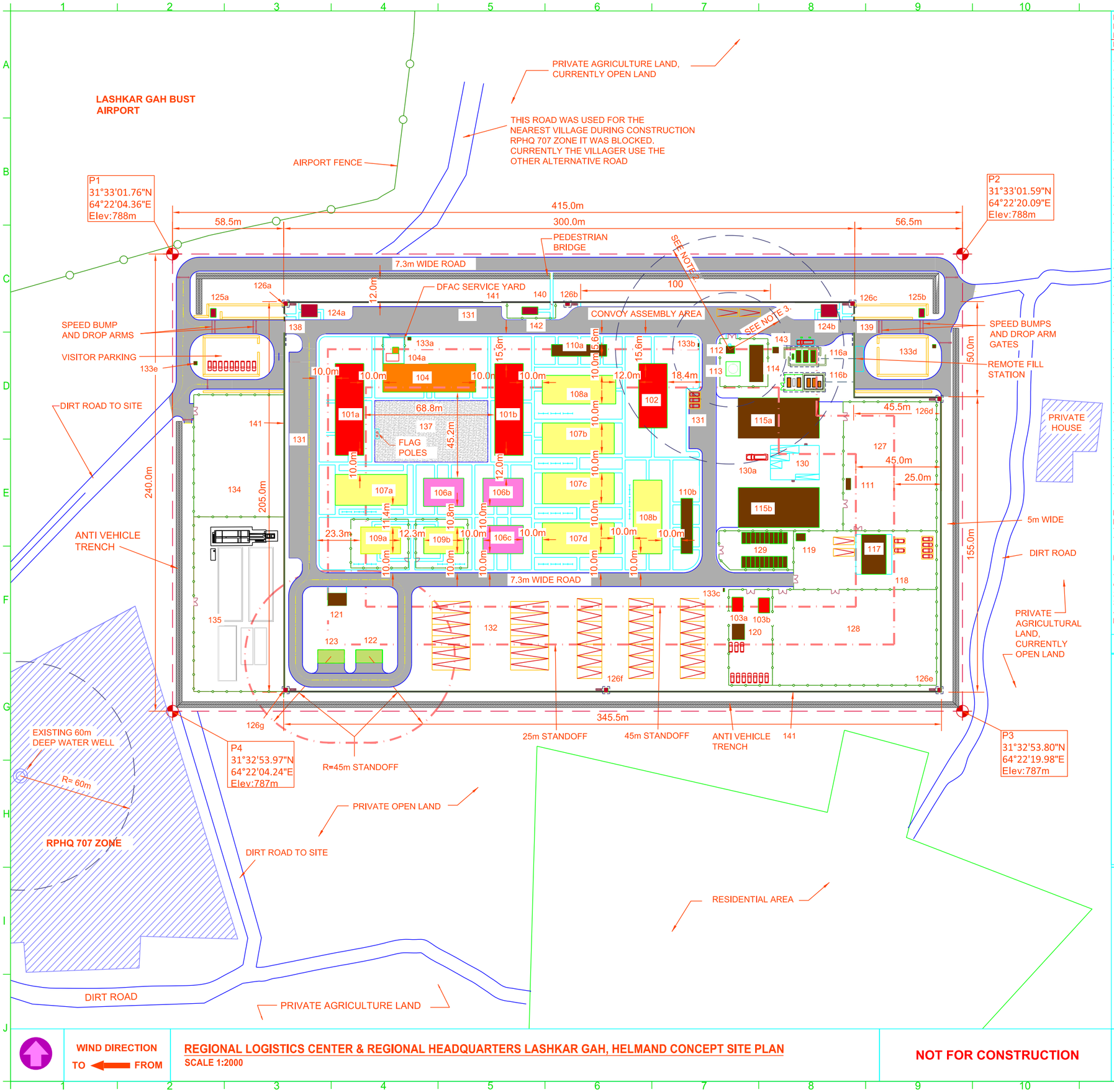


REGIONAL LOGISTICS CENTER (RLC) AND REGIONAL HEADQUARTERS LASHKAR GAH, HELMAND
NEW FACILITIES

	BUILDING	SIZE (GSM)	PEOPLE
101a-b	ADMINISTRATION BUILDING (TYPE 2 1446GSM)	1446	70P
102	ADMINISTRATION BUILDING (TYPE 5 508GSM)	508	18P
103a-b	MMT BUILDING (MOBILE MAINTENANCE TEAM)	60	
104	DINING FACILITY	734	216P
104a	WOOD STOVE KITCHEN		
105	not used		
106a-c	TRAINING BUILDING	3x319	
107a-d	SENIOR/HIGH BARRACKS (TYPE 2 B12 862)	4x862	40P Ea
108a-b	BARRACKS (TYPE B13 579GSM)	2x579	100P Ea
109a-b	WOMEN'S BARRACKS	2x294	20P Ea
110a-b	LATRINE, MEDIUM	2x180	100P Ea
111	SMALL LATRINE	12	
112	WELL HOUSE	20	
113	ELEVATED WATER STORAGE TANK		
114	WATER STORAGE TANK AS REQUIRED		
115a-b	LARGE WAREHOUSE	2x894	
116a	FUEL STORAGE & VEHICLE FUELING POINT		
116b	GENERATOR		
117	VEHICLE MAINTENANCE FACILITY (3-BAYS)	266	
118	VEHICLE MAINTENANCE YARD	1900	
119	POL BLDG (PETROLEUM, OIL AND LUBRICANT)	20	
120	SMALL WAREHOUSE, MMT	65	
121	SMALL WAREHOUSE, RHQ	65	
122	SECURE STORAGE (ASP)	90	
123	SECURE STORAGE (ASP)	90	
124a-b	GUARD HOUSE	54	
125a-b	GUARD SHACKS	12	
126a-g	GUARD TOWERS	12	
127	SECURE STORAGE AREA	3300	
128	SECURE VEHICLE STORAGE AREA	5000	
129	SECURE AREA with CONTAINERS (20) STEEL SHIPPING CONTAINERS	1700	
130	LOADING DOCK PLATFORM	460	
130a	OFF LOADING AREA		
131	PARKING (72 CARS)		
132	TRUCK AND TRAILER PARKING AREA (20 TRUCKS) (12 TRAILERS)	8300	
133a-e	TRASH POINTS		
134	EXTERNAL PARKING AREA	3030	
135	WASTE WATER TREATMENT PLANT		
136	not used		
137	COMPOUND ASSEMBLY AREA	1900	
138	PRIMARY ENTRY CONTROL POINT (ECP)		
139	SECONDARY ENTRY CONTROL POINT (ECP)		
140	FRU ENTRY GATE w/ BUZZER		
141	PERIMETER SECURITY WALL	1087lm	
142	FRU BUILDING (FAMILY RESPONSE UNIT)	60	
143	FUEL OPERATORS BUILLDING		

BILLETING DESIGN CAPACITY:

FOUR SENIOR/HIGH BARRACKS	40P Ea	160P
TWO OPEN DAY BARRACKS	100P Ea	200P
TWO FEMALE BARRACKS	20P Ea (40PTOTAL)	400P

NOTES:

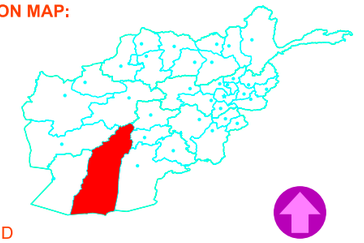
1. ALL FACILITIES SHALL RECEIVE CONTINUOUS 2M WIDE AGGREGATE GROUND COVER ALONG PERIMETER
2. 60M MINMUM DISTANCE BETWEEN WELLS
3. 30M MINIMUM DISTANCE BETWEEN WELL AND SANITARY & SEWER SYSTS.
4. AREAS GIVEN ARE APPROXIMATE AND AREPROVIDED FOR REFERENCE ONLY

LAYOUT UTILIZES AED STANDARD BUILDINGS

LEGEND:

- ADMINISTRATION
- HOUSING
- DFAC
- SECURITY
- SUPPORTING
- AMMUNITION AND ARMORY
- CHAIN LINK FENCE
- BOLLARDS
- SECURITY STANDOFF
- LICENSE FOR CONSTRUCTION
- ASPHALT ROAD
- SIDE-WALK
- FORCE PROTECTION WALL
- UNDERGROUND
- CONCRETE BARRIER
- ANTI VEHICLE TRENCH
- ROAD CENTER LINE
- CLOTHESLINE
- DROP ARM GATE

LOCATION MAP:



WIND DIRECTION TO ← FROM

REGIONAL LOGISTICS CENTER & REGIONAL HEADQUARTERS LASHKAR GAH, HELMAND CONCEPT SITE PLAN
SCALE 1:2000

NOT FOR CONSTRUCTION

0 20 40 60 100
Scale:1:2000 Meter

AFGHAN NATIONAL SECURITY FORCE
Comprehensive Plan For Facilities Development

REV	DATE	BY	APP	DESCRIPTION

SCALE: 1 : 2000
DATE: Feb. 19 2012
CJ.ENG. PROJ.#: PRLS020501RL
FIGURE:
SHEET FORMAT: A3

DESIGNED: AMEC
DRAWN: Abdul Basir Rahimy
CHECKED: Tom Lodge
APPROVED: Nino Spalic
IN CHARGE: David Wheeler
WBS NO: 052P5S0071

AFCEE CONTRACT # FA8903-08-D-8775
AMEC ENVIRONMENT INFRASTRUCTURE
PROJECT # 6144110299
REGIONAL LOGISTICS CENTER AND REGIONAL HEADUARTERS LASHKAR GAH, HELMAND
CONCEPT SITE PLAN

00

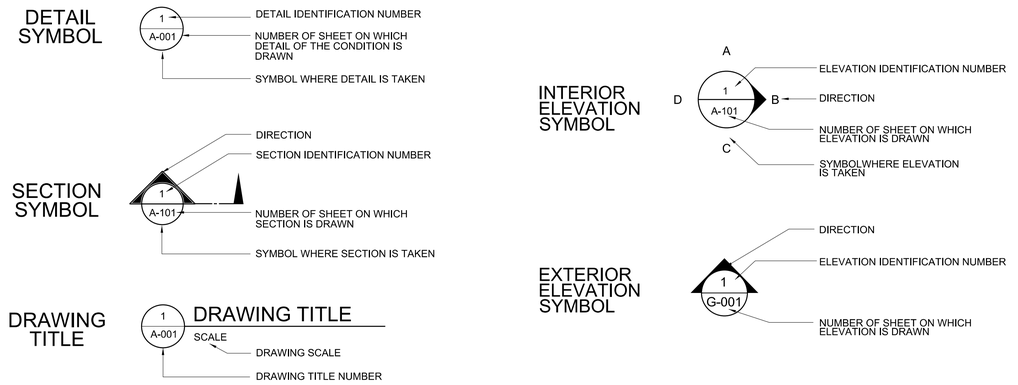
ENGINEERING AND CONSTRUCTION DIVISION
US ARMY ENGINEER DISTRICT, AFGHANISTAN
APO AE, 09356

01

20 METER WATER TOWER

(U05)

SECTION/DETAIL CROSS REFERENCING CONVENTIONS



SCHEDULE OF DRAWINGS

SHEET NO	DWG CODE	SHEET REFERENCE NO	DESCRIPTION	REV STATUS
			GENERAL	
			COVER SHEET	
1		G-001	TITLE SHEET & SCHEDULE OF DRAWINGS	
			STRUCTURAL	
2		S-1	GENERAL NOTES	
3		S-2	FOUNDATION PLAN	
4		S-3	PLATFORM AND CATWALK FRAMING PLAN	
5		S-4	ELEVATIONS	
6		S-5	FOUNDATION SECTIONS	
7		S-6	FOUNDATION STEEL FRAMING SECTIONS	
8		S-7	SECTIONS AND DETAILS	
9		S-8	SECTIONS AND DETAILS	
10		S-9	SECTIONS AND DETAILS	
11		S-10	MEMBER DETAILS	
12		S-11	MEMBER DETAILS	
13		S-12	MEMBER DETAILS	
14		S-13	MEMBER DETAILS	
15		S-14	MEMBER DETAILS	
16		S-15	MEMBER DETAILS	
17		S-16	MEMBER DETAILS	
18		S-17	MEMBER DETAILS	
19		S-18	MEMBER DETAILS	
20		S-19	MEMBER DETAILS	
21		S-20	MEMBER DETAILS	
			PLUMBING	
22		P-1	ELEVATION AND DETAIL	
			ELECTRICAL	
23		E-1	LIGHTNING PROTECTION DETAILS	

PROJECT COORDINATION

U.S. ARMY ENGINEER DISTRICT, AFGHANISTAN

PROJECT MANAGER — DATE

CHIEF, DESIGN BRANCH — DATE

THIS PROJECT WAS DESIGNED BY AFGHANASTAN ENGINEER DISTRICT OF THE U.S ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF INDIVIDUALS APPEAR ON THESE DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY ER 1110-1-8152.

US Army Corps of Engineers
AFGHANISTAN ENGINEER DISTRICT

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: | DWN BY: | CKD BY: | SUBMITTED BY: | DATE: | SOLICITATION NO.: | CONTRACT NO.: | FILE NUMBER: | PLOT SCALE: 1:1 | PLOT DATE: | SIZE: ANSI D | FILE NAME: U05_G-TS-dgn

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 09356

SITE ADAPT DESIGN
U05 - 20 METER WATAER TOWER
TITLE SHEET
SCHEDULE OF DRAWINGS

SHEET IDENTIFICATION
G-001
SHEET 1 OF 23

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GENERAL:

1. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AFFECTING THE WORK AT JOBSITE.

2. ALL STRUCTURAL WORK AND MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF THE PROJECT.

3. FOR LOCATION AND DIMENSIONS OF GROOVES, REGLETS, SLEEVES, OPENINGS, AND EMBEDDED OR ATTACHED ITEMS, REFER TO ELECTRICAL, AND PIPING DRAWINGS.

CODES:

1. ALL PARTS SHALL BE FURNISHED AND ERECTED ACCORDING TO THE LATEST VERSION OF THE APPLICABLE CODES OF THE FOLLOWING:

AMERICAN CONCRETE INSTITUTE	(ACI)
AMERICAN INSTITUTE OF STEEL CONSTRUCTION	(AISC)
AMERICAN IRON AND STEEL INSTITUTE	(AISI)
AMERICAN WATER WORKS ASSOCIATION	(AWWA)

2. ALL PARTS SHALL BE FURNISHED AND ERECTED ACCORDING TO THE APPLICABLE CODES OF THE FOLLOWING:

MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES	(ASCE 7-05)
INTERNATIONAL BUILDING CODE	(IBC-2006)
BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE	(ACI 318-08)
SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS	(AISC 13TH EDITION)

DESIGN LOADS:

1. ROOF LOADING

   A. LIVE LOAD 195 KG/SQ METER (40 PSF)
   B. SNOW LOAD 75 KG/SQ METER (15 PSF)
   C. COLLATERAL LOAD 50 KG/SQ METER (10 PSF)

2. WIND LOADING

   A. BASIC WIND SPEED 135 KM/HR (85 MPH)
   B. EXPOSURE CATEGORY "B"
   C. IMPORTANCE FACTOR, Iw = 1.00
   D. BUILDING CATEGORY "II"

3. SEISMIC LOADING:

   A. Ss = 1.28g
   B. S1 = 0.51g
   C. SEISMIC USE GROUP "I"
   D. SITE CLASSIFICATION "D"
   E. IMPORTANCE FACTOR I = 1.0

   BASIC SEISMIC FORCE RESISTING SYSTEM:

   CROSS-BRACED COLUMN-SUPPORTED ELEVATED TANK
   DESIGN BASE SHEAR: 0.284W

   ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE METHOD

4. THE WATER TOWER IS DESIGNED TO SUPPORT A 26,500 LITER (7,000 GALLON) WATER TANK, UNIFORMLY LOADING THE PLATFORM IN A BALANCED CONFIGURATION. SEE SHEET S-3 FOR TANK LIMITS.

FOUNDATIONS:

1. ALL FOOTINGS SHALL BEAR ON SOIL CAPABLE OF SUSTAINING THE LOADS. GEOTECHNICAL INVESTIGATIONS TO VERIFY THIS REQUIREMENT ARE CONTAINED IN THE AED DESIGN GUIDE – GEOTECHNICAL INVESTIGATIONS (LATEST VERSION). ALL REQUIREMENTS OF THIS PUBLICATION SHALL BE FOLLOWED, WITH EMPHASIS ON PARAGRAPH 2.2, DEPTH, LOCATION, SPACINT OF EXPLORATION.

2. FOUNDATION DESIGNED FOR A MAXIMUM BEARING CAPACITY OF 7323 KG/SQ. METER (1500 PSF).

3. ELEVATIONS SHOWN ON PLANS FOR TOP OF FOOTINGS ARE MINIMUM DEPTH. BOTTOM OF FOOTING SHALL BE A MINIMUM 800mm BELOW GRADE. DIFFERENT OR UNUSUAL CONDITIONS SHALL BE REPORTED TO THE CONTRACTING OFFICER.

4. ALL FOOTING REINFORCEMENT SHALL BE SECURELY SUPPORTED ABOVE GROUND. SUPPORT REINFORCEMENT WITH CONCRETE BRICK OR WITH ADEQUATE NUMBER AND SIZE OF REBAR CHAIRS.

5. ALL FOUNDATION FORMWORK SHALL BE ADEQUATELY PREPARED FOR CONCRETE PLACEMENT; SUFFICIENTLY BRACED; PROPER ELEVATIONS AND ALIGNMENT; NO STANDING WATER OR DEBRIS; ETC.

CONCRETE:

1. STRUCTURAL CONCRETE FOR THE BUILDING STRUCTURE SHALL HAVE THE FOLLOWING PROPERTIES:

ALL CONCRETE
UNLESS NOTED OTHERWISE: f'c = 280 KG/SQ. CM (4,000 PSI) AT 28 DAYS WITH MAXIMUM WATER/CEMENT RATIO OF 0.45. MIX DESIGN SHALL BE APPROVED BY COR PRIOR TO PLACEMENT.

2. ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615 GRADE 60 UNLESS NOTED OTHERWISE.

3. MINIMUM PROTECTIVE COVER OF REINFORCEMENT (SEE DETAILS) SHALL BE AS FOLLOWS:

FOOTINGS, 75mm CLEAR BOTTOM AND SIDES, 40mm CLEAR TOP.
CONCRETE PIERS, 40mm CLEAR TO TIES.

4. MINIMUM CONCRETE SPLICES AND HOOKS FOR REINFORCING STEEL SHALL CONFORM TO ACI 318, CURRENT EDITION.

5. CONCRETE WORK SHALL BE COORDINATED WITH DRAINS, UNDERGROUND UTILITIES, MECHANICAL, ELECTRICAL, AND ARCHITECTURAL PLANS. CONCRETE SHALL NOT BE CAST UNTIL THESE ITEMS HAVE BEEN INSTALLED AND ACCEPTED.

6. CONCRETE OPERATIONS SHALL BE APPROVED BY COR PRIOR TO CONCRETE PLACEMENT. PLAN SHALL BE IN WRITING AND INCLUDE THE FOLLOWING:

a. PORTLAND CEMENT CONCRETE (PCC) PLACEMENT.

b. EMBEDDED METALS PLAN SHALL DESCRIBE HOW REINFORCEMENT AND TOWER LEG ANCHORAGE PLATES WILL BE INSTALLED. SPECIFIC DISCUSSION OF ANCHORAGE PLATES SHALL INCLUDE HOW THESE CRITICAL COMPONENTS WILL BE ACCURATELY LOCATED AND SECURED FOR TRUE PLAN, ELEVATION AND VERTICAL POSITION, WITH NO ROTATION, PRIOR TO, DURING AND AFTER CONCRETING OPERATIONS. THE FOUR CORNERS SHALL BE LAID OUT TO BE DIMENSIONALLY SQUARE AS PER DRAWINGS.

c. PLAN SHALL ADDRESS CONCRETE DELIVERY (BATCHING EQUIPMENT, CAPACITY AND LOCATION); CONCRETE PLACEMENT OPERATIONS INTO THE FORMWORK; NUMBER AND USE OF VIBRATORS; FIELD AND LABORATORY TESTING REQUIRED; HOT OR COLD WEATHER PLACEMENT REQUIREMENTS; MANPOWER REQUIRED; AND OTHER PROCEDURES TO BE FOLLOWED TO COMPLETE SUCCESSFUL CONCRETING OPERATIONS. SUFFICIENT CONCRETE DELIVERY SHALL BE SHOWN TO ELIMINATE THE POTENTIAL FOR CONCRETE DEFECTS IN THE FINAL PRODUCT, INCLUDING COLD JOINTS, VOIDS, SEGREGATION OF AGGREGATE, AND EXCESSIVE REWORK LEADING TO STRENGTH REDUCTION.

STRUCTURAL STEEL:

1. STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION, "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS", 2005 (AISC MANUAL, 13TH EDITION).

2. STEEL SHALL CONFORM TO THE FOLLOWING REQUIREMENTS UNLESS NOTED OTHERWISE:

MISCELLANEOUS PLATES AND ANGLES – ASTM A36 250MPa (Fy = 36 KSI)
"W" SHAPES – ASTM A36 250MPa (Fy = 36 KSI)

3. NO STRUCTURAL STEEL SHALL BE FABRICATED OR ERECTED UNTIL SHOP DRAWINGS HAVE BEEN APPROVED.

4. NO HOLES OTHER THAN THOSE SPECIFICALLY DETAILED SHALL BE ALLOWED THROUGH STRUCTURAL STEEL MEMBERS. FIELD CUTTING OF STEEL SHALL NOT BE PERMITTED WITHOUT APPROVAL OF THE CONTRACTING OFFICER.

5. THE CONTRACTOR SHALL VERIFY ALL SHOP DRAWING DIMENSIONS WITH THE STRUCTURAL PLANS AND DETAILS, AND WITH DIMENSIONS OF COLUMN LAYOUT.

6. BOLTED CONNECTIONS: BOLTS SHALL CONFORM TO ASTM A307, 20MM DIAMETER MINIMUM UNLESS NOTED OTHERWISE AND HOT-DIP GALVANIZED; NUTS SHALL CONFORM TO ASTM A563 HOT DIP GALVANIZED; WASHERS SHALL NOT BE USED.

7. BOLTS SHALL BE TIGHTENED TO ADEQUATELY DEVELOP BOLT TENSION.

FABRICATION NOTES

1. THE CONTRACTOR SHALL SUBMIT A SEPARATE, SPECIFIC ERECTION AND SAFETY PLAN ADDRESSING ALL FACETS OF TOWER CONSTRUCTION.

2. THIS SET OF DRAWINGS WAS DEVELOPED AS A SOLUTION TO MEET AED REQUIREMENTS FOR THE CONSTRUCTION OF WATER TOWERS THAT MEET U.S. STANDARDS FOR DESIGN, TO INCLUDE SEISMIC CRITERIA, USING MATERIALS AND CONSTRUCTION METHODS THAT REDUCE OR ELIMINATE THE NEED FOR LARGE CRANES THAT MAY NOT BE ABLE TO ACCESS PROJECT SITES, AND ENABLE EASE OF CONSTRUCTION QUALITY CONTROL. WATER TOWER HAS BEEN DESIGNED TO SUPPORT A PRE-FABRICATED WATER TANK.

3. ALL ANGLES, BEAMS AND PLATES ARE TO BE FABRICATED IN A SHOP WHERE THE STRICTEST TOLERANCES FOR FABRICATION (MEMBER LENGTHS, LOCATION AND SIZE OF BOLT HOLES) CAN BE MAINTAINED. THESE COMPONENTS WOULD THEN BE TRANSPORTED TO PROJECT SITES AND ERECTED WITHOUT THE USE OF HEAVY EQUIPMENT AS THE MAXIMUM WEIGHT PER PIECE IS UNDER 90 KG. THIS DESIGN SHALL NOT BE MODIFIED, IN EITHER THE FABRICATION SHOP OR AT THE PROJECT SITE. UNDER NO CONDITIONS SHALL BOLT HOLES BE MODIFIED OR ADDED AT THE PROJECT SITE AS A RESULT OF INACCURATE CONSTRUCTION PRACTICES. CONTRACTOR SHALL ASSEMBLE PLATFORM IN SHOP, POSITION STEEL CHECKER PLATE SECTIONS IN FINAL LOCATION, AND DRILL HOLES IN PLATE TO ALIGH WITH FLANGES OF STRUCTURAL MEMBERS (SEE FUTHER NOTES ON S-3). LIMITED FIELD DRILLING OF HOLES FOR WATER TANK ERECTION MAY BE REQUIRED AND WILL BE SUBMITTED FOR APPROVAL.

4. IF THE CONTRACTOR CANNOT OBTAIN THE REQUIRED ANGLE, BEAM, OR PLATES, ANY MODIFICATIONS OR SUBSTITUTIONS WILL REQUIRE A SUBMISSION OF COMPLETE ALTERNATE FABRICATION DRAWINGS FOR REVIEW AND APPROVAL, AND ONLY INCREASES IN MEMBER SIZE WILL BE CONSIDERED.

5. WELDING WILL ABSOLUTELY NOT BE ALLOWED ON THIS TOWER.

6. FABRICATION SHALL BE DONE IN A SHOP WITH TOLERANCES PER AISC MANUAL OF STEEL CONSTRUCTION AND ALL ADDITIONAL CODES REFERENCED THERE IN. CONTRACTOR SHALL ESTABLISH A SYSTEM OF MARKING MEMBERS TO FACILITATE ASSEMBLY IN THE FIELD.

7. STEEL FINISH REQUIREMENTS SHALL INCLUDE REMOVAL OF ALL SCALE AND RUST PRIOR TO APPLICATION OF A BASE COAT PRIMER ON ALL METAL SURFACES. THIS WILL BE FOLLOWED BY TWO FINISH COATS OF EPOXY ENAMEL PAINT. IF AVAILABLE, HOT-DIP GALVANIZING OF TOWER ELEMENTS IS ACCEPTABLE, BUT GALVANIZED BOLTS AND NUTS MUST THEN BE PROVIDED, AND CARE MUST BE TAKEN TO PREVENT DAMAGING THE SURFACE FINISH.

8. TO AID IN MEANS OF CONSTRUCTION, THE 2L100x100 HANDRAIL PIECE HAS BEEN DESIGNED FOR A LOAD OF 250KG AT MIDSPAN. THE CONTRACTOR MAY USE THIS PIECE IN A PULLEY MECHANISM TO RAISE THE PLATFORM FRAMING TO THE REQUIRED ELEVATION. THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR MEANS OF CONSTRUCTION AND SHALL NOT HOLD THE GOVERNMENT LIABLE.

9. FIT-UP FOR DIMENSIONAL CHECK SHALL BE MADE BY THE CONTRACTOR.

WATER TANK

1. WATER TOWER HAS BEEN DESIGNED TO ACCEPT A PRE-FABRICATED WATER TANK. ONLY METAL TANKS SHALL BE PERMITTED. FULL DETAILS OF THE PROPOSED TANK SHALL BE SUBMITTED FOR APPROVAL.

2. A PARTIAL LIST OF WTER TANK SUPPLIERS:

http://www.alibaba.com/product-free/100696118/Panel_Water_tank.html

http://www.alibaba.com/product/my100479764-100277497-0/prodductdetail.html

http://www.modutank.com/

http://www.binasteel.com.my/stainless-steel-tank.html

http://www.sunnik.com.my/products01.htm

http://www.watertank.com/products.asp#eltank

3. CONTRACTOR SHALL COORDINATE WATER TANK CONNECTIONS WITH SHOP FABRICATOR.

US Army Corps of Engineers
AFGHANISTAN ENGINEER DISTRICT

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY:
DATE: 17 DECEMBER 2009
SOLICITATION NO.:
CONTRACT NO.:
PLOT SCALE: 1
PLOT DATE: 1/24/2011
FILE NUMBER:
SIZE: ANSI D
FILE NAME: U05_S-1.DGN

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 09356

SITE ADAPT DESIGN
U05 - 20 METER WATER TOWER
GENERAL NOTES

SHEET IDENTIFICATION
S-1
SHEET 2 OF 23

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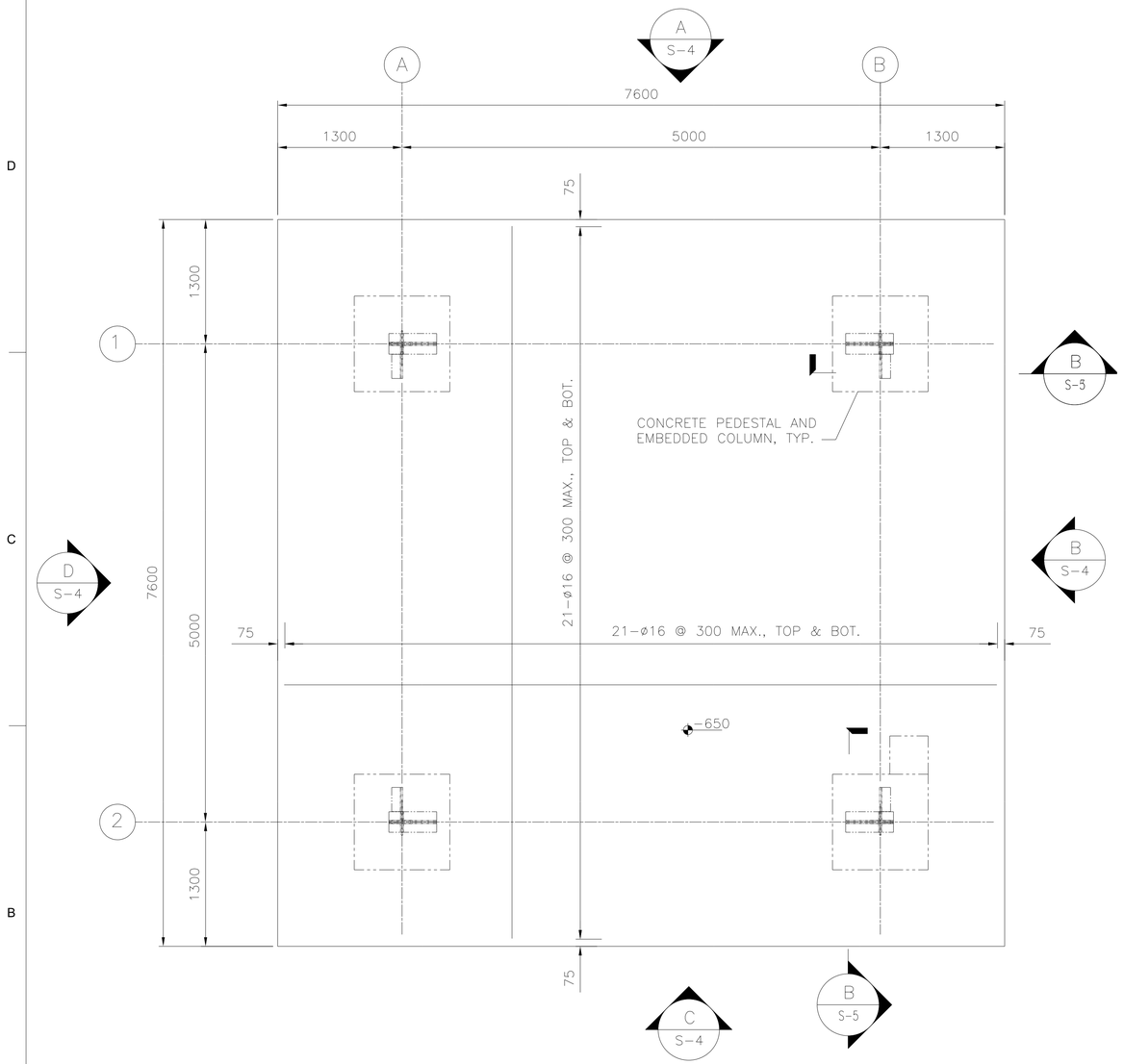
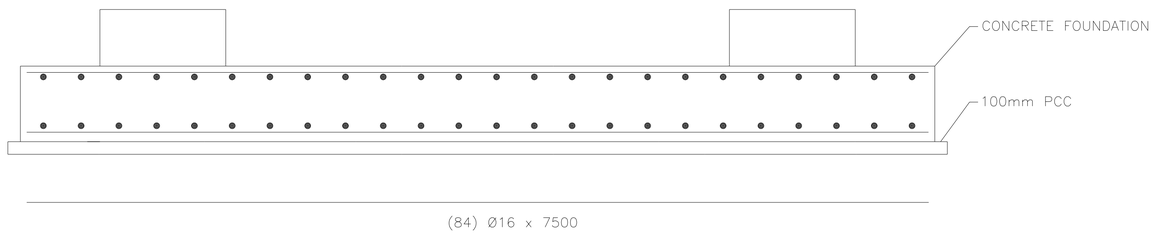
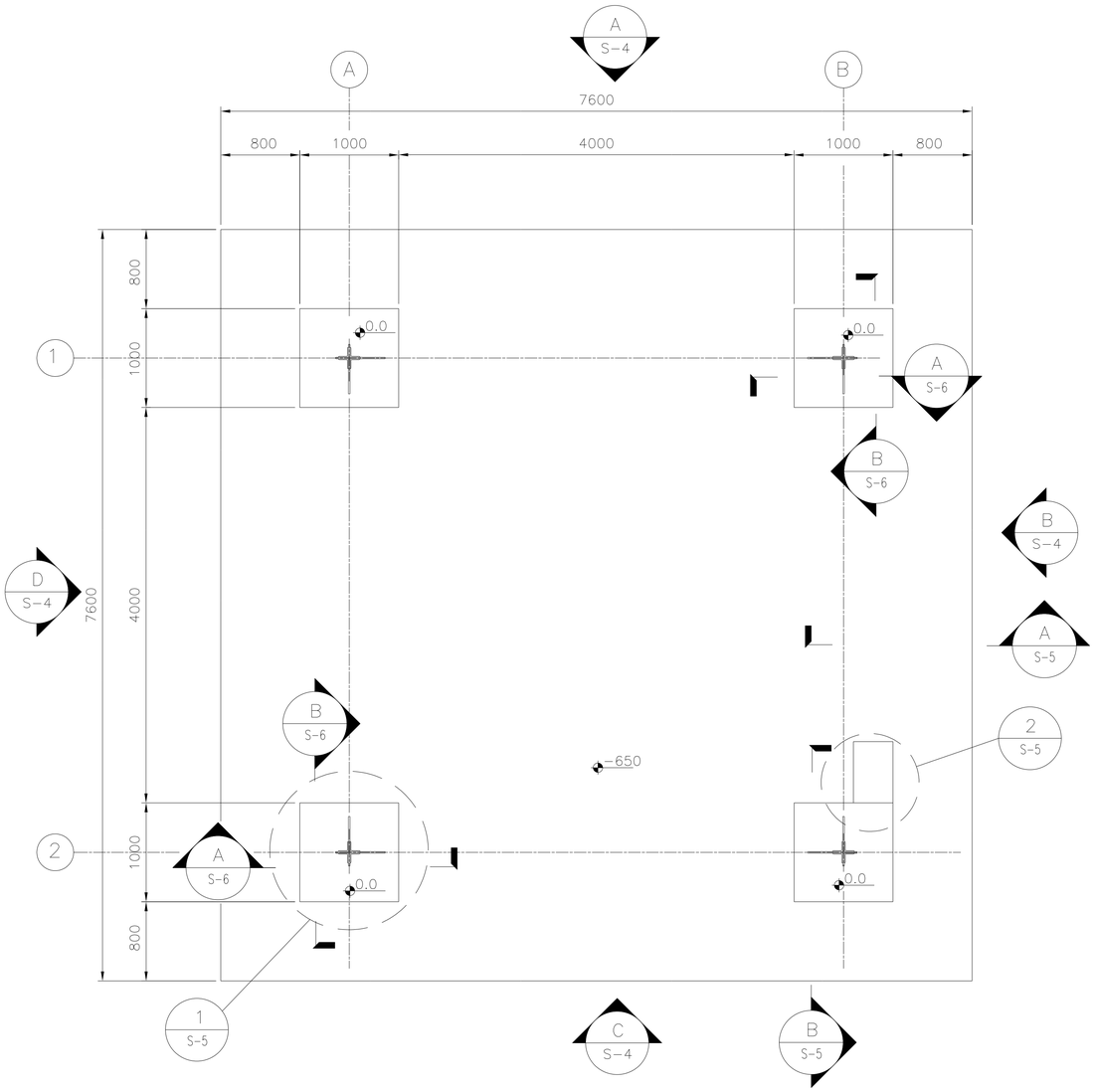


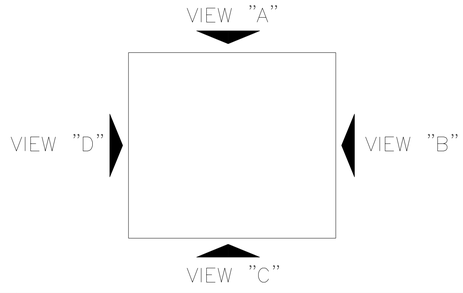
FOUNDATION PLAN
AT ELEVATION -650mm
1:30



REBAR DETAIL



FOUNDATION PLAN
AT ELEVATION 0.0mm
1:30



NOTES:

1. TOWER WAS DESIGNED FOR A 535mm BACKFILL OVER THE FOUNDATION SLAB. THE PEDESTALS SHALL BE A MAXIMUM OF 115mm ABOVE GRADE.

