS - FIXTURE DIMENSIONS ARE APPROXIMATELY 165mm WIDE X 279mm TALL X 133mm DEEP.
- INTEGRAL PHOTO CELL CONTROL

**SMALL WALL PACK (TYPE 41)**  
N.T.S. (TYPE 41)

**LUMINAIRE REQUIREMENTS:**

- HOUSING - ONE-PIECE, DIE-CAST ALUMINUM WITH BAKED-ON POLYESTER POWDER COAT FINISH IN BLACK.
- DIFFUSER - CLEAR PRISMATIC, UV-STABILIZED, INJECTION-MOLDED POLYCARBONATE WITH MINIMUM 3mm THICKNESS. DIFFUSER SECURED WITH TAMPER-RESISTANT STAINLESS STEEL SCREWS. BLACK HORIZONTAL FRONT EYELID FOR CUTOFF.
- GASKET - ONE-PIECE, CLOSED-CELL NEOPRENE TO DISCOURAGE MOISTURE, INSECTS AND DEBRIS.
- CERTIFICATION - UL LISTED AND LABELED FOR WET LOCATIONS.
- FIXTURE TYPE - METAL HALIDE (150 WATT)
- DIMENSIONS - FIXTURE DIMENSIONS ARE APPROXIMATELY 216mm WIDE X 150mm TALL X 190mm DEEP.
- INTEGRAL PHOTO CELL CONTROL

**WALL PACK**  
N.T.S. (TYPE 40)

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

CORRECTED FINAL DESIGN SUBMITTAL

REV	DATE	DESCRIPTION
0	09/15/10	KCT CORRECTED FINAL DESIGN SUBMITTAL
B	09/02/10	KCT FINAL DESIGN SUBMITTAL
A	08/13/10	KCT MID-POINT DESIGN SUBMITTAL

DESIGNED BY:	JAS	DATE:	09/15/10
DRAWN BY:	SES	SUBMITTED BY:	TETRA TECH
CHECKED BY:	KCT	FILE NO.:	AF1081A-EL203DT

US Army Corps of Engineers  
Middle East District

TETRA TECH

AUSTERE STANDARD DESIGNS - PHASE 4  
FY11 BARRACKS - PN74127-CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

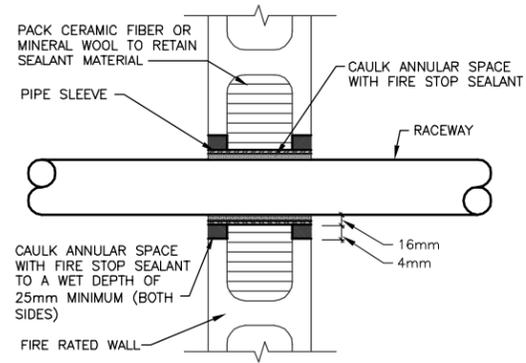
LIGHTING DETAILS

SHEET REFERENCE NUMBER:  
AF1081A  
E-203

THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.

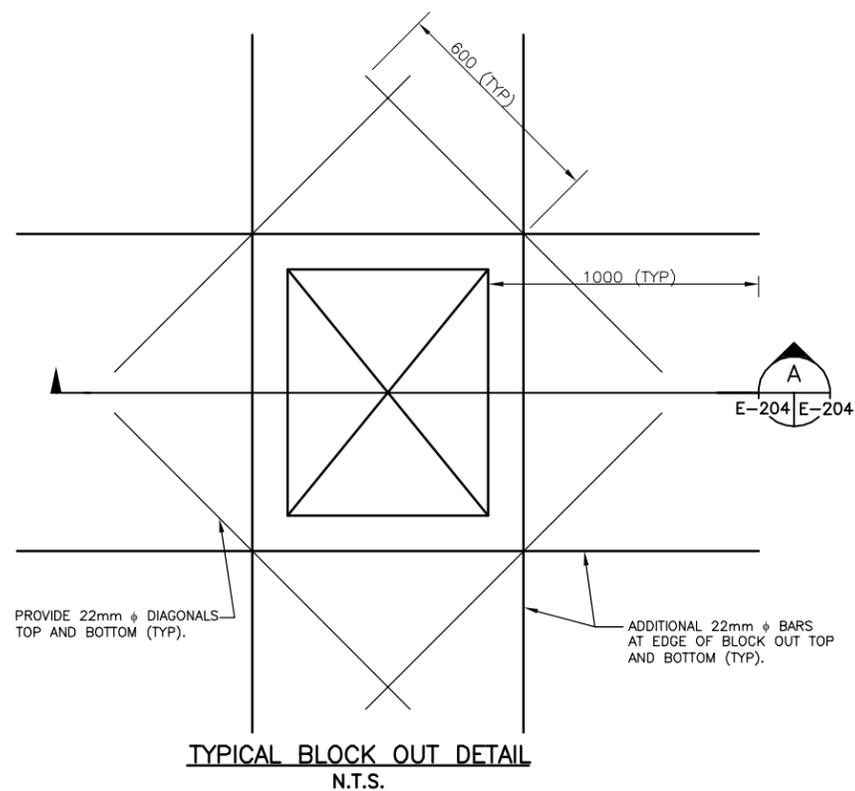
9/15/10

W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\07\_Electrical\AF1081A-EL204DT.dwg 10/14/2010 11:53:25 AM Barrett, Patrick

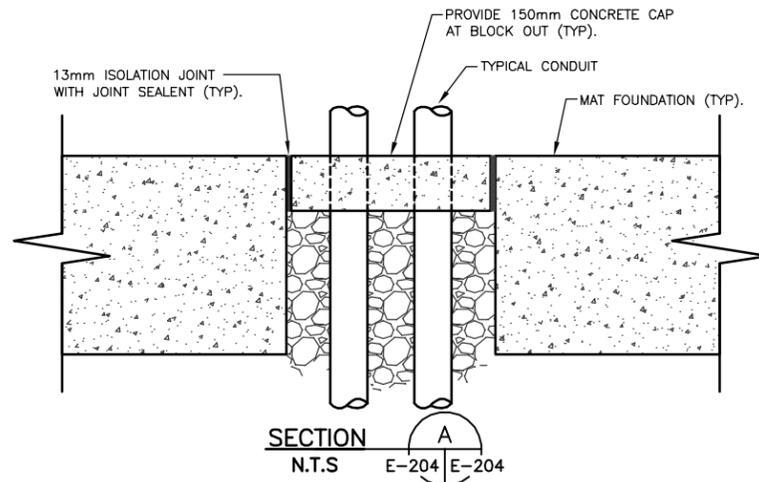


**FIRE RATED (1 HOUR) CMU WALL PENETRATION DETAIL**

N.T.S. E-100,E-101,E-102,E-103 E-204



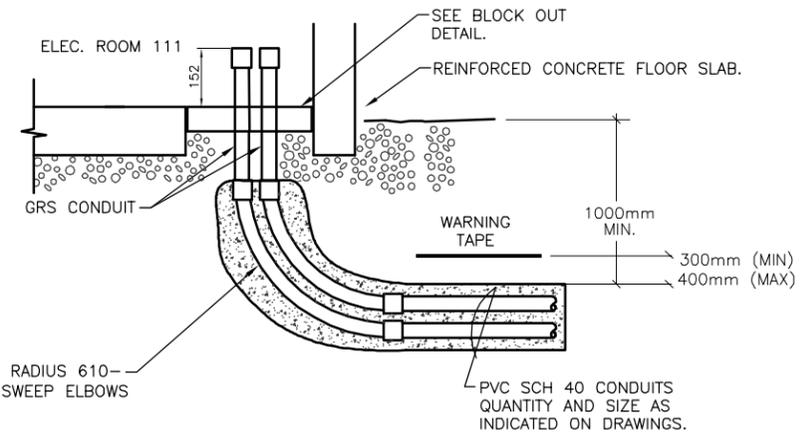
**TYPICAL BLOCK OUT DETAIL**



**SECTION**

N.T.S. E-204 E-204

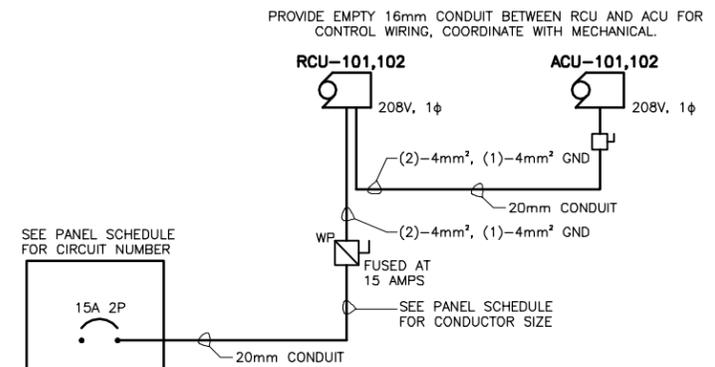
UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.



**FRONT ELEVATION**

**SECONDARY SERVICE ELEVATION**

N.T.S. E-102 E-204



**TYPICAL ACU, RCU WIRING DIAGRAM**

N.T.S. E-104 E-204

CORRECTED FINAL DESIGN SUBMITTAL

SYMB	DESCRIPTION	DATE	APP
D	CORRECTED FINAL DESIGN SUBMITTAL	09/15/10	KCT
B	FINAL DESIGN SUBMITTAL	09/02/10	KCT
A	MID-POINT DESIGN SUBMITTAL	08/13/10	KCT

DESIGNED BY:	JAS	DATE:	09/15/10
DRAWN BY:	SES	SUBMITTED BY:	TETRA TECH
CHECKED BY:	KCT	FILE NO.:	AF1081A-EL204DT

US Army Corps of Engineers  
Middle East District

TETRA TECH

THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.

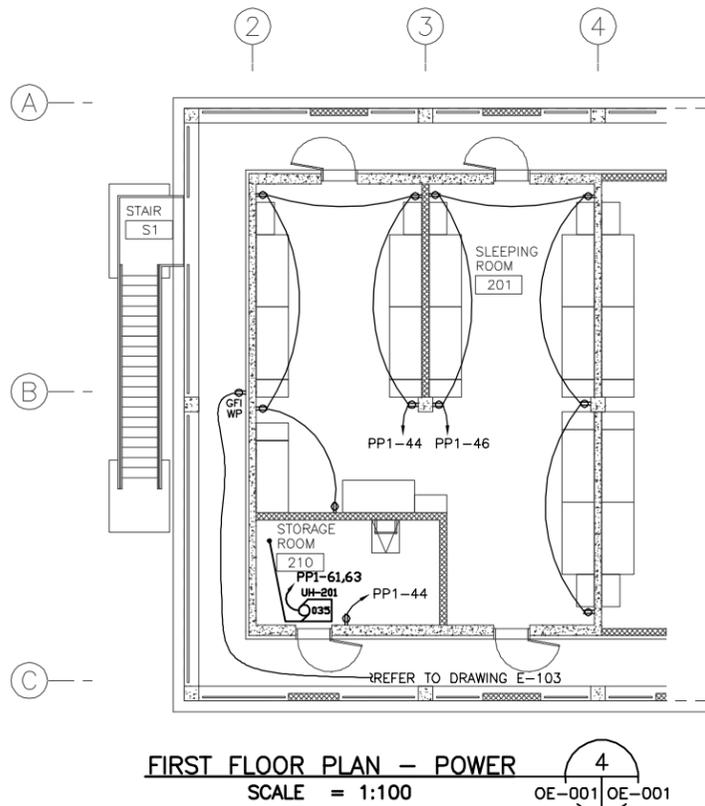
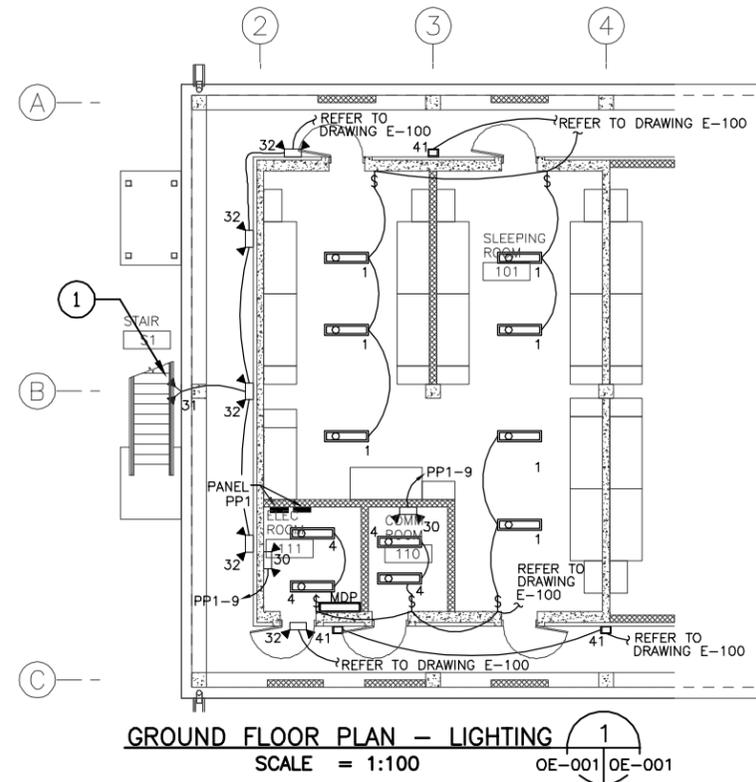
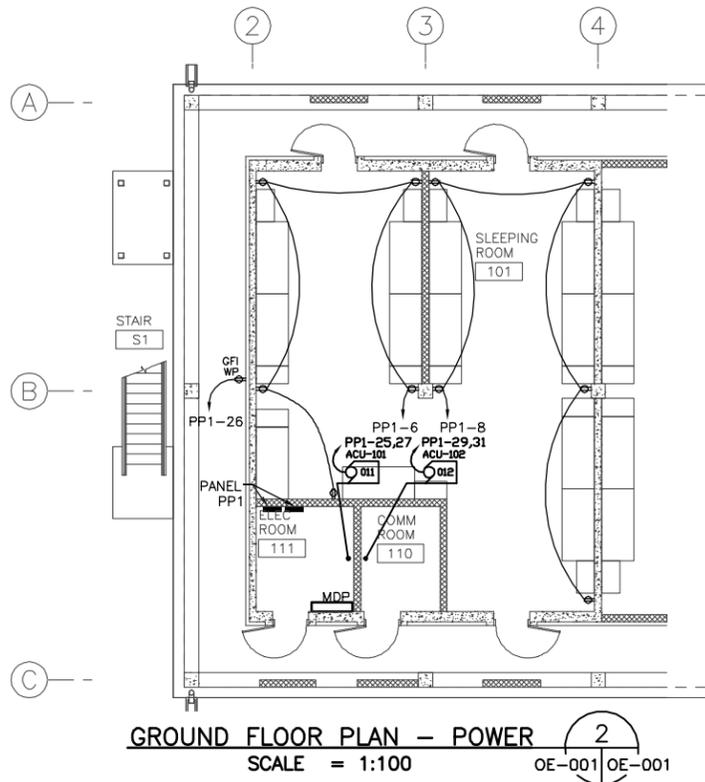
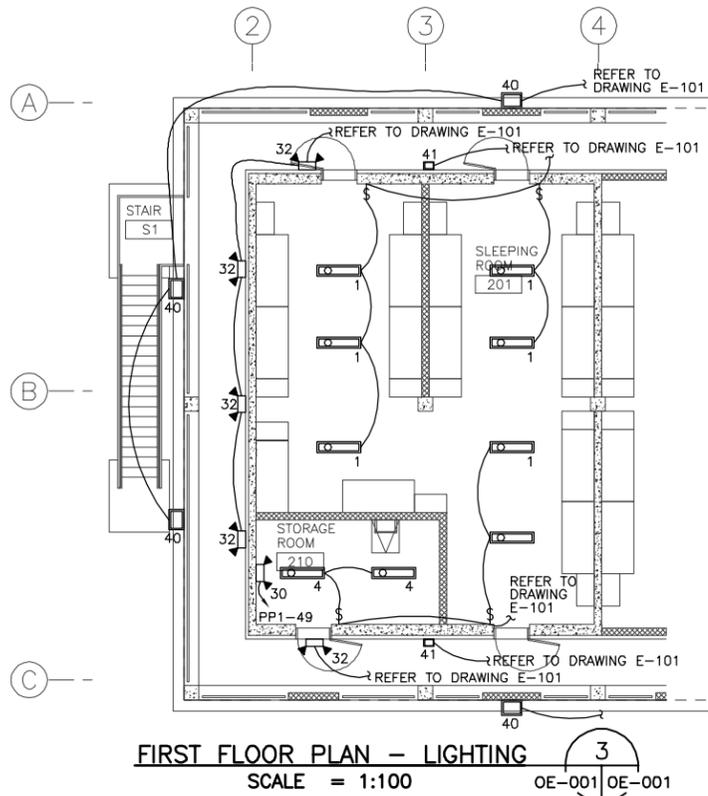


AUSTERE STANDARD DESIGNS - PHASE 4  
FY11 BARRACKS - PN74127-CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

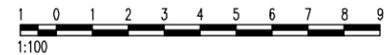
ELECTRICAL DETAILS

SHEET REFERENCE NUMBER:  
**AF1081A E-204**

W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\11\_LatOption\AF1081A-DELO01PN.dwg 10/14/2010 12:42:36 PM Barret, Patrick



① (2)-4mm<sup>2</sup> IN 20mm CONDUIT (DC) TYPICAL FOR ALL REMOTE HEADS.



THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



CORRECTED  
FINAL  
DESIGN  
SUBMITTAL

SYMB	DESCRIPTION	DATE	APP
D	CORRECTED FINAL DESIGN SUBMITTAL	09/15/10	KCT
B	FINAL DESIGN SUBMITTAL	09/02/10	KCT
A	MID-POINT DESIGN SUBMITTAL	08/13/10	KCT

DESIGNED BY:	JAS	DATE:	09/15/10
DRAWN BY:	SES	SUBMITTED BY:	TETRA TECH
CHECKED BY:	KCT	FILE NO.:	AF1081A-DELO01PN

**US Army Corps of Engineers**  
Middle East District

**TETRA TECH**

AUSTERE STANDARD DESIGNS - PHASE 4  
FY11 BARRACKS - PN74127-CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

GROUND FLOOR AND FIRST FLOOR  
LIGHTING AND POWER PLANS

SHEET  
REFERENCE  
NUMBER:  
**AF1081A  
OE-001**

UNLESS OTHERWISE NOTED, ALL  
DIMENSIONS SHOWN ARE IN MILLIMETERS.

W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\_05\_Mechanical\AF1081A-MH001GN.dwg 10/14/2010 11:40:29 AM Barrett, Patrick

CORRECTED  
FINAL  
DESIGN  
SUBMITTAL

**DUCTWORK LEGEND**

SYMBOL	DESCRIPTION
	DUCTWORK. FIRST FIGURE IS SIZE OF SIDE IN VIEW.
	DUCT OFFSET RISE IN DIRECTION OF FLOW
	DUCT OFFSET DROP IN DIRECTION OF FLOW
	FLEXIBLE CONNECTION
	CURVED ELBOW, MIN. R=1.5 WIDTH
	90° ELBOW WITH TURNING VANES
	MANUAL VOLUME DAMPER
	SUPPLY AIR DUCT IN SECTION (POSITIVE PRESSURE)
	RETURN, EXHAUST OR OUTSIDE AIR DUCT IN SECTION
	RETURN OR EXHAUST AIR GRILLE
	RETURN OR EXHAUST AIR REGISTER W/ VOLUME DAMPER
	FIRE DAMPER

**EQUIPMENT SYMBOLS**

SYMBOL	DESCRIPTION
	EXHAUST REGISTER
	BACKDRAFT OR BAROMETRIC DAMPER
	SUPPLY REGISTER
	INLINE EXHAUST FAN (CENTRIFUGAL TYPE)
	THERMOSTAT
	DUCT SMOKE DETECTOR

**PIPING LEGEND**

SYMBOL	DESCRIPTION
COND	CONDENSATE
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
	PIPE UP
	PIPE DOWN

**ABBREVIATIONS**

A.F.F.	ABOVE FINISHED FLOOR
ALUM	ALUMINUM
CMH	CUBIC METERS PER HOUR
M <sup>3</sup> /HR	CUBIC METERS PER HOUR
FD	FIRE DAMPER
GA	GAUGE
KW	KILOWATT
MAX	MAXIMUM
MIN	MINIMUM
mm	MILLIMETER
MPM	METERS PER MINUTE
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER ON CENTER
O.C.	ON CENTER
EA	EXHAUST AIR
RA	RETURN AIR
SA	SUPPLY AIR
SPEC	SPECIFICATION
S.M.	SQUARE METERS
TYP	TYPICAL
VD	VOLUME DAMPER
WG	WATER GAUGE
WWM	WELDED WIRE MESH

**GENERAL NOTES**

- SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF LOUVERS, DIFFUSERS, REGISTERS, AND GRILLES.
  - ALL DUCT DIMENSIONS SHOWN ON THE DRAWINGS ARE CLEAR INSIDE DIMENSIONS.
  - PROVIDE SUPPORT OF MECHANICAL SYSTEMS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.
  - ALL DIMENSIONS AND CAPACITIES SHOWN IN METRIC UNITS UNLESS OTHERWISE NOTED.
  - EXTERIOR ENVIRONMENTAL DESIGN CONDITIONS:**  
SUMMER: 50.0°C(122°F)db; 21.1°C(70°F)wb  
WINTER: -17.8°C(0°F)
  - INTERIOR DESIGN CONDITIONS:**  
**SLEEPING QUARTERS:**  
SUMMER: 23.9°C(75°F)db  
WINTER: 21.1°C(70°F)db  
**COMMUNICATIONS/ELECTRIC ROOMS:**  
SUMMER: 23.9°C(75°F)db  
WINTER: 23.9°C(75°F)db  
**LATRINE FACILITY:**  
SUMMER: VENTILATION PROVIDED  
WINTER: 20.0°C(68°F)db
  - TYPICAL DETAILS ON SHEETS M-201 AND M-202.
  - PROVIDE SEISMIC RESTRAINTS AS REQUIRED BY SPECIFICATION.
  - CONTROL SEQUENCES AND EQUIPMENT SCHEDULES ARE ON SHEETS M-203.
  - INSULATE ALL SUPPLY AND RETURN DUCTS AS WELL AS PROVIDE WEATHERPROOF COVERING ON ALL EXTERIOR DUCTS PER SPECIFICATION 23 07 00.
- NOT CONSTRUCTING THE LATRINE SHALL BE CONSIDERED A CONSTRUCTION OPTION. IF THE BUILDING IS CONSTRUCTED PER THE "LATRINE DELETION OPTION", THE PORTION OF THE BUILDING BETWEEN COLUMN LINES 1 AND 2 WILL NOT BE CONSTRUCTED. SEE ALSO ARCHITECTURAL AND STRUCTURAL DRAWINGS.

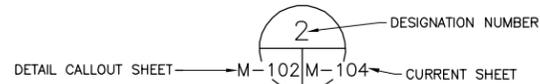
NO.	DESCRIPTION	DATE	BY
0	CORRECTED FINAL DESIGN SUBMITTAL	09/15/10	KCT
B	FINAL DESIGN SUBMITTAL	09/02/10	KCT
A	MID-POINT DESIGN SUBMITTAL	08/13/10	KCT

DESIGNED BY:	SRZ	DATE:	09/15/10
DRAWN BY:	RRS	SUBMITTED BY:	TETRA TECH
CHECKED BY:	KCT	FILE NO.:	AF1081A-MH001GN

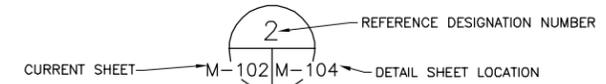
US Army Corps of Engineers  
Middle East District

TETRA TECH

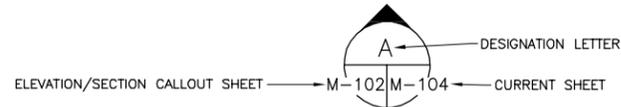
**DETAIL TITLE**



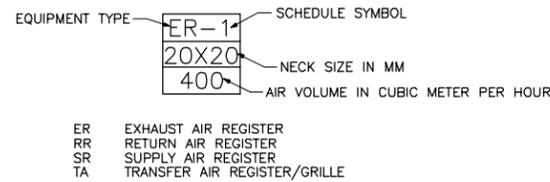
**DETAIL CALLOUT**



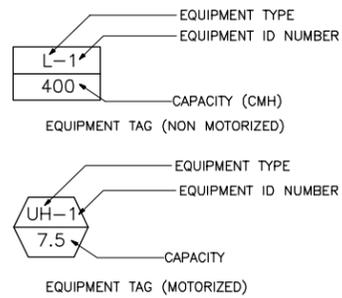
**ELEVATION/SECTION CALLOUT**



**AIR REGISTER DESIGNATION**



**EQUIPMENT DESIGNATION**



ACU	AIR CONDITIONING UNIT (CAPACITY IN KW-COOLING)
EF	EXHAUST FAN
L	LOUVER
UH	UNIT HEATER (CAPACITY IN KW-HEATING)
RCU	REMOTE CONDENSING UNIT (CAPACITY IN KW-COOLING)
AHU	AIR HANDLING UNIT

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.

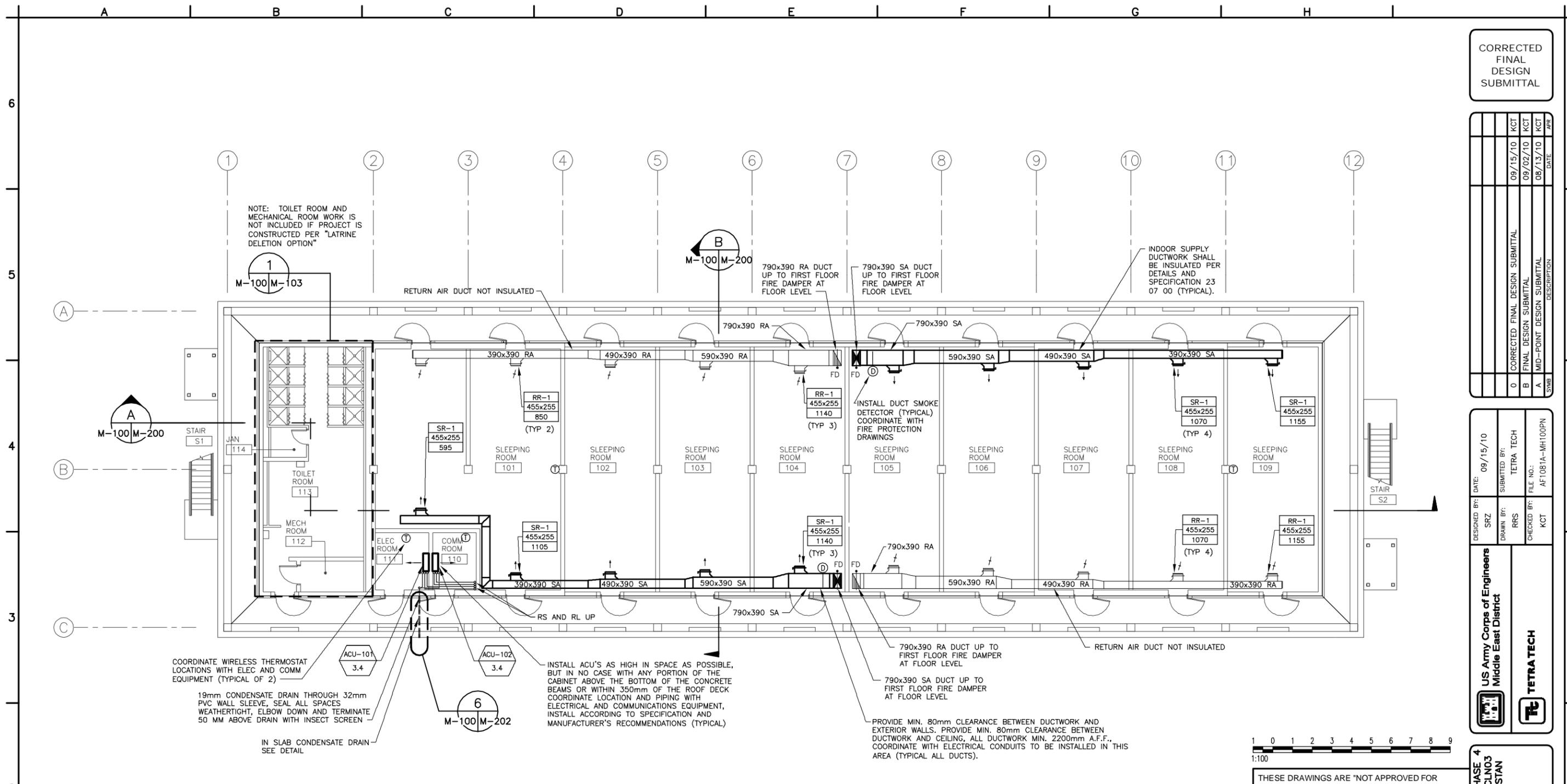


AUSTERE STANDARD DESIGNS - PHASE 4  
FY11 BARRACKS - PN74127-CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

MECHANICAL SYMBOLS,  
ABBREVIATIONS, LEGEND  
AND GENERAL NOTES

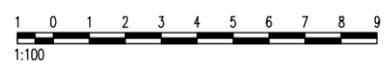
SHEET REFERENCE NUMBER:  
**AF1081A  
M-001**

W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\05\_Mechanical\AF1081A-MH100PN.dwg 10/14/2010 11:40:41 AM Barrett, Patrick



**GROUND FLOOR PLAN**  
SCALE 1:100

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.



THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



CORRECTED FINAL DESIGN SUBMITTAL

SYMB	DESCRIPTION	DATE	APP
0	CORRECTED FINAL DESIGN SUBMITTAL	09/15/10	KCT
B	FINAL DESIGN SUBMITTAL	09/02/10	KCT
A	MID-POINT DESIGN SUBMITTAL	08/13/10	KCT

DESIGNED BY:	DATE:	09/15/10
SRZ	SUBMITTED BY:	TETRA TECH
RRS	FILE NO.:	AF1081A-MH100PN
KCT		

**US Army Corps of Engineers**  
Middle East District

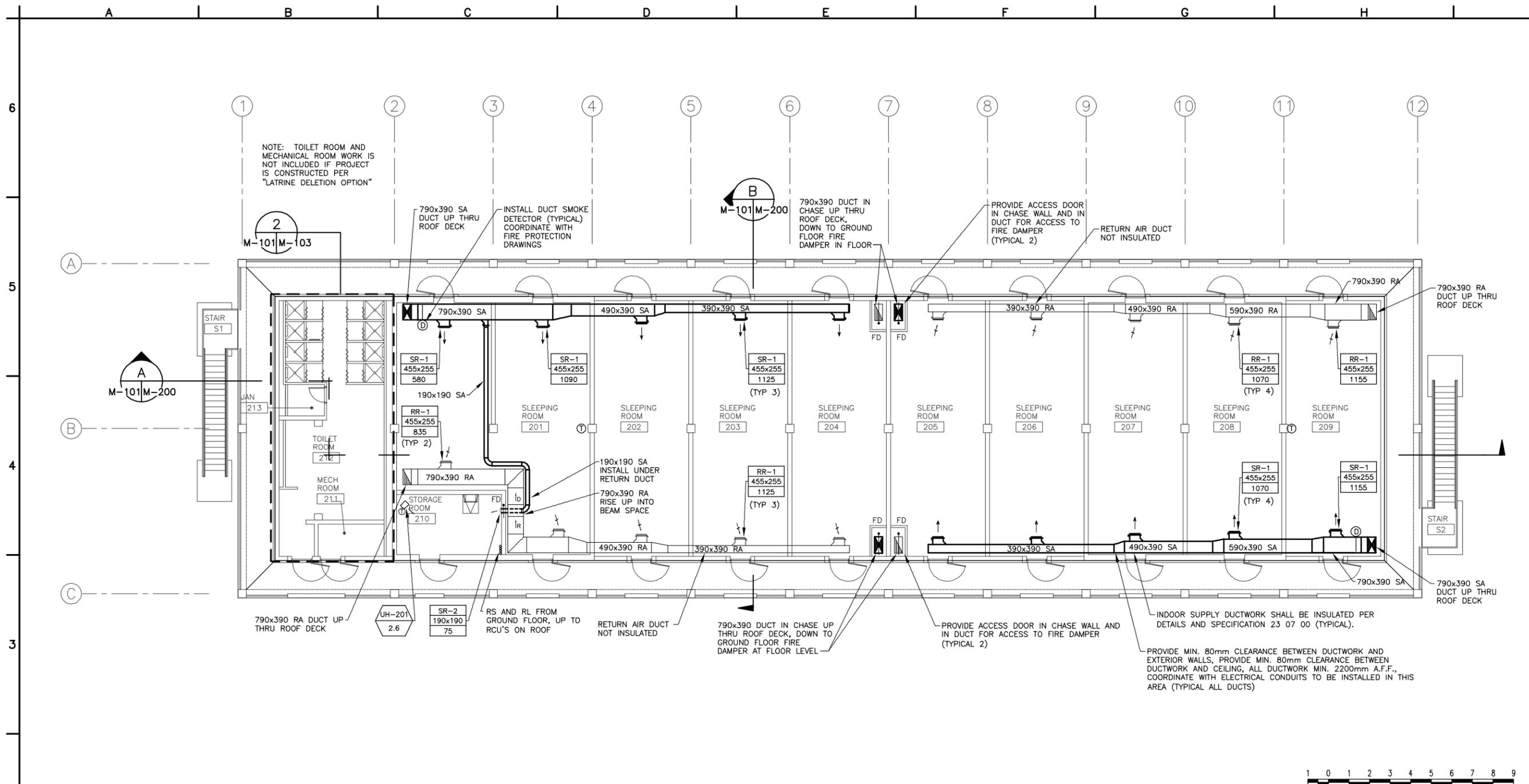
**TETRA TECH**

AUSTERE STANDARD DESIGNS - PHASE 4  
FY11 BARRACKS - PN74127-CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

GROUND FLOOR MECHANICAL PLAN

SHEET REFERENCE NUMBER:  
**AF1081A**  
**M-100**

W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\05\_Mechanical\AF1081A-MH101PN.dwg 10/14/2010 11:40:52 AM Barrett, Patrick