600 0 600mm
SCALE: 1 = 30

UNLESS NOTED OTHERWISE, LINEAR DIMENSIONS ARE IN MILLIMETERS.

US Army Corps of Engineers
AFGHANISTAN ENGINEER DISTRICT

MARK	DESCRIPTION	DATE	APPR.	APPR. MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY:
DATE: 17 DECEMBER 2009
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:
PLOT SCALE: 1 = 1
PLOT DATE: 10/24/2011
SIZE: ANSI D
FILE NAME: U05_S-2.dgn

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 09356

SITE ADAPT DESIGN
U05 - 20 METER WATER TOWER
FOUNDATION PLAN

SHEET IDENTIFICATION
S-2
SHEET 3 OF 23

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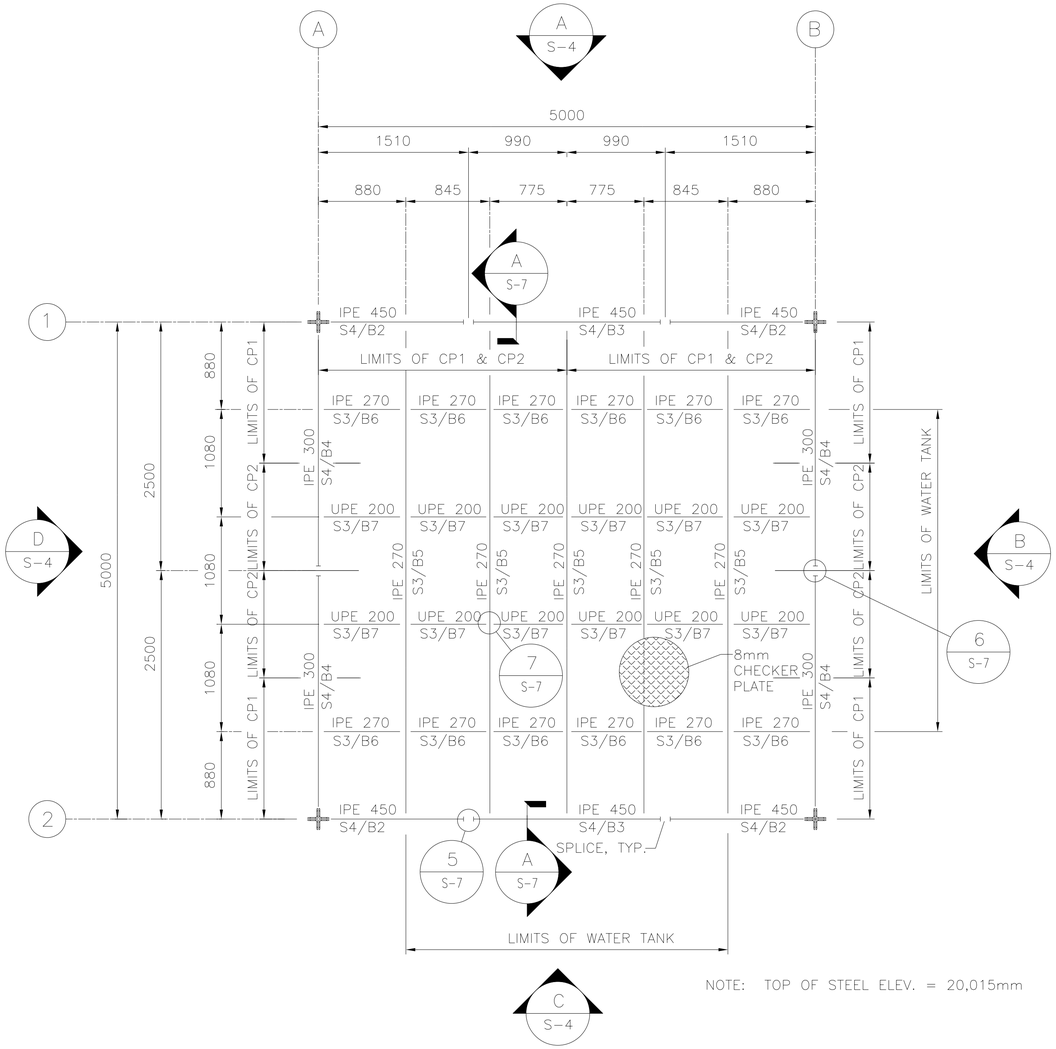
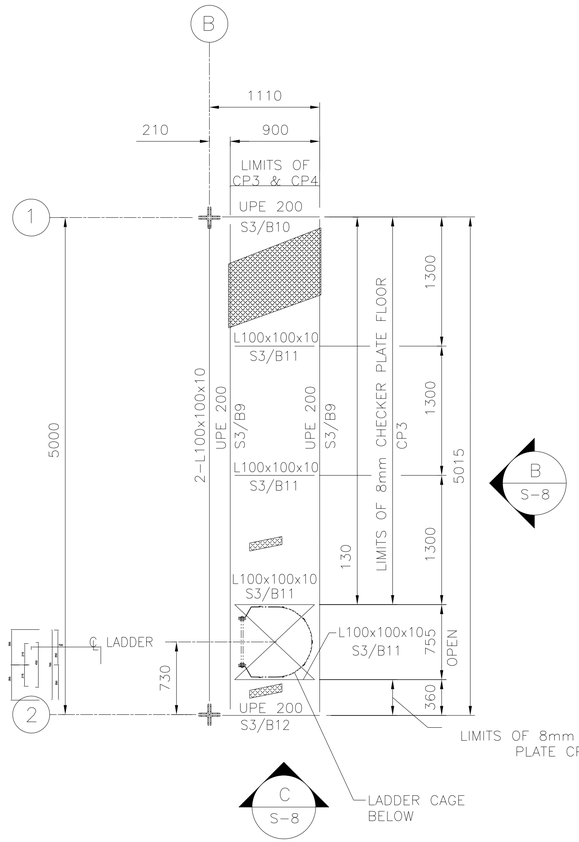


NOTE: TOP OF STEEL ELEV. = 20,015mm

PLATFORM FRAMING PLAN

1:30



NOTE: TOP OF PLATFORM STEEL ELEV. = 9790mm

STAIR LANDING FRAMING PLAN

1:30

CHECKER PLATE NOTES:

PLATFORM:

1. PLATFORM CHECKER PLATE SHALL BE INSTALLED IN SIX (6) SEPARATE PIECES; FOUR (4) EACH CP1'S AND TWO (2) EACH CP2'S.

2. PLATES WILL BE ATTACHED WITH 12mm ø BOLTS TO THE SUPPORTING MEMBERS AT A MAXIMUM SPACING IF 700mm AROUND PERIMETER BEAMS AND WALKWAY AREA. COORDINATE BOLT LOCATION AND INTERFERENCE WITH WATER TANK ON BOLTS UNDER THE WATER TANK.

3. CUT OUT PLATES AROUND BEAM SPLICE PLATES WHERE NECESSARY.

LANDING:

4. LANDING CHECKER PLATE SHALL BE INSTALLED IN TWO (2) SEPARATE PIECES; ONE (1) EACH CP3 AND ONE (1) EACH CP4.

5. PLATES WILL BE ATTACHED WITH 12mm ø BOLTS TO THE SUPPORTING MEMBERS AT A MAXIMUM SPACING IF 700mm AROUND PERIMETER BEAMS.

CHECKER PLATE DIMENSIONS:

CP1 – 2470mm x 1390mm
CP2 – 2470mm x 1080mm
CP3 – 3885mm x 895mm
CP4 – 355mm x 895mm

LEGEND:

CPX – 8mm CHECKER PLATE NUMBER
SX/XX – MEMBER MARK NUMBER

NOTES:

1. PLAN DIMENSIONS ON IPE SHAPES ARE MEASURED TO THE CENTERLINE MEMBERS. PLAN DIMENSIONS ON UPE AND L SHAPES ARE MEASURED TO THE OUTSIDE OF THE VERTICAL FACE OF THE WEB OR LEG.

600 0 600mm
SCALE: 1 = 30

UNLESS NOTED OTHERWISE, LINEAR DIMENSIONS ARE IN MILLIMETERS.

US Army Corps of Engineers®
AFGHANISTAN ENGINEER DISTRICT

MARK	DESCRIPTION	DATE	APPR.	DESCRIPTION	DATE	APPR.

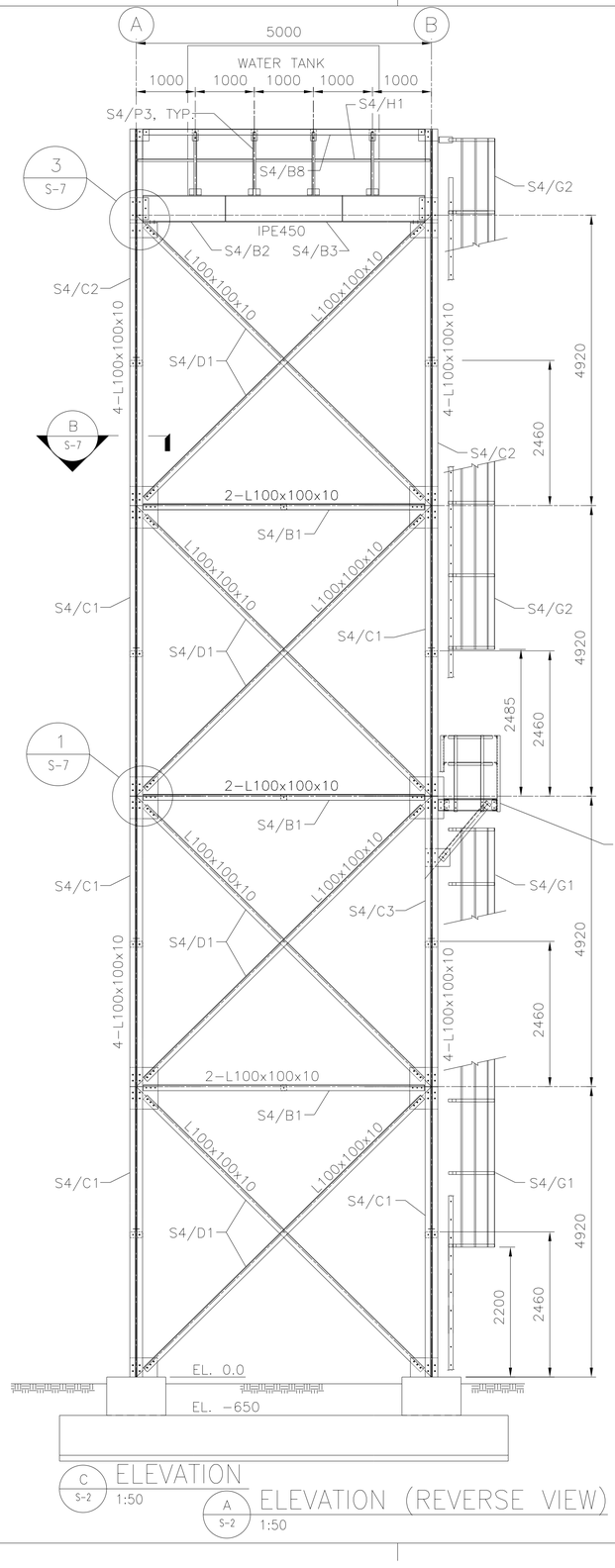
DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY:
DATE: 17 DECEMBER 2009
SOLICITATION NO.:
CONTRACT NO.:
PLOT SCALE: 1:1
PLOT DATE: 10/24/2011
FILE NUMBER:
SIZE: ANSI D
FILE NAME: U05_S-3.dgn

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 09356

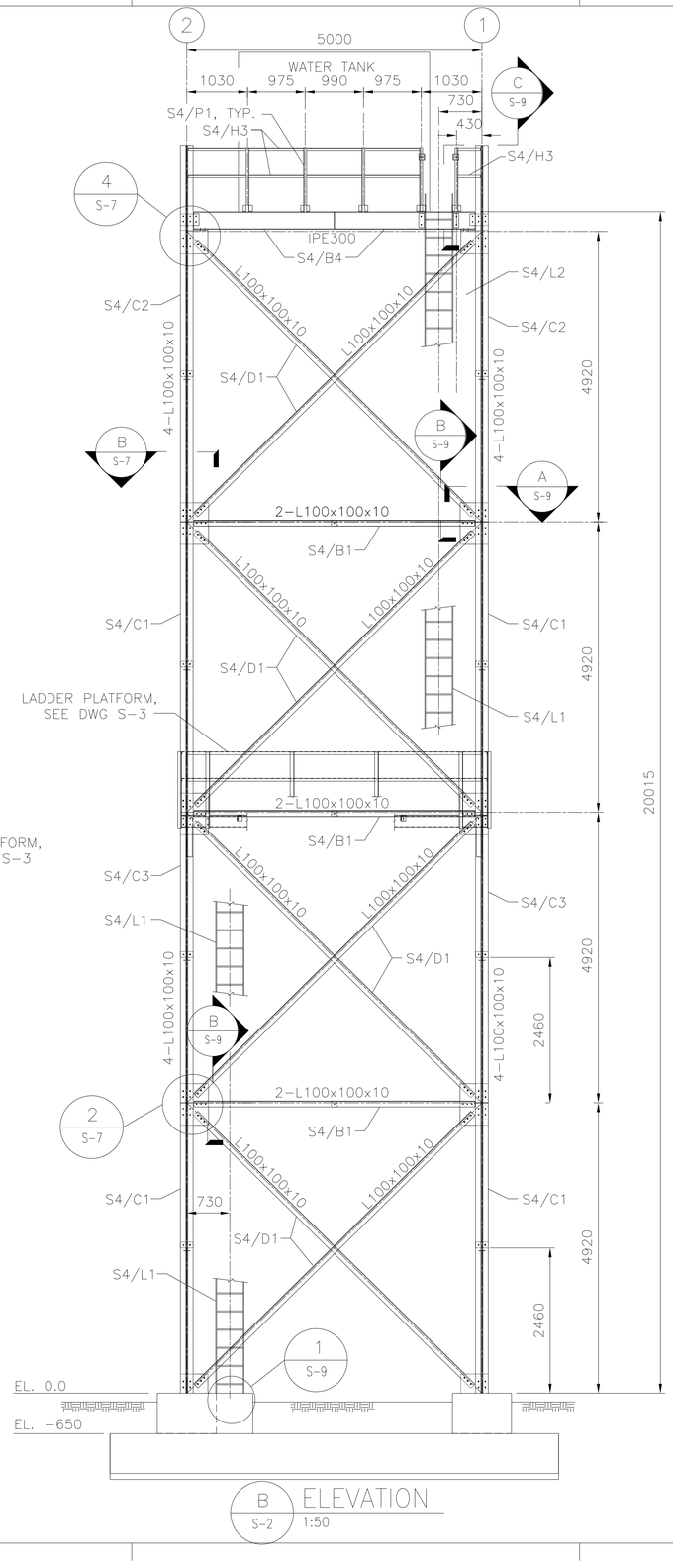
SITE ADAPT DESIGN
U05 - 20 METER WATER TOWER
PLATFORM & CATWALK FRAMING PLAN

SHEET IDENTIFICATION
S-3
SHEET 4 OF 23

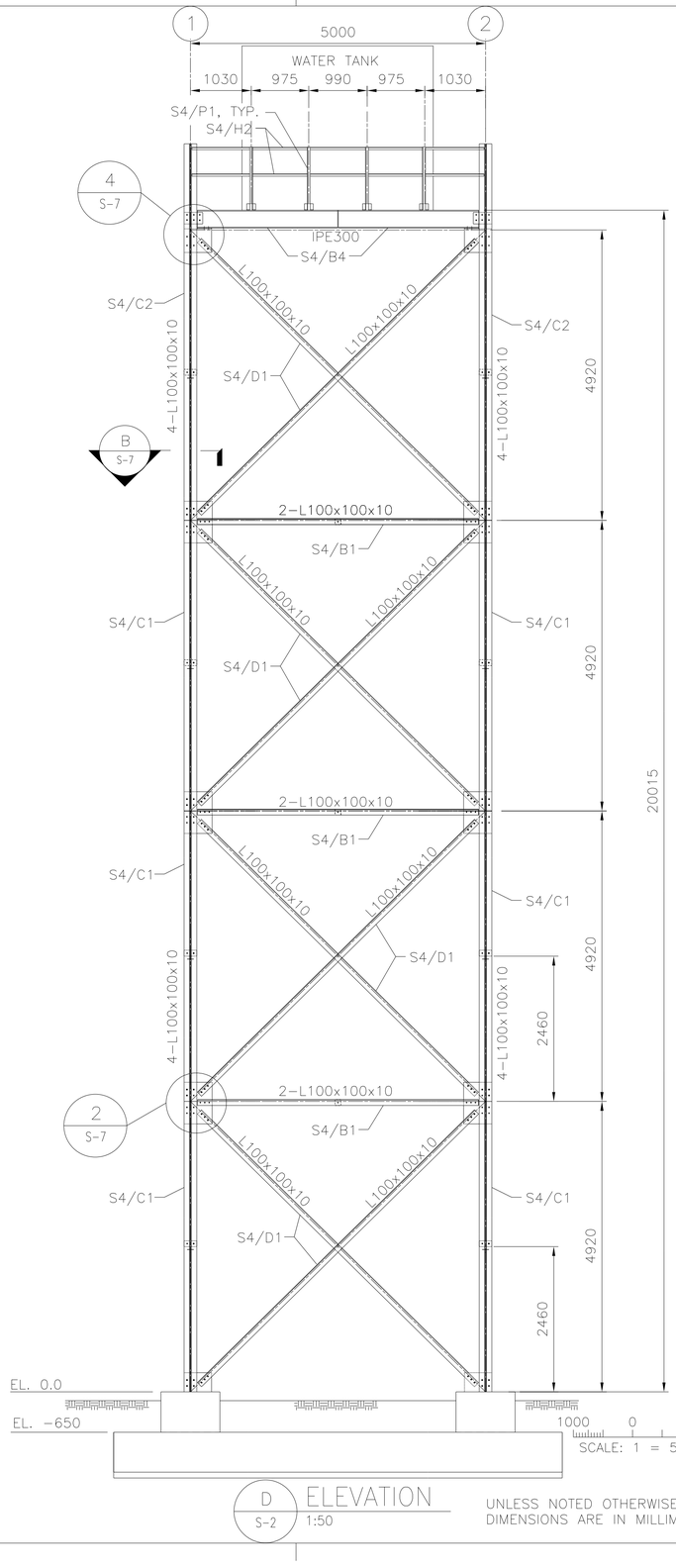
c:\users\n2aenjh3\documents\pwwork1\d0147927\U05_S-3.dgn
10/24/2011 6:38:44 AM



C S-2 ELEVATION 1:50



B S-2 ELEVATION 1:50



D S-2 ELEVATION 1:50

UNLESS NOTED OTHERWISE, LINEAR DIMENSIONS ARE IN MILLIMETERS.

C S-2 ELEVATION (REVERSE VIEW) 1:50

US Army Corps of Engineers
AFGHANISTAN ENGINEER DISTRICT

MARK	DESCRIPTION	DATE	APPR.	APPR. MARK	DESCRIPTION	DATE	APPR.

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 09356

DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY:
PLOT SCALE: 1.000000:1
SIZE: ANSI D
PLOT DATE:
FILE NAME: U05_S-4.dgn
FILE NUMBER:
CONTRACT NO.:
SOLICITATION NO.:
DATE: 17 DECEMBER 2009

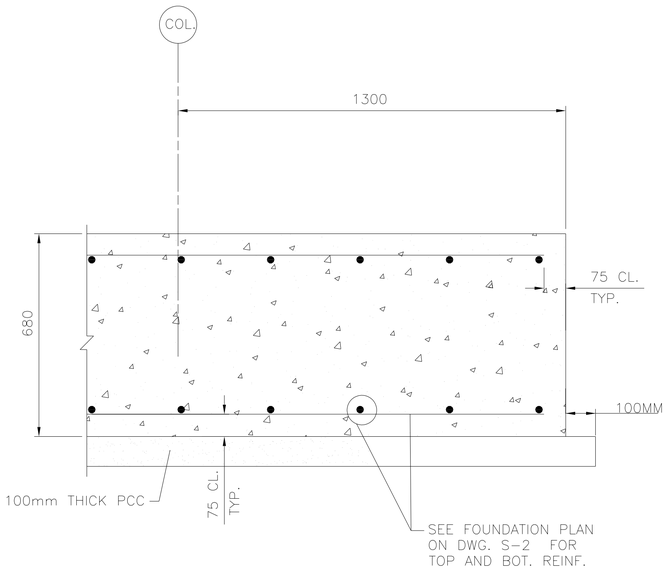
SITE ADAPT DESIGN

U05 - 20 METER WATER TOWER

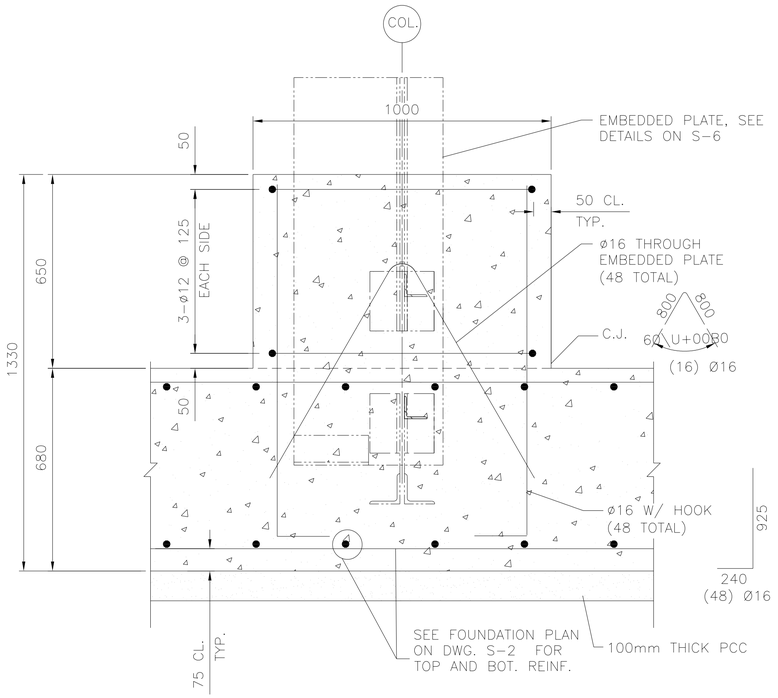
ELEVATIONS

SHEET IDENTIFICATION
S-4
SHEET 5 OF 23

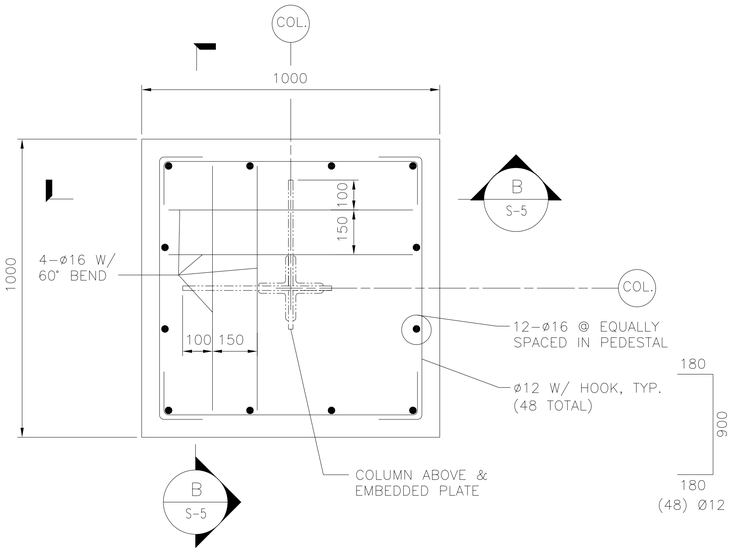
c:\users\n2aenjh3\documents\pwwork1\d0147927\U05_S-4.dgn
10/24/2011 6:42:53 AM



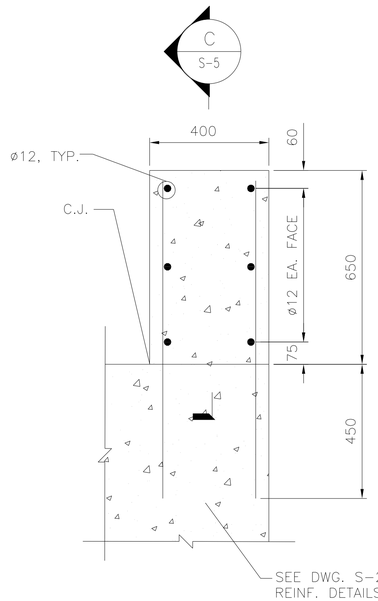
SECTION A
1:10 S-2



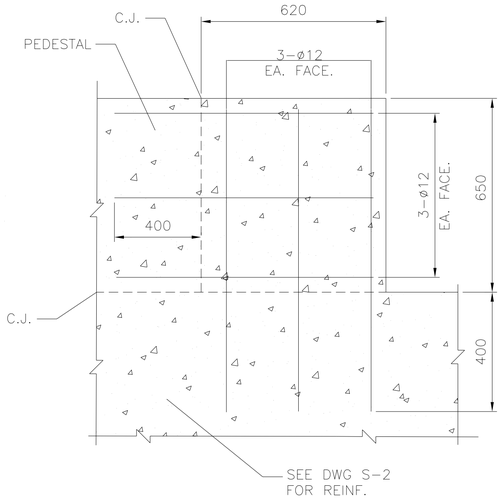
SECTION B
1:10 S-2 S-5



DETAIL 1
1:10 S-2



DETAIL 2
1:10 S-2



SECTION C
1:10 S-5

200 0 200mm
SCALE: 1 = 10

NOTE: SEPARATE CONCRETE PLACEMENT. SEE DETAIL 1 ON DRAWING S-9 FOR ANCHOR BOLT REQUIREMENTS.

UNLESS NOTED OTHERWISE, LINEAR DIMENSIONS ARE IN MILLIMETERS.

US Army Corps of Engineers
AFGHANISTAN ENGINEER DISTRICT

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

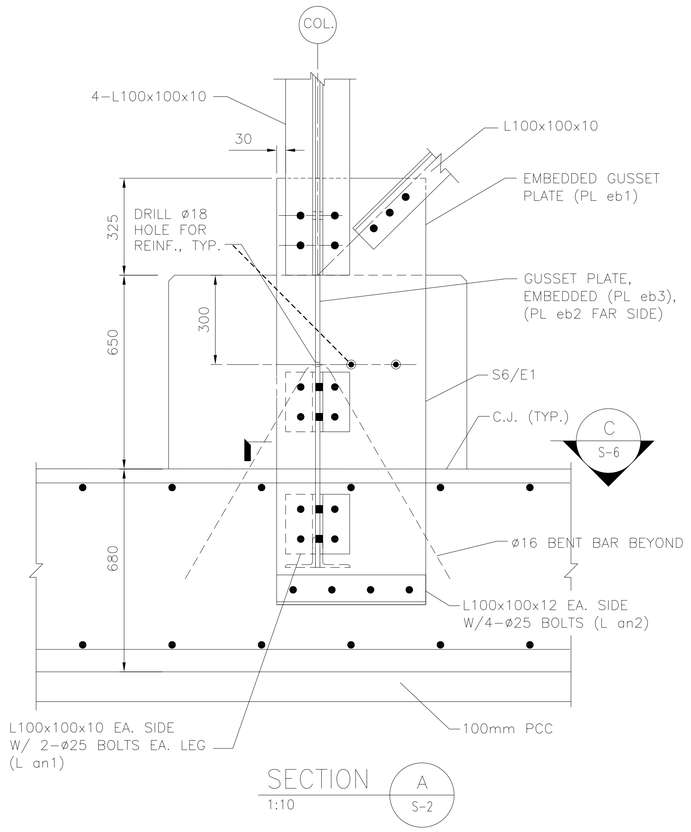
DESIGNED BY:
DWN BY: CKD BY:
SUBMITTED BY:
DATE: 17 DECEMBER 2009
SOLICITATION NO.:
CONTRACT NO.:
PLOT SCALE: 1.1
PLOT DATE: 11/07/2011
FILE NUMBER:
SIZE: ANSI D
FILE NAME: U05_S-5.dgn

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 09356

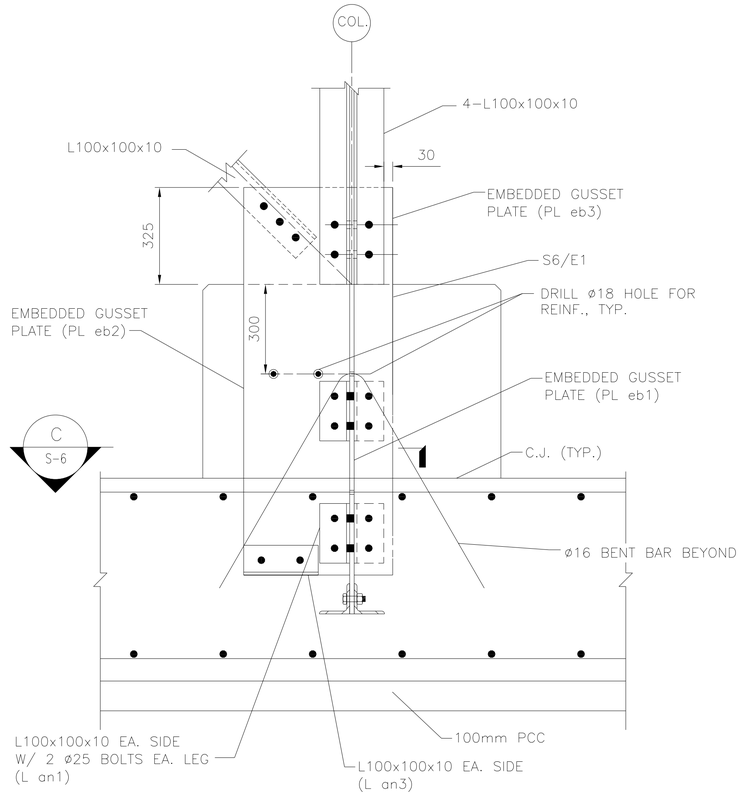
SITE ADAPT DESIGN
U05 - 20 METER WATER TOWER
FOUNDATION SECTIONS

SHEET IDENTIFICATION
S-5
SHEET 6 OF 23

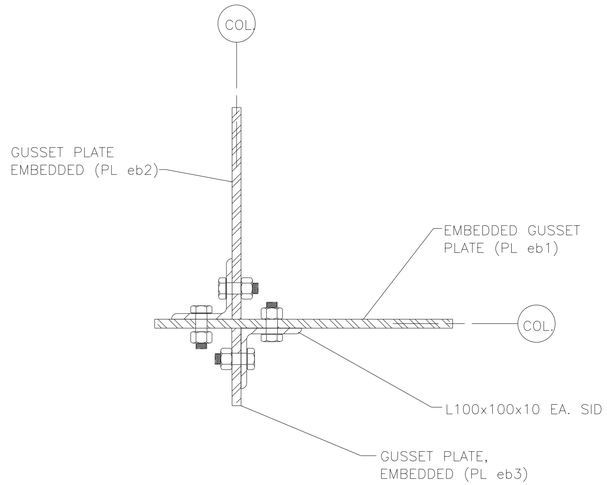
c:\users\n2aenjh3\documents\pwwork1\d0147927\U05_S-5.dgn
10/23/2011 5:34:13 PM



SECTION A
1:10 S-2



SECTION B
1:10 S-2



SECTION C
1:5 S-6

UNLESS NOTED OTHERWISE, LINEAR DIMENSIONS ARE IN MILLIMETERS.

US Army Corps of Engineers®
AFGHANISTAN ENGINEER DISTRICT

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY:
DATE: 17 DECEMBER 2009
SOLICITATION NO.:
CONTRACT NO.:
PLOT SCALE: 1:1
PLOT DATE: 10/23/2011
FILE NUMBER:
SIZE: ANSI D
FILE NAME: U05_S-6.dgn

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 09356

SITE ADAPT DESIGN

U05 - 20 METER WATER TOWER

FOUNDATION STEEL FRAMING SECTIONS

SHEET IDENTIFICATION
S-6
SHEET 7 OF 23

c:\users\n2aenjh3\documents\pwwork1\d01147927\U05_S-6.dgn
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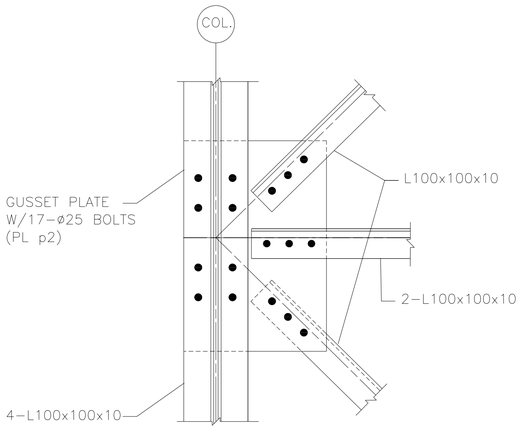
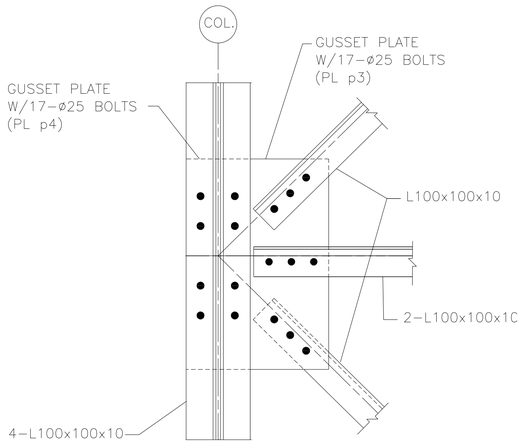
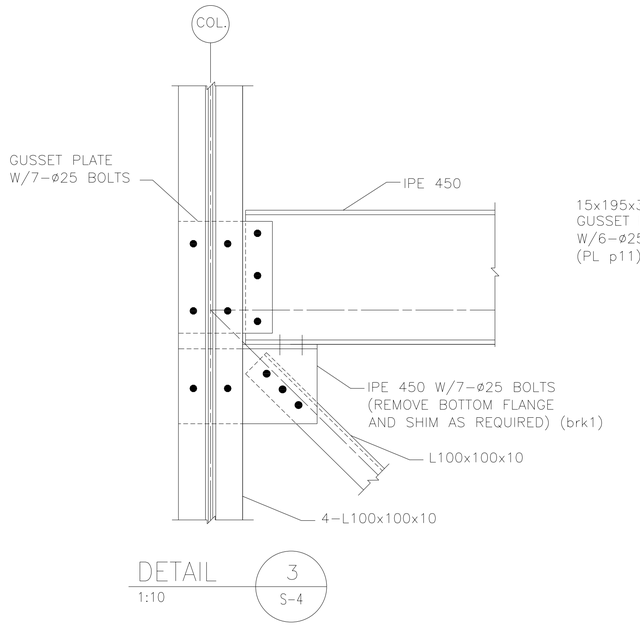


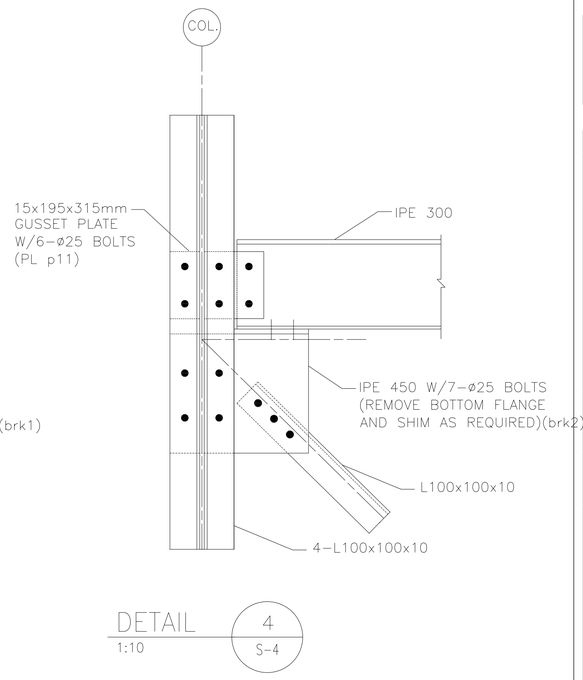
DETAIL 1 / S-4
1:10



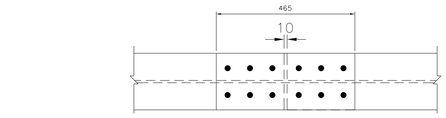
DETAIL 2 / S-4
1:10

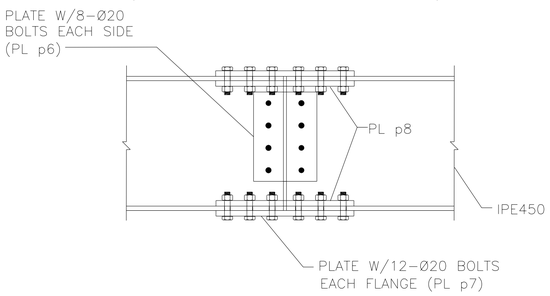


DETAIL 3 / S-4
1:10

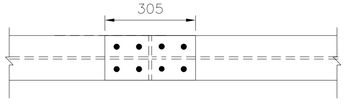


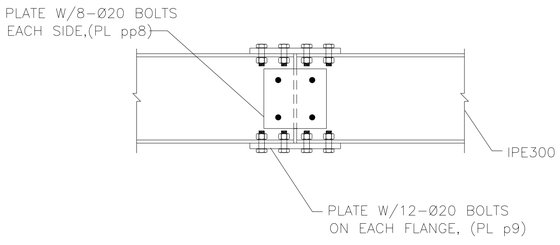
DETAIL 4 / S-4
1:10



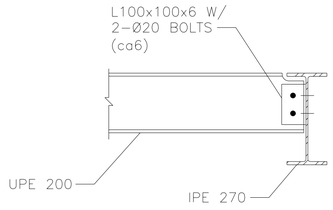


DETAIL 5 / S-3
1:10

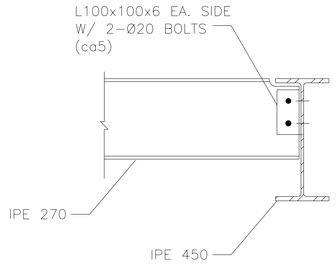




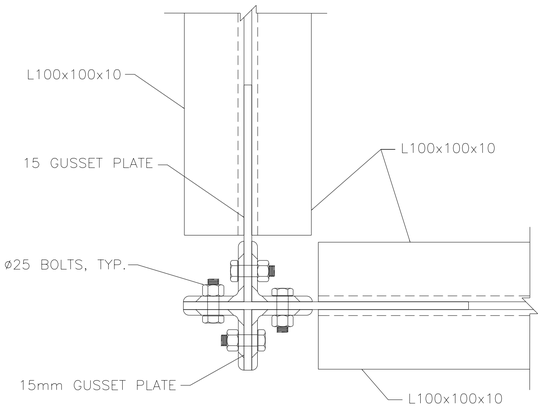
DETAIL 6 / S-3
1:10



DETAIL 7 / S-3
1:10



SECTION A / S-3
1:10



SECTION B / S-4
1:5

1000 0 1000mm
SCALE: 1 = 50

UNLESS NOTED OTHERWISE, LINEAR DIMENSIONS ARE IN MILLIMETERS.

US Army Corps of Engineers
AFGHANISTAN ENGINEER DISTRICT

MARK	DESCRIPTION	DATE	APPR.
APPR. MARK	DESCRIPTION	DATE	APPR.

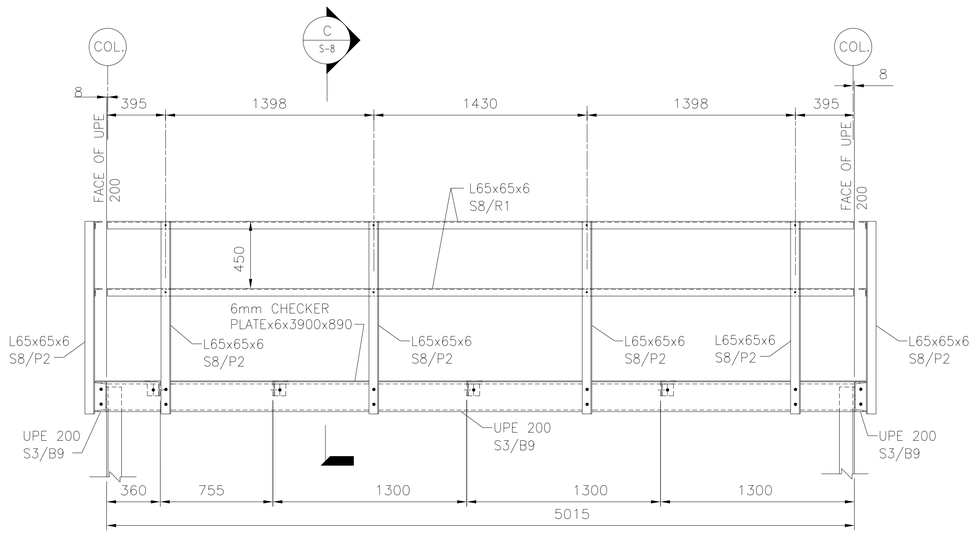
U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 09356

DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY:
DATE: 17 DECEMBER 2009
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:
PLOT SCALE: 1.5:1
PLOT DATE: 10/23/2013
SIZE: ANSI D
FILE NAME: U05_S-7.dgn

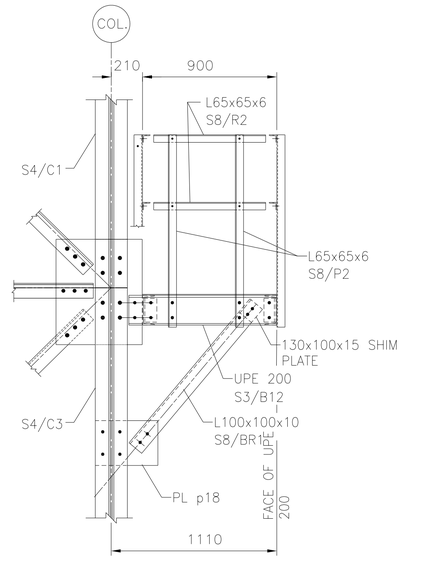
SITE ADAPT DESIGN
U05 - 20 METER WATER TOWER
SECTIONS & DETAILS

SHEET IDENTIFICATION
S-7
SHEET 8 OF 23

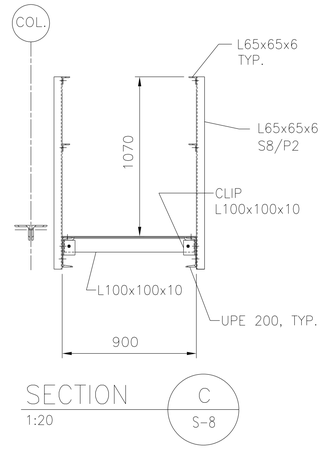
c:\users\h2aeinjh3\documents\pwwork1\d0147927\U05_S-7.dgn
10/23/2013 3:38:16 PM



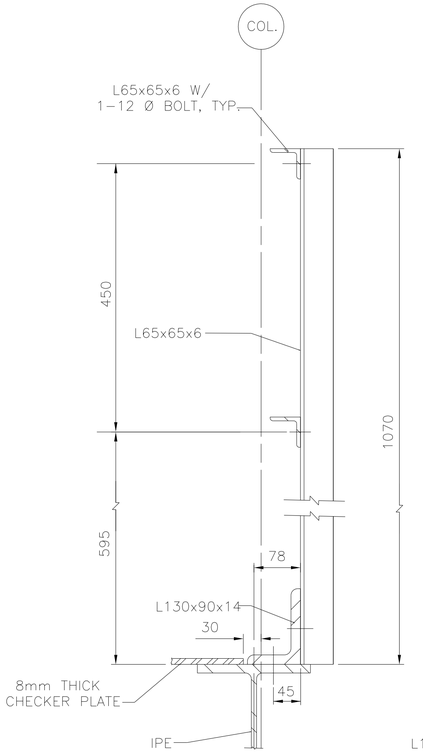
PLATFORM ELEVATION A
1:20
S-3

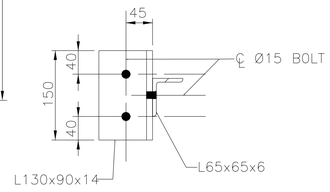


PLATFORM ELEVATION B
1:20
S-3

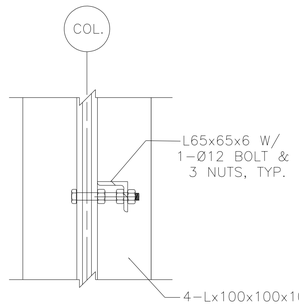


SECTION C
1:20
S-8

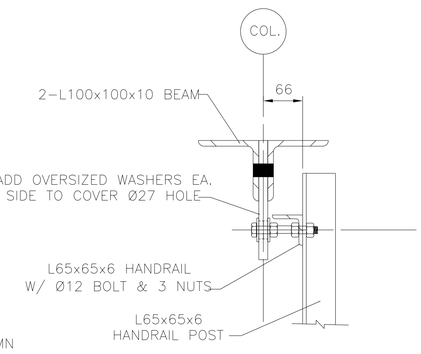




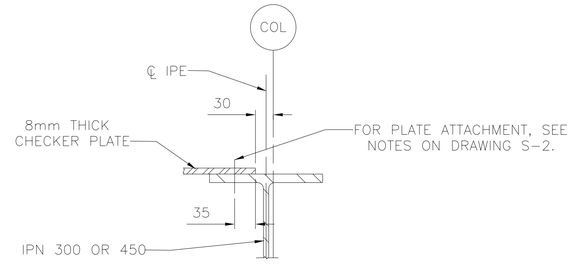
PLATFORM HANDRAIL DETAIL
1:5



COLUMN/HANDRAIL
CONNECTION DETAIL
1:5



BEAM/HANDRAIL
CONNECTION DETAIL
1:5



CHECKER PLATE ATTACHMENT DETAIL
1:5

100 0 100mm
SCALE: 1 = 5

UNLESS NOTED OTHERWISE, LINEAR
DIMENSIONS ARE IN MILLIMETERS.

US Army Corps of Engineers
AFGHANISTAN ENGINEER DISTRICT

MARK	DESCRIPTION	DATE	APPR.	APPR. MARK	DESCRIPTION	DATE	APPR.

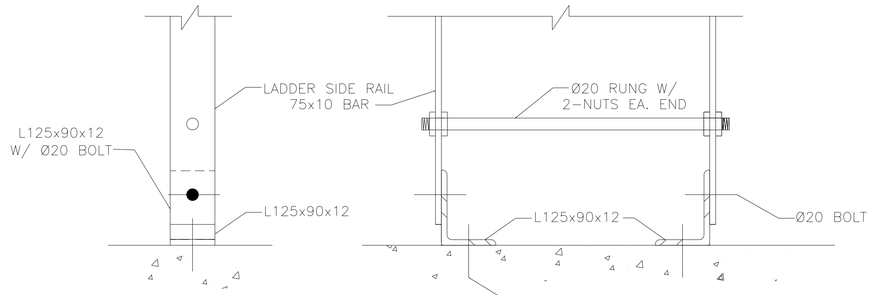
DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY:
DATE: 17 DECEMBER 2009
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:
PLOT SCALE: 1
PLOT DATE: 10/23/2011
SIZE: ANSI D
FILE NAME: U05_S-8.dgn

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 09356

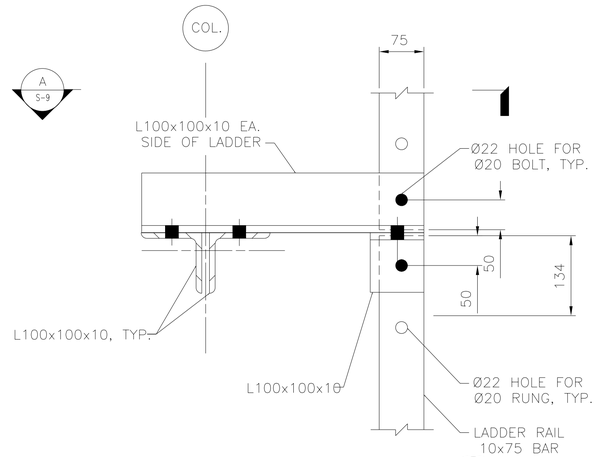
SITE ADAPT DESIGN
U05 - 20 METER WATER TOWER
SECTIONS & DETAILS

SHEET IDENTIFICATION
S-8
SHEET 9 OF 23

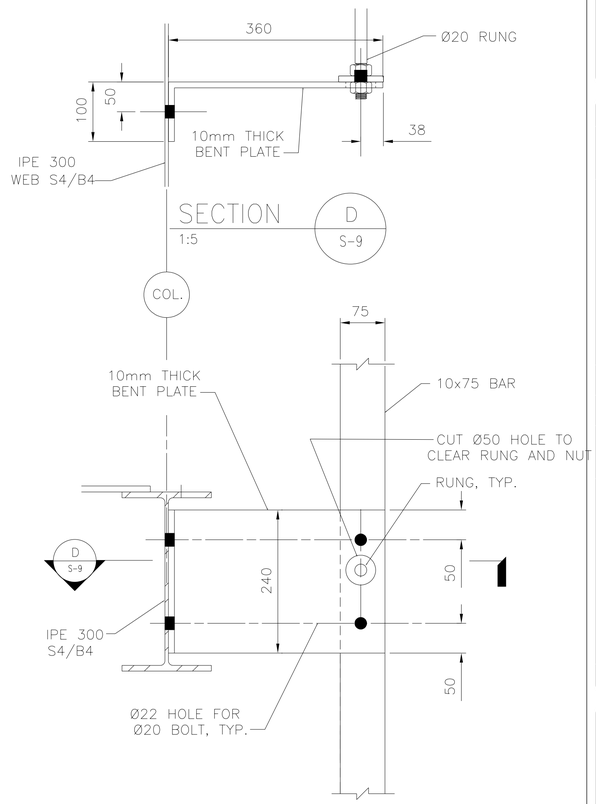
c:\users\n2aenjh3\documents\pwwork1\d0147927\U05_S-8.dgn
10/23/2011 8:38:58 PM



DETAIL 1 / S-4
1:5



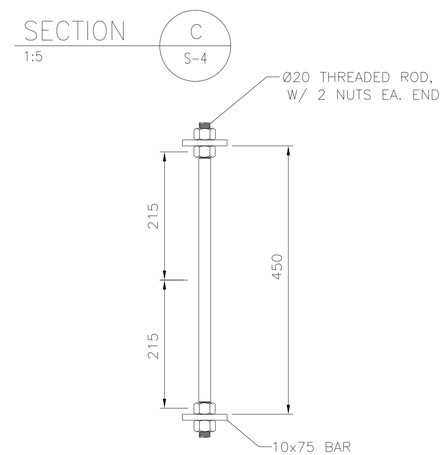
SECTION B / S-4
1:5



SECTION D / S-9
1:5

SECTION A / S-4 / S-9
1:5

LADDER CAGE DETAIL
1:5



LADDER RUNG & SIDE RAIL
1:5

100 0 100mm
SCALE: 1 = 5

UNLESS NOTED OTHERWISE, LINEAR
DIMENSIONS ARE IN MILLIMETERS.

US Army Corps of Engineers
AFGHANISTAN ENGINEER DISTRICT

MARK	DESCRIPTION	DATE	APPR. MARK	DESCRIPTION	DATE	APPR.

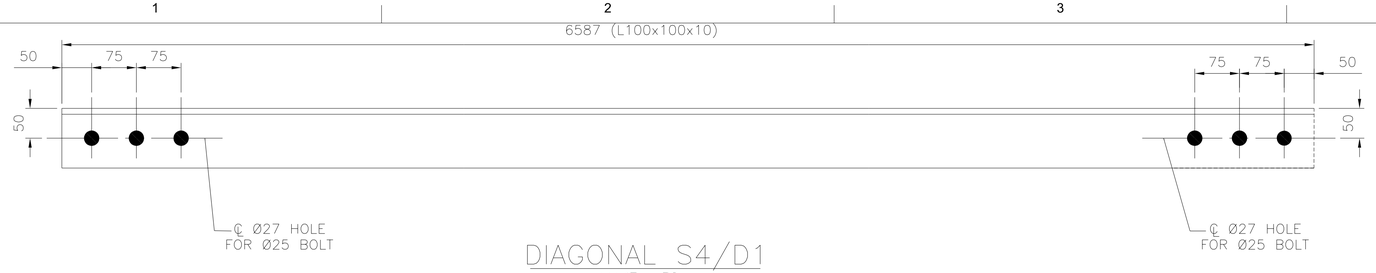
DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY:
PLOT SCALE: 1:1
PLOT DATE: 10/23/2011
SIZE: ANSI D
FILE NAME: U05_S-9.dgn
DATE: 17 DECEMBER 2009
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 09356

SITE ADAPT DESIGN
U05 - 20 METER WATER TOWER
SECTIONS & DETAILS

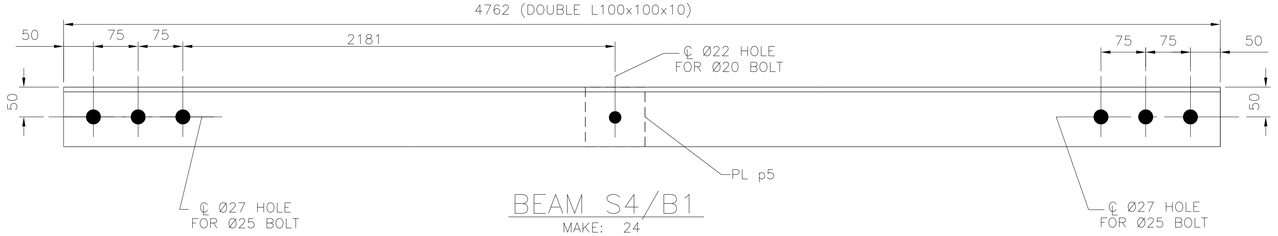
SHEET IDENTIFICATION
S-9
SHEET 10 OF 23

c:\users\n2aenjh3\documents\pwwork1\dt0147927\U05_S-9.dgn
10/23/2011 3:39:41 PM



DIAGONAL S4/D1

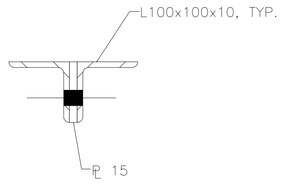
MAKE: 32



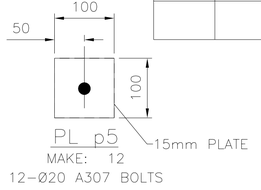
BEAM S4/B1

MAKE: 24

24–ø20 A307 BOLTS

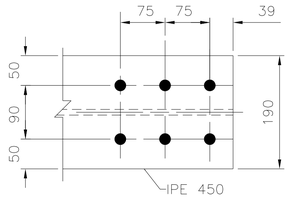


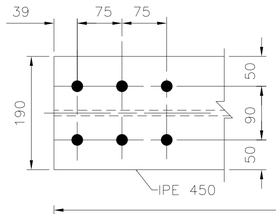
SHIP	MARK	NO. PCS	DESCRIPTION	LENGTH (mm)	FAB. MARK	NOTES
32	S4/D1		L100x100x10	6587		
24	S4/B1		2L100x100x10	4762		
		12	PL 15x100	100	PL p5	
4	S4/B2		IPE 450	1388		
		4	PL 10x215	300	PL p6	
		8	PL 20x190	465	PL p7	
		16	PL 20x80	465	PL p8	
		8	L100x100x10	200	ca5	
2	S4/B3		IPE 450	1970		
		12	L100x100x10	200	ca5	

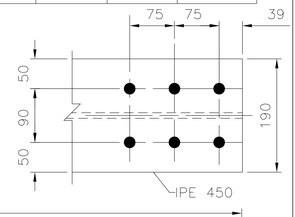


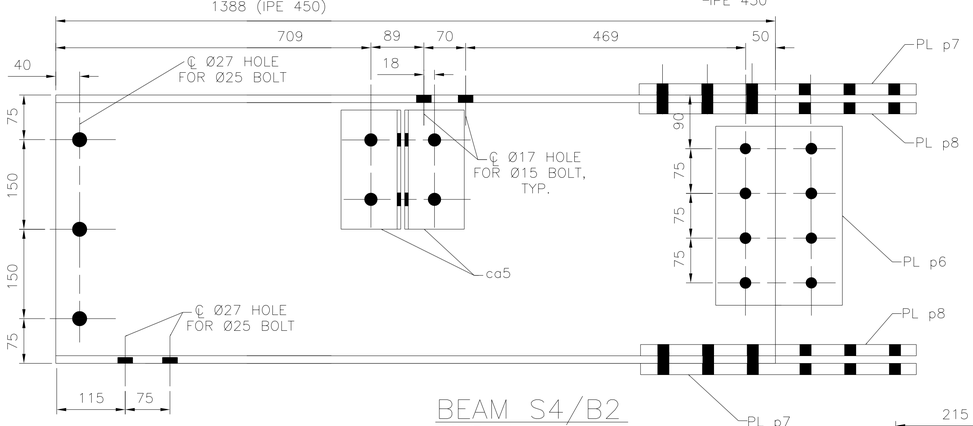
MAKE: 12

12–Ø20 A307 BOLTS





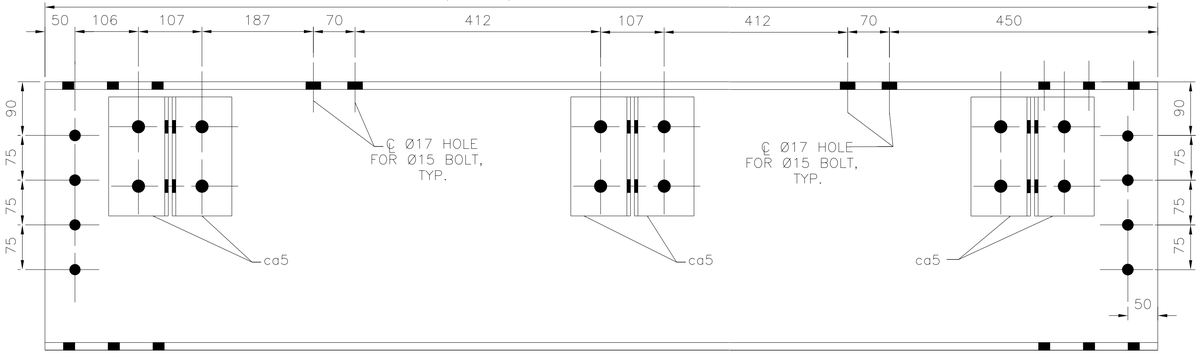




BEAM S4/B2

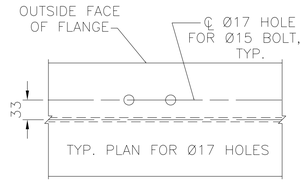
MAKE: 4

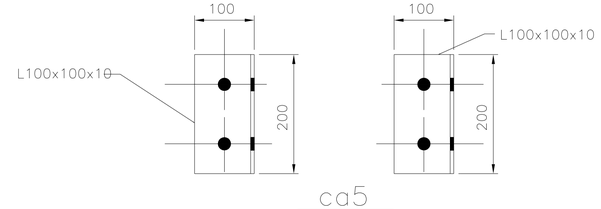
12–ø25 A307 BOLTS



BEAM S4/B3

MAKE: 2

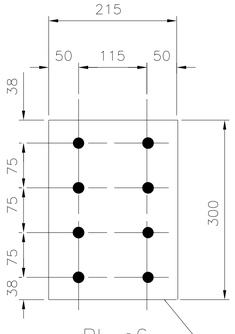




ca5

MAKE: 20

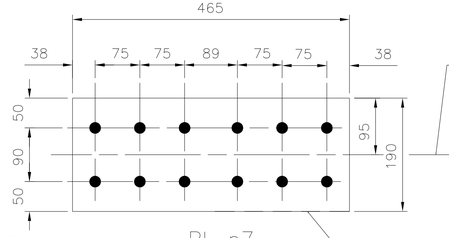
40–Ø25 A307 BOLTS



PL p6

MAKE: 8

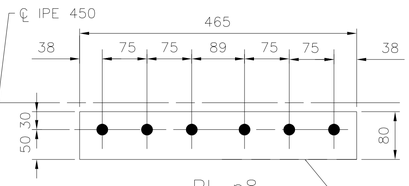
32–ø20 A307 BOLTS



PL p7

MAKE: 8

96–ø20 A307 BOLTS



PL p8

MAKE: 16

UNLESS NOTED OTHERWISE, LINEAR DIMENSIONS ARE IN MILLIMETERS.