**FIRST FLOOR PLAN**  
SCALE 1:100

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

CORRECTED FINAL DESIGN SUBMITTAL

SYMB	DESCRIPTION	DATE	APP
0	CORRECTED FINAL DESIGN SUBMITTAL	09/15/10	KCT
B	FINAL DESIGN SUBMITTAL	09/02/10	KCT
A	MID-POINT DESIGN SUBMITTAL	08/13/10	KCT

DESIGNED BY:	SRZ	DATE:	09/15/10
DRAWN BY:	RRS	SUBMITTED BY:	TETRA TECH
CHECKED BY:	KCT	FILE NO.:	AF1081A-MH101PN

**US Army Corps of Engineers**  
Middle East District

**TETRA TECH**



THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



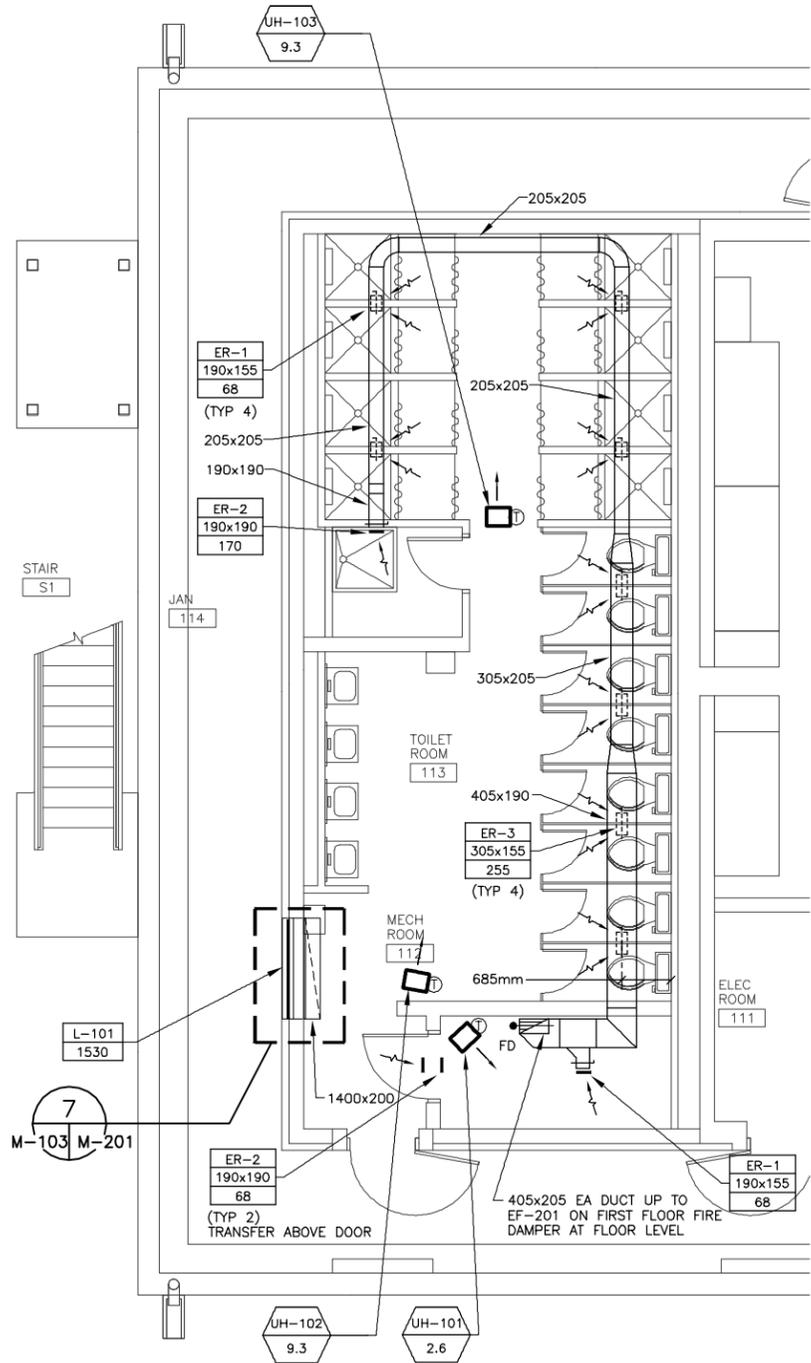
AUSTERE STANDARD DESIGNS - PHASE 4  
FY11 BARRACKS - PN74127 - CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

FIRST FLOOR  
MECHANICAL PLAN

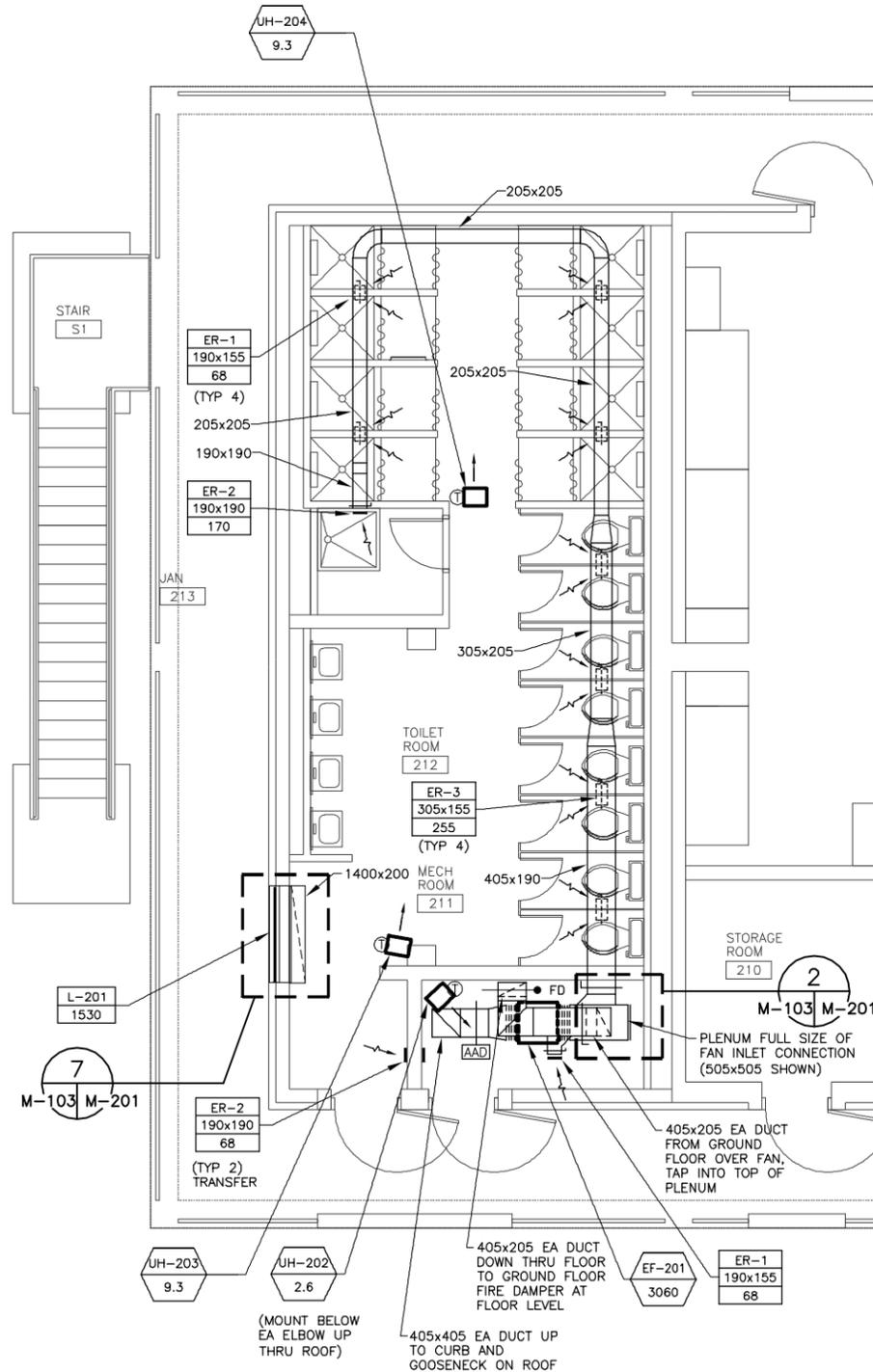
SHEET REFERENCE NUMBER:  
**AF1081A**  
**M-101**



W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\_05\_Mechanical\AF1081A-MH103LS.dwg 10/14/2010 11:41:14 AM Barrett, Patrick



**GROUND FLOOR LATRINE PLAN** (1)  
SCALE 1:50 M-100 M-103



**FIRST FLOOR LATRINE PLAN** (2)  
SCALE 1:50 M-101 M-103

NOTE: ALL WORK SHOWN ON THIS DRAWING IS NOT INCLUDED IF PROJECT IS CONSTRUCTED PER "LATRINE DELETION OPTION"

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.



THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



CORRECTED FINAL DESIGN SUBMITTAL

SYMB	DESCRIPTION	DATE	APP
0	CORRECTED FINAL DESIGN SUBMITTAL	09/15/10	KCT
B	FINAL DESIGN SUBMITTAL	09/02/10	KCT
A	MID-POINT DESIGN SUBMITTAL	08/13/10	KCT

DESIGNED BY:	DATE:	09/15/10
SRZ	SUBMITTED BY:	TETRA TECH
DRAWN BY:	RRS	FILE NO.:
CHECKED BY:	KCT	AF1081A-MH103LS

US Army Corps of Engineers  
Middle East District



TETRA TECH

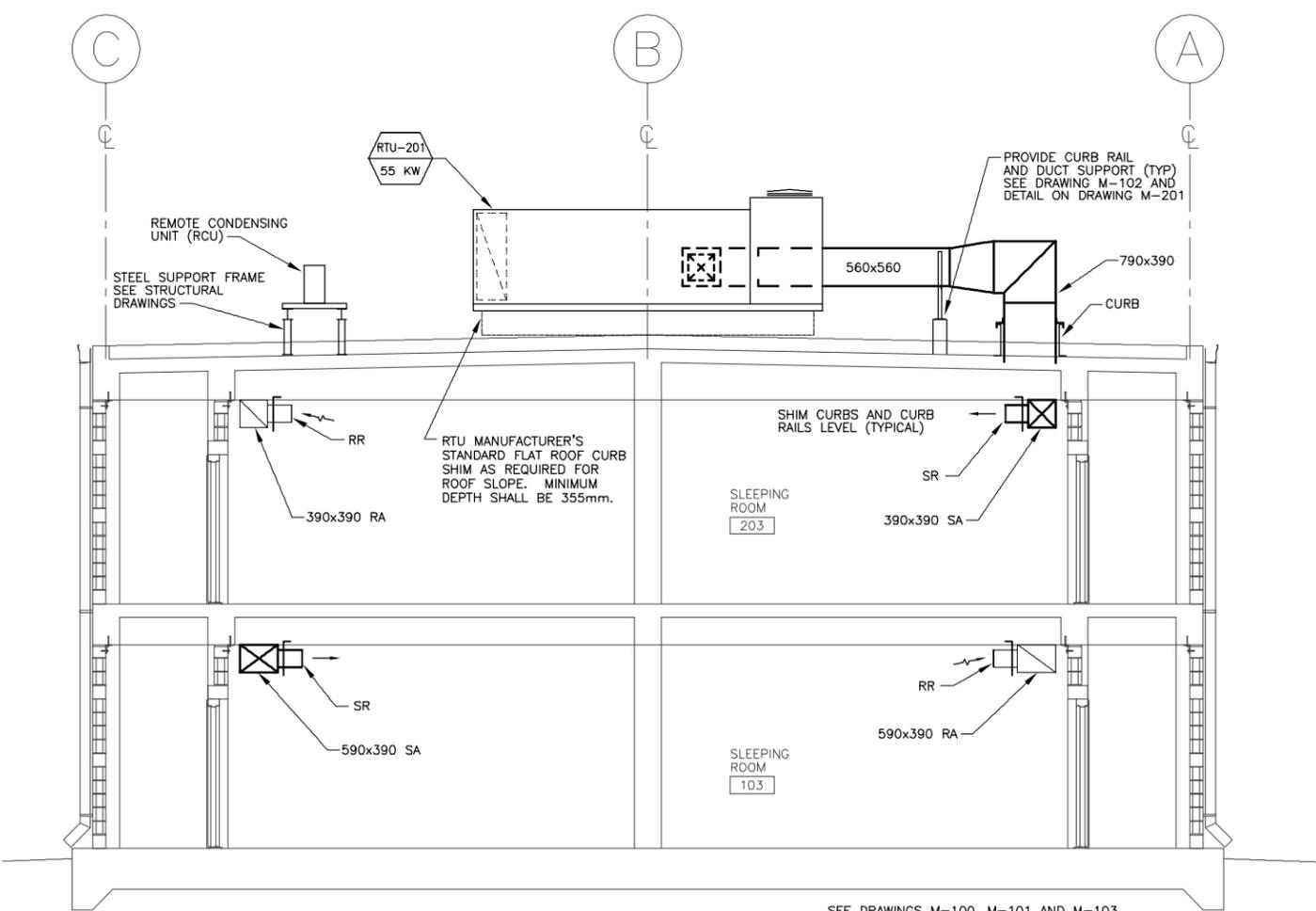
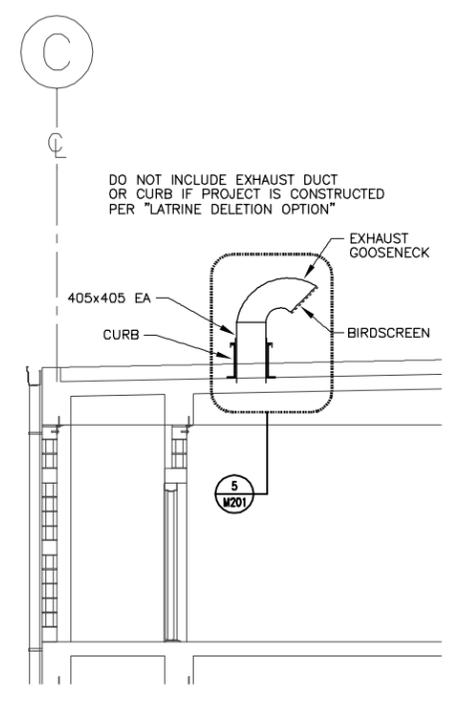
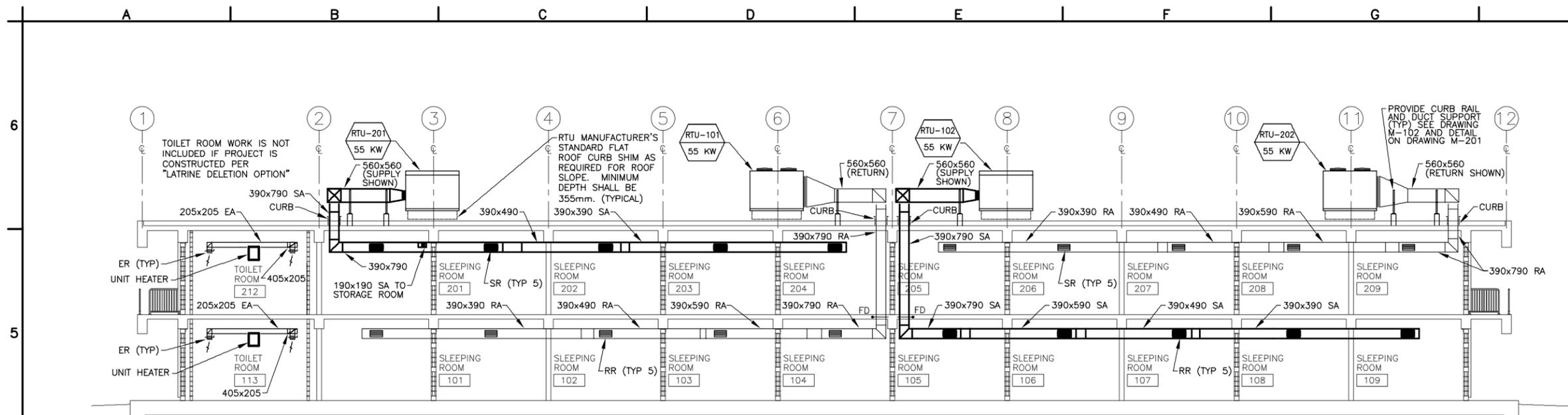


AUSTERE STANDARD DESIGNS - PHASE 4  
FY11 BARRACKS - PN74127-CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

ENLARGED MECHANICAL PLANS  
LATRINE AREA

SHEET REFERENCE NUMBER:  
**AF1081A**  
**M-103**

W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\05\_Mechanical\AF1081A-MH200EL.dwg 10/14/2010 11:41:22 AM Barretti, Patrick



THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



CORRECTED FINAL DESIGN SUBMITTAL

SYMB	DESCRIPTION	DATE	APP
0	CORRECTED FINAL DESIGN SUBMITTAL	09/15/10	KCT
B	FINAL DESIGN SUBMITTAL	09/02/10	KCT
A	MID-POINT DESIGN SUBMITTAL	08/13/10	KCT

DESIGNED BY:	SRZ	DATE:	09/15/10
DRAWN BY:	RRS	SUBMITTED BY:	TETRA TECH
CHECKED BY:	KCT	FILE NO.:	AF1081A-MH200EL

**US Army Corps of Engineers**  
Middle East District

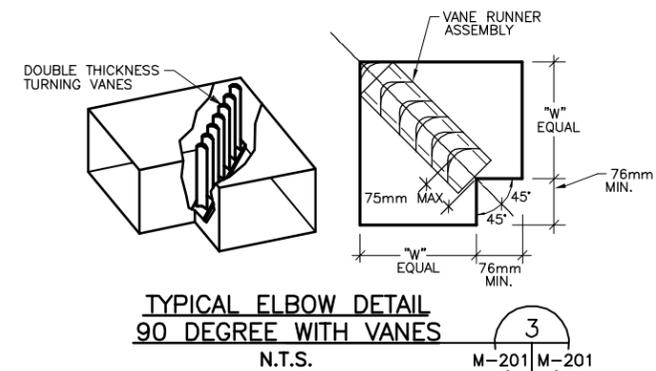
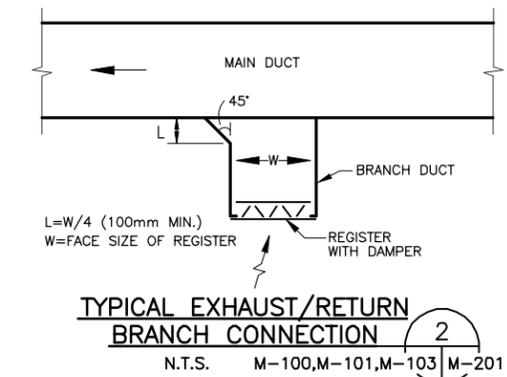
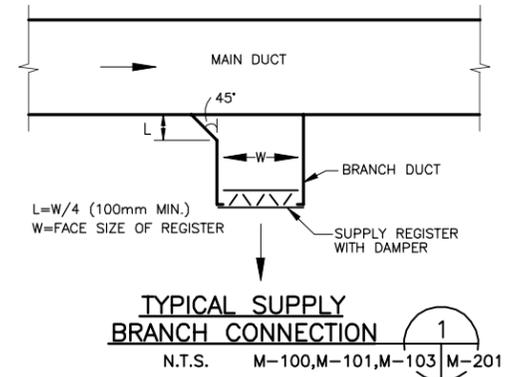
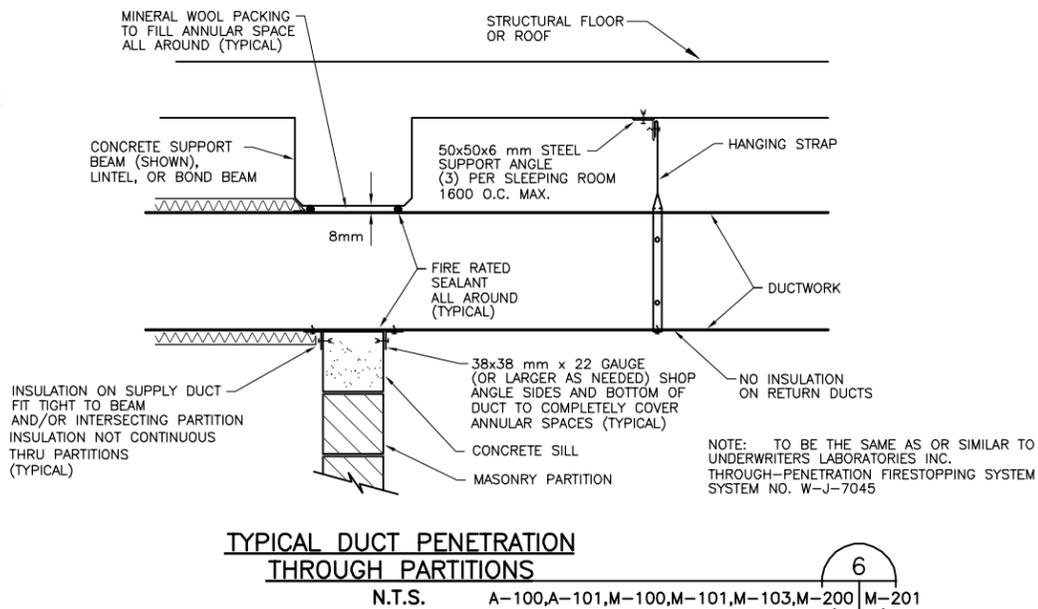
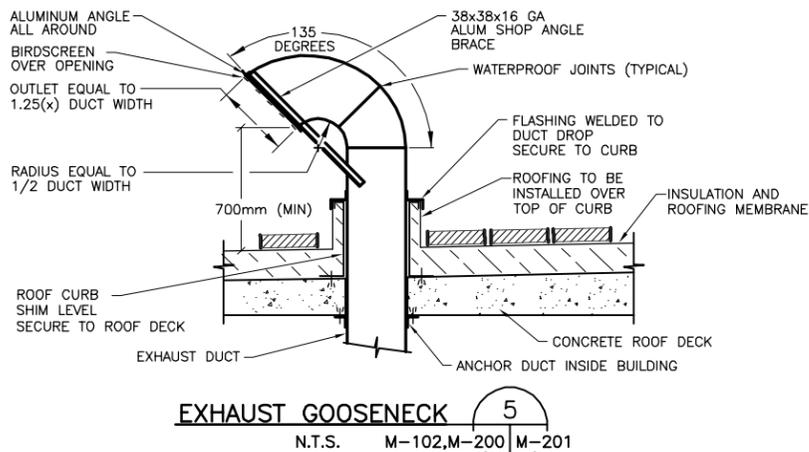
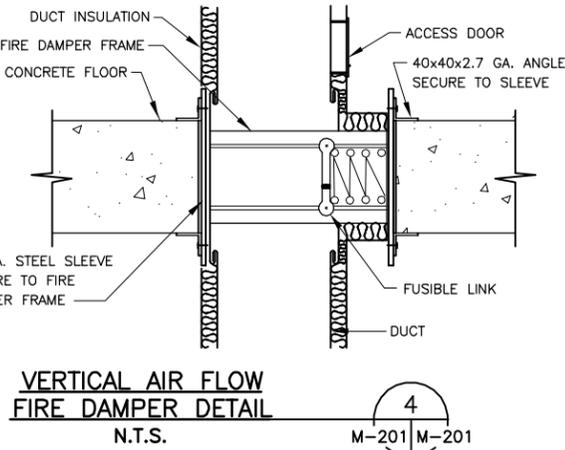
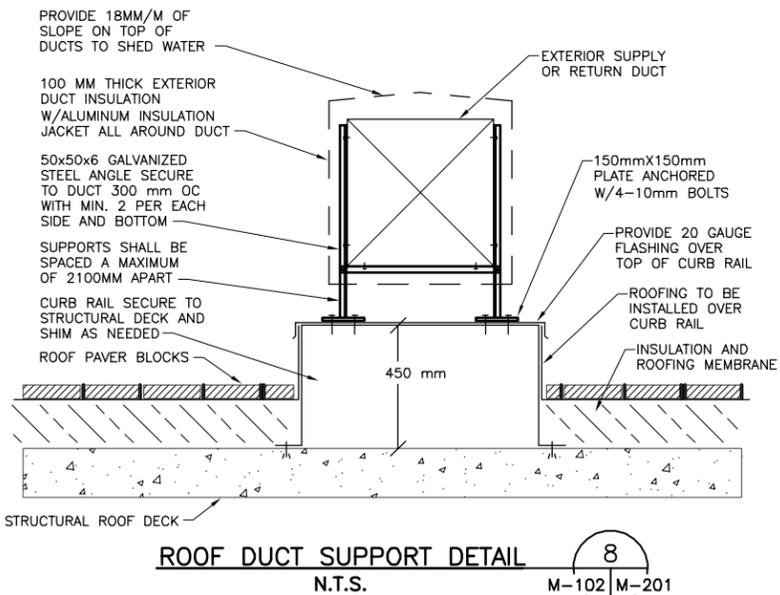
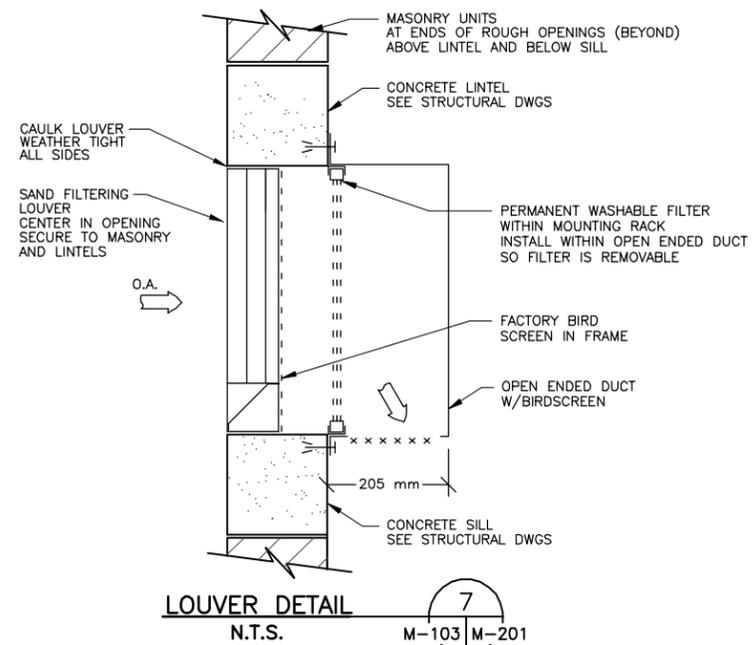
**TETRA TECH**

AUSTERE STANDARD DESIGNS - PHASE 4  
FY11 BARRACKS - PN74127 - CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

MECHANICAL SECTIONS AND ELEVATIONS

SHEET REFERENCE NUMBER:  
**AF1081A M-200**

W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\_05\_Mechanical\AF1081A-MH201DT.dwg 10/14/2010 11:41:30 AM Barrett, Patrick



CORRECTED  
FINAL  
DESIGN  
SUBMITTAL

SYMBOL	DESCRIPTION	DATE	BY
0	CORRECTED FINAL DESIGN SUBMITTAL	09/15/10	KCT
B	FINAL DESIGN SUBMITTAL	09/02/10	KCT
A	MID-POINT DESIGN SUBMITTAL	08/13/10	KCT