US Army Corps of Engineers®
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MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 09356

DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY:
DATE: 17 DECEMBER 2009
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:
PLOT SCALE: 1 = 1
PLOT DATE: 10/23/2013
SIZE: ANSI D
FILE NAME: U05_S-10.dgn

SITE ADAPT DESIGN

U05 - 20 METER WATER TOWER

MEMBER DETAILS

SHEET IDENTIFICATION
S-10
SHEET 11 OF 23

c:\users\n2aenjh3\documents\pwwork1\d0147927\U05_S-10.dgn
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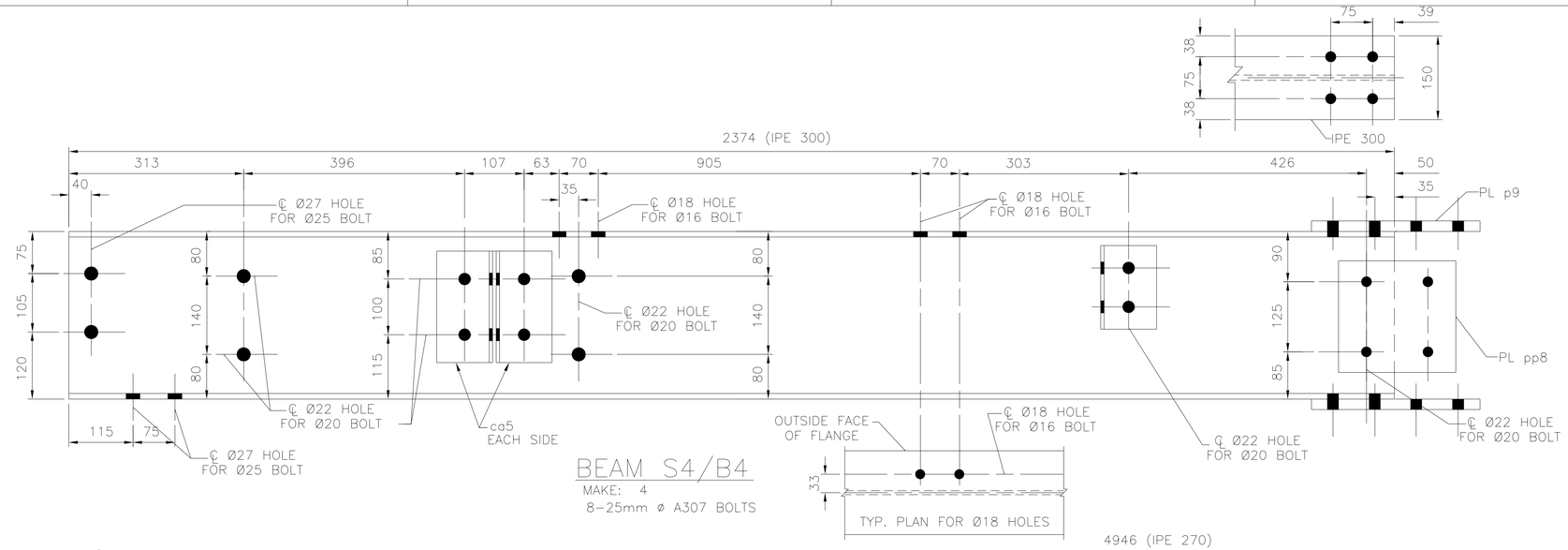
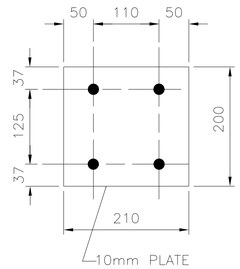
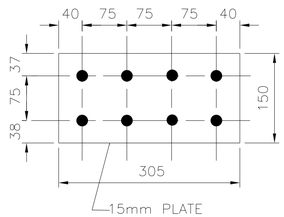


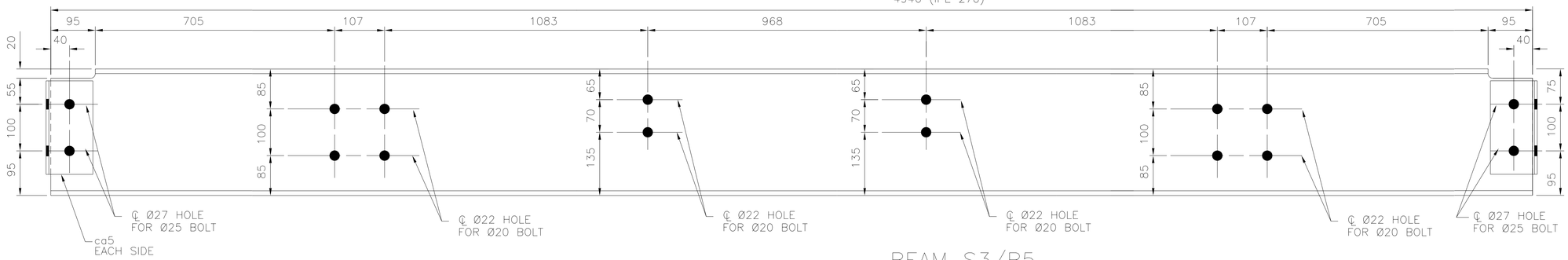
BEAM S4/B4
MAKE: 4
8–25mm ø A307 BOLTS



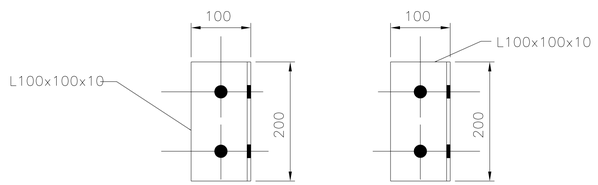
PL pp8
MAKE: 4
16–ø20 A307 BOLTS



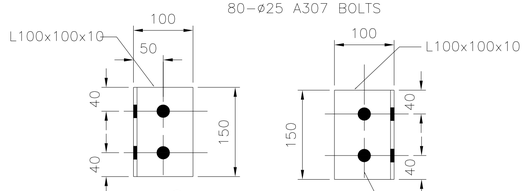
PL p9
MAKE: 4
24–ø20 A307 BOLTS



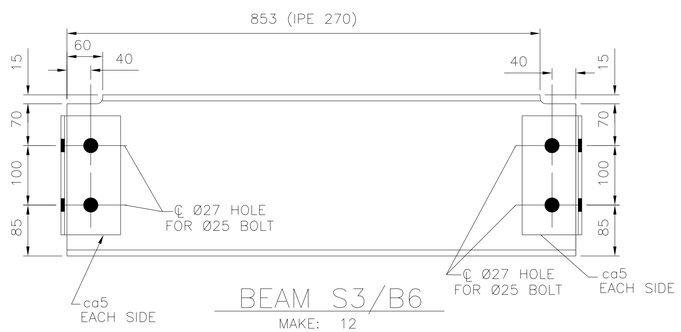
BEAM S3/B5
MAKE: 5
80–ø25 A307 BOLTS



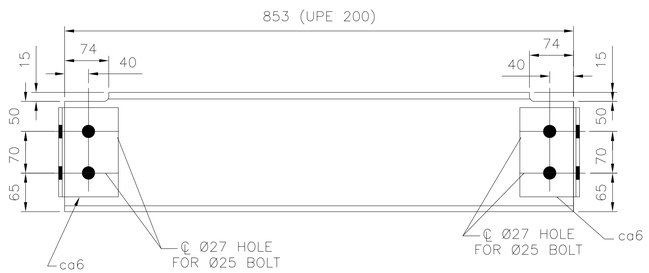
ca5
MAKE: 68



ca6
MAKE: 24



BEAM S3/B6
MAKE: 12
48–ø25 A307 BOLTS



BEAM S3/B7
MAKE: 12
48–ø25 A307 BOLTS

SHIP	MARK	NO. PCS	DESCRIPTION	LENGTH (mm)	FAB. MARK	NOTES
4	S4/B4		IPE 300	2367		
		4	PL 210x10	200	PL pp8	
		4	PL 150x15	305	PL p9	
5	S3/B5		IPE 270	4947		
		20	L100x100x10	200	ca5	
12	S3/B6		IPE 270	853		
		48	L100x100x10	200	ca5	
12	S3/B7		UPE 200	853		
		24	L100x100x10	150	ca6	

UNLESS NOTED OTHERWISE, LINEAR DIMENSIONS ARE IN MILLIMETERS.

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MARK	DESCRIPTION	DATE	APPR. MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY:
DATE: 17 DECEMBER 2009
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:
PLOT SCALE: 1:1
PLOT DATE: 10/23/2013
SIZE: ANSI D
FILE NAME: U05_S-11.dgn

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 09356

SITE ADAPT DESIGN
U05 - 20 METER WATER TOWER
MEMBER DETAILS

SHEET IDENTIFICATION
S-11
SHEET 12 OF 23

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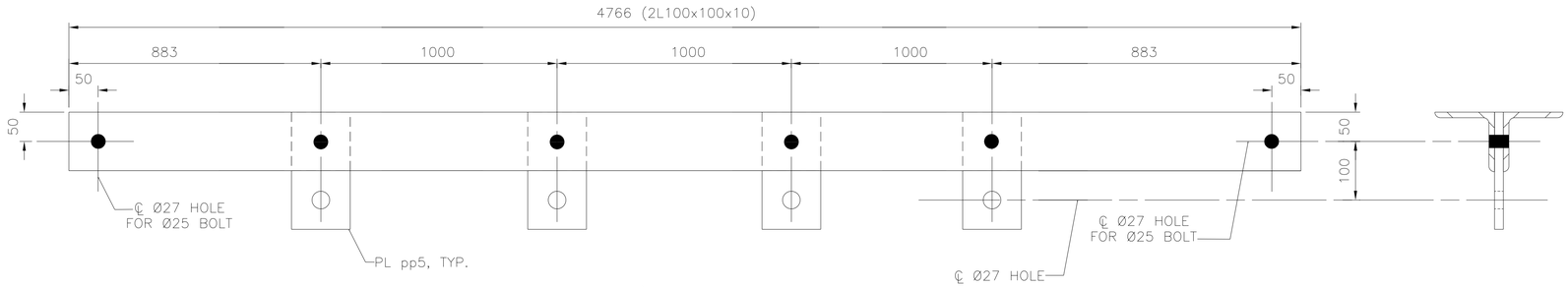
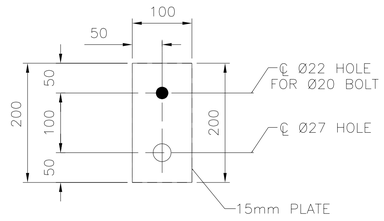


BEAM S4/B8

MAKE: 2
4–ø25 A307 BOLTS



PL pp5

MAKE: 8
8–ø20 A307 BOLTS

SHIP	MARK	NO. PCS	DESCRIPTION	LENGTH (mm)	FAB. MARK	NOTES
4	S4/B8		2L100x100x10	4766		
		4	PL 15x100	200	PL pp5	

UNLESS NOTED OTHERWISE, LINEAR DIMENSIONS ARE IN MILLIMETERS.

US Army Corps of Engineers
AFGHANISTAN ENGINEER DISTRICT

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY:
DATE: 17 DECEMBER 2009
SOLICITATION NO.:
CONTRACT NO.:
PLOT SCALE: 1:1
PLOT DATE: 10/23/2013
FILE NUMBER:
SIZE: ANSI D
FILE NAME: U05_S-12.dgn

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 09356

SITE ADAPT DESIGN
U05 - 20 METER WATER TOWER
MEMBER DETAILS

SHEET IDENTIFICATION
S-12
SHEET 13 OF 23

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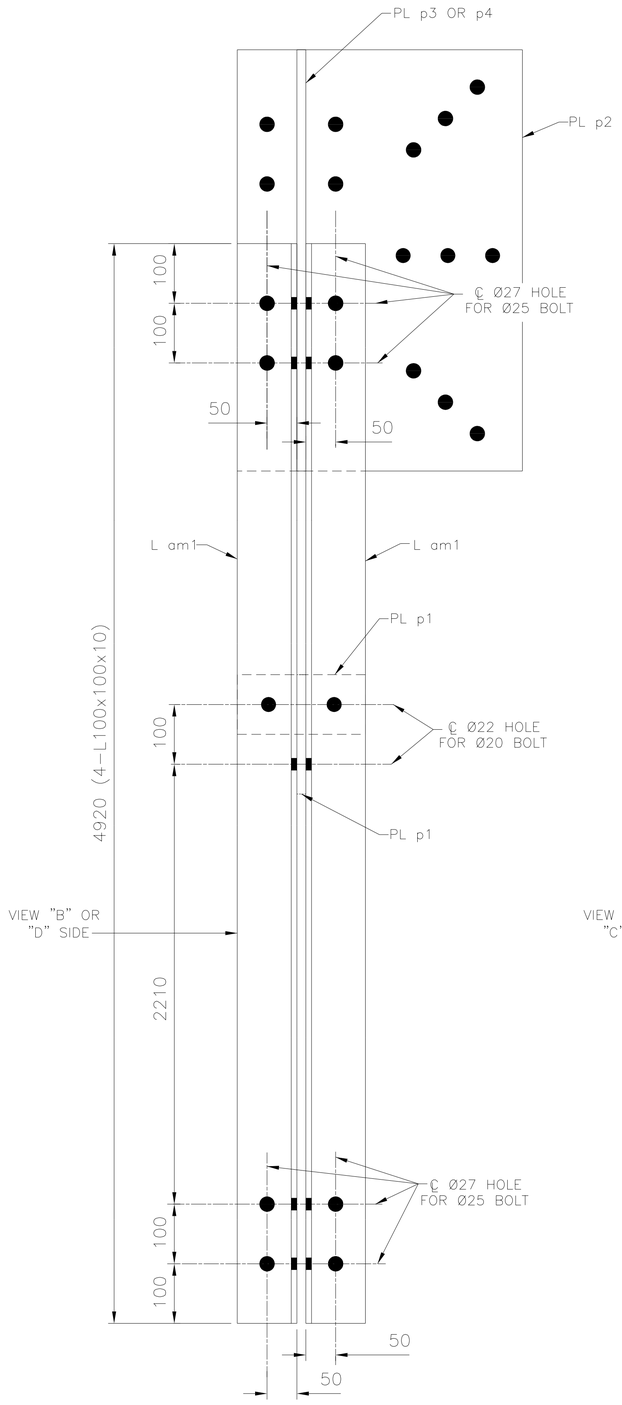
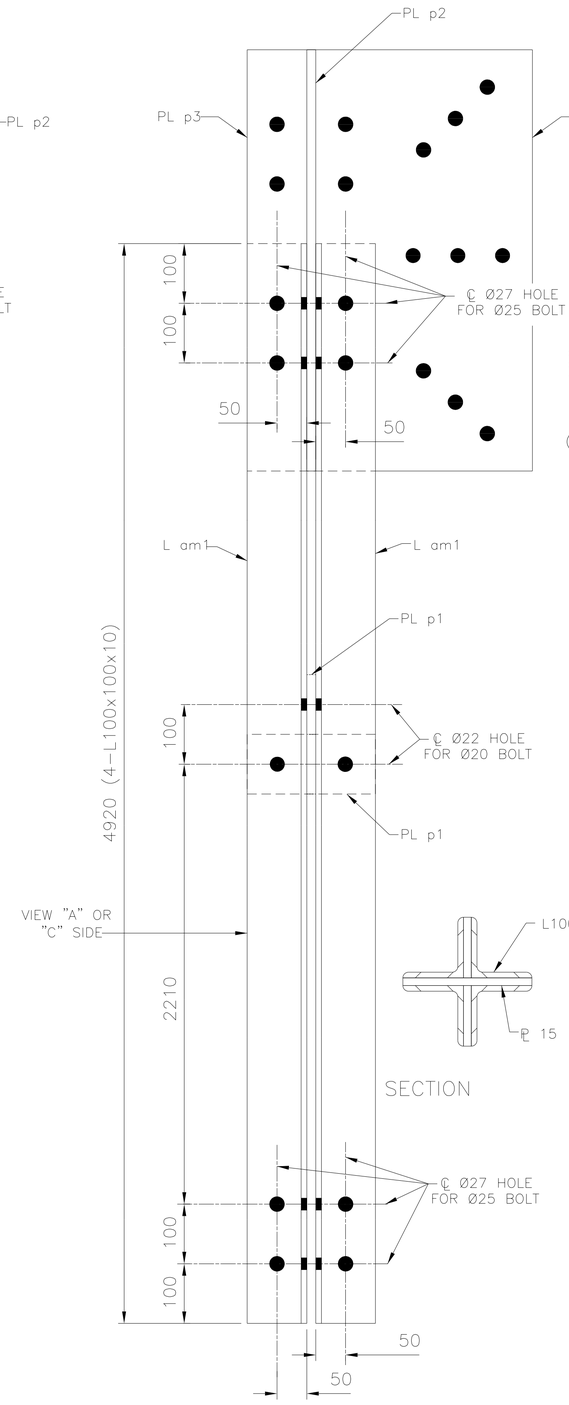
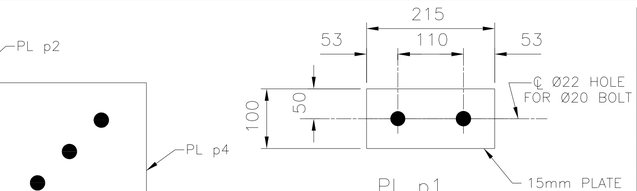
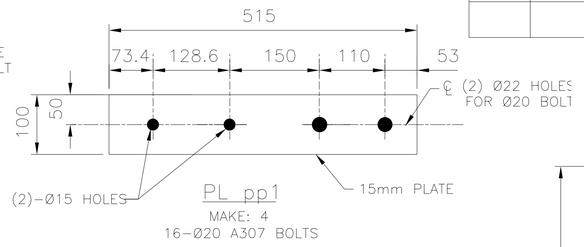




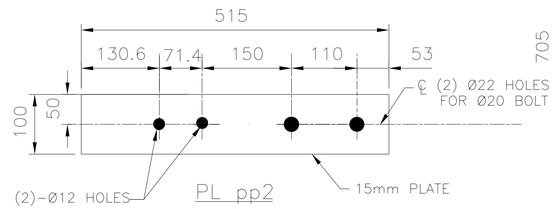


PL p1
MAKE: 20
40–ø20 A307 BOLTS



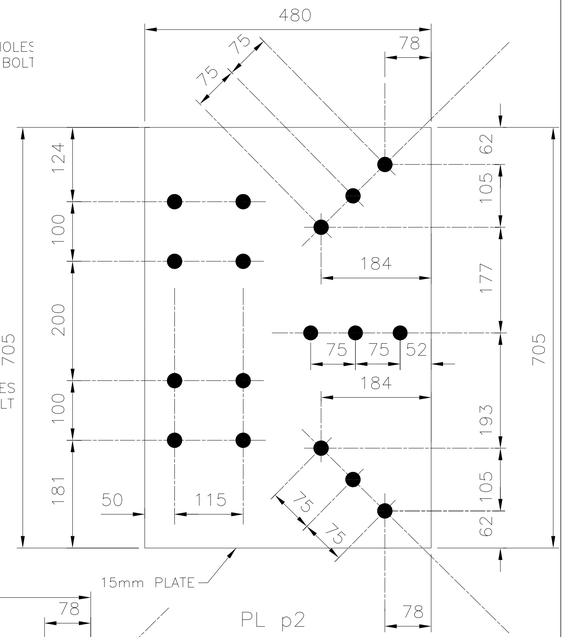
PL pp1
MAKE: 4
16–Ø20 A307 BOLTS

NOTE: PLUMBING PIPE SUPPORT (PL pp1) MAY BE INTERCHANGED WITH PL p1 TO ATTACH PLUMBING.



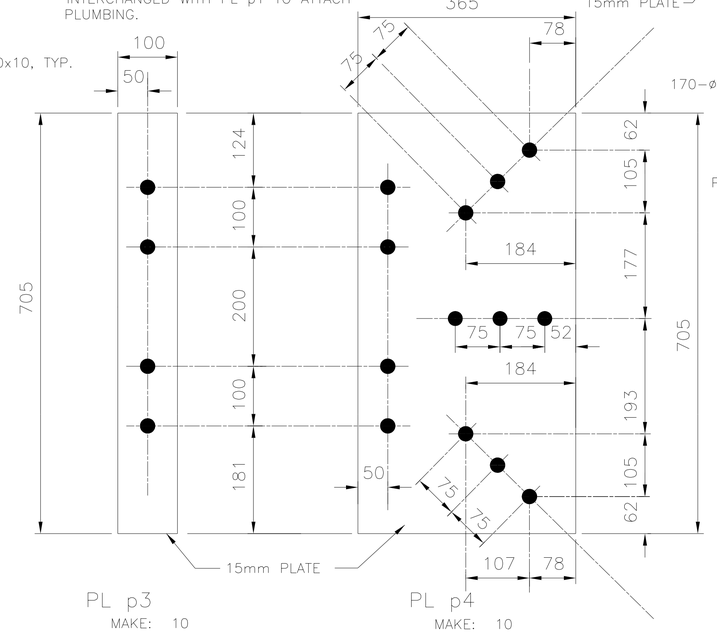
PL pp2
MAKE: 4
16–Ø20 A307 BOLTS

NOTE: PLUMBING PIPE SUPPORT (PL pp2) MAY BE INTERCHANGED WITH PL p1 TO ATTACH PLUMBING.



PL p2
MAKE: 10
170–ø25 A307 BOLTS

SECTION



PL p3
MAKE: 10
40–ø25 A307 BOLTS

PL p4
MAKE: 10
130–ø25 A307 BOLTS

NOTE: BOLT HOLES IN PL p2, p3, & p4 ARE Ø27

UNLESS NOTED OTHERWISE, LINEAR DIMENSIONS ARE IN MILLIMETERS.

COLUMN S4/C1
MAKE: 10

SHIP	MARK	NO. PCS	DESCRIPTION	LENGTH (mm)	FAB. MARK	WEIGHT	NOTES
10	S4/C1		4–L100x100x10	4920			
		40	L100x100x10	4920	L am1		
		20	PL 100x15	215	PL p1		
		10	PL 480x15	705	PL p2		
		10	PL 100x15	705	PL p3		
		10	PL 365x15	705	PL p4		
		4	PL 100X15	515	PL pp1		
		4	PL 100X15	515	PL pp2		

US Army Corps of Engineers
AFGHANISTAN ENGINEER DISTRICT

MARK	DESCRIPTION	DATE	APPR.
MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY:
DATE: 17 DECEMBER 2009
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:
PLOT SCALE: 1.1
PLOT DATE: 10/23/2013
SIZE: ANSI D
FILE NAME: U05_S-13.dgn

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 09356

SITE ADAPT DESIGN
U05 - 20 METER WATER TOWER
MEMBER DETAILS

SHEET IDENTIFICATION
S-13
SHEET 14 OF 23

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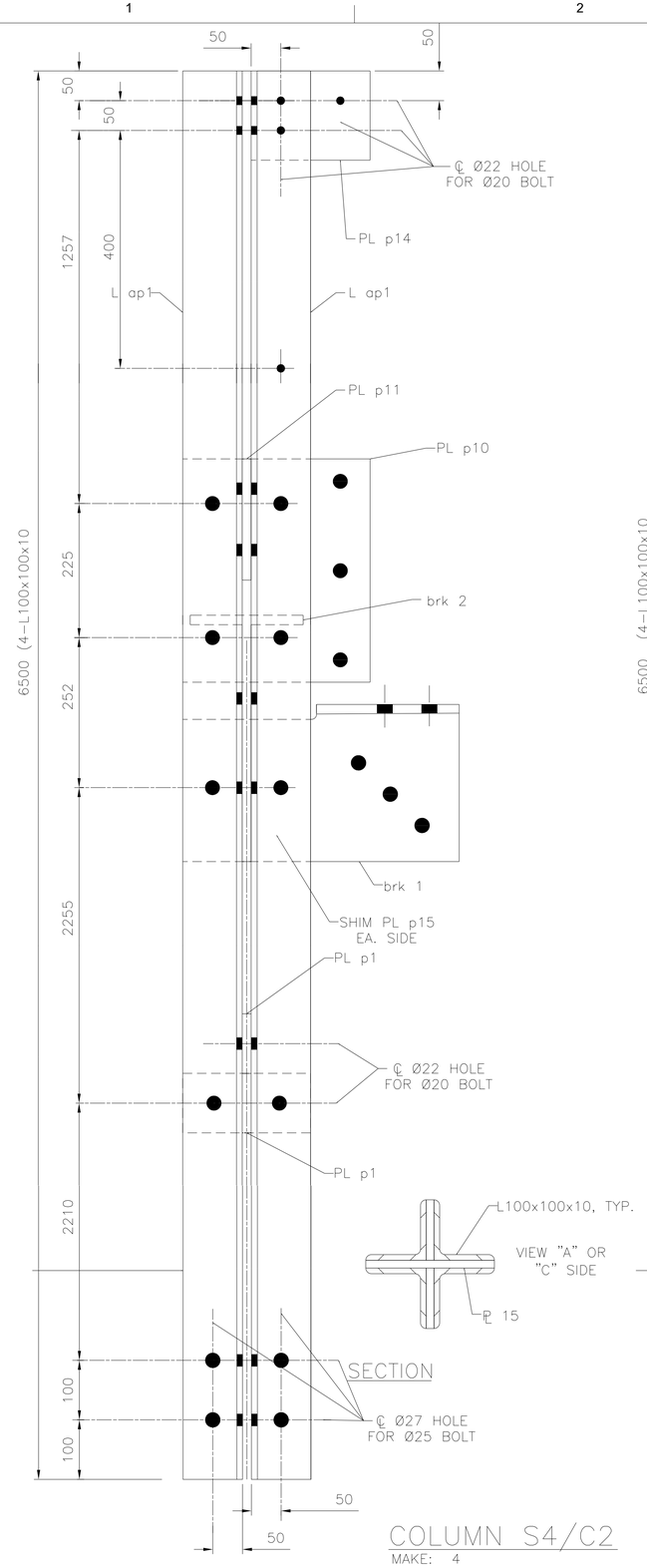
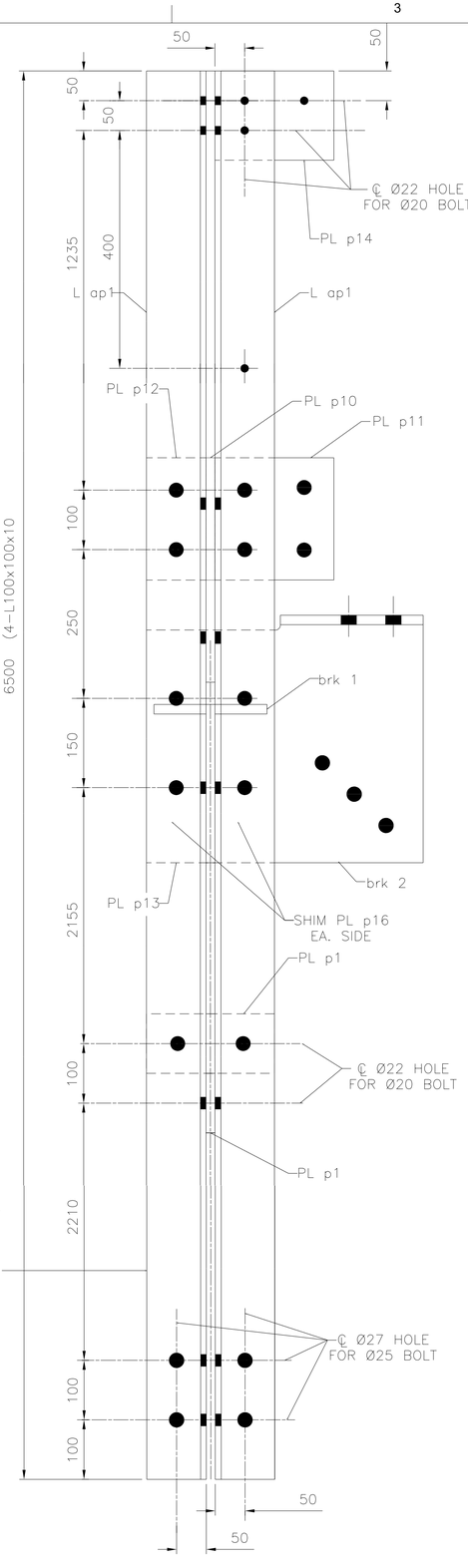
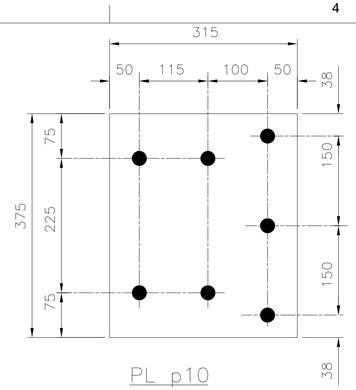
10/23/2013 3:43:37 PM

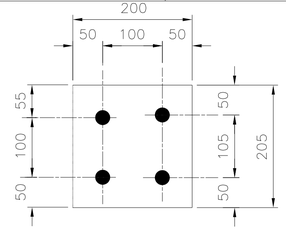


COLUMN S4/C2
MAKE: 4

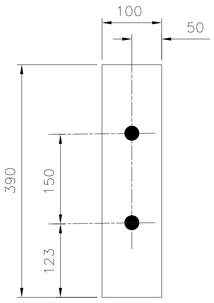




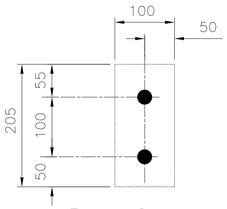
PL p10
MAKE: 4
28-ø25 A307 BOLTS



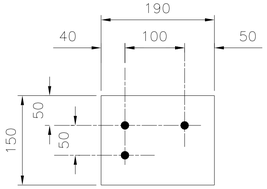
PL p11
MAKE: 4
16-ø25 A307 BOLTS



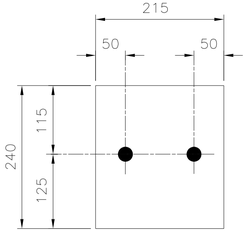
PL p13
MAKE: 4
8-ø25 A307 BOLTS



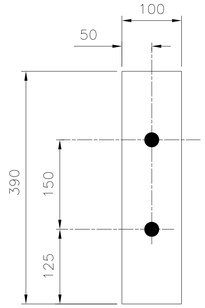
PL p12
MAKE: 4
8-ø25 A307 BOLTS



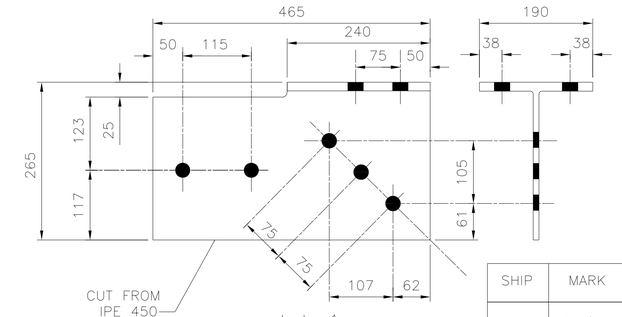
PL p14
MAKE: 8
12-ø20 A307 BOLTS



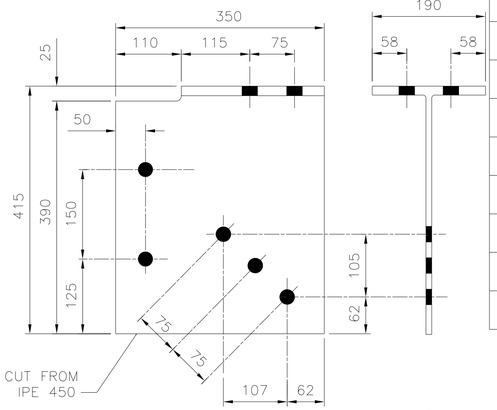
SHIM PL p15
MAKE: 8
2mm SHIM PLATES



SHIM PL p16
MAKE: 16
2mm SHIM PLATES



brk 1
MAKE: 4
28-ø25 A307 BOLTS



brk 2
MAKE: 4
28-ø25 A307 BOLTS

SHIP	MARK	NO. PCS	DESCRIPTION	LENGTH (mm)	FAB. MARK	NOTES
4	S4/C2		4-L100x100x10	6500		
		16	L100x100x10	6500	L ap1	
		4	PL 315x15	375	PL p10	
		4	PL 200x15	205	PL p11	
		4	PL 100x15	205	PL p12	
		4	PL 100x15	390	PL p13	
		8	PL 150x15	190	PL p14	
		8	PL 215x2	240	SHIM PL p15	
		16	PL 100x2	390	SHIM PL p16	
		4	PL 265x15	465	brk 1	
		4	PL 350x15	415	brk 2	

UNLESS NOTED OTHERWISE, LINEAR DIMENSIONS ARE IN MILLIMETERS.