DESIGNED BY:	DATE:	09/15/10
SRZ	SUBMITTED BY:	TETRA TECH
DRN BY:	RRS	FILE NO.:
		AF1081A-MH201DT
		KCT

**US Army Corps of Engineers**  
Middle East District

**TETRA TECH**

THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



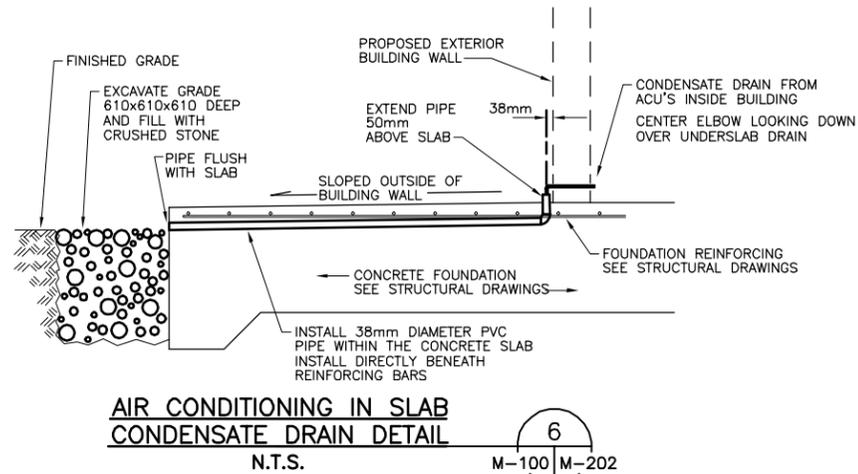
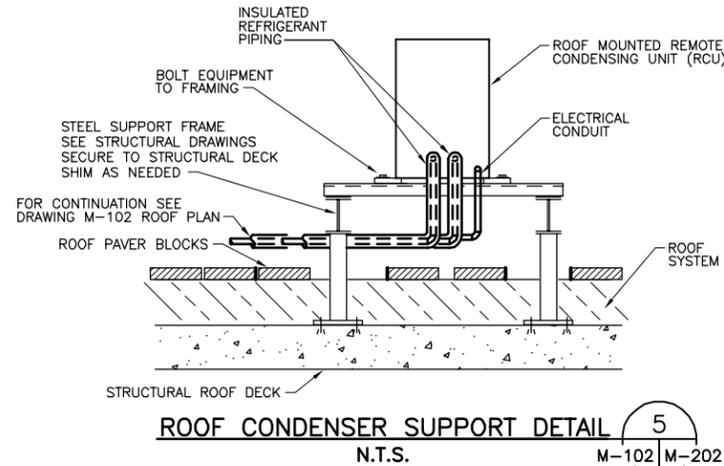
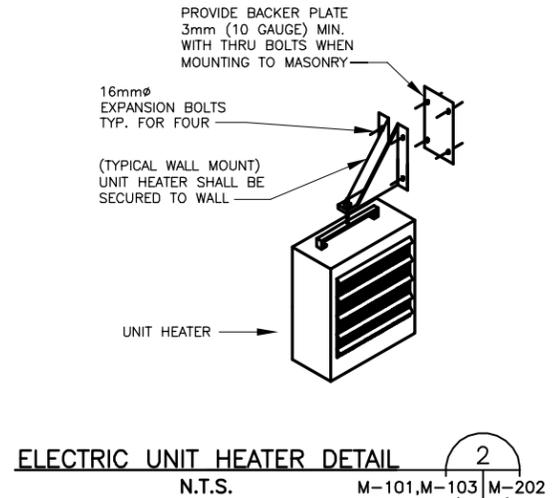
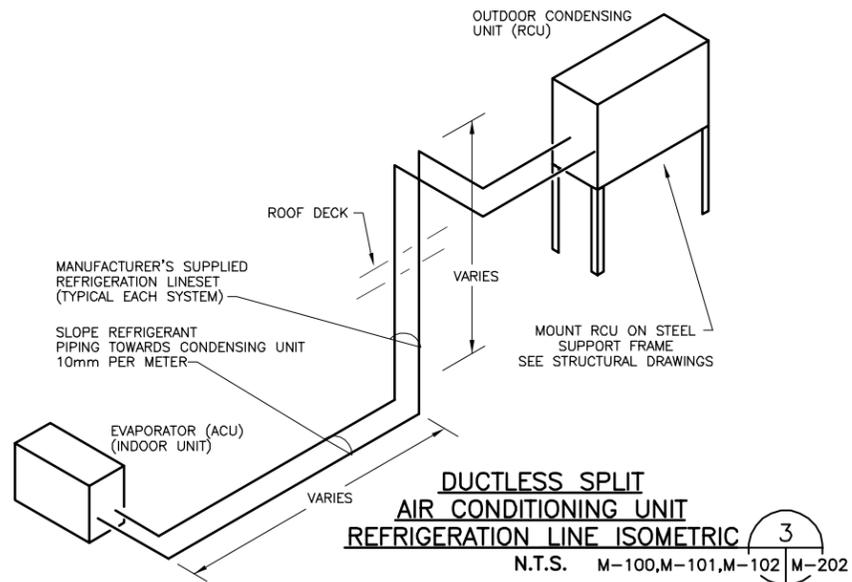
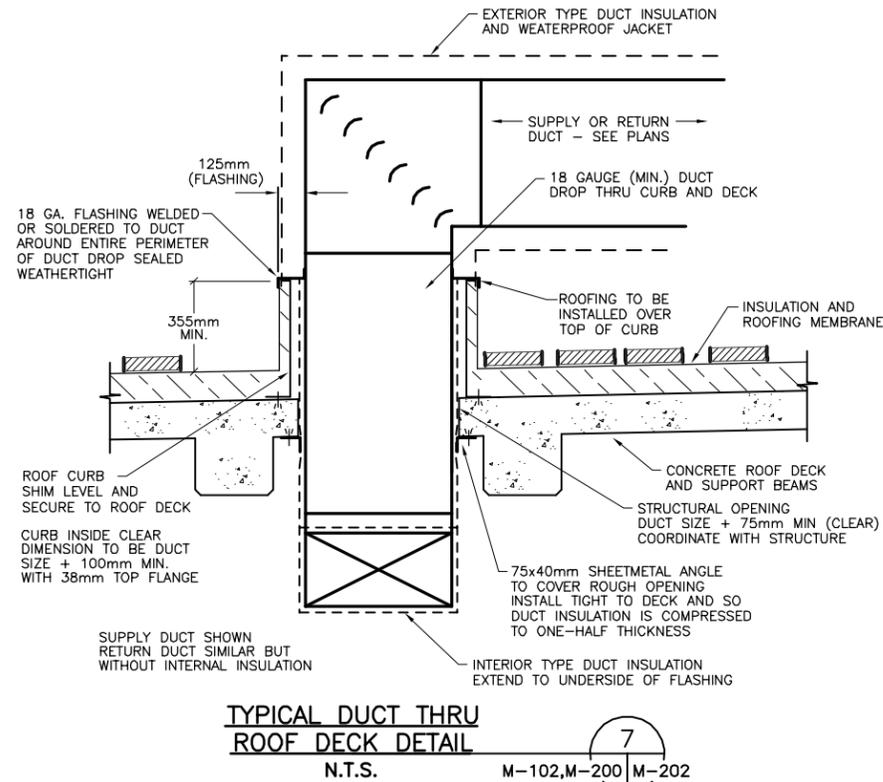
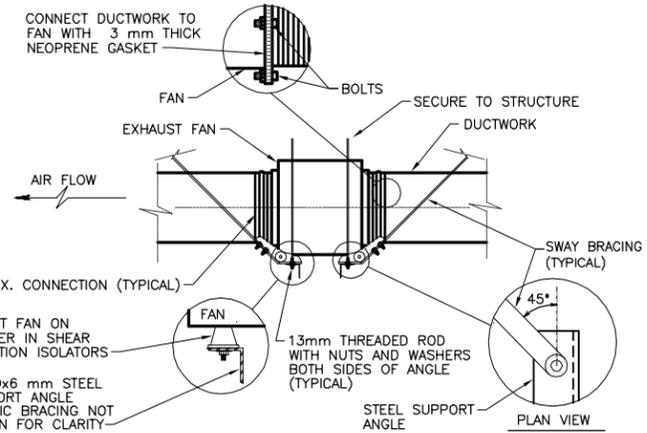
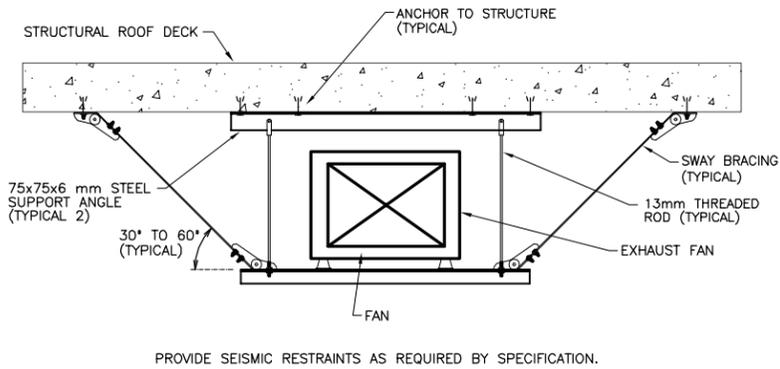
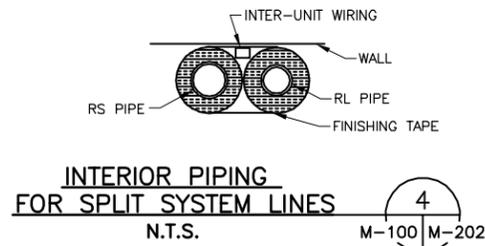
**AUSTERE STANDARD DESIGNS - PHASE 4**  
FY11 BARRACKS - PN74127 - CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

MECHANICAL DETAILS  
SHEET 1 OF 2

SHEET REFERENCE NUMBER:  
**AF1081A**  
**M-201**

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\05\_Mechanical\AF1081A-MH202DT.dwg 10/14/2010 11:41:40 AM Barrett, Patrick



THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



CORRECTED FINAL DESIGN SUBMITTAL

REV	DATE	DESCRIPTION
0	09/15/10	KCT CORRECTED FINAL DESIGN SUBMITTAL
B	09/02/10	KCT FINAL DESIGN SUBMITTAL
A	08/13/10	KCT MID-POINT DESIGN SUBMITTAL

DESIGNED BY:	SRZ	DATE:	09/15/10
DRAWN BY:	RRS	SUBMITTED BY:	TETRA TECH
CHECKED BY:	KCT	FILE NO.:	AF1081A-MH202DT

US Army Corps of Engineers  
Middle East District

TETRA TECH

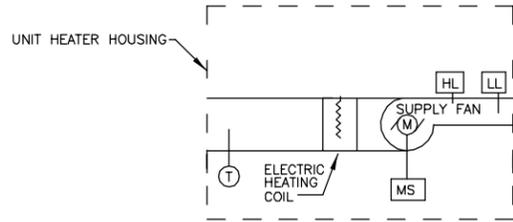
AUSTERE STANDARD DESIGNS - PHASE 4  
FY11 BARRACKS - PN74127-CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

MECHANICAL DETAILS  
SHEET 2 OF 2

SHEET REFERENCE NUMBER:  
AF1081A  
M-202

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

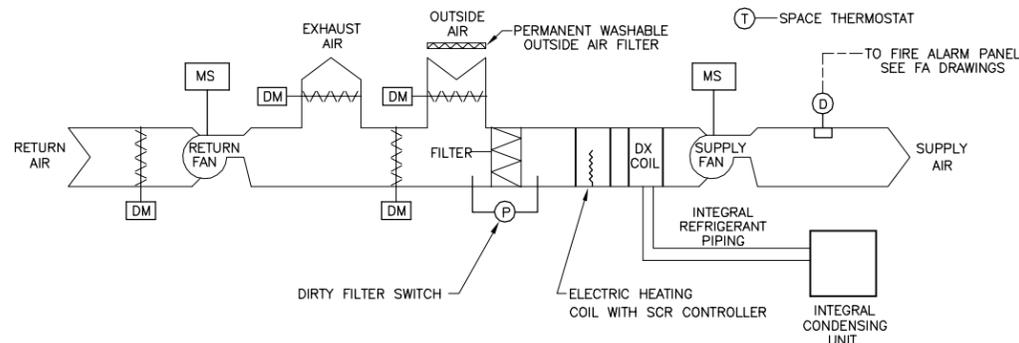
W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\05\_Mechanical\AF1081A-MH203DI.dwg 10/14/2010 11:41:50 AM Barrett, Patrick



**A. UH CONTROL**

1. UNITS SHALL BE CONTROLLED WITH THE UNIT PROVIDED CONTROLS, SAFETIES, AND INTEGRAL THERMOSTATS.

**ELECTRIC UNIT HEATER CONTROL SEQUENCE** 3  
N.T.S. M-101, M-103, M-200 | M-203



PACKAGED AIR HANDLING UNIT - ELECTRIC HEATING AND DX COOLING (SELF-CONTAINED UNIT SHOWN FOR CLARITY)  
- SEQUENCE OF OPERATIONS (STAND ALONE CONTROLS - SINGLE ZONE WITH MICROPROCESSOR ENABLED THERMOSTAT):

1. SEQUENCE OF OPERATIONS:
  - a. SUPPLY FAN AND RETURN FAN SHALL RUN CONTINUOUSLY EXCEPT IN CASE OF ALARM.
  - b. THE OUTSIDE AIR DAMPER SHALL OPEN TO THE POSITION REQUIRED TO MAINTAIN THE MINIMUM OUTSIDE AIR QUANTITY INDICATED.
  - c. WHEN THE SPACE TEMPERATURE IS AT OR BELOW THE HEATING SETPOINT, THE ELECTRIC HEATING COIL SHALL BE ENERGIZED TO MAINTAIN SPACE HEATING SETPOINT SUBJECT TO DISCHARGE HIGH LIMIT OF 43°C (ADJUSTABLE) AND DISCHARGE LOW LIMIT OF 21°C (ADJUSTABLE).
  - d. WHEN THE SPACE TEMPERATURE IS 1.7°C (ADJUSTABLE) ABOVE THE COOLING SETPOINT THE CONDENSING UNIT SHALL BE CYCLED TO MAINTAIN SPACE TEMPERATURE WITH THE ELECTRIC HEATING COIL DISABLED. USE 2.8°C (ADJUSTABLE) DEADBAND BETWEEN HEATING AND COOLING SETPOINTS.
2. SAFETIES
  - a. WHEN DUCT SMOKE DETECTOR SENSES SMOKE, THE AHU SHALL BE DISABLED AND AN ALARM SHALL BE GENERATED.
  - b. DIFFERENTIAL PRESSURE ACROSS THE AIR FILTERS SHALL GENERATE AN ALARM WHENEVER THE DIFFERENTIAL PRESSURE EXCEEDS IT'S ADJUSTABLE SETPOINT. THE UNIT SHALL CONTINUE TO OPERATE NORMALLY.

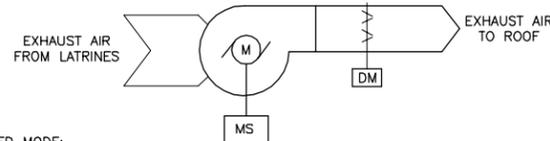
(NOTE: SMOKE DETECTORS ARE SHOWN FOR COORDINATION PURPOSES. REFER TO FIRE PROTECTION DRAWINGS AND SPECIFICATIONS FOR SPECIFIC REQUIREMENTS.)

**RTU CONTROL SEQUENCE** 4  
N.T.S. M-100, M-101, M-102 | M-203

**TEMPERATURE CONTROLS SYMBOLS LIST**

- MS MOTOR STARTER
- DM DAMPER MOTOR
- T THERMOSTAT
- D DUCT SMOKE DETECTOR
- HL HIGH LIMIT SENSOR
- LL LOW LIMIT SENSOR
- P DIFFERENTIAL PRESSURE SWITCH

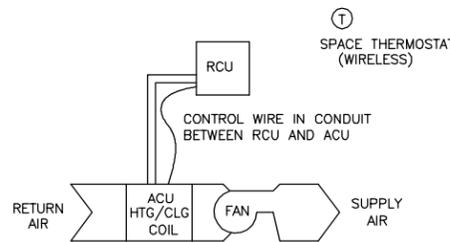
FOR ENVIRONMENTAL DESIGN CONDITIONS AND TEMPERATURES SEE DRAWING M-001



**1. OCCUPIED MODE:**

- a. ENABLE THE EXHAUST FAN TO RUN WHEN THE GROUND FLOOR, THE FIRST FLOOR, OR BOTH FLOOR'S LATRINE LIGHTS ARE ON. DISABLE THE EXHAUST FAN WHEN BOTH THE GROUND FLOOR AND FIRST FLOOR LIGHTS ARE OFF.
- b. WHEN THE EXHAUST FAN IS ENABLED THE DISCHARGE DAMPER SHALL BE OPEN

**POWERED EXHAUST CONTROL SEQUENCE** 1  
N.T.S. M-103 | M-203



**ACU CONTROL (DUCTLESS SPLIT SYSTEMS)**

1. UNITS SHALL BE CONTROLLED WITH THE UNIT PROVIDED CONTROLS AND REMOTE WIRELESS THERMOSTATS.
2. PROVIDE 7 DAY PROGRAMMABLE CAPABILITY.

**SPLIT SYSTEM CONTROL SEQUENCE** 2  
N.T.S. M-100, M-102 | M-203

THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



CORRECTED FINAL DESIGN SUBMITTAL

SYMB	DESCRIPTION	DATE	APP
0	CORRECTED FINAL DESIGN SUBMITTAL	09/15/10	KCT
B	FINAL DESIGN SUBMITTAL	09/02/10	KCT
A	MID-POINT DESIGN SUBMITTAL	08/13/10	KCT

DESIGNED BY:	DATE:	09/15/10
SRZ	SUBMITTED BY:	TETRA TECH
RRS	FILE NO.:	AF1081A-MH203DI
CHECKED BY:	KCT	

**US Army Corps of Engineers**  
Middle East District

**TETRA TECH**

**AUSTERE STANDARD DESIGNS - PHASE 4**  
FY11 BARRACKS - PN74127-CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

MECHANICAL CONTROL SCHEMATICS

SHEET REFERENCE NUMBER:  
**AF1081A**  
**M-203**

W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\05\_Mechanical\AF1081A-MH204SC.dwg 10/14/2010 11:41:59 AM Barrett, Patrick

FAN SCHEDULE - (EF)													
DWG LABEL	SERVES	TYPE	MODEL NO.	M <sup>3</sup> /HR	FAN DATA						ELECTRICAL		NOTES
					SP (mm WG)	SONES	RPM	OPENING (SQ. M)	DRIVE	BHP	HP	V/PH/HZ	
EF-201	TOILET/SHOWER 113, 212	INLINE	BSQ-140-3	3060	12.7	8.9	1212	0.26	BELT	0.15	1/3	208/1/60	ALL

**NOTES:**  
 1. DESIGN BASIS: GREENHECK  
 2. FACTORY WIRED DISCONNECT  
 3. VIBRATION ISOLATORS  
 4. MOTOR GUARD  
 5. DO NOT INCLUDE IF PROJECT IS CONSTRUCTED PER "LATRINE DELETION OPTION"

PACKAGED AIR HANDLING UNIT W/DX COOLING SCHEDULE - (RTU)																					
DWG LABEL	UNIT LOCATION	SERVES	MODEL NO.	SUPPLY FAN					RETURN FAN					MCA	MOP	NOTES					
				SA M <sup>3</sup> /HR	MIN OA	DISCH ARR (mm)	ESP (mm)	FAN RPM	BHP	HP	V/PH/HZ	RA M <sup>3</sup> /HR	DISCH ARR (mm)				ESP (mm)	FAN RPM	BHP	HP	V/PH/HZ
RTU-101	ROOF	FIRST FLR	PPHC8	5115	1223	SIDE	25	1396	2.3	3	208/3/60	5115	SIDE	25	846	1.2	2	208/3/60	108	175	ALL
RTU-102	ROOF	GROUND FLR	PPHC8	5435	1360	SIDE	25	1396	2.3	3	208/3/60	5435	SIDE	25	846	1.2	2	208/3/60	108	175	ALL
RTU-201	ROOF	FIRST FLR	PPHC8	5115	1223	SIDE	25	1396	2.3	3	208/3/60	5115	SIDE	25	846	1.2	2	208/3/60	108	175	ALL
RTU-202	ROOF	GROUND FLR	PPHC8	5435	1360	SIDE	25	1396	2.3	3	208/3/60	5435	SIDE	25	846	1.2	2	208/3/60	108	175	ALL

**NOTES:**  
 1. DESIGN BASIS: PETRA  
 2. PROVIDE WITH SINGLE POINT ELECTRICAL CONNECTION, INCLUDE FACTORY INSTALLED FUSED DISCONNECT SWITCH AND MOTOR STARTER.  
 3. PROVIDE WITH MANUFACTURER'S STANDARD FACTORY CURB.  
 4. SEE DRAWING M-001 FOR DESIGN CONDENSING TEMPERATURES.  
 5. PROVIDE WITH 50 mm WASHABLE PERMANENT FILTER AND RACK AT OUTSIDE AIR INTAKE.  
 6. PROVIDE WITH SAND ELIMINATION LOUVER AT OUTSIDE AIR INTAKE.  
 7. PROVIDE AIR FILTERS PER SPECIFICATION 23 00 00.  
 8. BOTTOM OF OUTSIDE AIR INTAKE 915mm ABOVE ROOF MINIMUM.