US Army Corps of Engineers
AFGHANISTAN ENGINEER DISTRICT

MARK	DESCRIPTION	DATE	APPR. MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY:
DATE: 17 DECEMBER 2009
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:
PLOT SCALE: 1 = 1.000000
PLOT DATE: 10/23/2013
SIZE: ANSI D
FILE NAME: U05_S-14.dgn

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 09356

SITE ADAPT DESIGN
U05 - 20 METER WATER TOWER
MEMBER DETAILS

SHEET IDENTIFICATION
S-14
SHEET 15 OF 23

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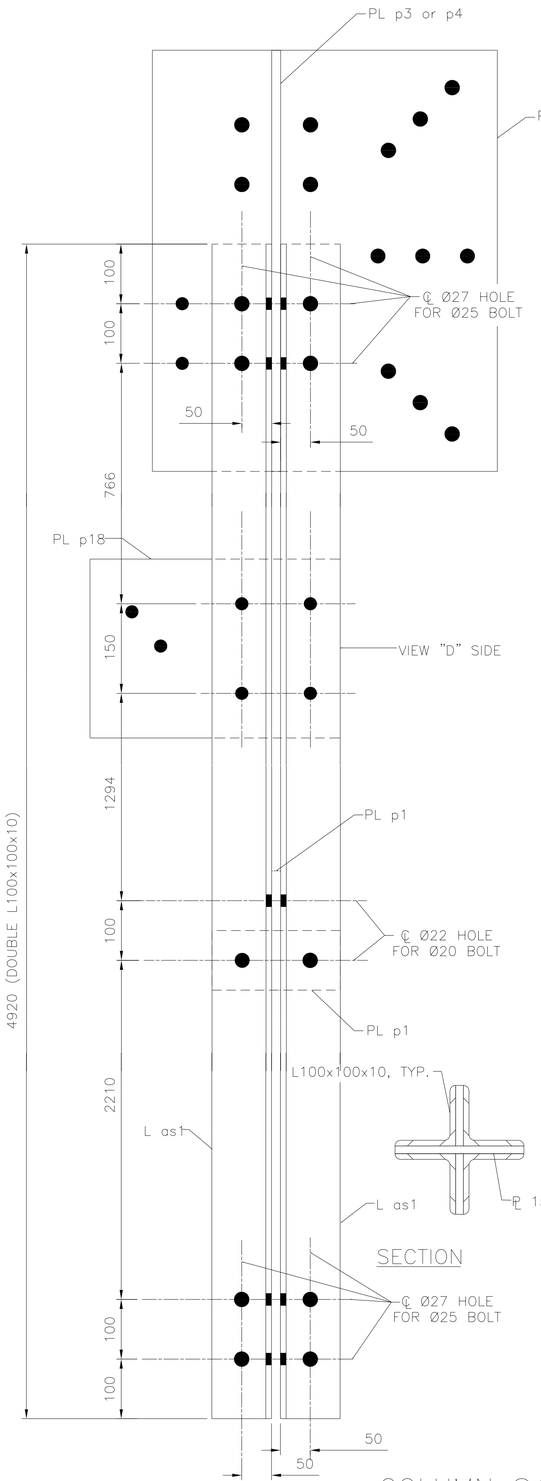
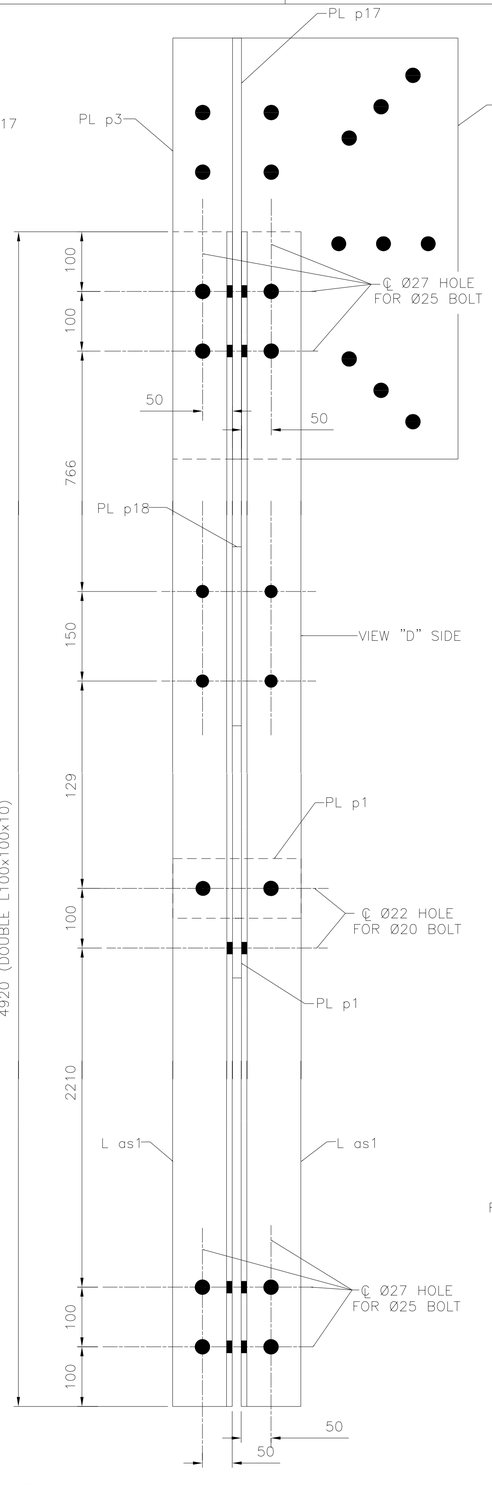
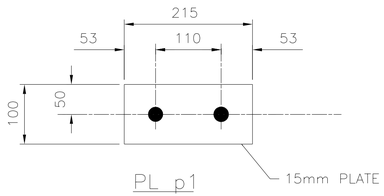


COLUMN S4/C3

MAKE: 2

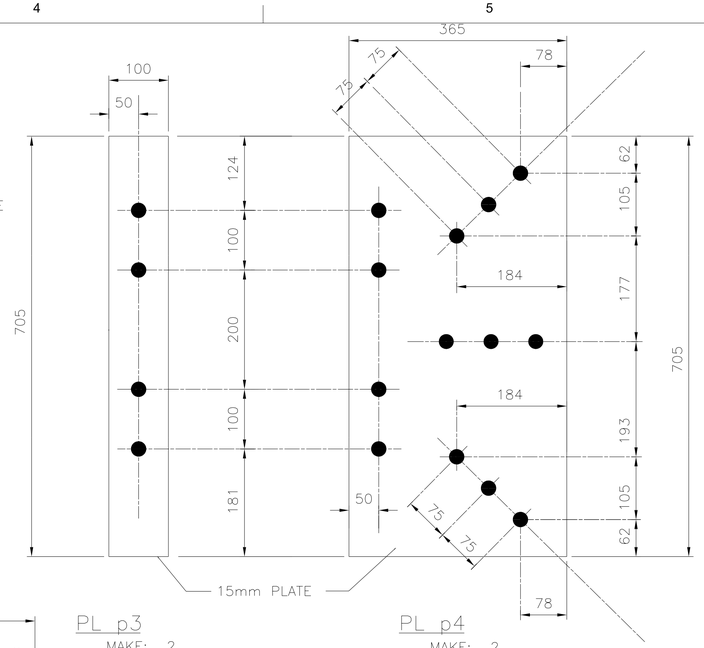




PL p1

MAKE: 4

64–ø20 A307 BOLTS



PL p3

MAKE: 2

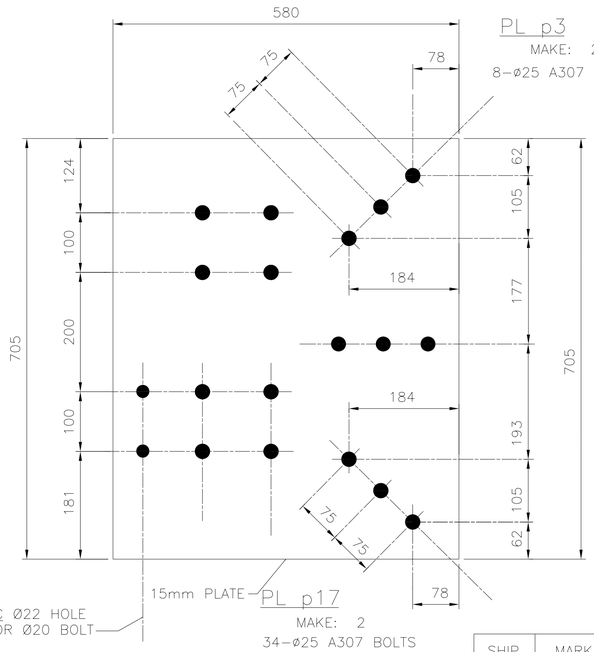
8–ø25 A307 BOLTS

PL p4

MAKE: 2

26–ø25 A307 BOLTS

NOTE: HOLES IN PL p3, p4, p17, & p18 ARE Ø27 UNLESS SHOWN OTHERWISE.

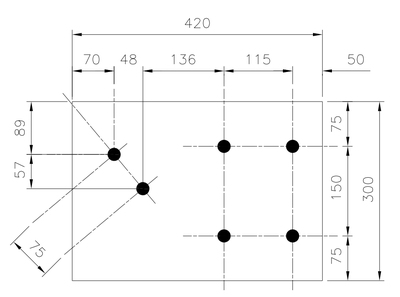


PL p17

MAKE: 2

34–ø25 A307 BOLTS

4–ø20 A307 BOLTS



PL p18

MAKE: 2

12–ø25 A307 BOLTS

SHIP	MARK	NO. PCS	DESCRIPTION	LENGTH (mm)	FAB. MARK	WEIGHT	NOTES
2	S4/C3		4–L100x100x10	4920			
		8	4–L100x100x10	4920	L as1		
		4	₧ 100x15	215	PL p1		
		2	₧ 100x15	705	PL p3		
		2	₧ 100x15	705	PL p4		
		2	₧ 580x15	705	PL p17		
		2	₧ 300x15	420	PL p18		

UNLESS NOTED OTHERWISE, LINEAR DIMENSIONS ARE IN MILLIMETERS.

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AFGHANISTAN ENGINEER DISTRICT

MARK	DESCRIPTION	DATE	APPR. MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY:
DATE: 17 DECEMBER 2009
SOLICITATION NO.:
CONTRACT NO.:
PLOT SCALE: 1.1
PLOT DATE: 10/23/2013
FILE NUMBER:
SIZE: ANSI D
FILE NAME: U05_S-15.dgn

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 09356

SITE ADAPT DESIGN
U05 - 20 METER WATER TOWER
MEMBER DETAILS

SHEET IDENTIFICATION
S-15
SHEET 16 OF 23

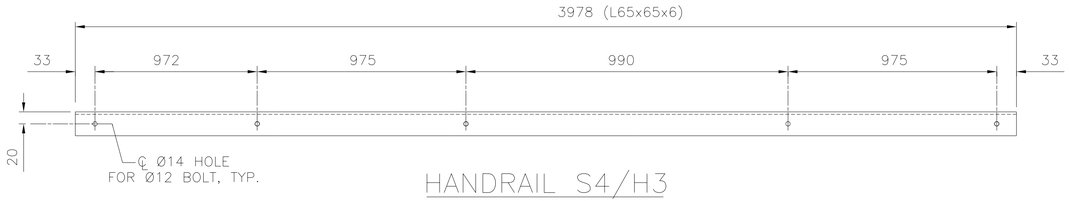
c:\users\n2aenjh3\documents\pwwork\1\d0147927\U05_S-15.dgn
10/23/2013 3:52:48 PM

HANDRAIL S4/H1

MAKE: 2
24-Ø12 A307 BOLTS

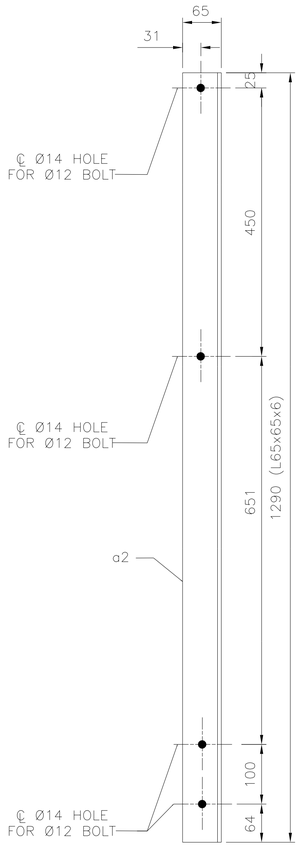
HANDRAIL S4/H2

MAKE: 2
20-Ø12 A307 BOLTS



HANDRAIL S4/H3

MAKE: 2
10-Ø12 A307 BOLTS

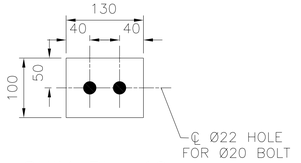


HANDRAIL POST S8/P2

MAKE: 12
48-12 ø A307 BOLTS

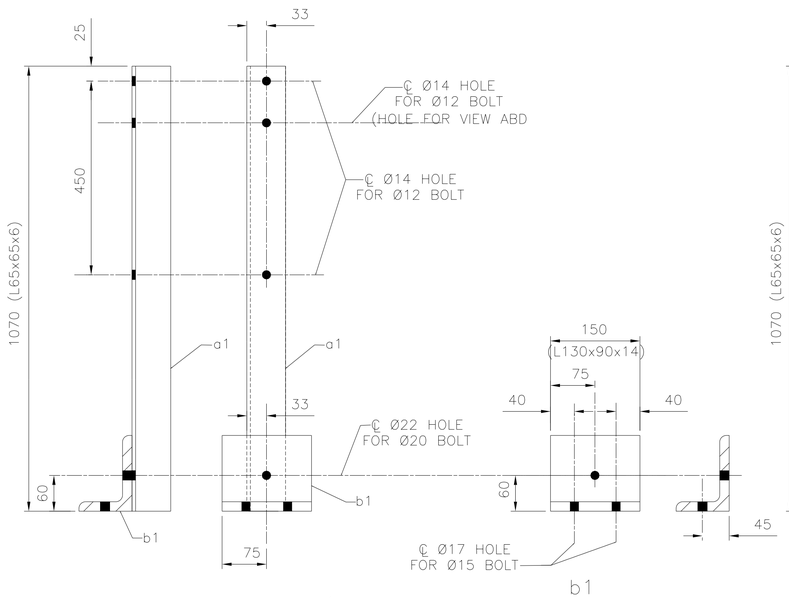
HANDRAIL S4/H4

MAKE: 2
4-Ø12 A307 BOLTS



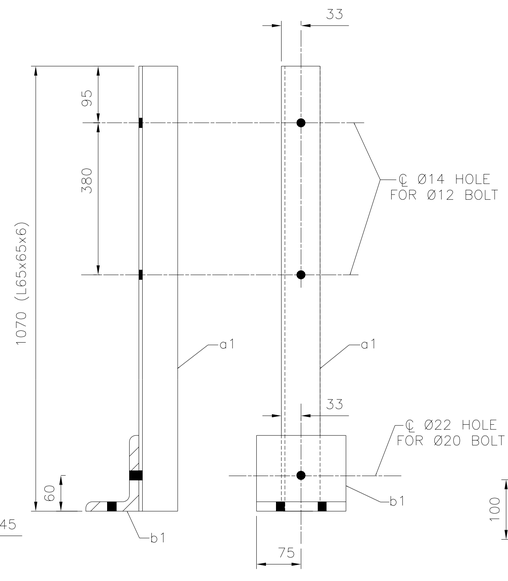
SHIM PL p19

MAKE: 2
15mm SHIM PLATES



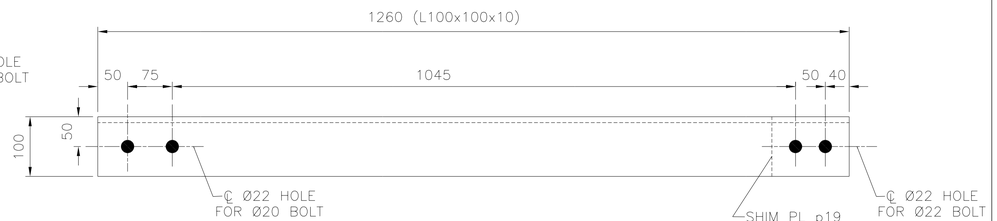
HANDRAIL POST S4/P1

MAKE: 9
28-Ø12 A307 BOLTS
42-Ø15 A307 BOLTS



HANDRAIL POST S4/P3

MAKE: 8
28-Ø12 A307 BOLTS
42-Ø15 A307 BOLTS



BEAM S8/BR1

MAKE: 2
4-Ø15 A307 BOLTS

UNLESS NOTED OTHERWISE, LINEAR DIMENSIONS ARE IN MILLIMETERS.

SHIP	MARK	NO. PCS	DESCRIPTION	LENGTH (mm)	FAB. MARK	NOTES
2	S4/H1		L65x65x6	4950		
2	S4/H2		L65x65x6	4950		
2	S4/H3		L65x65x6	3978		
2	S4/H4		L65x65x6	3978		
14	S4/P1					
			L65x65x6	1070		
		14	L130x90x14	150	b1	
12	S4/P2		HANDRAIL POST	1290		
		14	L65x65x6	1290	a2	
2	S8/BR1		L100x100x10	1260		
		2	PL 100x15	130	PL p19	

US Army Corps of Engineers
AFGHANISTAN ENGINEER DISTRICT

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY:
DATE: 17 DECEMBER 2009
SOLICITATION NO.:
CONTRACT NO.:
PLOT SCALE: 1:1
PLOT DATE: 10/23/2011
FILE NUMBER:
SIZE: ANSI D
FILE NAME: U05_S-16.dgn

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 09356

SITE ADAPT DESIGN
U05 - 20 METER WATER TOWER
MEMBER DETAILS

SHEET IDENTIFICATION
S-16
SHEET 17 OF 23

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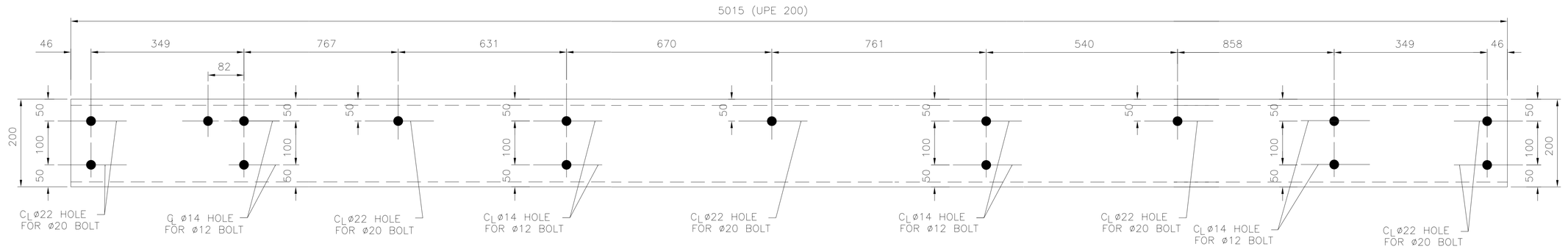
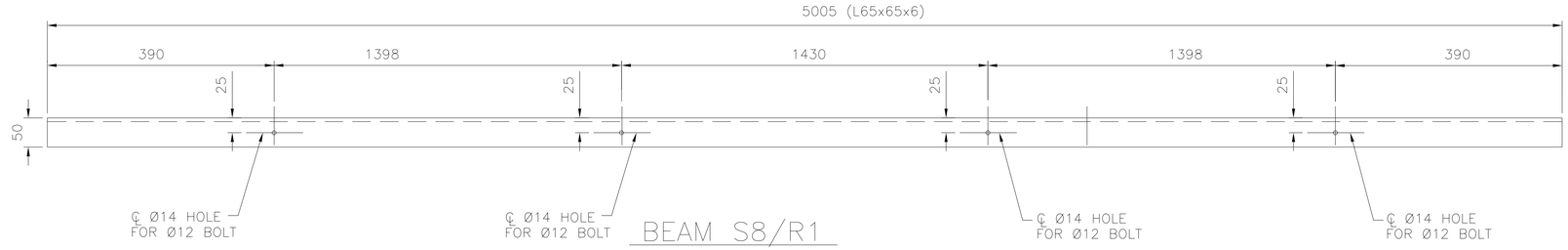


BEAM S3/B9

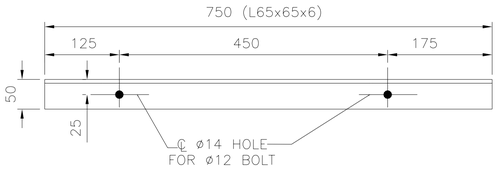
MAKE: 2



BEAM S8/R1

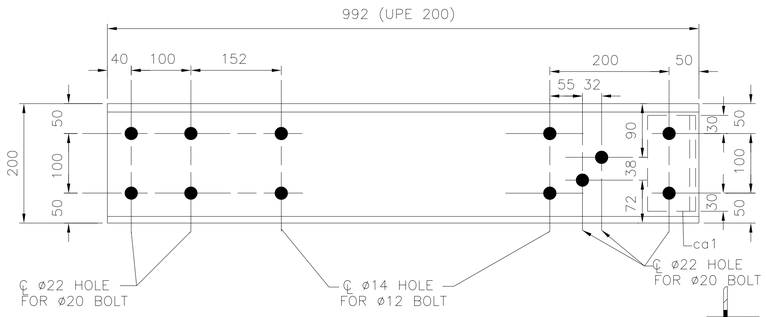
MAKE: 2

SHIP	MARK	NO. PCS	DESCRIPTION	LENGTH (mm)	FAB. MARK	NOTES
2	S3/B9		UPE 200	5015		
2	S8/R1		L65x65x6	5005		
2	S8/R2		L65x65x6	750		
1	S3/B10		UPE 200	992		
		1	L100x100x10	160	ca1	
4	S3/B11		L100x100x10	870		
		8	L100x100x10	100	ca2	
1	S3/B12		UPE 200	992		
		1	L100x100x10	100	ca1	



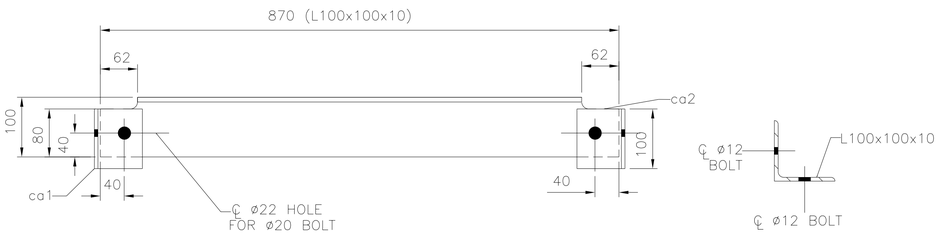
BEAM S8/R2

MAKE: 2



BEAM S3/B10

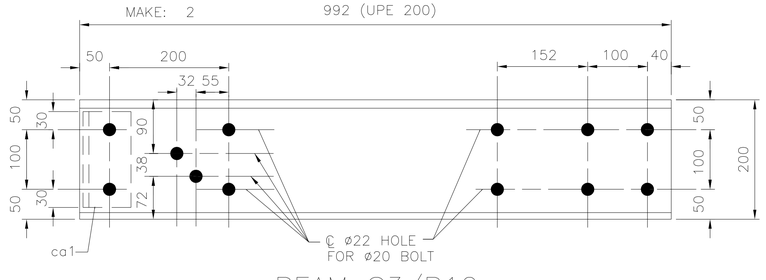
MAKE: 1
12-ø20 A307 BOLTS



BEAM S3/B11

MAKE: 4
16-ø20 A307 BOLTS

MAKE: 8



BEAM S3/B12

MAKE: 1
12-ø20 A307 BOLTS

100 0 100mm
SCALE: 1 = 5

UNLESS NOTED OTHERWISE, LINEAR DIMENSIONS ARE IN MILLIMETERS.

US Army Corps of Engineers
AFGHANISTAN ENGINEER DISTRICT

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY:
DATE: 17 DECEMBER 2009
SOLICITATION NO.:
CONTRACT NO.:
PLOT SCALE: 1:1
PLOT DATE: 10/24/2011
FILE NUMBER:
SIZE: ANSI D
FILE NAME: U05_S-17.dgn

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 09356

SITE ADAPT DESIGN
U05 - 20 METER WATER TOWER
SECTIONS & DETAILS

SHEET IDENTIFICATION
S-17
SHEET 18 OF 23

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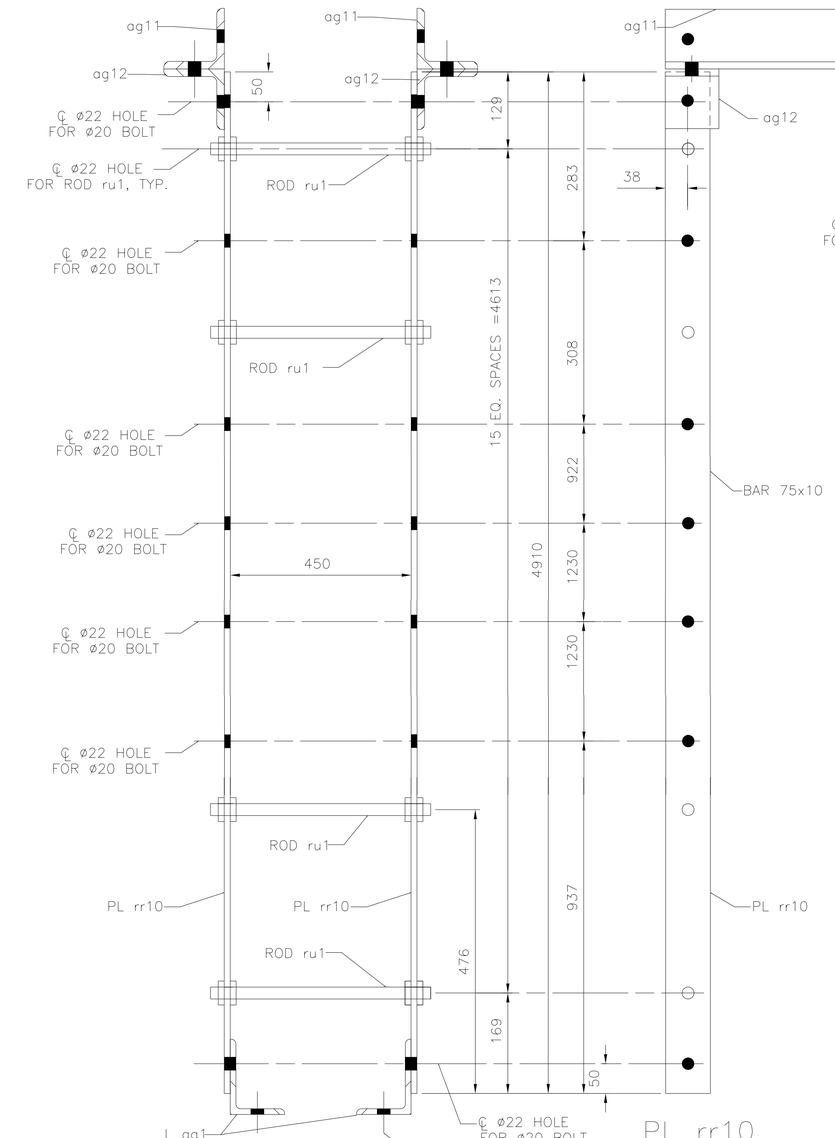
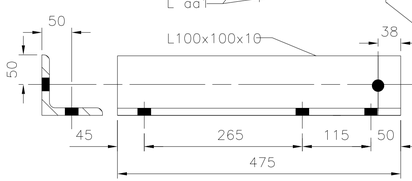
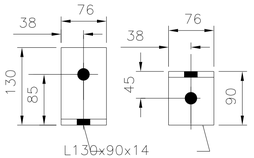
10/24/2011 6:45:54 AM



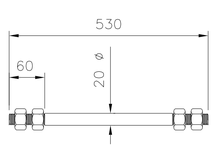
PL rr10
MAKE: 2



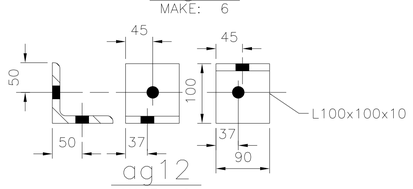
ag11
MAKE: 6



aa1
MAKE: 2

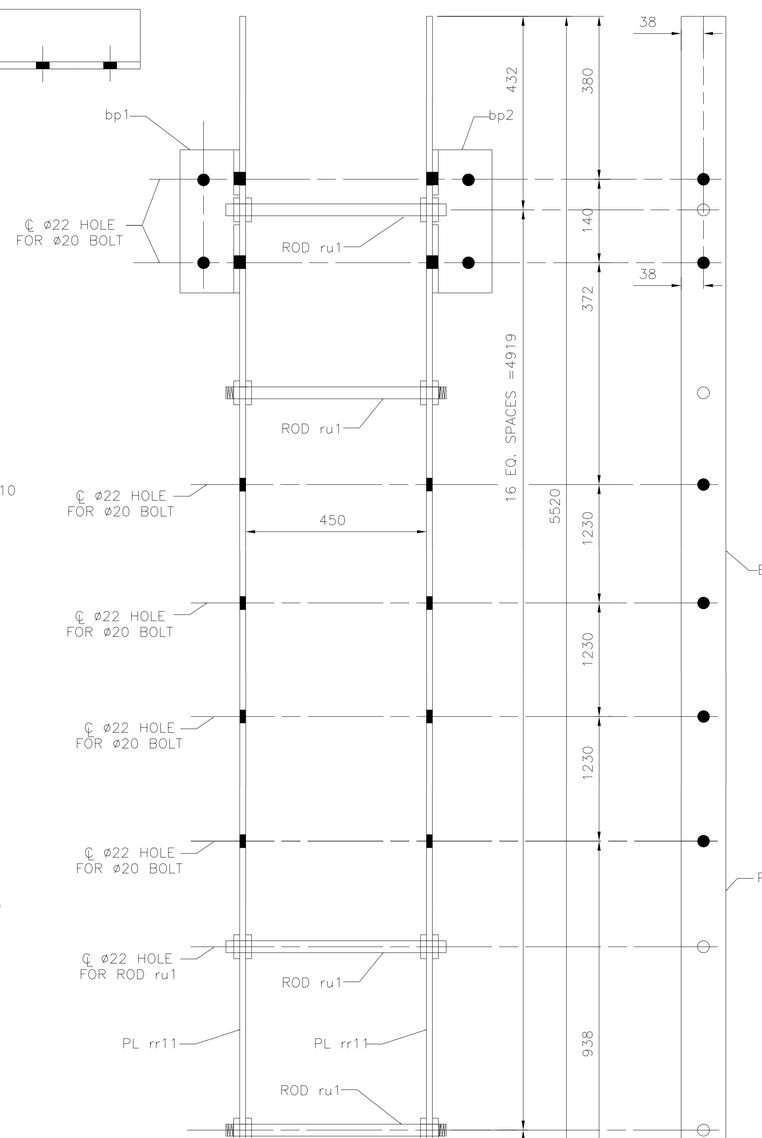


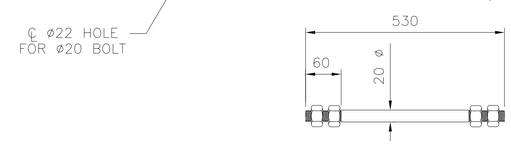
ROD ru1
MAKE: 48



ag12
MAKE: 6

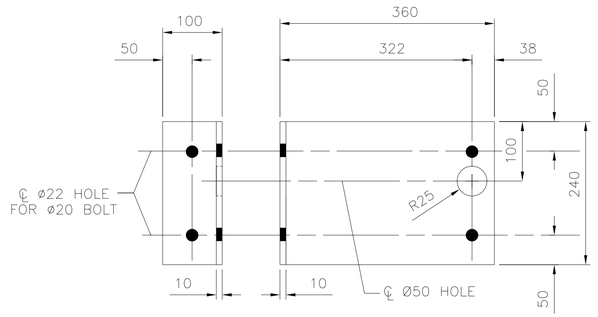
LADDER S4/L1
MAKE: 3
54-ø20 A307 BOLTS
2-ø20 A307 ANCHOR BOLTS



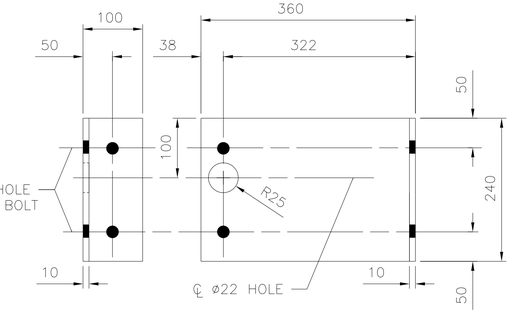


ROD ru1
MAKE: 17

LADDER S4/L2
MAKE: 1



bp1
MAKE: 1



bp2
MAKE: 1

SHIP	MARK	NO. PCS	DESCRIPTION	LENGTH (mm)	FAB. MARK	WEIGHT	NOTES
3	S4/L1		LADDER	4910			
		6	PL 10x75	4910	PL rr10		
		48	ø20	530	ROD ru1		
		2	L130x90x14	75	aa1		
		6	L100x100x10	475	ag11		
		6	L100x100x10	76	ag12		
1	S4/L2		LADDER	4910			
		2	PL 10x75	5920	PL rr11		
		17	ø20	530	ROD ru1		
		1	PL 10x460	240	bp1		
		1	PL 10x460	240	bp2		

UNLESS NOTED OTHERWISE, LINEAR DIMENSIONS ARE IN MILLIMETERS.

US Army Corps of Engineers®
AFGHANISTAN ENGINEER DISTRICT

MARK	DESCRIPTION	DATE	APPR.	APPR. MARK	DESCRIPTION	DATE	APPR.