RTU COIL SCHEDULE													
COIL LOCATION	HEATING DATA				COOLING DATA								NOTES
	EAT (°C)	LAT (°C)	CAPACITY (KW)	APD (MM WG)	REFRIG.	NO. ROWS	EDB (°C)	EWB (°C)	LDB (°C)	LWB (°C)	TC (KW)	SC (KW)	
RTU-101	12.2	28.3	28	9	407c	8	30	16.67	11.25	9.6	32.10	32.10	ALL
RTU-102	12.2	28.3	28	10	407c	8	30	16.67	12.17	10.0	32.5	32.5	ALL
RTU-201	12.2	28.3	28	9	407c	8	30	16.67	11.25	9.6	32.10	32.10	ALL
RTU-202	12.2	28.3	28	10	407c	8	30	16.67	12.17	10.0	32.5	32.5	ALL

**NOTES:**  
 1. DESIGN BASIS: PETRA  
 2. PROVIDE TWO STAGE ELECTRIC HEAT  
 3. PROVIDE WITH MANUFACTURER INSTALLED SAFETIES AND THERMAL OVERLOADS.  
 4. FIELD CHARGE REFRIGERANT CIRCUIT.  
 5. PROVIDE 2 STAGE COOLING CAPACITY WITH HOT GAS BYPASS ON LEAD STAGE.  
 6. 0 - 100 PERCENT SCR ELECTRIC HEAT.

LOUVER SCHEDULE - (L)										
DWG LABEL	SERVES	TYPE	LENGTH (mm)	HEIGHT (mm)	DEPTH (mm)	FREE AREA (S.M.)	M <sup>3</sup> /HR	VELOCITY (MPM)	MAX APD (mm WG)	NOTES
L-101	LATRINE MAKE UP AIR - GROUND FLOOR	INTAKE	1390	590	150	0.21	1530	121	2.5	ALL
L-201	LATRINE MAKE UP AIR - FIRST FLOOR	INTAKE	1390	590	150	0.21	1530	121	2.5	ALL

**NOTES:**  
 1. DESIGN BASIS: GREENHECK FSL-401 SAND LOUVER - MATERIAL: STEEL.  
 2. PROVIDE WITH KYNAR (5 YEAR) FINISH.  
 3. PROVIDE WITH BIRDSCREEN IN REMOVABLE FRAME.  
 4. PROVIDE WITH 50mm WASHABLE ALUMINUM FILTER INCLUDING FILTER RACK.  
 5. DO NOT INCLUDE IF PROJECT IS CONSTRUCTED PER "LATRINE DELETION OPTION"

AIR CONDITIONING UNIT SCHEDULE - (ACU)															
DWG LABEL	UNIT LOCATION	MODEL NO.	SA M <sup>3</sup> /HR	FAN SPEED	FACE DIMENSION (MM x MM)	UNIT DEPTH (MM)	HEATING (KW)	COOLING DATA				ELECTRICAL		NOTES	
								LDB (°C)	LWB (°C)	AMB. (°C)	TC (KW)	FLA	V/PH/HZ		MCA
ACU-101	ELECTRICAL ROOM	FTXS12DVJU	420	3	785 x 275	197	3.4	23	15.6	52	3.4	0.18	208/1/60	0.18	ALL
ACU-102	COMM ROOM	FTXS12DVJU	420	3	785 x 275	197	3.4	23	15.6	52	3.4	0.18	208/1/60	0.18	ALL

**NOTES:**  
 1. DESIGN BASIS: DAIKIN  
 2. PROVIDE REMOTE WIRELESS THERMOSTAT AND HOLDER WITH UNIT AND MOUNT ON WALLS.

REMOTE CONDENSING UNIT SCHEDULE - (RCU)														
DWG LABEL	SERVES	MODEL NO.	REFRIG. SIZE (MIN)	SUCTION SIZE (MIN)	LIQUID SIZE (MIN)	NOMINAL HEATING/COOLING CAPACITY (KW)	OUTDOOR COMPRESSORS		CONDENSER FANS		ELECTRICAL			NOTES
							NO.	TYPE	NO.	DRIVE TYPE	V/PH/HZ	MOP	MCA	
RCU-101	ACU-101	RXS12DVJU	R-410A	10	6	3.4/3.4	1	SCROLL	1	DIRECT	208/1/60	15	7.9	ALL
RCU-102	ACU-102	RXS12DVJU	R-410A	10	6	3.4/3.4	1	SCROLL	1	DIRECT	208/1/60	15	7.9	ALL

**NOTES:**  
 1. DESIGN BASIS: DAIKIN  
 2. PROVIDE BRAZED TUBING REFRIGERANT LINE SETS, COUPLINGS AND ACCESSORIES.  
 3. PROVIDE FOR LOW AMBIENT OPERATION TO -18°C.  
 4. FIELD CHARGE SYSTEM WITH REFRIGERANT.  
 5. VERIFY LINE SIZES WITH MANUFACTURER, PROVIDE AS REQUIRED TO CERTIFY PERFORMANCE.  
 6. PROVIDE RATED CAPACITIES AT 52°C (125°F) CONDENSING AMBIENT CONDITION.

REGISTER SCHEDULE (ER, RR, SR)									
TAG	MODEL	TYPE	MOUNT	NECK SIZE	FACE SIZE	M <sup>3</sup> /HR MAX	NC (MAX)	MATERIAL	NOTES
SR-1	T54	SUPPLY	SURFACE	510x255	560x305	1200	25	STEEL	1,2,3,4
SR-2	T54	SUPPLY	SURFACE	190x190	240x240	400	30	STEEL	1,2,3,4
RR-1	T70	RETURN	SURFACE	510x255	560x305	1200	25	STEEL	1,2,3,4
ER-1	A75D	EXHAUST	SURFACE	190x155	240x205	100	30	ALUMINUM	1,2,3,4,5
ER-2	A75D	EXHAUST/TRANSFER	SURFACE	190x190	240x240	200	30	ALUMINUM	1,2,3,4,5
ER-3	A75D	EXHAUST	SURFACE	305x155	355x205	300	30	ALUMINUM	1,2,3,4,5

**NOTES:**  
 1. DESIGN BASIS: TUTTLE AND BAILEY.  
 2. PROVIDE WITH FACTORY WHITE FINISH.  
 3. PROVIDE WITH OPPOSED BLADE DAMPER.  
 4. SEE PLAN VIEWS FOR INDIVIDUAL DEVICE AIRFLOWS.  
 5. DO NOT INCLUDE IF PROJECT IS CONSTRUCTED PER "LATRINE DELETION OPTION".

UNIT HEATER SCHEDULE - (UH)									
DWG LABEL	UNIT LOCATION	MODEL NO.	TYPE	ELECTRIC HEAT (KW)	TEMP RISE (C)	AIRFLOW M <sup>3</sup> /HR	ELECTRICAL		NOTES
							V/PH/HZ	FLA	
UH-201	STORAGE RM 210 FIRST FLOOR	HVH-02	FAN	2.6	11.6	697	208/1/60	11.4	1,2,3,4,5
UH-101	MECH ROOM 112 GND FLOOR	HVH-04	FAN	2.6	11.6	697	208/1/60	11.4	ALL
UH-102	TOILET ROOM 113 GND FLOOR	HVH-12	FAN	9.3	20.0	1444	208/3/60	26.3	ALL
UH-103	TOILET ROOM 113 GND FLOOR	HVH-12	FAN	9.3	20.0	1444	208/3/60	26.3	ALL
UH-202	MECH ROOM 211 FIRST FLOOR	HVH-04	FAN	2.6	11.6	697	208/1/60	11.4	ALL
UH-203	TOILET ROOM 212 FIRST FLOOR	HVH-12	FAN	9.3	20.0	1444	208/3/60	26.3	ALL
UH-204	TOILET ROOM 212 FIRST FLOOR	HVH-12	FAN	9.3	20.0	1444	208/3/60	26.3	ALL

**NOTES:**  
 1. DESIGN BASIS: CHROMALOX.  
 2. PROVIDE WITH DISCONNECT SWITCH AND SAFETIES.  
 3. PROVIDE WITH INTEGRAL THERMOSTAT SET TO MAINTAIN SPECIFIED CONDITIONS.  
 4. PROVIDE WITH MANUFACTURER'S OPTIONAL WALL SWIVEL MOUNTING BRACKET.  
 5. MOUNTING HEIGHT IS AT ELEVATION AS HIGH AS POSSIBLE WITHIN INTERIOR SPACE. MINIMUM OF 2200 MM ABOVE FINISHED FLOOR.  
 6. DO NOT INCLUDE IF PROJECT IS CONSTRUCTED PER "LATRINE DELETION OPTION"

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

CORRECTED FINAL DESIGN SUBMITTAL

SYMB	DESCRIPTION	DATE
D	CORRECTED FINAL DESIGN SUBMITTAL	09/15/10
B	FINAL DESIGN SUBMITTAL	09/02/10
A	MID-POINT DESIGN SUBMITTAL	08/13/10

DESIGNED BY: SRZ	DATE: 09/15/10
DRAWN BY: RRS	SUBMITTED BY: TETRA TECH
CHECKED BY: KCT	FILE NO.: AF1081A-MH204SC

US Army Corps of Engineers  
Middle East District

TETRA TECH

THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



AUSTERE STANDARD DESIGNS - PHASE 4  
FY11 BARRACKS - PN74127 - CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

MECHANICAL SCHEDULES

SHEET REFERENCE NUMBER:  
AF1081A  
M-204

9/15/10

W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\06\_Plumbing\AF1081A-PL0010N.dwg 10/14/2010 11:45:59 AM Barrett, Patrick

**LEGEND**

- BALL VALVE
- BUTTERFLY VALVE
- GATE VALVE
- SOLENOID VALVE
- EMERGENCY VALVE
- CHECK VALVE
- CIRC PUMP
- D.V. DRAIN VALVE
- UNION
- CAPPED / PLUGGED CONNECTION
- REDUCER - INCREASER
- PIPE TURNING DOWN
- PIPE TURNING DOWN WITH SHUT-OFF
- PIPE TURNING UP
- SUPPORT LOCATION
- HOSE BIBB

**ABBREVIATIONS**

AAV	AUTOMATIC AIR VENT	KG	KILOGRAM
AFF	ABOVE FINISHED FLOOR	KW	KILOWATT
ALUM	ALUMINUM	KPa	KILO PASCALS
AP	ACCESS PANEL		
'C	DEGREES CELSIUS	L	LITER
CA	COMPRESSED AIR	LAV	LAVATORY
CKT	CIRCUIT	LPM	LITERS PER MINUTE
CLG	CEILING	LPH	LITERS PER HOUR
CM	CENTIMETER	LS	LEVEL SWITCH
CO	CLEAN OUT	LVG	LEAVING
CONN	CONNECTION	M	METER
CONT	CONTINUATION	M <sup>2</sup>	SQUARE METER
COWP	CLEAN OUT WALL PLATE	M <sup>3</sup>	CUBIC METER
CSK	COUNTERSUNK	MAX	MAXIMUM
CW	COLD WATER	MECH	MECHANICAL
		MIN	MINIMUM
		MISC	MISCELLANEOUS
		MM	MILLIMETER
		MS	MOP SINK
D	DROP/DEPTH	NC	NORMALLY CLOSED
DET	DETAIL	NFFPA	NATIONAL FIRE PROTECTION ASSOCIATION
DIA	DIAMETER	NO	NORMALLY OPEN/NUMBER
DIFF	DIFFERENTIAL	NOM	NOMINAL
DN	DOWN	NST	NATIONAL STANDARD THREAD
DWG	DRAWING	NTS	NOT TO SCALE
EL	ELEVATION	OC	ON CENTER
ELEC	ELECTRICITY/ELECTRICAL	OD	OVERFLOW DRAIN
EM SHR	EMERGENCY SHOWER	Ø	PHASE
EQ	EQUAL		
EQUIP	EQUIPMENT		
EW	ELECTRIC WATER HEATER		
EXT	EXTERNAL/EXTERIOR		
*F	DEGREES FAHRENHEIT	PD	PRESSURE DIFFERENTIAL
FCO	FLOOR CLEAN OUT	PRESS	PRESSURE
FCV	FLOW CONTROL VALVE	PRV	PRESSURE REDUCING VALVE
FD	FLOOR DRAIN		
FFE	FINISHED FLOOR ELEVATION	QTY	QUANTITY
FIN	FINISH		
FLR	FLOOR	R	RISE
FS	FLOOR SINK	RD	ROOF DRAIN
FTD	FLOOR TRENCH DRAIN	REQ'D	REQUIRED
		RM	ROOM
GA	GAUGE		
GAL	GALLON	S	SOIL/SOUTH/SECOND
GPH	GALLONS PER HOUR	SAN	SANITARY
		SH	SHEET
HORIZ	HORIZONTAL	SOV	SHUT-OFF VALVE
HP	HORSEPOWER	SP	STATIC PRESSURE
HR	HOUR	SQ M	SQUARE METER
HTR	HEATER	SS	STAINLESS STEEL
HU	HUMIDIFIER		
HW	HOT WATER	TCV	TEMPERATURE CONTROL VALVE
HWR	HOT WATER RETURN	TEMP	TEMPERATURE
HZ	HERTZ	THRU	THROUGH
		TK	TANK
ID	INSIDE DIAMETER	TMV	THERMOSTATIC MIXING VALVE
IN	INCH	TYP	TYPICAL
INT	INTERIOR		
INV EL	INVERT ELEVATION	UL	UNDERWRITER'S LABORATORIES
		UR	URINAL
		V	VENT
		VEL	VELOCITY
		VTR	VENT THROUGH ROOF
		W/	WITH
		WF	WALL FAUCET
		W	WASTE
		WCO	WALL CLEAN OUT
		WG	WATER GAGE
		WH	WALL HYDRANT
		WC	WATER CLOSET

**MATERIAL SPECIFICATIONS**

SANITARY SEWER AND VENT: SCHEDULE 40 POLYVINYL CHLORIDE (PVC) CONFORMING TO ASTM D 2665. JOINTS SHALL BE MADE USING SOLVENT CEMENTS MEETING THE REQUIREMENTS OF ASTM D 2564.

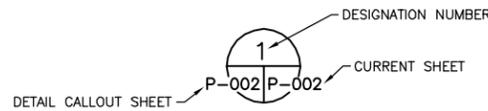
DOMESTIC WATER PIPING: ASTM D 2846, USING ASTM F441 SCHEDULE 80 CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE. JOINTS SHALL BE MADE USING SOLVENT CEMENTS MEETING THE REQUIREMENTS OF ASTM F493. DOMESTIC WATER DISTRIBUTION SYSTEM SHALL BE INSULATED WITH CELLULAR GLASS OR FLEXIBLE ELASTOMERIC CELLULAR INSULATION AND INSULATED FITTING COVERS.