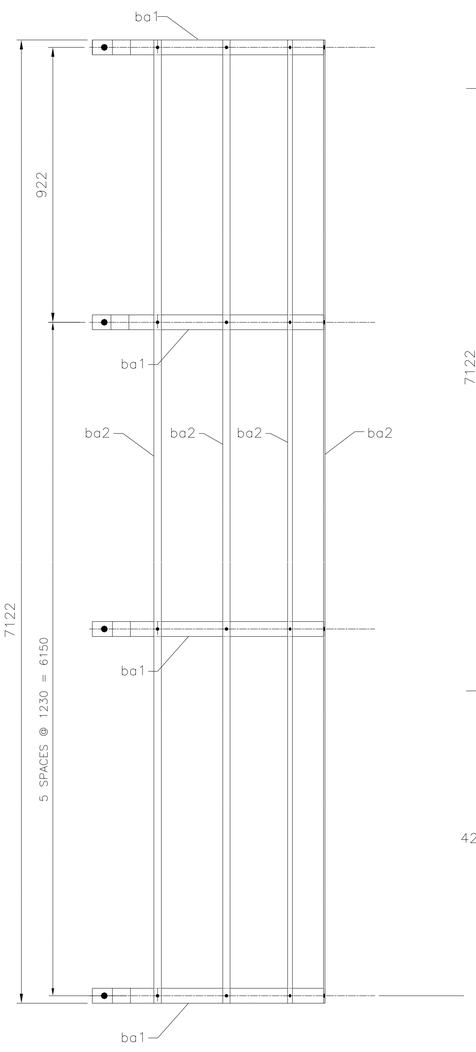
DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY:
PLOT SCALE: 1:1
PLOT DATE: 10/24/2017
FILE NUMBER:
SIZE: ANSI D
FILE NAME: U05_S-18.dgn
DATE: 17 DECEMBER 2009
SOLICITATION NO.:
CONTRACT NO.:

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 09356

SITE ADAPT DESIGN
U05 - 20 METER WATER TOWER
SECTIONS & DETAILS

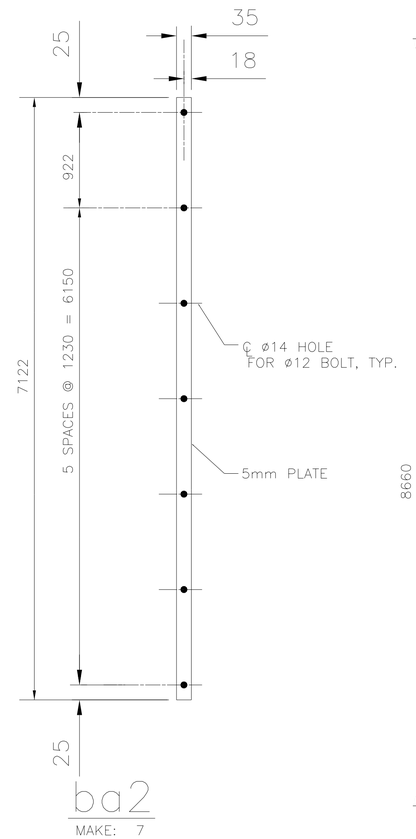
SHEET IDENTIFICATION
S-18
SHEET 19 OF 23

c:\users\n2aenjh3\documents\pwwork1\d0147927\U05_S-18.dgn
10/24/2017 09:23 AM



LADDER CAGE S4/G1

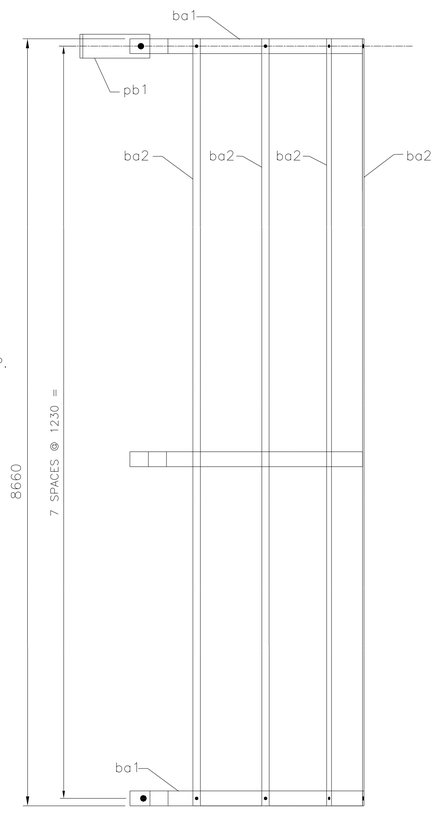
MAKE: 1

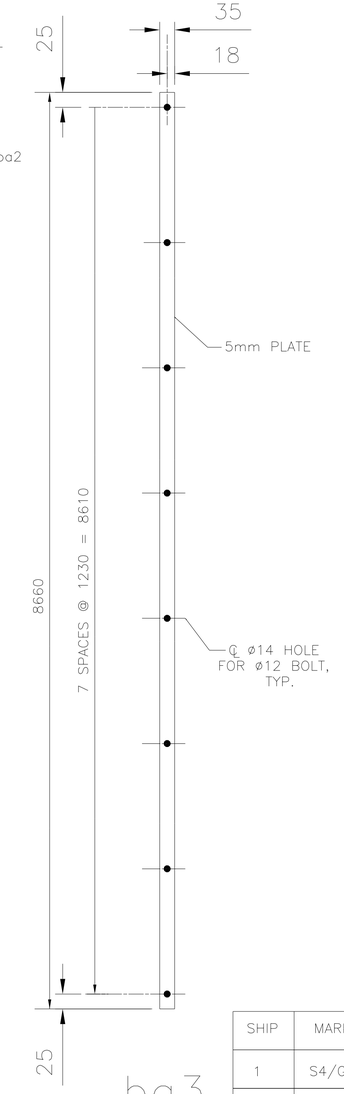


ba2

MAKE: 7

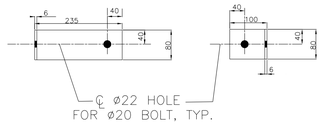
42–12mm Ø A307 BOLTS





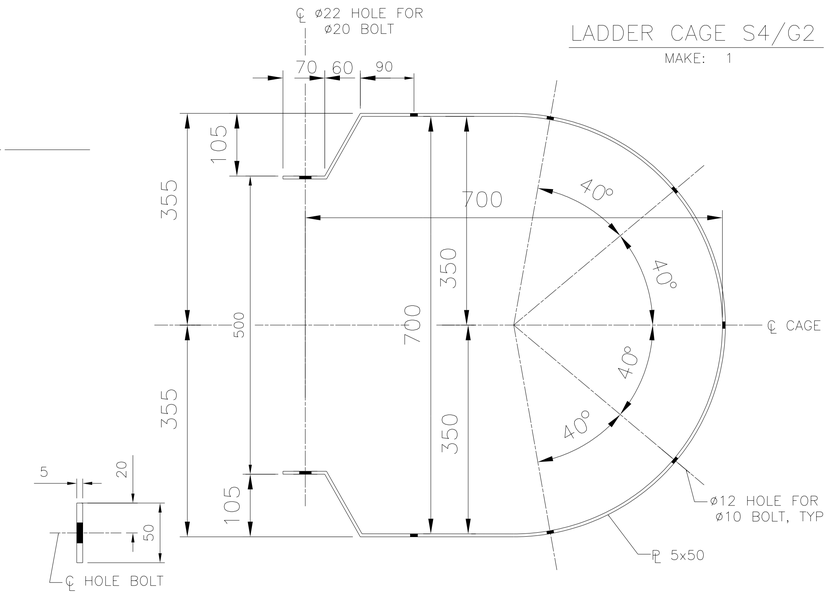
ba3

MAKE: 7



pb1

MAKE: 2



ba1

MAKE: 15

LADDER CAGE S4/G2

MAKE: 1

SHIP	MARK	NO. PCS	DESCRIPTION	LENGTH (mm)	FAB. MARK	WEIGHT	NOTES
1	S4/G1		LADDER CAGE	7150			
		6	℄ 5x50	1990	ba1		
		7	℄ 5x35	7122	ba2		
1	S4/G2		LADDER CAGE	8660			
		8	℄ 5x50	1990	ba1		
		7	℄ 5x35	8660	ba2		
		2	℄ 6x80	335	pb1		

UNLESS NOTED OTHERWISE, LINEAR DIMENSIONS ARE IN MILLIMETERS.

US Army Corps of Engineers
AFGHANISTAN ENGINEER DISTRICT

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY:
DATE: 17 DECEMBER 2009
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:
PLOT SCALE: 1 = 1
PLOT DATE: 10/24/2017
SIZE: ANSI D
FILE NAME: U05_S-19.dgn

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 09356

SITE ADAPT DESIGN

U05 - 20 METER WATER TOWER

MEMBER DETAILS

SHEET IDENTIFICATION
S-19
SHEET 20 OF 23

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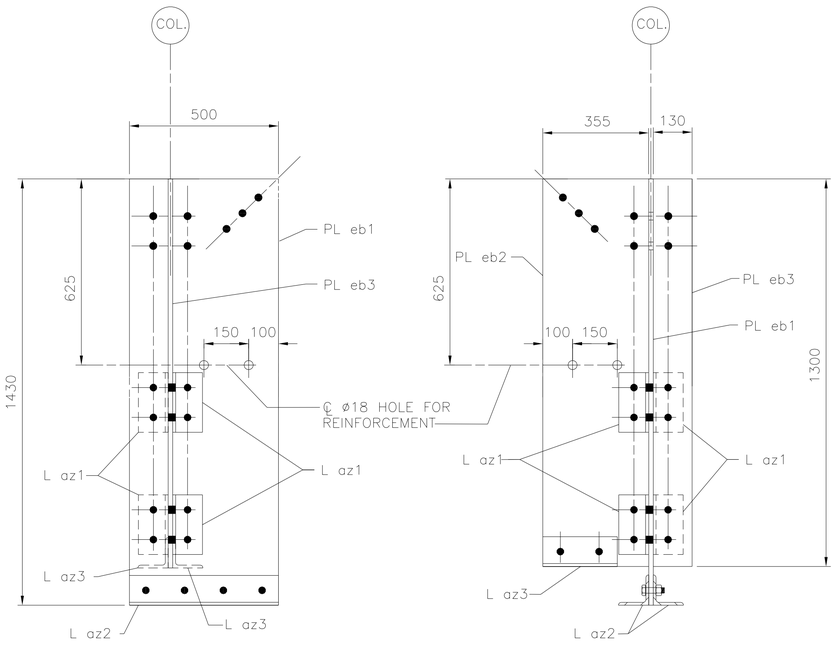
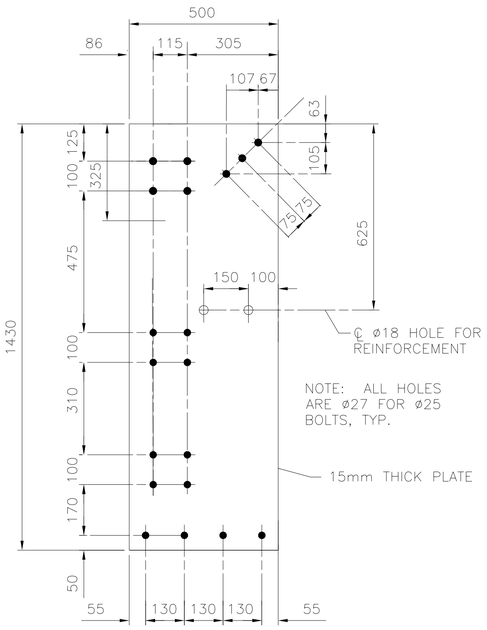


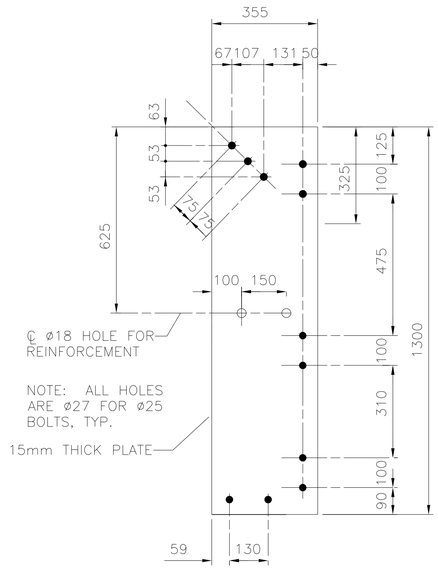
EMBEDDED ANCHOR PLATE S6/E1

MAKE: 4



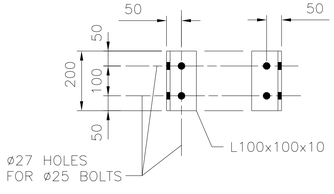
PL eb1

MAKE: 4
76–ø25 A307 BOLTS



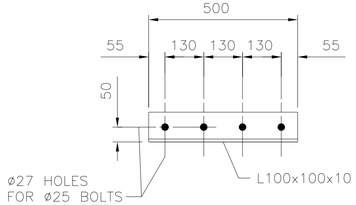
PL eb2

MAKE: 4
44–ø25 A307 BOLTS



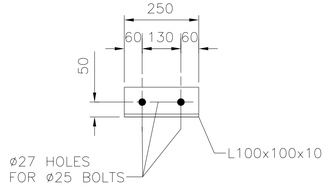
L az1

MAKE: 16



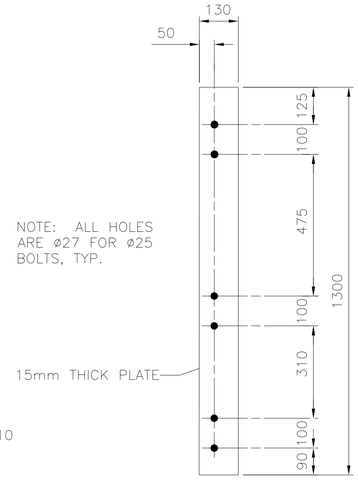
L az2

MAKE: 8



L az3

MAKE: 8



PL eb3

MAKE: 4
24–ø25 A307 BOLTS

SHIP	MARK	NO. PCS	DESCRIPTION	LENGTH (mm)	FAB. MARK	WEIGHT	NOTES
4	S6/E1		EMBEDDED ANCHOR PLATE	1430			
		4	PL 15x500	1430	PL eb1		
		4	PL 15x355	1300	PL eb2		
		4	PL 15x130	1300	PL eb3		
		16	L100x100x10	200	L az1		
		8	L100x100x10	500	L az2		
		8	L100x100x10	250	L az3		

UNLESS NOTED OTHERWISE, LINEAR DIMENSIONS ARE IN MILLIMETERS.

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MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY:
DWN BY: CKD BY:
SUBMITTED BY:
DATE: 17 DECEMBER 2009
SOLICITATION NO.:
CONTRACT NO.:
PLOT SCALE: 1 = 1
PLOT DATE: 10/24/2011
FILE NUMBER:
SIZE: ANSI D
FILE NAME: U05_S-20.dgn

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 09356

SITE ADAPT DESIGN
U05 - 20 METER WATER TOWER
MEMBER DETAILS

SHEET IDENTIFICATION
S-20
SHEET 21 OF 23

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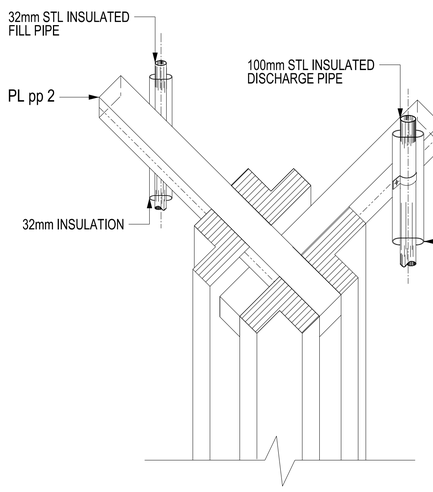
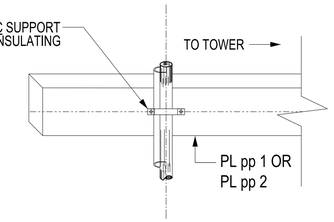


CONNECTION OF WATER PIPE DETAIL:
SCALE:NTS

NOTE: SEE STRUCTURAL SHEET S-13 FOR PLUMBING SUPPORT PLATES



CONNECTION PIPE SUPPORT DETAIL:
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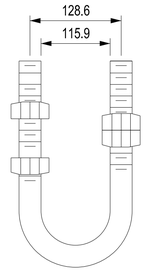
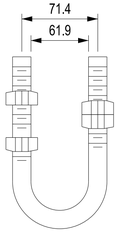


THREAD SIZE-12mm
THREAD LENGTH-76.2mm
TANGENT-114.3mm
TOP OF PIPE TO TOP OF THREAD-57.1
WT.-42.6kg

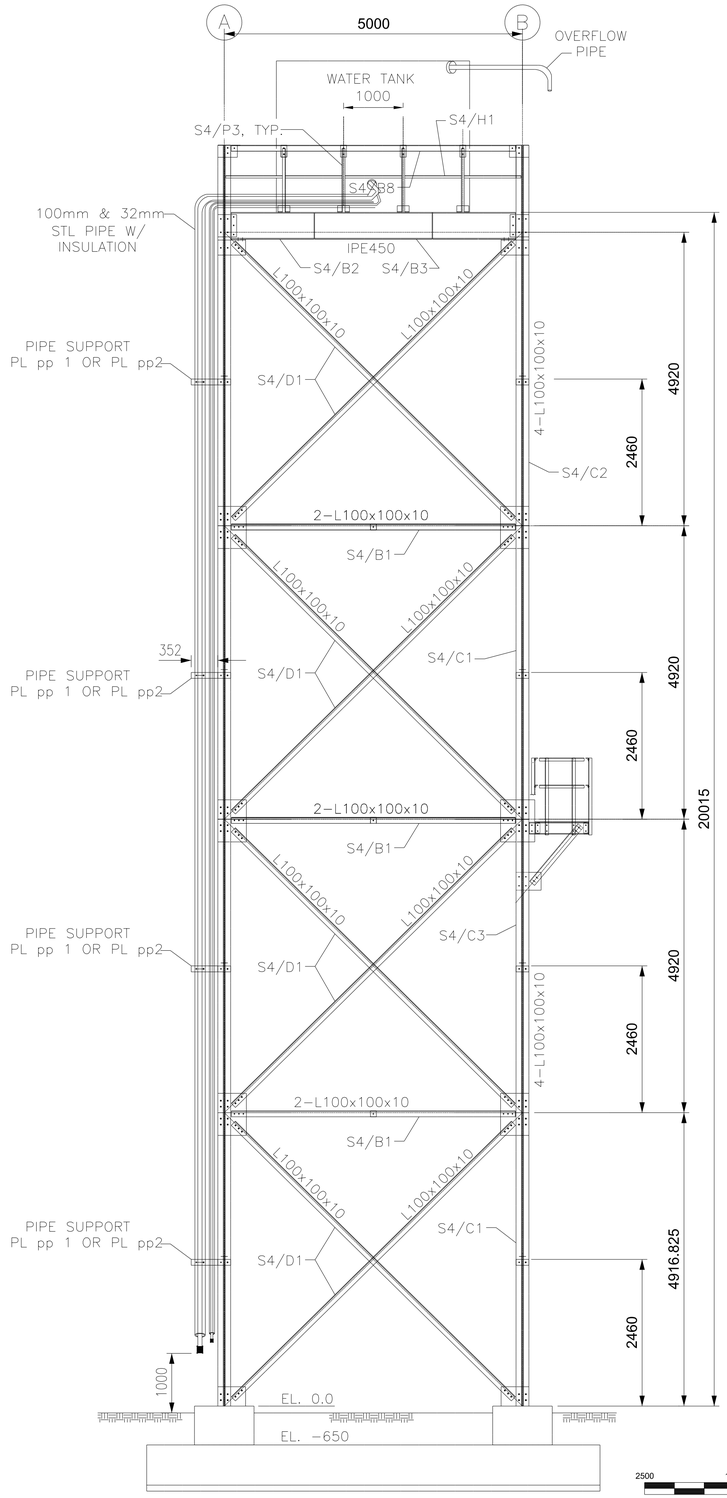
PIPE CLAMP DETAILS: NOMINAL 100mm
SCALE:NTS



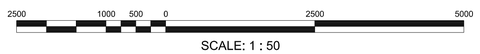
THREAD SIZE-10mm
THREAD LENGTH-63.5mm
TANGENT-82.5mm
TOP OF PIPE TO TOP OF THREAD-52.4
WT.-14.0kg

PIPE CLAMP DETAILS: NOMINAL 50mm
SCALE:NTS

PLUMBING NOTES:



PIPING ELEVATION
1:50



SCALE: 1 : 50

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CKD BY:
SUBMITTED BY:
DATE: 2008/09/27
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:
PLOT SCALE: 1.00
PLOT DATE: 11/09/2011
SIZE: ANSI D
FILE NAME: U05_P-4.dgn

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 09356

SITE ADAPT DESIGN
U05 - 20 METER WATER TOWER
PIPING ELEVATION

SHEET IDENTIFICATION
P-4
SHEET 22 OF 23

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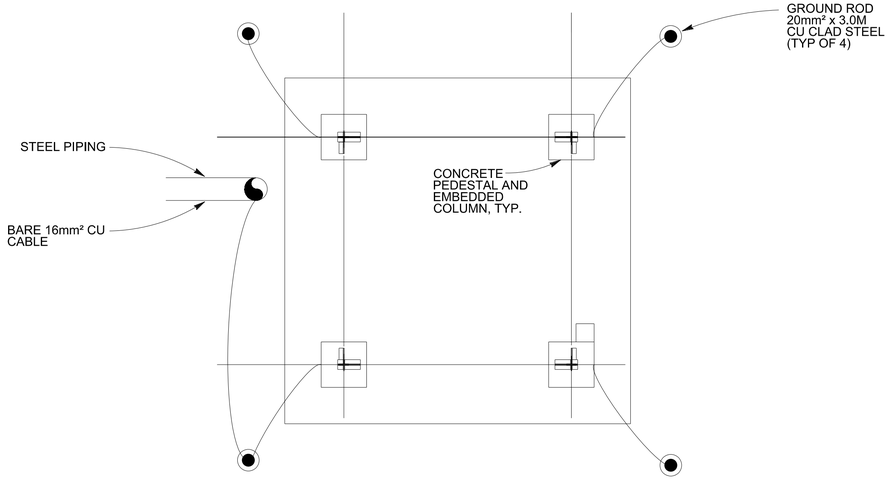
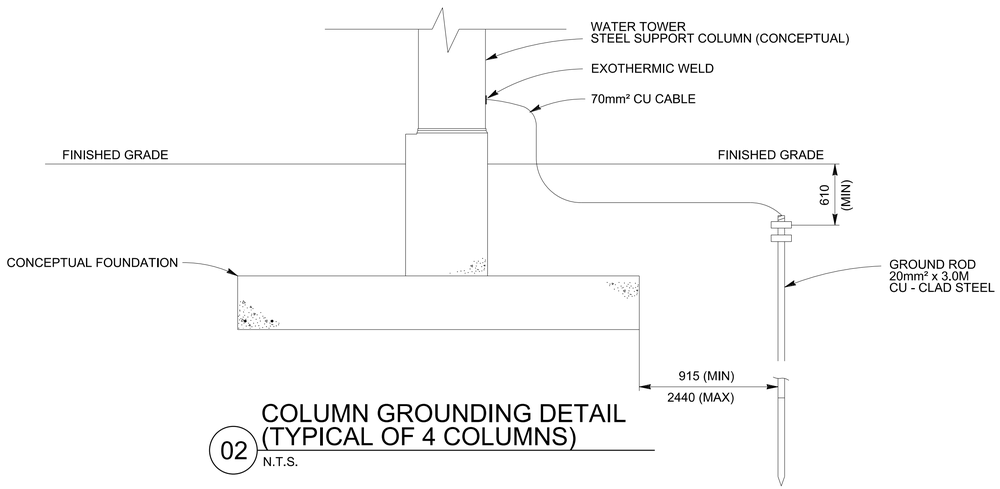
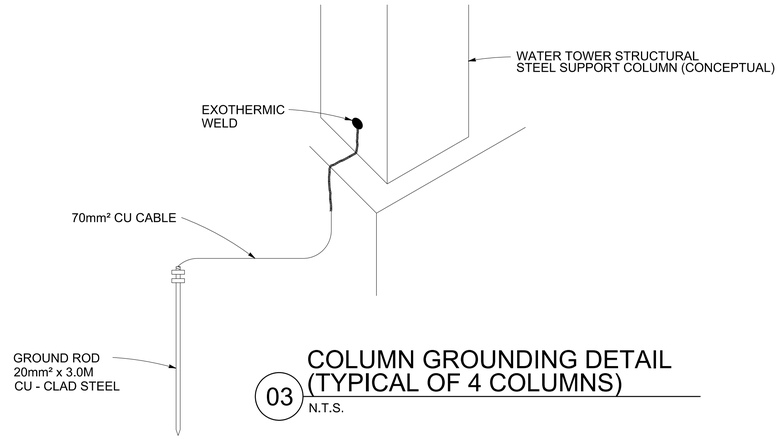


01 GROUNDING ELECTRODE PLAN
N.T.S.



02 COLUMN GROUNDING DETAIL
(TYPICAL OF 4 COLUMNS)
N.T.S.



03 COLUMN GROUNDING DETAIL
(TYPICAL OF 4 COLUMNS)
N.T.S.

LIGHTNING PROTECTION PLANS AND DETAILS
N.T.S.

NOTES:
1. CONTRACTOR SHALL MAKE ALL METALLIC ELEMENTS OF WATER TOWER TANK AND SUPPORT STRUCTURE ELECTRICALLY CONTINUOUS BY BOLTING REINFORCEMENT STEEL SHALL BE MADE ELECTRICALLY CONTINUOUS BY METALLIC WIRE TIES.
2. BOND EACH METALLIC UNDERGROUND PIPE TO AT LEAST ONE GROUND ROD WITH 16mm² CU CABLE.
3. EACH COLUMN SHALL BE BONDED TO A 20mm² x 3.0M CU CLAD STEEL GROUND ROD VIA A BARE 70mm² CU CABLE. CABLE SHALL BE EXOTHERMIC ALLY WELDED TO COLUMN 150mm ABOVE CONCRETE FOUNDATION.

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MARK	DESCRIPTION	DATE	APPR.

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AFGHANISTAN DISTRICT
APO AE 09356

DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY:
PLOT SCALE: 1:1
PLOT DATE: 10/23/2013
DATE: 17 DECEMBER 2009
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:
SIZE: ANSI D
FILE NAME: U05_E-01.dgn

SITE ADAPT DESIGN
U05 - 20 METER WATER TOWER
LIGHTNING PROTECTION DETAILS

SHEET IDENTIFICATION
E-01
SHEET 23 OF 23

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02

STANDARD BUILDING DESIGNS

FUEL/GENERATOR/CANOPY
(U03)

SHEET INDEX

FOR REFERECCE ONLY

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U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 96338

DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY:
PLOT SCALE 1:
PLOT DATE: $DATE$
SIZE: ANSI D
DATE:
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:
FILE NAME: U02_G-001XX.DWG

STANDARD DESIGN
VARIOUS LOCATIONS, AFGHANISTAN
U02 - FUEL/GENERATOR/CANOPY

COVER SHEET

SHEET IDENTIFICATION
G-001
SHEET 1 OF 18

STRUCTURAL ABBREVIATIONS:

ACI	AMERICAN CONCRETE INSTITUTE
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ALT	ALTERNATE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWS	AMERICAN WELDING SOCIETY
ARCH	ARCHITECTURAL
B	BOTTOM
BLDG	BUILDING
BOTT	BOTTOM
℄	CENTER LINE
CFMF	COLD FORM METAL FRAME
CFS	COLD FORMED STEEL
CIP	CAST IN PLACE
CIPL	CAST-IN-PLACE LINTEL
CJ	CONTROL JOINT
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COEFF	COEFFICIENT
COL	COLUMN
CONC	CONCRETE
CONT	CONTINUOUS
COORD	COORDINATE
CSJ	CONSTRUCTION JOINT
CTJ	CONTROL JOINT
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DWG	DRAWING
DWL	DOWEL
EA	EACH
ELEC	ELECTRICAL
ELEV	ELEVATION
EMBED	EMBEDMENT
EQUIV	EQUIVALENT
ETC	ET CETERA
E.W.	EACH WAY
EXT	EXTERIOR
FTG	FOOTING
GA	GAUGE
HORIZ	HORIZONTAL
HRS	HOURS
IBC	INTERNATIONAL BUILDING CODE
INT	INTERIOR
Kg	KILOGRAM
KIP	KIPS (1 KIP = 1,000 POUNDS)
kN	KILONEWTON
kPa	KILOPASCAL
L#	ANGLE (# INDICATES SIZE)
LLV	LONG LEG VERTICAL
M	METER
MAX	MAXIMUM
MBM	METAL BUILDING MANUFACTURER
MBMA	METAL BUILDING MANUFACTURERS ASSOCIATION
MECH	MECHANICAL
MFG	MANUFACTURER
MID	MIDDLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MM	MILLIMETER
MPa	MEGAPASCAL
MTL	METAL
MWFRS	MAIN WIND FORCE RESISTING SYSTEM
N	NEWTON
N	NORTH
N/A	NOT APPLICABLE
#	NUMBER SYMBOL FOR REBAR SIZE
NTS	NOT TO SCALE
O.C.	ON CENTER
OPNG	OPENING
ℙ or PL	PLATE
PRE-ENG	PRE-ENGINEERED
REINF	REINFORCED
REQ'D	REQUIRED
SIM	SIMILAR
SPECS	SPECIFICATIONS
STD	STANDARD
STRUCT	STRUCTURAL
T	TOP
T/	TOP OF
T/ELEV	TOP ELEVATION
T&B	TOP AND BOTTOM
THK	THICK
TM	TRADE MARK
TYP	TYPICAL
UFC	UNIFIED FACILITIES CRITERIA
UON	UNLESS OTHERWISE NOTED
VERT	VERTICAL
W	WIDTH
W/	WITH
W/O	WITHOUT

GENERAL NOTES

1.0 THIS PROJECT HAS BEEN DESIGNED FOR THE WEIGHTS AND MATERIALS INDICATED ON THE DRAWINGS AND FOR THE LIVE LOADS INDICATED IN THE DESIGN DATA. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALLOWABLE CONSTRUCTION LOADS AND TO PROVIDE PROPER DESIGN AND CONSTRUCTION OF FALSEWORK, FORMWORK, STAGING, BRACING, SHEETING AND SHORING, ETC.

1.1 COORDINATE THESE DRAWINGS WITH THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, AND CIVIL DRAWINGS. ALL DIMENSIONS SHOWN ON THE DRAWINGS ARE MILLIMETERS UNLESS NOTED OTHERWISE.

1.2 THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL FLOOR AND ROOF OPENING SIZES AND LOCATIONS, EQUIPMENT PAD SIZES AND LOCATIONS, ANCHOR BOLT LAYOUTS, ETC WITH EQUIPMENT SELECTED. THE CONTRACTOR SHALL MAKE ANY REQUIRED MODIFICATIONS AT NO ADDITIONAL COST.

1.3 THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR SLEEVES, CURBS, INSERTS OR OPENINGS, ETC. NOT HEREIN INDICATED.

1.4 NOT USED

1.5 SLAB OPENINGS SMALLER THAN 250mm DIA TO BE CORE DRILLED IN FIELD UNO. SEE MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR LOCATIONS OF THESE OPENINGS.

1.6 WORK NOT INCLUDED ON THE DRAWINGS BUT IMPLIED TO BE SIMILAR TO THAT SHOWN AT CORRESPONDING PLACES ELSEWHERE ON THE DRAWINGS SHALL BE REPEATED.

1.7 IN CASE OF CONFLICT BETWEEN THE NOTES, DETAILS AND SPECIFICATIONS THE MOST RIGID REQUIREMENTS SHALL GOVERN.

1.8 COORDINATE FINISHED FLOOR DATUM ELEVATION 0.0m WITH THE CIVIL DRAWINGS.

2.0 FOUNDATION NOTES

2.1 THE GEOTECHNICAL ANALYSIS FOR THIS PROJECT IS THE RESPONSIBILITY OF THE CONTRACTOR AWARDED THE WORK. DESIGN VALUES USED IN THE STRUCTURAL ANALYSIS OF THE BUILDINGS HEREIN INDICATED HAVE BEEN ASSUMED AND SHALL BE CONFIRMED AND VERIFIED AS PART OF THE GEOTECHNICAL INVESTIGATION. VALUES WHICH DO NOT MEET THE REQUIREMENTS INDICATED ON THE BASIS OF DESIGN SHEET SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER-OF-RECORD FOR CONSIDERATION AND DETERMINATION ON THE NEXT APPROPRIATE COURSE OF ACTION.

2.2 SEE THE SPECIFICATION FOR ADDITIONAL REQUIREMENTS TO THOSE OUTLINED IN THE GEOTECHNICAL INVESTIGATION FOR EXCAVATION AND PREPARATION OF THE FOUNDATION AND THE SLAB ON GRADE SUBGRADE INCLUDING COMPACTION PROCEDURES.

2.3 EXCAVATIONS FOR FOOTINGS SHALL HAVE THE SIDES AND BOTTOMS TEMPORARILY LINED WITH 0.15mm POLYETHYLENE IF PLACEMENT OF CONCRETE DOES NOT OCCUR WITHIN 24 HRS OF THE EXCAVATION OF THE FOOTING.

2.4 FOUNDATION CONDITIONS NOTED DURING CONSTRUCTION WHICH DIFFER FROM THOSE DESCRIBED IN THE GEOTECHNICAL REPORT SHALL BE REPORTED TO THE GENERAL CONTRACTOR BEFORE FURTHER CONSTRUCTION IS ATTEMPTED. SEE PROJECT SPECIFICATIONS.

2.5 NO FOOTINGS OR SLABS SHALL BE POURED INTO OR AGAINST SUBGRADE CONTAINING FREE WATER, FROST, ICE OR LOOSE MATERIAL. FROST DEPTH ASSUMED TO BE 800MM

2.6 ALL SLAB-ON-GRADE, TRENCH BOTTOMS AND OTHER ON-GRADE INTERIOR HORIZONTAL SURFACES SHALL BE PLACED OVER A 0.15mm VAPOR BARRIER OVER A 100mm #57 STONE WATER BARRIER PLACED ON SUBGRADE PROPERLY PREPARED IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS. (UNO)

2.7 SEE PLUMBING, ELECTRICAL & CIVIL DRAWINGS FOR REQUIRED UNDERSLAB UTILITIES.

2.8 SEE ARCHITECTURAL DRAWINGS FOR ALL WATERPROOFING DETAILS AND MATERIALS.

2.9 IF UNDERMINING OF FOOTINGS OCCURS, FILL VOIDS WITH 15MPa CONCRETE. DO NOT ATTEMPT TO REPLACE AND RECOMPACT SOIL.

3.0 CONCRETE

3.1 CONCRETE SHALL HAVE THE UNIT WEIGHT AND THE MINIMUM COMPRESSIVE STRENGTHS (f'c) AT 28 DAYS AS SHOWN IN THE CONCRETE MATERIALS SCHEDULE ON THE BASIS OF DESIGN SHEET. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION. ENTRAIN AIR TO PRODUCE TOTAL AIR CONTENT ACCORDING TO THE SPECIFICATIONS FOR CONCRETE EXPOSED TO FREEZING TEMPERATURES (EXTERIOR FOOTINGS, SLAB TURNDOWNS, EXTERIOR SLABS AND SLABS-ON-GRADE, EXTERIOR RETAINING WALLS, AND EXTERIOR GRADE BEAMS.)

3.2 GROUT FOR BASE PLATES SHALL BE NON-SHRINKABLE GROUT AND SHALL HAVE A MINIMUM SPECIFIED COMPRESSIVE STRENGTH AT 28 DAYS OF 35MPa, UNLESS NOTED OTHERWISE.

3.3 NO CALCIUM CHLORIDE SHALL BE USED IN ANY CONCRETE.

3.4 MIXING, TRANSPORTING AND PLACING OF CONCRETE SHALL CONFORM TO AC1-301-89

3.5 ALL CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICAN CONCRETE INSTITUTE (ACI) 318M MANUAL (metric), "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", AND REQUIREMENTS OUTLINED IN THE CONTRACT SPECIFICATIONS. WHEN THERE IS A CONFLICT BETWEEN ACI AND THE SPECIFICATIONS, THE MORE STRINGENT SHALL GOVERN.

3.6 CHAMFER ALL EXPOSED EXTERNAL CORNERS OF CONCRETE WITH 20mm x45 DEGREE CHAMFER UNO.

3.7 CONCRETE REINFORCEMENT BARS SHALL CONFORM TO ASTM A615M-96a, GRADE 60, REINFORCING BARS SHALL NOT BE TACK WELDED, WELDED, HEATED OR CUT, UNLESS INDICATED ON THE CONTRACT DOCUMENTS. ALL LAP SPLICES SHALL BE CLASS "B" UON.

3.8 HORIZONTAL FOOTING AND HORIZONTAL WALL REINFORCEMENT SHALL BE CONTINUOUS AND SHALL HAVE 90 DEGREE BENDS AND EXTENSIONS, OR CORNER BARS OF EQUIVALENT SIZE LAPPED WITH A CLASS B TENSION SPLICE AT CORNERS AND INTERSECTIONS. TOP BAR CRITERIA SHALL APPLY IF 300mm OR MORE OF FRESH CONCRETE IS PLACED BELOW BAR.

3.9 SLABS-ON-GRADE SHALL HAVE CONSTRUCTION JOINTS OR CRACK CONTROL JOINTS AS SHOWN ON THE DRAWINGS. CONSTRUCTION JOINTS CAN BE USED AT CONTROL JOINT LOCATIONS AT CONTRACTORS OPTION. SEE SLAB PLANS & JOINT DETAILS FOR ADDITIONAL INFORMATION. FOR AREAS NOT SHOWN ON DWGS, THE MAXIMUM SPACING OF CONSTRUCTION / CRACK CONTROL JOINTS SHALL BE 4800 mm

3.10 ALL CONCRETE REINFORCEMENT SHALL BE DETAILED, FABRICATED, LABELED, SUPPORTED, AND SPACED IN FORMS AND SECURED IN PLACE IN ACCORDANCE WITH THE PROCEDURES AND REQUIREMENTS OUTLINED IN THE LATEST EDITION OF THE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", ACI 318, AND THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315, LATEST EDITION.

3.11 SHOP DRAWINGS SHOWING REINFORCING DETAILS, INCLUDING STEEL SIZES, SPACING AND PLACEMENT, SHALL BE SUBMITTED FOR REVIEW PRIOR TO FABRICATION.

3.12 NOT USED.

3.13 ALL DOWELS SHALL MATCH SIZE AND NUMBER OF MAIN REINFORCING, UNLESS NOTED OTHERWISE ON DRAWINGS.

3.14 ADDITIONAL BARS SHALL BE PROVIDED AROUND ALL FLOOR AND WALL OPENINGS AS SHOWN ON THE DWGS.

3.15 SEE ARCHITECTURAL DRAWINGS FOR TYPE AND LOCATION OF ALL FLOOR FINISHES.

3.16 THE CONTRACTOR SHALL COORDINATE ADDITIONAL WALL/SLAB OPENINGS NOT SHOWN ON STRUCTURAL DRAWINGS. SEE MECHANICAL, ELECTRICAL, PLUMBING AND CIVIL DRAWINGS.

3.17 UNLESS NOTED OTHERWISE, ALL CURBS SHALL BE REINFORCED WITH AT LEAST (1) #12 CONTINUOUS AND #12 AT 300mm OC DOWELS TO STRUCTURE BELOW.

3.18 THE SUB-CONTRACTOR SHALL VERIFY ALL OPENINGS, PAD SIZES, AND ANCHOR BOLTS WITH EQUIPMENT SELECTED.

3.19 FOR ALL WALLS & PIERS, PROVIDE DOWELS INTO FOOTING AT EACH VERT REINF BAR, UON DOWEL SIZE SHALL BE SAME AS VERT REINF.

3.20 ALL DEFORMED BAR ANCHORS SHALL BE TRS NELSON DIVISION OR EQUAL 15mm DIA (UON) CONFORMING TO ASTM A-496M WITH A MINIMUM TENSILE STRENGTH OF 550 MPa. ANCHOR DIMENSIONS SHALL BE IN ACCORDANCE WITH ASTM D-19. INSTALL ANCHORS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS BY AUTOMATIC ND WELDING AS INDICATED ON THE DRAWINGS. NO UNAUTHORIZED OR FIELD WELDING SHALL BE MADE WITHOUT AUTHORIZATION FROM THE MANUFACTURER.

3.21 ALL REINFORCING INDICATED TO BE WELDED SHALL BE IN ACCORDANCE WITH ASTM A706M. "LOW ALLOY STEEL DEFORMED BARS FOR CONCRETE REINFORCEMENT". ANY INSTALLATIONS USING MANUFACTURER'S EQUIPMENT SHALL BE PER MANUFACTURER'S RECOMMENDATIONS.

3.22 PROVIDE CONCRETE POUR STOPS OR FORMED AS REQUIRED FOR INSTALLATION OF ALL CONCRETE WORK.

3.23 PROVIDE ADDITIONAL 2-#12 x 600mm REINFORCING BARS IN SLAB-ON GRADE AT ALL RE-ENTRANT CORNERS. PLACE BARS AT MID-DEPTH OF SLAB WITH A CLEARANCE OF 50mm FROM CORNER UNO.

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MARK	DESCRIPTION	DATE	APPR. MARK	DESCRIPTION	DATE	APPR.
	EDITING NOTES	01/22/2012				

DESIGNED BY:
DWN BY:
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SUBMITTED BY:
DATE:
SOLICITATION NO.:
CONTRACT NO.:
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PLOT DATE: SDATE$
FILE NAME: U02_S-001XXX.DWG
SIZE: ANSI D
FILE NUMBER:

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 96338

STANDARD DESIGN
VARIOUS LOCATIONS, AFGHANISTAN

U02 - FUEL/GENERATOR/CANOPY

STRUCTURAL GENERAL NOTES

SHEET IDENTIFICATION
S-1
SHEET 2 OF 18

STRUCTURAL DESIGN CRITERIA

ALL DESIGNS SHALL CONFORM TO THE PROVISIONS OF THE IBC 2006 AS APPLICABLE

1.0 DESIGN LOADS

1.1 DEAD LOADS

1.1.1 ROOF DEAD LOADS – PRE-ENGINEERED FRAMING

	MAXIMUM GRAVITY LOAD	MINIMUM GRAVITY LOAD
STEEL FRAMING	0.20 KPa	0.15 KPa
METAL DECKING/ROOFING	0.14 KPa	0.05 KPa
MECH/ELEC/PLUMBING	0.15 KPa	0.10 KPa
METAL PANEL CEILING	0.15 KPa	0.15 KPa
MISC	0.40 KPa	0.00 KPa
	1.00 KPa	0.45 KPa

1.2 LIVE LOADS (PER IBC 2006)

1.2.1 ROOF LIVE LOADS: ALL BUILDINGS

GREATER OF 1.0 KPa MINIMUM OR SNOW LOAD

1.2.2 SLAB-ON-GRADE LIVE LOADS

ALL BUILDINGS 4.80 KPa

1.3 SNOW LOADS (PER IBC 2006)

1.3.1 DESIGN PARAMETERS

GROUND SNOW LOAD (per UFC 3-310-01)	1.2 KPa
SNOW IMPORTANCE FACTOR	1.0
SNOW EXPOSURE FACTOR	1.0

1.4 SEISMIC LOADS (PER IBC 2006 & UFC 3-310-04)

1.4.1 SEISMIC PARAMETERS – PRE-ENGINEERED BUILDINGS

SEISMIC OCCUPANCY CATEGORY	II
SEISMIC IMPORTANCE FACTOR (I)	1.0
SEISMIC SITE CLASS	D
Ss	1.28
S1	0.51
Sds	0.853
Sd1	0.510
SEISMIC DESIGN CATEGORY	D
SEISMIC RESISTING SYSTEM	MOMENT RESISTING FRAME INTERMEDIATE STEEL MOMENT FRAMES
RESPONSE MODIFICATION FACTOR (R)	4.5
SEISMIC ANALYTICAL PROCEDURE	EQUIV LATERAL FORCE

1.5 WIND LOADS (PER IBC 2006)

1.5.1 DESIGN PARAMETERS

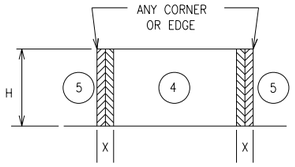
BASIC WIND SPEED	137 Km/h
WIND IMPORTANCE FACTOR	1.0
WIND EXPOSURE CATEGORY	D
DIRECTIONALITY COEFFICIENT (Kd)	0.85
TOPOGRAPHIC FACTOR (Kzt)	1.0

1.5.2 DESIGN WIND PRESSURE – MAIN WINDFORCE RESISTING SYSTEM

LOCATION	CORNER ZONE WIDTH "a"	WINDWARD (@ MEAN ROOF HEIGHT)	LEEWARD (@ MEAN ROOF HEIGHT)	ROOF
FIELD ZONE	N/A	600 N/m^2	−570 N/m^2	−780 N/m^2
CORNER ZONE	1440mm	830 N/m^2	−680 N/m^2	−1130 N/m^2

1.5.3 DESIGN WIND PRESSURE – WALL COMPONENTS AND CLADDING

EXTERIOR WALL SYSTEMS & THEIR ATTACHMENTS TO THE PRIMARY STRUCTURE SHALL BE DESIGNED FOR THE PRESSURES SHOWN IN THE DIAGRAM BELOW:



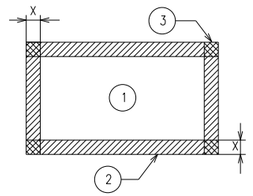
LOCATION	WINDWARD PRESSURE N/m^2 (inward)		LEEWARD PRESSURE N/m^2 (outward)		X
	④	⑤	④	⑤	
MAIN BUILDING					(mm)
AREA = 1 m^2	1050	1050	−1140	−1410	1440
AREA = 2 m^2	1010	1010	−1100	−1310	1440
AREA = 5 m^2	910	910	−1000	−1120	1440
AREA = 10 m^2	820	820	−910	−930	1440

NOTES:
1. DESIGN WIND PRESSURES ABOVE REPRESENT THE NET PRESSURE (SUM OF INTERNAL AND EXTERNAL PRESSURE) APPLIED NORMAL TO ALL SURFACES.
2. LINEAR INTERPOLATION BETWEEN VALUES OF TRIBUTARY AREA IS PERMISSIBLE.
3. PLUS AND MINUS SIGNS SIGNIFY PRESSURE TOWARD AND AWAY FROM THE EXTERIOR SURFACE, RESPECTIVELY.

1.5 WIND LOADS (CONT)

1.5.4 DESIGN WIND PRESSURE – ROOF COMPONENTS AND CLADDING

ROOF COMPONENTS & THEIR ATTACHMENTS SHALL BE DESIGNED FOR THE PRESSURES SHOWN IN THE ADJACENT DIAGRAM & TABLE BELOW:



ROOF MEAN HEIGHT

LOCATION	GROSS UPLIFT PRESSURE N/m^2 (upward)			X
	①	②	③	
MAIN BUILDING				(mm)
AREA = 1 m^2	−970	−1670	−2480	1440
AREA = 2 m^2	−950	−1540	−2320	1440
AREA = 5 m^2	−880	−1260	−1990	1440
AREA = 10 m^2	−880	−1240	−1960	1440

NOTES:
1. DESIGN WIND PRESSURES ABOVE REPRESENT THE NET PRESSURE (SUM OF INTERNAL AND EXTERNAL PRESSURE) APPLIED NORMAL TO ALL SURFACES.
2. LINEAR INTERPOLATION BETWEEN VALUES OF TRIBUTARY AREA IS PERMISSIBLE.
3. PLUS AND MINUS SIGNS SIGNIFY PRESSURE TOWARD AND AWAY FROM THE EXTERIOR SURFACE, RESPECTIVELY.

2.0 FOUNDATION DESIGN CRITERIA (TO BE CONFIRMED BY THE CONTRACTOR)

THE GEOTECHNICAL ANALYSIS FOR THIS PROJECT IS THE RESPONSIBILITY OF THE CONTRACTOR AWARDED THE WORK. DESIGN VALUES USED IN THE STRUCTURAL ANALYSIS OF THE BUILDINGS HEREIN INDICATED HAVE BEEN ASSUMED AND SHALL BE CONFIRMED AND VERIFIED AS PART OF THE GEOTECHNICAL INVESTIGATION. VALUES WHICH DO NOT MEET THE REQUIREMENTS INDICATED BELOW SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CONTRACTING OFFICER FOR CONSIDERATION AND DETERMINATION ON THE NEXT APPROPRIATE COURSE OF ACTION.

2.1.1 SOIL DESIGN PARAMETERS

NET ALLOWABLE SOIL BEARING CAPACITY	96.0 KPa
UNIT WEIGHT OF SOIL (moist)	1800 Kg/m^3
COEFF ACTIVE EARTH PRESSURE (Kpa)	0.30
COEFF PASSIVE EARTH PRESSURE (Kpp)	3.33
COEFF AT-REST EARTH PRESSURE (Kpr)	.55
COEFF OF SOIL FRICTION	.35
SUBGRADE MODULUS	4120 g/cm^3
MINIMUM BEARING DEPTH BELOW GRADE	800mm
SEISMIC SITE CLASS (based on in-situ soil)	D

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STANDARD DESIGN
VARIOUS LOCATIONS, AFGHANISTAN

U02 - FUEL/GENERATOR/CANOPY

STRUCTURAL BASIS OF DESIGN

SHEET IDENTIFICATION
S-2
SHEET 3 OF 18

MINIMUM LAP SPLICES OF REINFORCING BARS IN TENSION (PER ACI 318M-05 & 08)

f'c = 28 MPa CONCRETE, CLASS B SPLICE

BAR SIZE \ CENTER TO CENTER BAR SPACING	(---TOP BARS--) LESS THAN 3db	(---TOP BARS--) 3db OR MORE	(--OTHER BARS--) LESS THAN 3db	(--OTHER BARS--) 3db OR MORE	3db
#10	960	640	740	500	30
#12	1150	770	890	600	36
#14	1340	900	1040	700	42
#16	1540	1020	1180	800	48
#18	1730	1150	1330	900	54
#20	1920	1280	1480	1000	60
#22	2660	1760	2050	1360	66
#25	3020	2000	2320	1550	75
#28	3390	2240	2600	1740	84
#32	3870	2560	2980	1980	96

NOTES:

1. LAP SPLICES ABOVE ARE IN MILLIMETERS UON.
2. YIELD STRENGTH OF REINFORCEMENT, fy, IS 400MPa (LAP SPLICE LENGTH IS IN MILLIMETERS).
3. CONCRETE IS NORMAL WEIGHT (2400Kg/m^3).
4. TOP BAR INDICATES HORIZONTAL REINFORCEMENT WHICH IS PLACED ABOVE 300mm OR MORE OF FRESH CONCRETE.
5. STRAIGHT DEVELOPMENT LENGTH OF AN UNLAPPED BAR IS EQUAL TO VALUE FROM TABLE DIVIDED BY 1.3. BARS SPACED LESS THAN 3db CORRESPONDS TO CASE 2 IN THE CRSI HANDBOOK, WHEREAS FOR BARS SPACED 3db OR MORE CORRESPONDS TO CASE 1.
6. HOOK DEVELOPMENT LENGTH IS VALID FOR 180° HOOKS ALSO.

CONCRETE COVER SCHEDULE

MINIMUM CONCRETE COVER PROTECTION FOR REINFORCEMENT BARS SHALL BE AS FOLLOWS: (SEE ACI 318M-05, SECTION 7.7 FOR CONDITIONS NOT NOTED). DIMENSIONS FOR BAR PLACEMENT GIVEN IN SECTIONS AND DETAILS SHALL SUPERSEDE MINIMUM COVER REQUIREMENTS GIVEN HERE. DIMENSIONS ARE IN mm.

FOOTINGS (EARTH FORMED)		70
COLUMNS / PIERS		40
GRADE BEAMS OR SLAB TURNED DOWN EDGES:		
TOP		40
BOTTOM (EARTH FORMED)		70
SIDES (EARTH FORMED)		70
SIDES (BOARD FORMED)	#16 BAR & SMALLER	40
	#19 THRU #36 BAR	50
		40
SLABS-ON-GRADE (NO EXPOSURE TO WEATHER) FROM TOP		20
SLABS-ON-GRADE (EXPOSURE TO WEATHER) FROM TOP		40
UTILITY TUNNEL WALLS, RETAINING WALLS AND SHEAR WALLS, (NO SURFACES SHALL BE EARTH FORMED) EARTH SIDE AND FRONT SIDE (EXPOSED TO WEATHER):		
#16 BAR AND SMALLER		40
#19 THRU #36 BAR		50

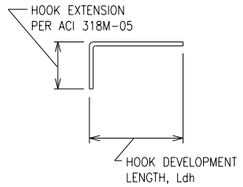
PROVIDE STANDARD BAR CHAIRS AND SPACERS AS REQUIRED TO MAINTAIN CONCRETE PROTECTION SPECIFIED.

CONCRETE MATERIALS SCHEDULE

STRUCTURAL ELEMENT	f'c CONCRETE COMPRESSIVE STRENGTH @ 28 DAYS (MPa)
SLAB-ON-GRADE/TURN-DOWN SLABS	28
FLOOR SLABS	28
ALL FOOTINGS (UON)	28
MISC. CURBS, WALLS AND PADS UON	28
CAST-IN-PLACE LINTEL	28
CONCRETE FRAMING - BEAMS AND COLUMNS	28

NOTES:
1. ALL CONCRETE SHALL BE NORMAL WEIGHT CONCRETE. (2400 Kg/m^3 UON)
2. ALL CONCRETE SHALL HAVE A MAX WATER-CEMENT RATIO OF 0.45.

STANDARD HOOKS IN TENSION PER (ACI 318M-05)	
HOOK DEVELOPMENT LENGTH Ldh (mm)	
BAR SIZE	f'c 28 MPa
#10	190
#12	230
#14	270
#16	300
#18	340
#20	380
#22	420
#25	480
#28	530
#32	610



NOTES:
1. CONCRETE IS NORMAL WEIGHT CONCRETE.
2. BAR YIELD STRENGTH, fy = 400 MPa
3. SIDE COVER REQUIREMENTS OF ACI SECT. 12.5.3.2 ARE ASSUMED TO NOT BE MET.
4. TIE OR STIRRUP REQUIREMENTS OF ACI SECT. 12.5.3.2 ARE ASSUMED TO NOT BE MET.
5. REDUCTION FOR EXCESS REINFORCEMENT IS NOT TAKEN.
6. HOOK DEVELOPMENT LENGTH IS VALID FOR 180° HOOKS ALSO.

SPREAD FOOTING AND PIER SCHEDULE

MARK	FOOTING SIZE LENGTH	FOOTING SIZE WIDTH	FOOTING SIZE THICKNESS	FOOTING REINFORCING	PIER SIZE	PIER VERT. BARS	PIER TIES	REMARKS
F1	2500	2500	300	(7)-#16 EW T&B	600 X 600	(4)-#20	2 SETS #12 @ 125	

NOTES:
1. DIMENSIONS NOTED ARE MILLIMETERS (mm) UON
2. PIER SIZE INDICATED IS SQUARE (DIMENSION SAME IN BOTH DIRECTIONS) UON

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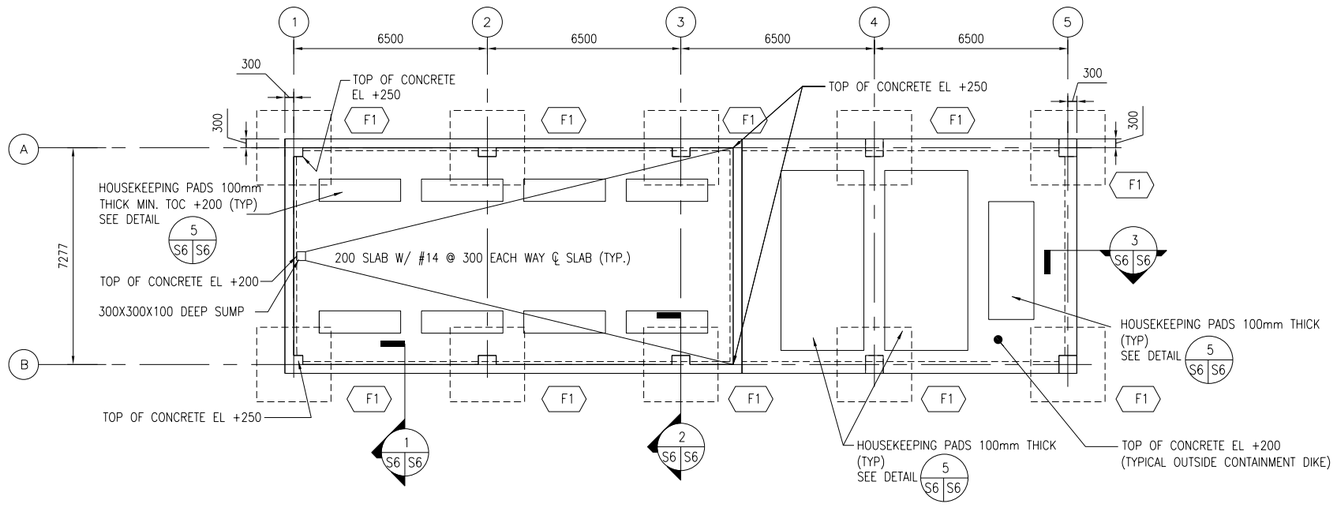
STANDARD DESIGN
VARIOUS LOCATIONS, AFGHANISTAN

U02 - FUEL/GENERATOR/CANOPY

STRUCTURAL MATERIALS SCHEDULES

SHEET IDENTIFICATION
S-3
SHEET 4 OF 18



1 S4 S4 CANOPY FOUNDATION AND SLAB PLAN

SCALE: 1:100

NOTES :

1. DIMENSIONS NEED TO BE VERIFIED AND ADJUSTED TO FIT FUEL & GENERATOR REQUIREMENTS FOR ACTUAL QUANTITY AND SIZE.
2. FINISH GRADE ELEVATION SHALL BE (DATUM 0.0) ALL PLUS OR MINUS DIMENSIONS INDICATED ON PLAN OR REFERRED TO IN NOTES RELATE TO FINISH GRADE ELEVATION.
3. TOP OF HOUSEKEEPING PADS SHALL BE AN ELEVATION OF +200 UNLESS NOTED OTHERWISE.
4. TOP OF FOOTINGS SHALL BE -500 UNLESS OTHERWISE INDICATED.
5. SPREAD FOOTINGS INDICATED THUS ⟨XXXX⟩ ON PLAN. REFER TO SPREAD FOOTING SCHEDULE ON DRAWING S-003.
6. REFER TO DRAWINGS S-001, S-002, AND S-003 FOR STRUCTURAL NOTES, BASIS OF DESIGN, ABBREVIATIONS AND SYMBOLS.
7. CTJ AND CJ INDICATES SLAB CONTROL OR CONSTRUCTION JOINTS, RESPECTIVELY REFER TO DRAWING S-306 FOR SECTIONS & DETAILS.
8. SEE MECHANICAL AND ELECTRICAL DWGS. FOR CONCRETE PAD LOCATIONS, SIZES, AND THICKNESS NOT SHOWN. SEE DWG. S-306 FOR DETAILS.
9. ——→ INDICATES SLOPE IN SLAB ON GRADE. COORDINATE LOCATION AND ELEVATION WITH ARCHITECTURAL AND PLUMBING DRAWINGS. (TYP.)
10. FUEL CONTAINMENT DIKE TO BE RAISED AS REQUIRED TO CONTAIN 110% OF THE TOTAL FUEL IN THE SINGLE LARGEST STORAGE TANK PLUS 150mm.

1 0 1 2 3 4 5 6 7 8 9
1:100

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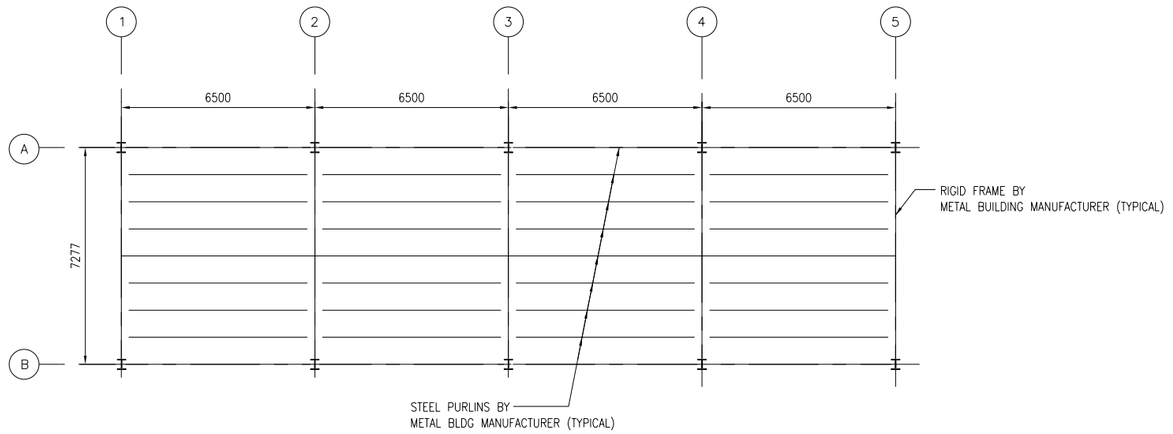
U02 - FUEL/GENERATOR/CANOPY

CANOPY FOUNDATION AND SLAB PLAN

SHEET IDENTIFICATION
S-4
SHEET 5 OF 18

NOTES:

1. REFER TO SHEETS S-001 TO S-003 FOR STRUCTURAL NOTES, BASIS OF DESIGN SYMBOLS AND ABBREVIATIONS.
2. PRE-ENGINEERED BUILDING MANUFACTURER SHALL COORDINATE ALL LOADING REQUIREMENTS INDICATED ON THE SHEETS AND SPECIFICATIONS WITH OTHER TRADES.
3. PRE-ENGINEERED BUILDING COLUMN BASES SHALL BE DESIGNED AS PINNED ONLY.
4. LOCATIONS OF PORTAL FRAMES HAVE NOT BEEN SHOWN IN PLAN. CONTRACTOR TO DETERMINE.
5. PRE-ENGINEERED BUILDING MANUFACTURER SHALL COORDINATE ALL HANGING LOADING FROM EQUIPMENT OR ARCHITECTURAL ELEMENTS AND INCLUDE IN THE DESIGN OF THE FRAMING.
6. SEE SPECIFICATION FOR LATERAL DRIFT REQUIREMENTS.
7. BUILDING DOES NOT NEED PROVISIONS FOR FUTURE EXPANSION AT END WALLS.
8. METAL ROOF DECKING DESIGNED AND PROVIDED BY PRE-ENGINEERED METAL BUILDING MANUFACTURER.



1 / S-105 ROOF FRAMING PLAN

SCALE: 1:100

1 0 1 2 3 4 5 6 7 8 9
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STANDARD DESIGN
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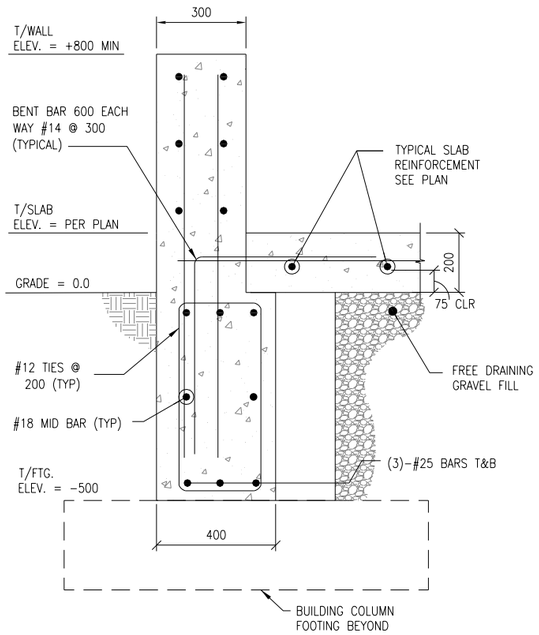
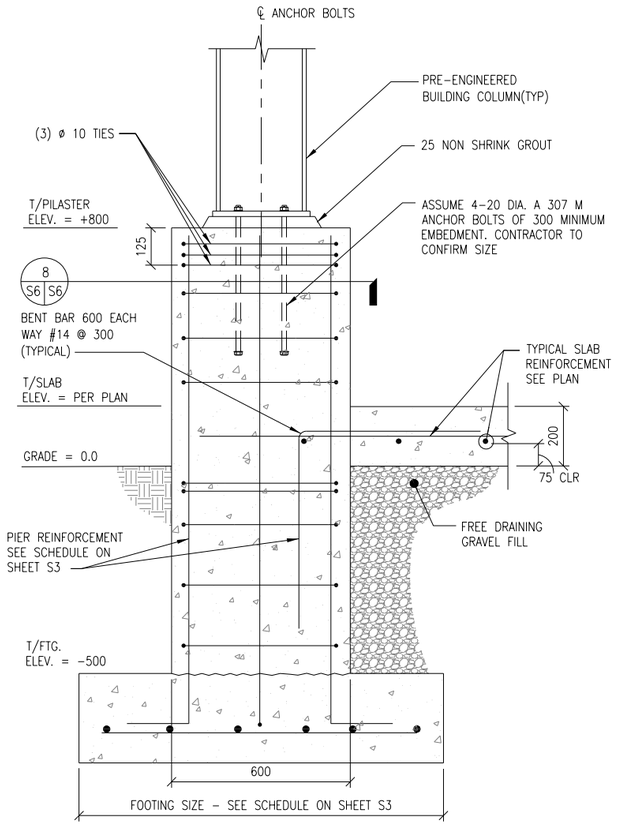
U02 - FUEL/GENERATOR/CANOPY

CANOPY ROOF FRAMING PLAN

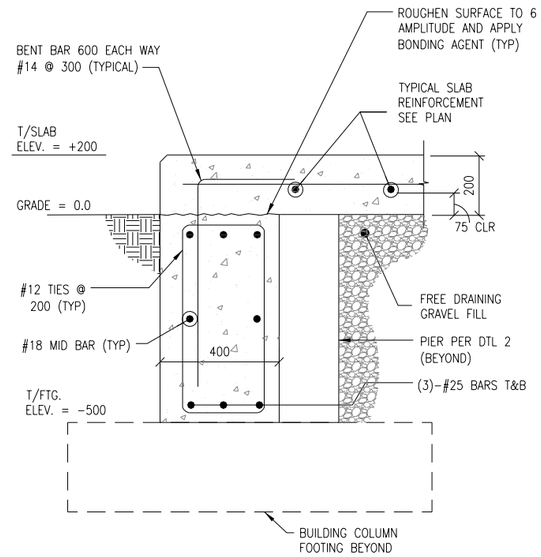
SHEET IDENTIFICATION
S-5
SHEET 6 OF 18



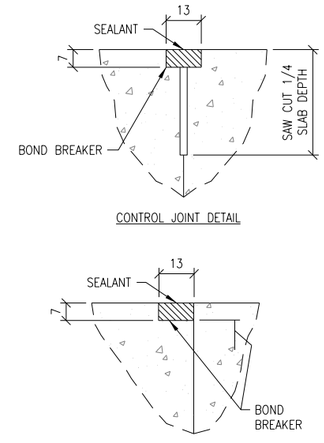
1 S6 S6 **SECTION**
SCALE: NTS



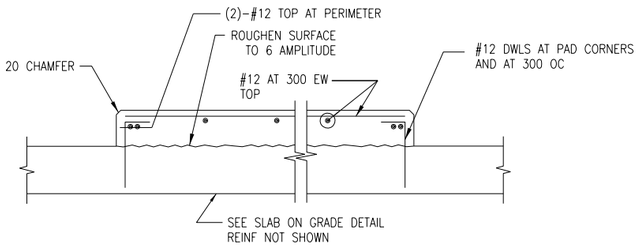
2 S6 S6 **SECTION**
SCALE: NTS



3 S6 S6 **SECTION**
SCALE: NTS

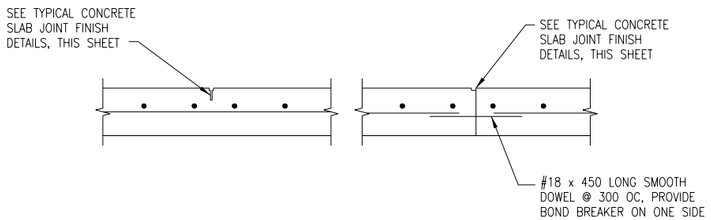


4 S6 S6 **TYPICAL CONCRETE SLAB JOINT FINISH DETAIL**
SCALE: NTS

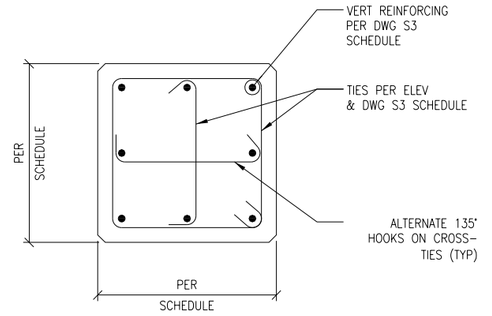


DETAIL NOTE:
1. COORDINATE EQUIPMENT PAD SIZE AND LOCATIONS W/ ELECTRICAL/MECHANICAL SHEETS AND EQUIPMENT MANUFACTURER.