PLUMBING FIXTURES: WATER CLOSETS AND LAVATORIES SHALL BE COMMERCIAL GRADE FIXTURES MADE FROM VITREOUS CHINA. THE WATER CLOSETS SHALL BE FLOOR MOUNTED, ELONGATED BOWL, TANK TYPE DESIGN. LAVATORIES SHALL BE WALL HUNG AND SHALL INCLUDE CAST BRASS, SINGLE LEVER MIXING TYPE FAUCET.

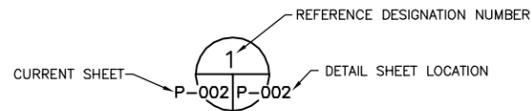
THE MOP SINK SHALL BE COMMERCIAL GRADE MOLDED STONE MATERIAL WITH A COMMERCIAL CAST BRASS FAUCET.

SHOWER: FOUR PIECE SOLID ACRYLIC PRESSURE MOLDED FIBERGLASS REINFORCED PLASTIC STALL WITH SHOWER HEAD, CONTROLS AND SHOWER BASE FLOOR DRAIN.

**DETAIL TITLE**



**DETAIL CALLOUT**



**GENERAL NOTES:**

- ALL DIMENSIONS HERE ON PLANS ARE IN mm UNLESS OTHERWISE INDICATED.
- REFER TO CIVIL DRAWINGS FOR DOMESTIC WATER SUPPLY
- FOR FLOOR/ WALL PENETRATION DETAILS, REFER TO "A" DRAWINGS.
- INTERIOR SOIL AND WASTE PIPING 80mm AND SMALLER SHALL BE ROUTED WITH A 2% SLOPE. INTERIOR SOIL AND WASTE PIPING 100mm AND LARGER SHALL BE ROUTED WITH A MINIMUM 1% SLOPE.
- MINIMUM BURIED PIPE SIZE SHALL BE 50 mm.
- MANUFACTURER BRAND NAMES AND MODEL NUMBERS GIVEN ON PLANS ARE FOR INFORMATION PURPOSES ONLY. THESE AND SIMILAR PRODUCTS FROM OTHER MANUFACTURERS THAT MEET THE SPECIFICATIONS WILL BE APPROVED AS AN ACCEPTABLE ALTERNATIVE.

- \_\_\_\_\_ SOIL OR WASTE PIPE ABOVE FLOOR
- SOIL OR WASTE PIPE BELOW FLOOR ( MIN. 50mm SIZE )
- COLD WATER, DOMESTIC (PLAN)
- HOT WATER, DOMESTIC (PLAN)
- V----- VENT PIPE

**PLUMBING FIXTURE SCHEDULE**

SYMBOL	FIXTURE NAME	CW (mm)	HW (mm)	WASTE (mm)	VENT (mm)	REMARKS
	WESTERN WATER CLOSET (FLUSH TANK)	15	--	100	50	ELONGATED BOWL, FLOOR MOUNTED FLUSH TANK
	LAVATORY	15	15	50	32	
	MOP SINK FLOOR MOUNT (JANITOR'S TYPE)	20	20	75	50	FLOOR MOUNT JANITOR TYPE
	FLOOR DRAIN	--	--	VARIES	50	
	SHOWER	15	15	VARIES	VARIES	

**PLUMBING FIXTURES REQUIRED**

OCCUPANCY	WATER CLOSETS	SHOWERS	LAVATORIES
152 SOLDIERS	1 PER 10	1 PER 10	1 PER 20

**ELECTRIC WATER HEATER SCHEDULE**

DESIGNATION	NO. REQUIRED	MANUFACTURER AND MODEL NUMBER	RECOVERY RATE (LPH)/(GPH)	TEMPERATURE RISE (°C)/(°F)	ELECTRIC LOAD (kW)	VOLTS	PHASE	HERTZ	DIMENSIONS DIA (mm)/(in.)	DIMENSIONS HEIGHT (mm)/(in.)	CAPACITY (LITERS)/(GAL)	DRAWING NO.
EW1	4	AO SMITH DVE-80-18	280/74	37/100	9	208	3	60	641/25 1/4	1511/59 1/2	302/80	P-104

NOTE: FOR EACH PAIR OF HEATERS: PROVIDE ONE EXPANSION TANK WITH A TOTAL VOLUME 24 LITERS (6.4GAL) WITH A MAX ACCEPTANCE VOLUME OF 12L (3.2GAL) SIMILAR TO AMTROL ST-12-C OR APPROVED EQUAL.

THERMOSTATIC MIXING VALVE: SELF ACTUATING, BRONZE BODY, SELF ALIGNING, CHECKSTOPS, MINIMUM FLOW RATE 4 LPM TO ASSE 1017 STANDARD FLOWING 102 LPM AT 69 KPa PRESSURE DROP. SIMILAR TO POWERS SH1432 OR APPROVED EQUAL.

CORRECTED FINAL DESIGN SUBMITTAL

NO.	DATE	DESCRIPTION
0	09/15/10	CORRECTED FINAL DESIGN SUBMITTAL
B	09/02/10	FINAL DESIGN SUBMITTAL
A	08/13/10	MID-POINT DESIGN SUBMITTAL

DESIGNED BY: DCG	DATE: 09/15/10
DRAWN BY: BCL	SUBMITTED BY: TETRA TECH
CHECKED BY: KCT	FILE NO.: AF1081A-PL0010N

**US Army Corps of Engineers**  
Middle East District

**TETRA TECH**

THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



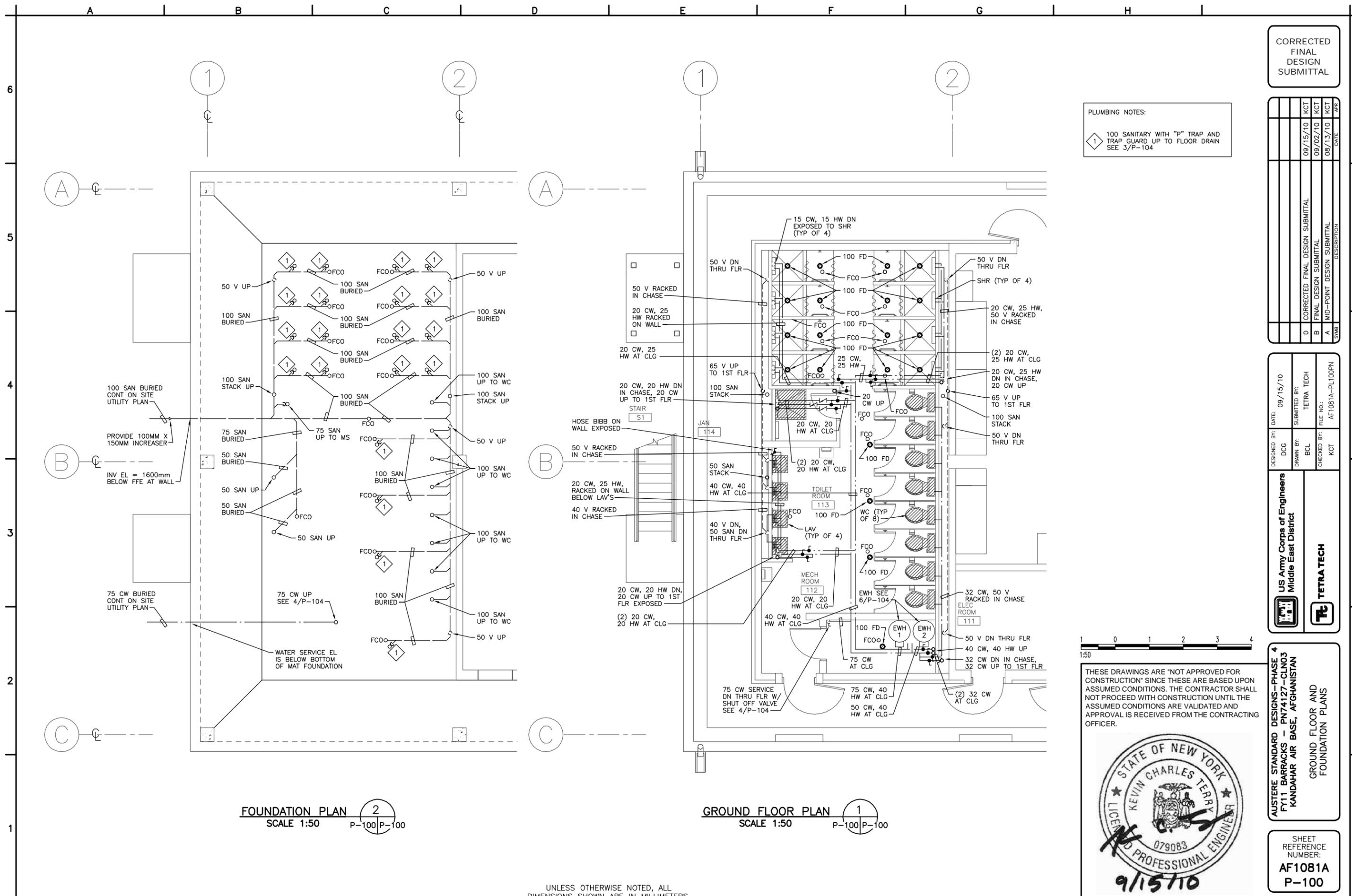
AUSTERE STANDARD DESIGNS - PHASE 4  
FY11 BARRACKS - PN74127 - CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

PLUMBING LEGEND, ABBREVIATIONS, SYMBOLS AND GENERAL NOTES

SHEET REFERENCE NUMBER:  
**AF1081A**  
**P-001**

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\06\_Plumbing\_AF1081A-PL100PN.dwg 10/14/2010 11:46:09 AM Barrett, Patrick



PLUMBING NOTES:  
 1 100 SANITARY WITH "P" TRAP AND TRAP GUARD UP TO FLOOR DRAIN SEE 3/P-104

CORRECTED FINAL DESIGN SUBMITTAL

SYMB	DESCRIPTION	DATE	APP
0	CORRECTED FINAL DESIGN SUBMITTAL	09/15/10	KCT
B	FINAL DESIGN SUBMITTAL	09/02/10	KCT
A	MID-POINT DESIGN SUBMITTAL	08/13/10	KCT

DESIGNED BY:	DCG	DATE:	09/15/10
DRAWN BY:	BCL	SUBMITTED BY:	TETRA TECH
CHECKED BY:	KCT	FILE NO.:	AF1081A-PL100PN

US Army Corps of Engineers  
 Middle East District

TETRA TECH



THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



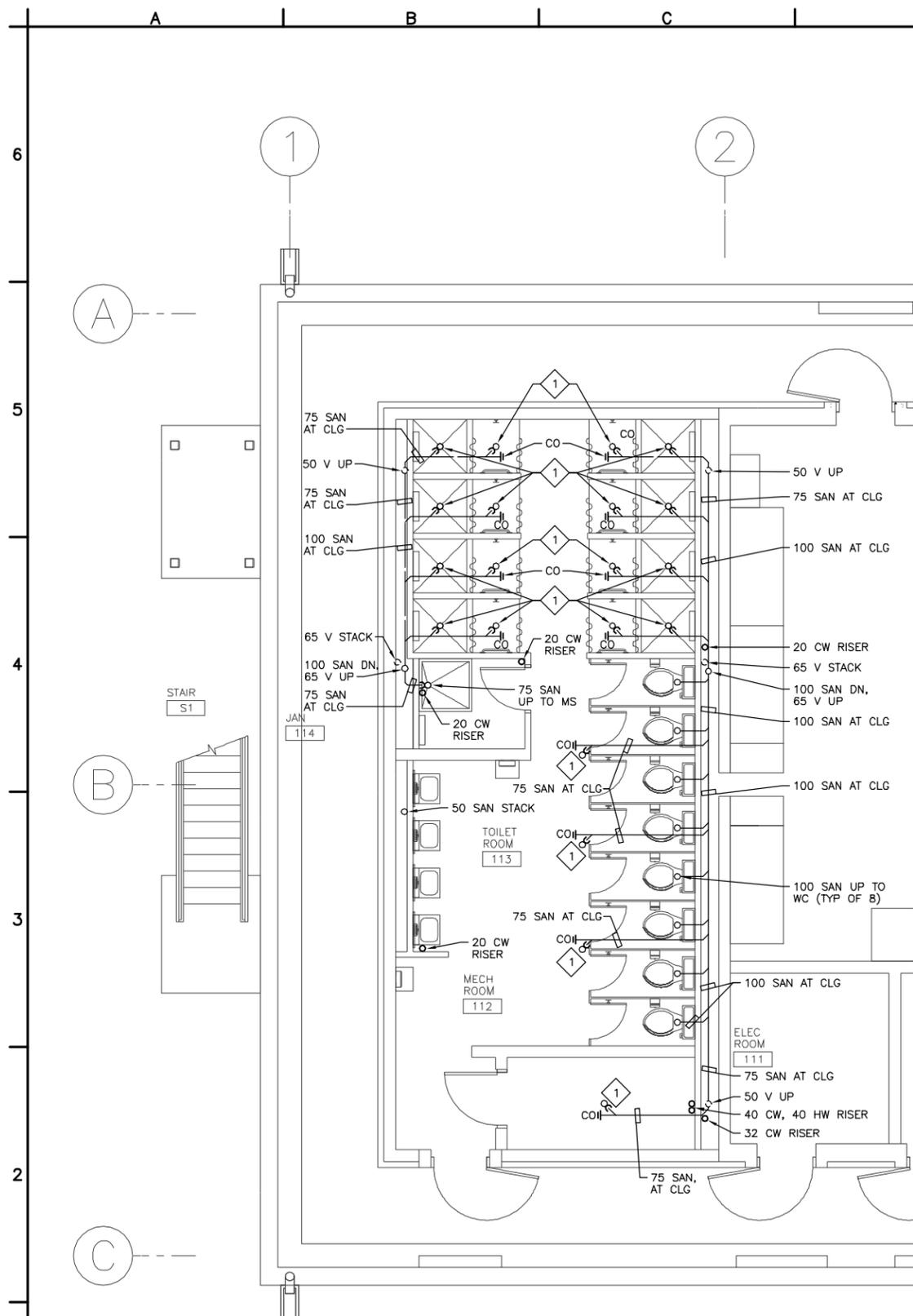
AUSTERE STANDARD DESIGNS - PHASE 4  
 FY11 BARRACKS - PN74127-CLN03  
 KANDAHAR AIR BASE, AFGHANISTAN

GROUND FLOOR AND FOUNDATION PLANS

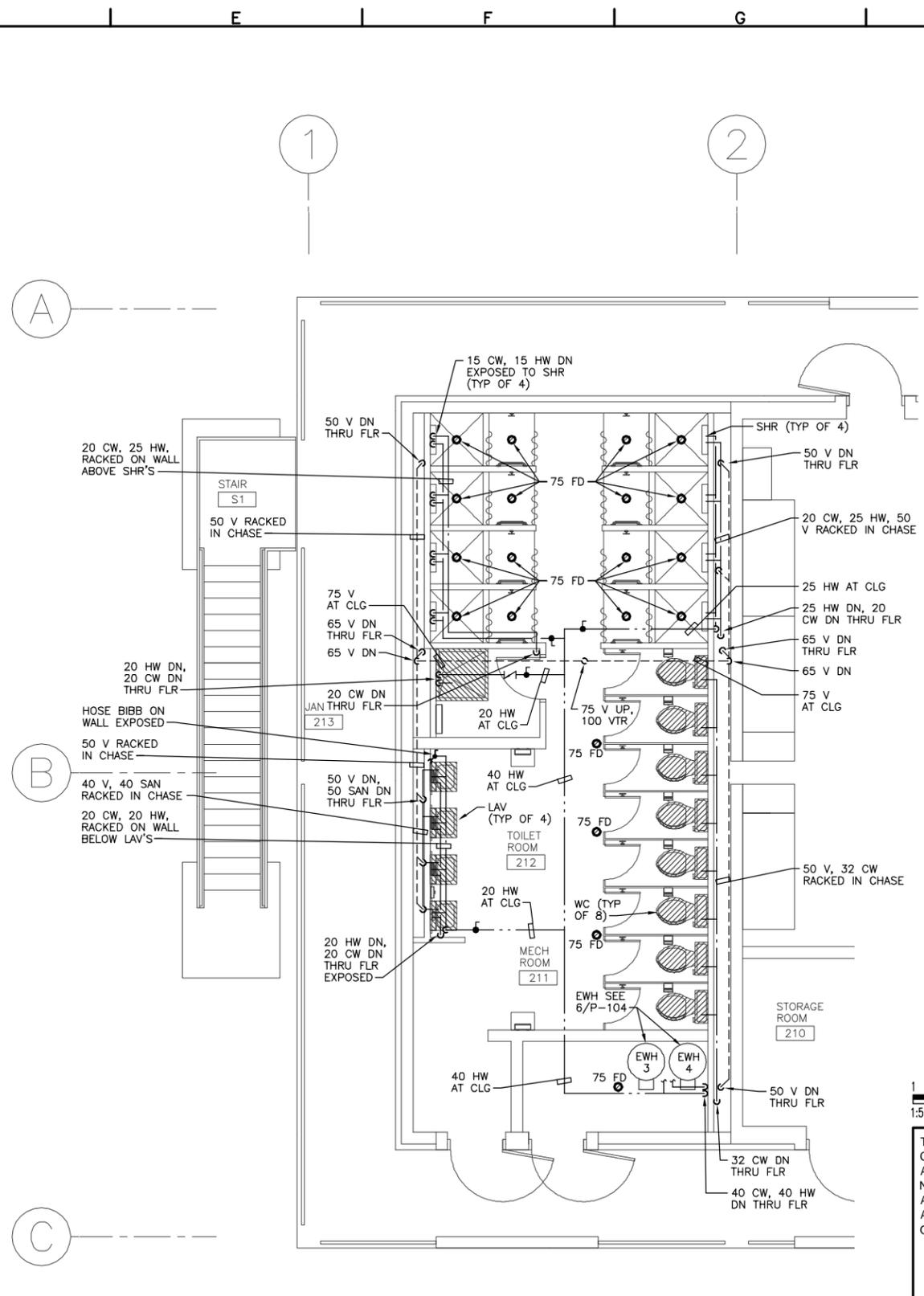
SHEET REFERENCE NUMBER:  
**AF1081A**  
**P-100**

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\06\_Plumbing\AF1081A-PL101PN.dwg 10/14/2010 11:46:21 AM Barrett, Patrick



**FIRST FLOOR SANITARY** 2  
SCALE 1:50 P-101 P-101



**FIRST FLOOR PLAN** 1  
SCALE 1:50 P-101 P-101

**PLUMBING NOTES:**

1 75 SANITARY WITH "P" TRAP AND TRAP GUARD UP TO FLOOR DRAIN SEE 3/P-104



THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



CORRECTED FINAL DESIGN SUBMITTAL

REV	DATE	DESCRIPTION
0	09/15/10	KCT CORRECTED FINAL DESIGN SUBMITTAL
B	09/02/10	KCT FINAL DESIGN SUBMITTAL
A	08/13/10	KCT MID-POINT DESIGN SUBMITTAL

DESIGNED BY:	DATE:	09/15/10
DCG	SUBMITTED BY:	TETRA TECH
BCL	CHECKED BY:	AF1081A-PL101PN
KCT	FILE NO.:	

**US Army Corps of Engineers**  
Middle East District

**TETRA TECH**

AUSTERE STANDARD DESIGNS - PHASE 4  
FY11 BARRACKS - PN74127-CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

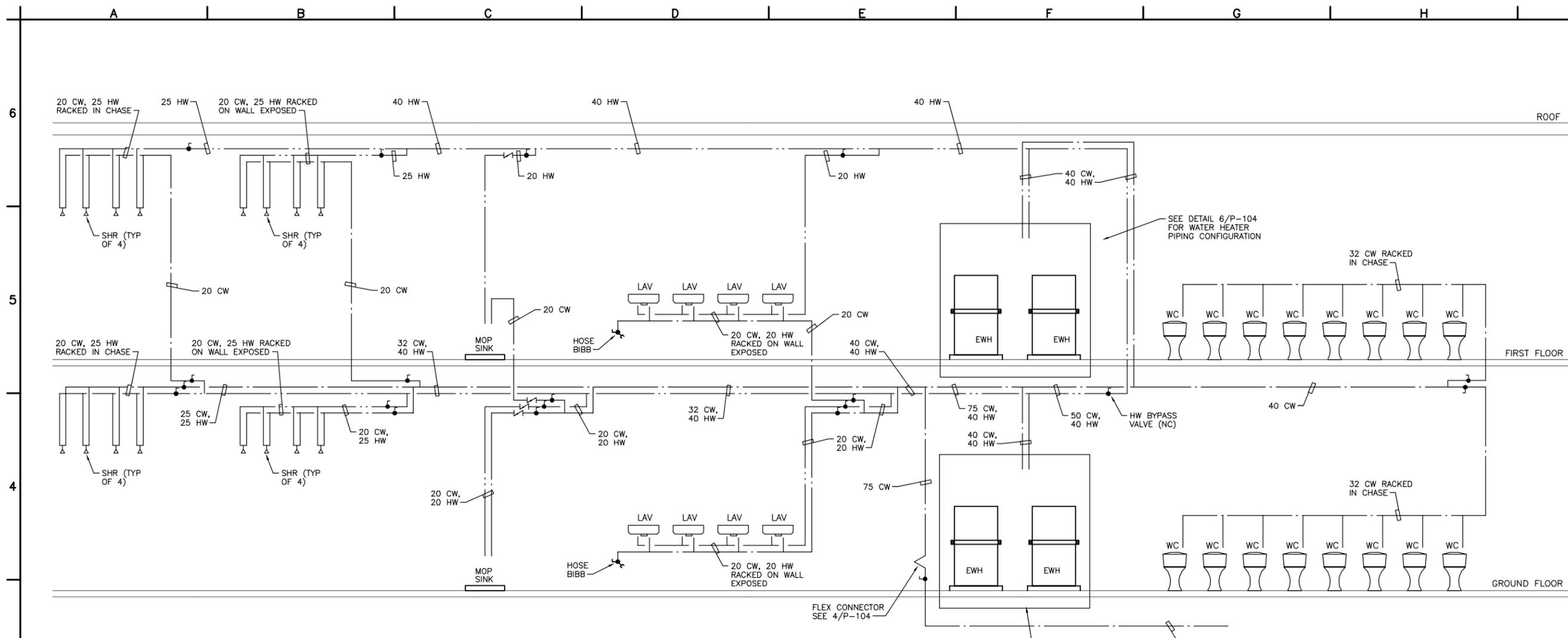
FIRST FLOOR AND  
SANITARY PLANS

SHEET REFERENCE NUMBER:  
**AF1081A**  
**P-101**

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.



W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\06\_Plumbing\AF1081A-PL103Di.dwg 10/14/2010 11:46:40 AM Barrett, Patrick



**WATER RISER DIAGRAM**  
SCALE: NONE  
1  
P-103 | P-103

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

CORRECTED FINAL DESIGN SUBMITTAL

SYMB	DESCRIPTION	DATE	APP
0	CORRECTED FINAL DESIGN SUBMITTAL	09/15/10	KCT
B	FINAL DESIGN SUBMITTAL	09/02/10	KCT
A	MID-POINT DESIGN SUBMITTAL	08/13/10	KCT

DESIGNED BY:	DCG	DATE:	09/15/10
DRAWN BY:	BCL	SUBMITTED BY:	TETRA TECH
CHECKED BY:	KCT	FILE NO.:	AF1081A-PL103DI

**US Army Corps of Engineers**  
Middle East District

THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



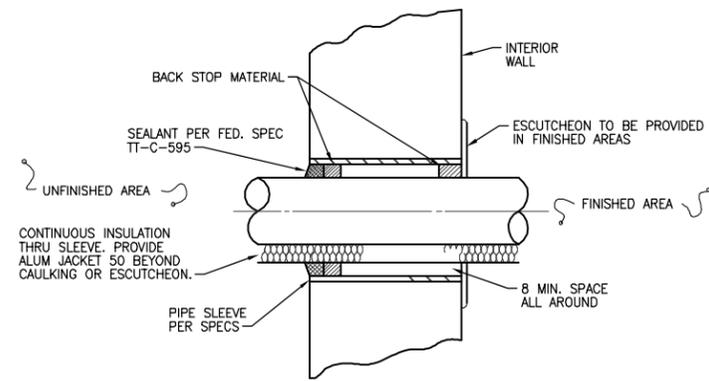
9/15/10

AUSTERE STANDARD DESIGNS - PHASE 4  
FY11 BARRACKS - PN74127-CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

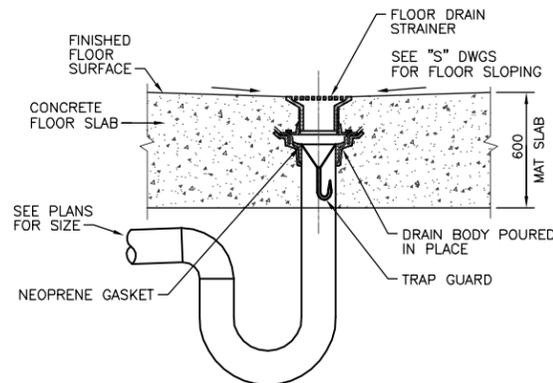
PLUMBING  
WATER RISER DIAGRAM

SHEET REFERENCE NUMBER:  
**AF1081A**  
**P-103**

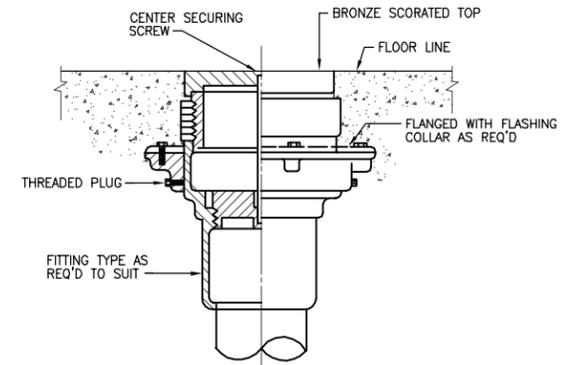
W:\23308\127-23308-10010\CAD\SheetFiles\ASD03\_KAND\06\_Plumbing\AF1081A-PL104DT.dwg 10/14/2010 11:46:50 AM Barrett, Patrick



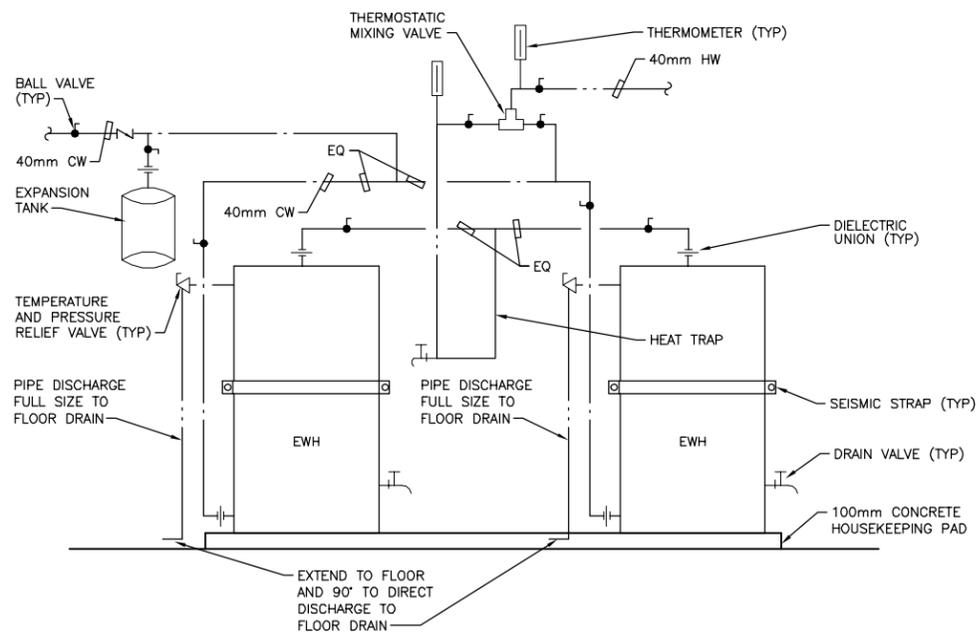
**WALL PIPE SLEEVE DETAIL** (5)  
SCALE: NONE P-104 P-104



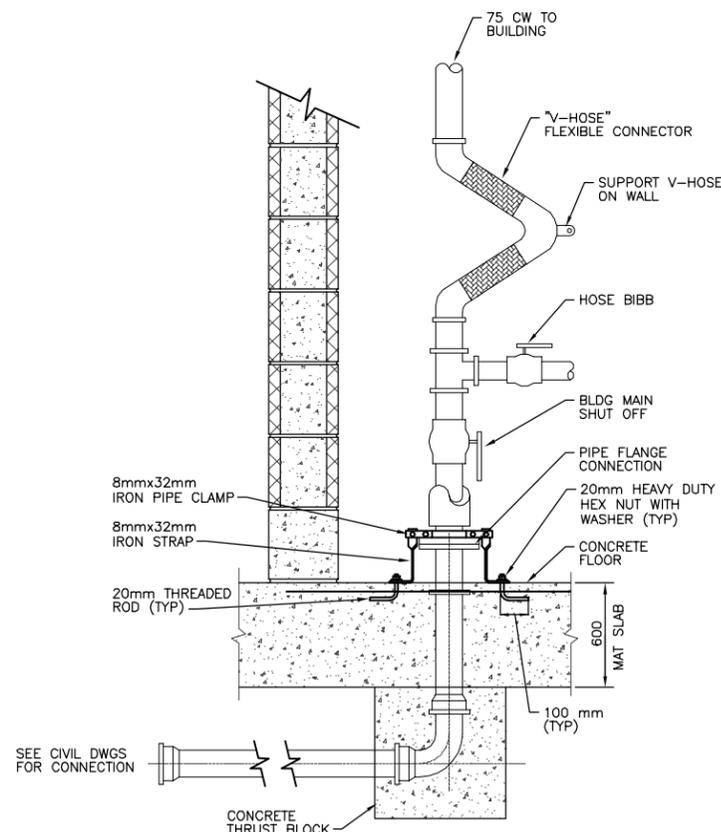
**DEEP SEAL "P" TRAP** (3)  
SCALE: NONE P-104 P-104  
NOTE: TYPICAL ALL FLOOR DRAINS



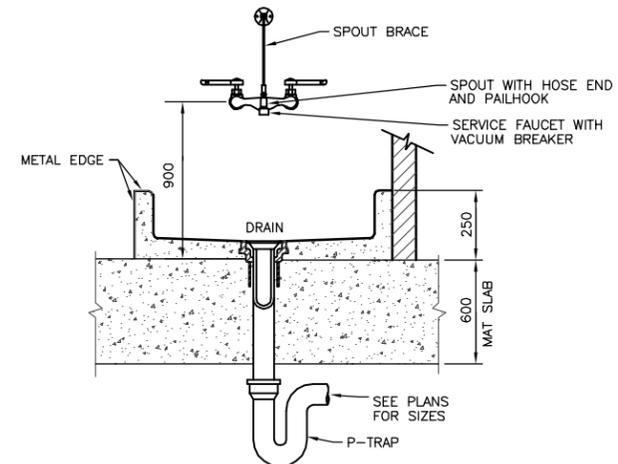
**FLOOR CLEANOUT (FCO)** (1)  
SCALE: NONE P-104 P-104



**DOMESTIC ELECTRIC WATER HEATER** (6)  
SCALE: NONE P-103 P-104



**WATER SERVICE DETAIL** (4)  
SCALE: NONE P-104 P-104



**MOP SINK DETAIL** (2)  
SCALE: NONE P-104 P-104

CORRECTED FINAL DESIGN SUBMITTAL

SYMB	DESCRIPTION	DATE	APP
D	CORRECTED FINAL DESIGN SUBMITTAL	09/15/10	KCT
B	FINAL DESIGN SUBMITTAL	09/02/10	KCT
A	MID-POINT DESIGN SUBMITTAL	08/13/10	KCT

DESIGNED BY:	DCG	DATE:	09/15/10
DRAWN BY:	BCL	SUBMITTED BY:	TETRA TECH
CHECKED BY:	KCT	FILE NO.:	AF1081A-PL104DT

**US Army Corps of Engineers**  
Middle East District

**TETRA TECH**

AUSTERE STANDARD DESIGNS - PHASE 4  
FY11 BARRACKS - PN74127-CLN03  
KANDAHAR AIR BASE, AFGHANISTAN

PLUMBING DETAILS

SHEET REFERENCE NUMBER:  
**AF1081A**  
P-104

THESE DRAWINGS ARE "NOT APPROVED FOR CONSTRUCTION" SINCE THESE ARE BASED UPON ASSUMED CONDITIONS. THE CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE ASSUMED CONDITIONS ARE VALIDATED AND APPROVAL IS RECEIVED FROM THE CONTRACTING OFFICER.



UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.