5 S6 S6 **HOUSEKEEPING PAD DETAIL**
SCALE: NTS



7 S6 S6 **TYPICAL SLAB ON GRADE JOINT DETAILS**
SCALE: NTS



8 S6 S6 **SECTION**
SCALE: NTS

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STANDARD DESIGN
VARIOUS LOCATIONS, AFGHANISTAN

U02 - FUEL/GENERATOR/CANOPY

SECTIONS AND DETAILS

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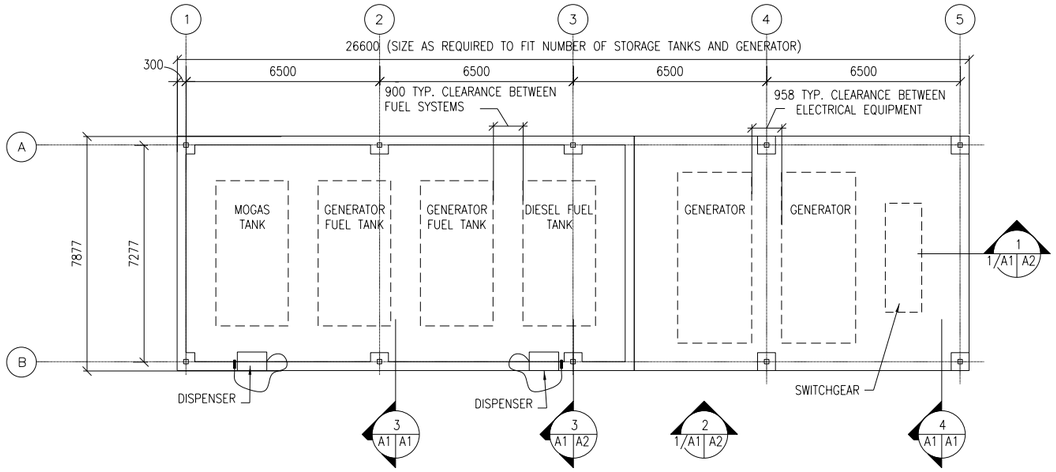
S-6
SHEET 7 OF 18



1 / A1 A1 CANOPY PLAN

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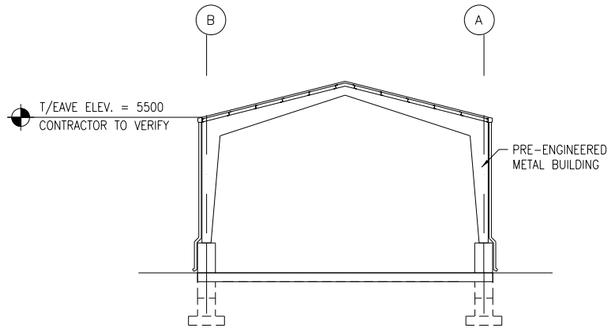

3 / A1 A1 CANOPY SECTION

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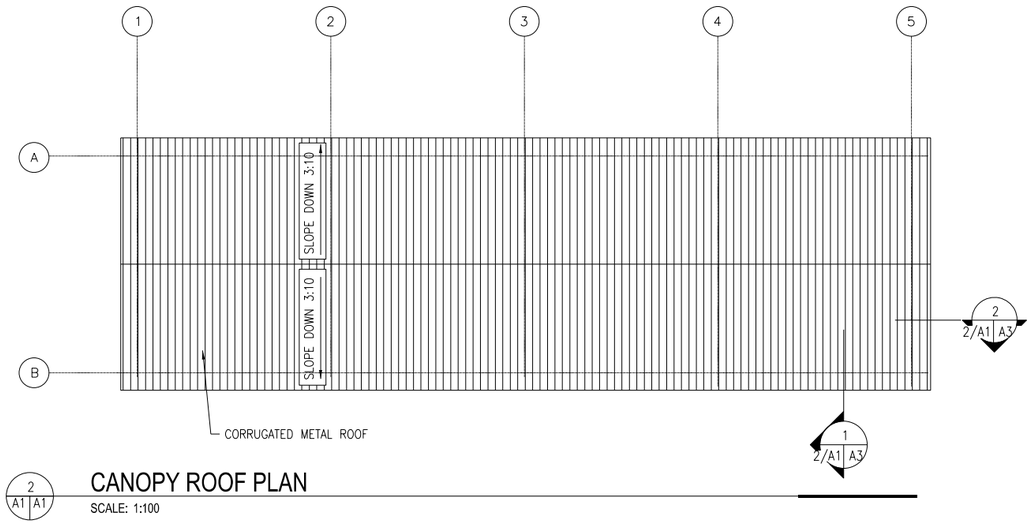
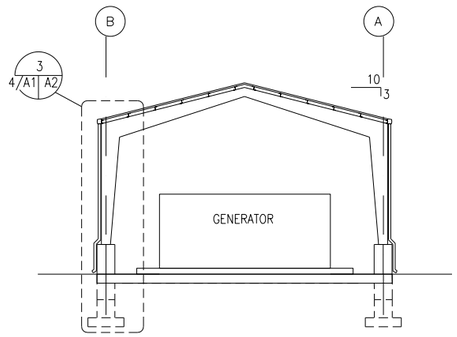


2 / A1 A1 CANOPY ROOF PLAN

SCALE: 1:100



4 / A1 A1 CANOPY SECTION

SCALE: 1:100

GENERAL NOTES:

1. BUILDING UTILIZES PRE-ENGINEERED METAL SYSTEM W/ STANDARD MANUFACTURER'S ROOF PANEL, AND TRIM.
2. PROJECT BUILDING DIMENSIONS NEED TO BE VERIFIED AND ADJUSTED TO FIT ACTUAL FUEL & GENERATOR REQUIREMENTS FOR ACTUAL QUANTITY AND SIZE.

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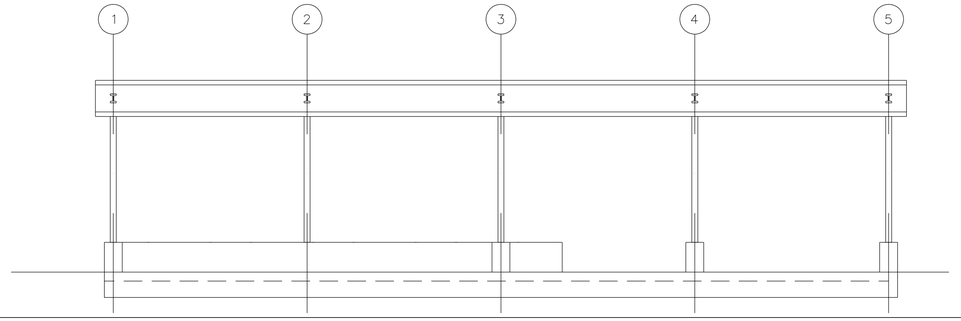
STANDARD DESIGN
VARIOUS LOCATIONS, AFGHANISTAN

U02 - FUEL/GENERATOR/CANOPY

CANOPY PLAN, ELEVATIONS AND SECTIONS

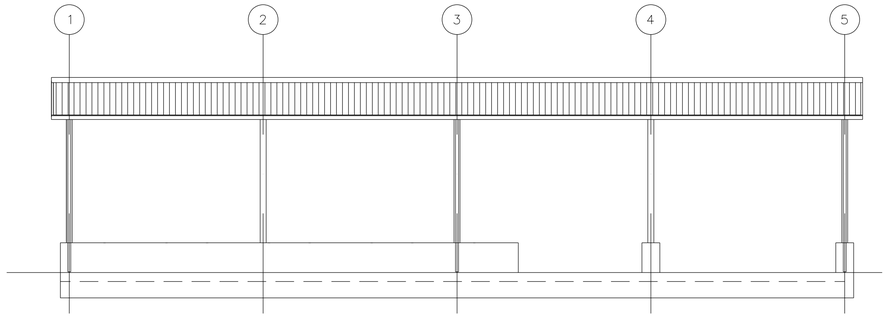
SHEET IDENTIFICATION
A-1
SHEET 8 OF 18



1 A-202

CANOPY SECTION

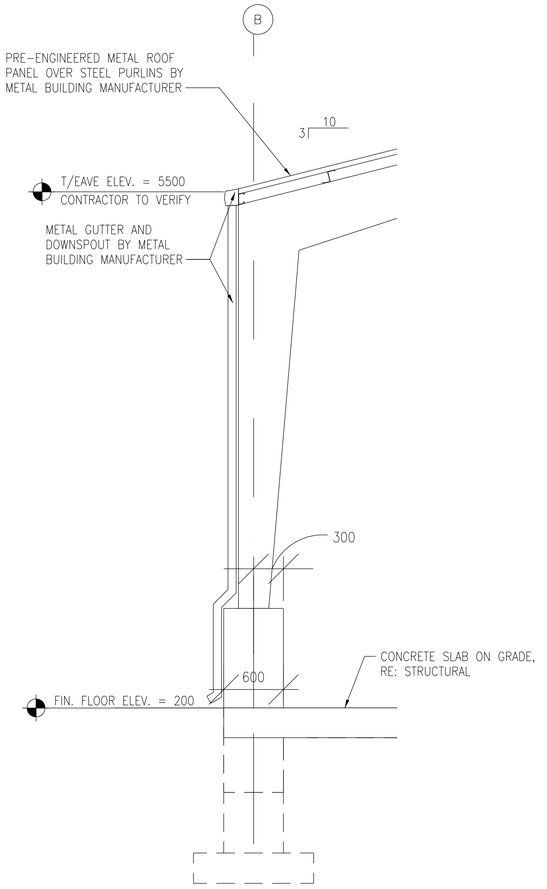
SCALE: 1:100



2 A-202

CANOPY ELEVATION

SCALE: 1:100



3 A-202

CANOPY BUILDING SECTION

SCALE: 1:30

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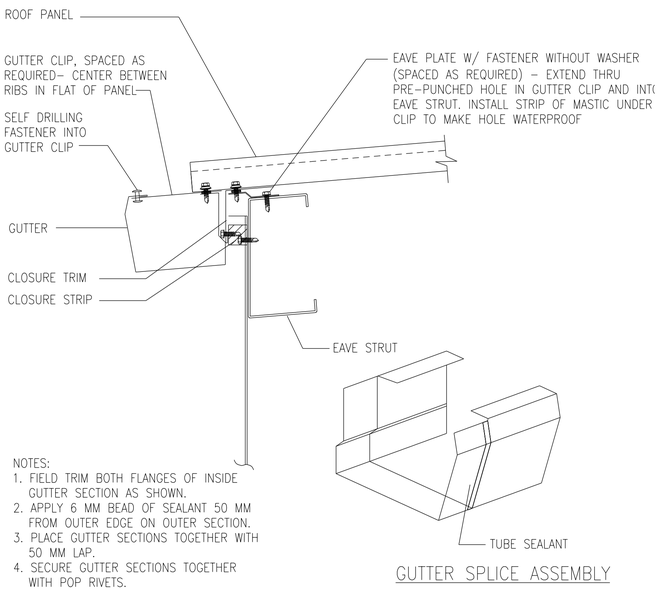
U02 - FUEL GENERATOR CANOPY

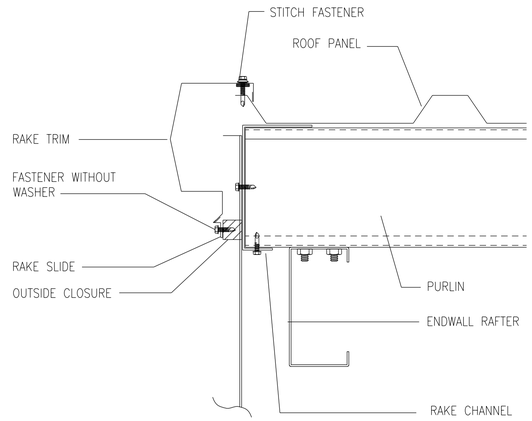
CANOPY ELEVATIONS AND SECTIONS

SHEET IDENTIFICATION
A-202
SHEET 9 OF 18



NOTES:
1. FIELD TRIM BOTH FLANGES OF INSIDE GUTTER SECTION AS SHOWN.
2. APPLY 6 MM BEAD OF SEALANT 50 MM FROM OUTER EDGE ON OUTER SECTION.
3. PLACE GUTTER SECTIONS TOGETHER WITH 50 MM LAP.
4. SECURE GUTTER SECTIONS TOGETHER WITH POP RIVETS.

GUTTER SPLICE ASSEMBLY



1 / A–503 **EAVE DETAIL WITH GUTTER**
SCALE: NONE

2 / A–503 **RAKE TRIM DETAIL**
SCALE: NONE

1 0 1 2 3 4 5 6 7 8 9
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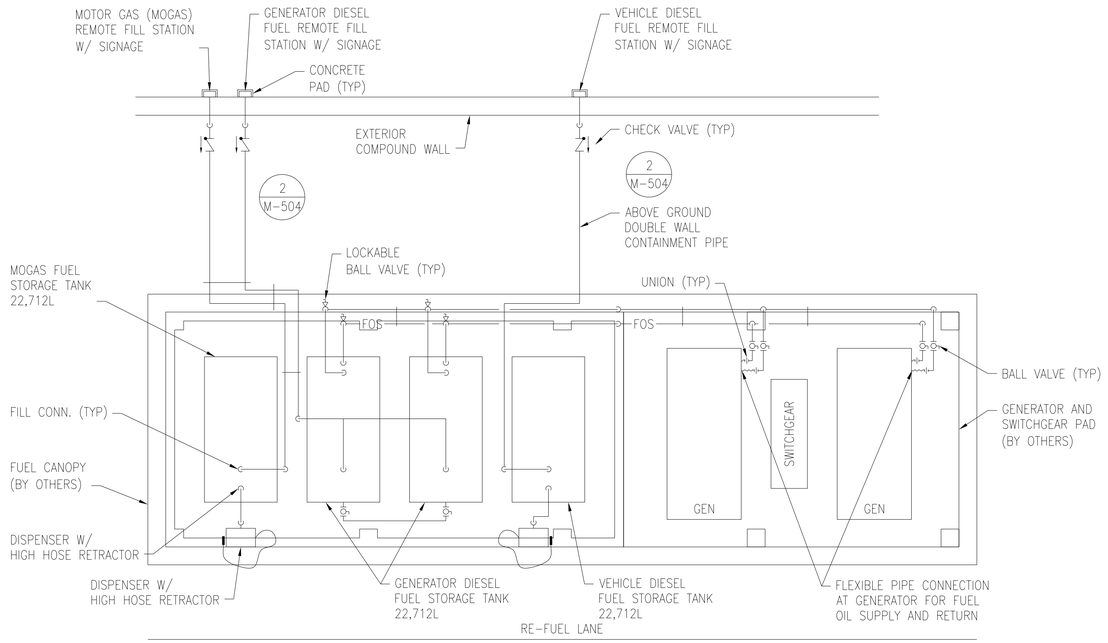
STANDARD DESIGN
VARIOUS LOCATIONS, AFGHANISTAN

U02 - FUEL GENERATOR CANOPY

CANOPY DETAILS

SHEET IDENTIFICATION
A-503
SHEET 10 OF 18



1 / M-101 FUEL SYSTEM

SCALE: 1:100

NOTES:

1. NOT ALL TANK CONNECTIONS/SPECIALTIES SHOWN, REFER TO DETAILS ON M-102 AND M-503.
2. PROVIDE PIPE SUPPORTS FOR FUEL PIPING. PROVIDE SUPPORTS AT 90° BENDS AND AT A MAXIMUM INTERVAL OF 1.5M FOR STRAIGHT PIPE. REFER TO DETAIL 2 ON DWG. M-504.

TANK SIZES Diameter x L:

TANK A: 2.438M x 4.877M
TANK B: 2.438M x 4.877M
GENERATORS: 5.740M x 2.489M
SWITCHGEAR: 3.658M x 1.219M
TANK C: 2.438M x 4.877M
TANK D: 2.438M x 4.877M

1 0 1 2 3 4
1:100

US Army Corps of Engineers
AFGHANISTAN ENGINEER DISTRICT

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

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CONTRACT NO.:
FILE NUMBER:
PLOT SCALE: 1.000000
PLOT DATE: 1/16/2014
SIZE: ANSI D
FILE NAME: U02_M-101.dwg

U.S. ARMY CORPS OF ENGINEERS
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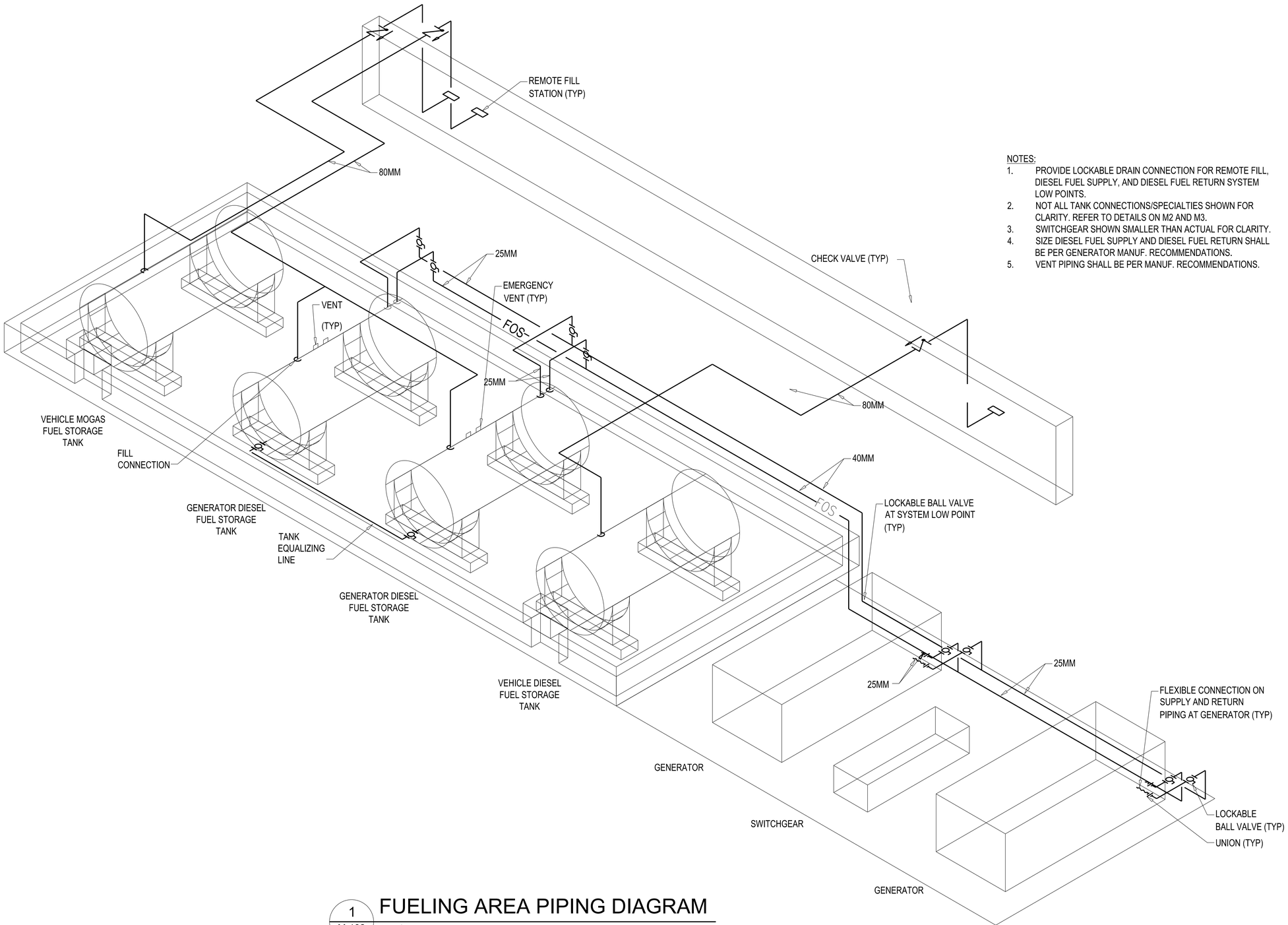
APO AE 96338

STANDARD DESIGN
VARIOUS LOCATIONS, AFGHANISTAN

U02 - FUEL GENERATOR CANOPY

FUEL SYSTEM

SHEET IDENTIFICATION
M-101
SHEET 11 OF 18



NOTES:

1. PROVIDE LOCKABLE DRAIN CONNECTION FOR REMOTE FILL, DIESEL FUEL SUPPLY, AND DIESEL FUEL RETURN SYSTEM LOW POINTS.
2. NOT ALL TANK CONNECTIONS/SPECIALTIES SHOWN FOR CLARITY. REFER TO DETAILS ON M2 AND M3.
3. SWITCHGEAR SHOWN SMALLER THAN ACTUAL FOR CLARITY.
4. SIZE DIESEL FUEL SUPPLY AND DIESEL FUEL RETURN SHALL BE PER GENERATOR MANUF. RECOMMENDATIONS.
5. VENT PIPING SHALL BE PER MANUF. RECOMMENDATIONS.

1 / M-102 FUELING AREA PIPING DIAGRAM

N.T.S.

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MARK	DESCRIPTION	DATE	APPR.

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PLOT SCALE: 1:1
PLOT DATE: 10/07/2011
FILE NUMBER:
SIZE: ANSI D
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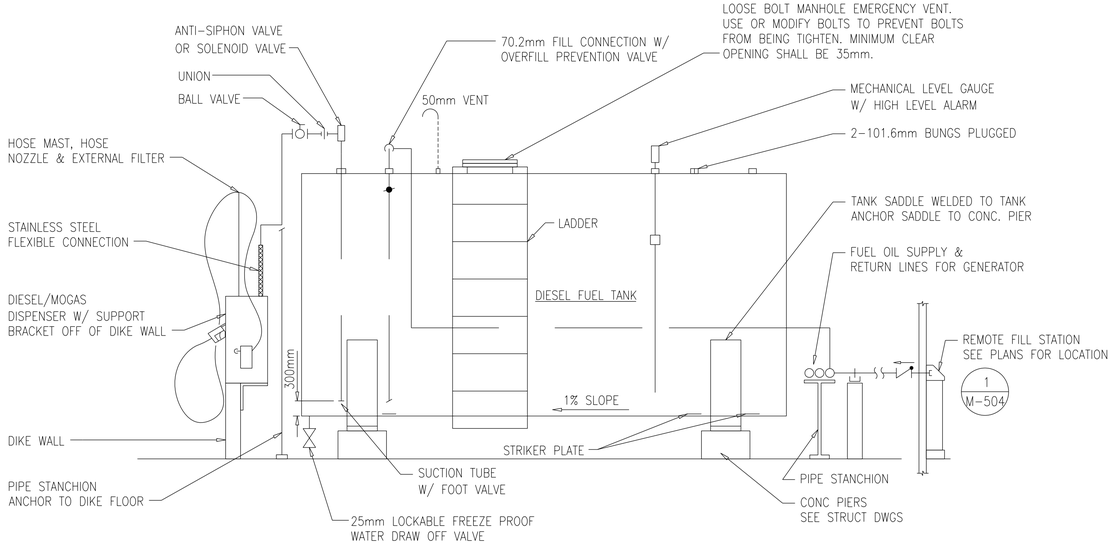
STANDARD DESIGN
VARIOUS LOCATIONS, AFGHANISTAN

U02 - FUEL GENERATOR CANOPY

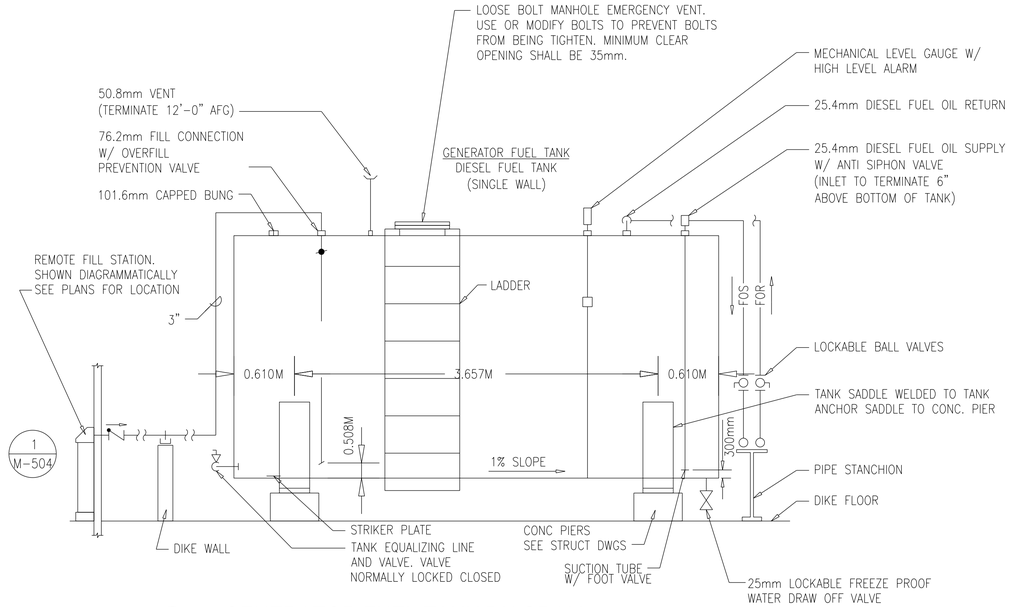
FUEL SYSTEMS DIAGRAM

SHEET IDENTIFICATION
M-102
SHEET 12 OF 18



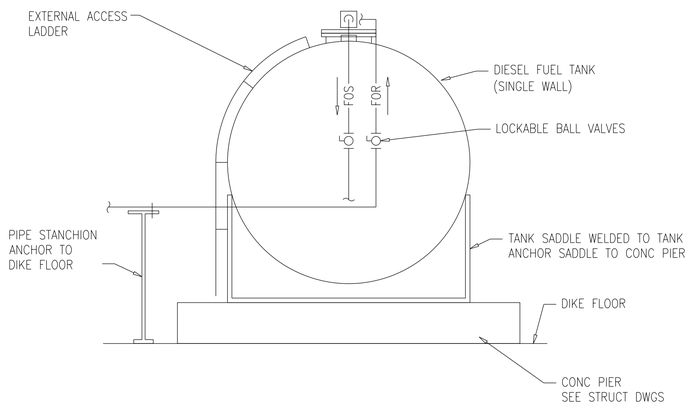
1 M-503 **DIESEL FUEL TANK DIAGRAM**

SCALE: NONE



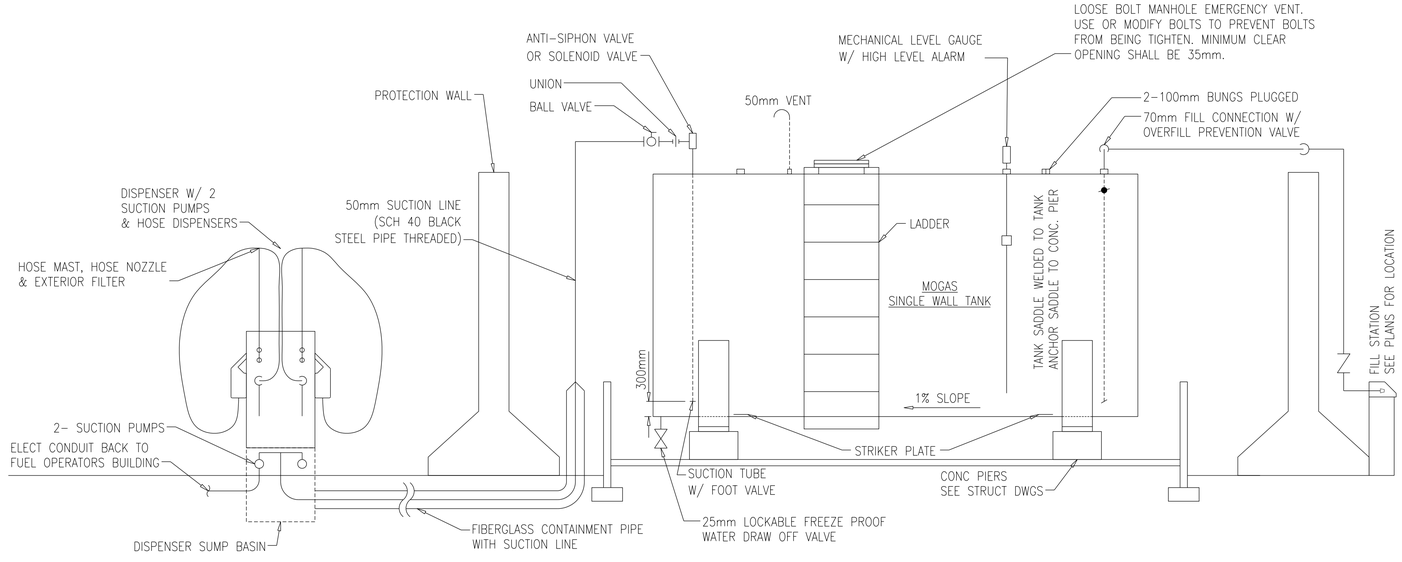
2 M-503 **GENERATOR FUEL TANK DIAGRAM**

SCALE: NONE



3 M-503 **DIESEL FUEL TANK DIAGRAM**

SCALE: NONE



4 M-503 **MOGAS FUELING TANK DETAIL**

SCALE: NONE

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CONTRACT NO.:
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PLOT SCALE: 1:1
PLOT DATE: 1/1/2001
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STANDARD DESIGN
VARIOUS LOCATIONS, AFGHANISTAN

U02 - FUEL GENERATOR CANOPY

FUEL SYSTEMS DETAILS

SHEET IDENTIFICATION
M-503
SHEET 13 OF 18

AMERICAN PETROLEUM INSTITUTE (API)
FILL PORT COLOR CODES AND SYMBOLS

FILL PORT COLOR CODES

PRODUCT	COLOR
HIGH GASOLINE	RED
MIDDLE GASOLINE	BLUE
LOWER GASOLINE	WHITE
HIGHER UNLEADED GASOLINE	RED WITH WHITE CROSS
MIDDLE UNLEADED GASOLINE	BLUE WITH WHITE CROSS
LOWER UNLEADED GASOLINE	WHITE WITH BLACK CROSS
VAPOR RECOVERY	ORANGE
DIESEL	YELLOW

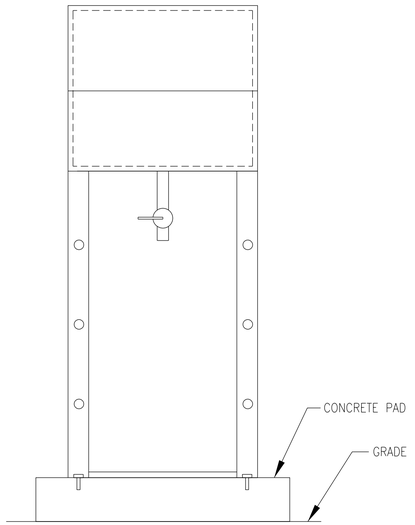
SYMBOLS

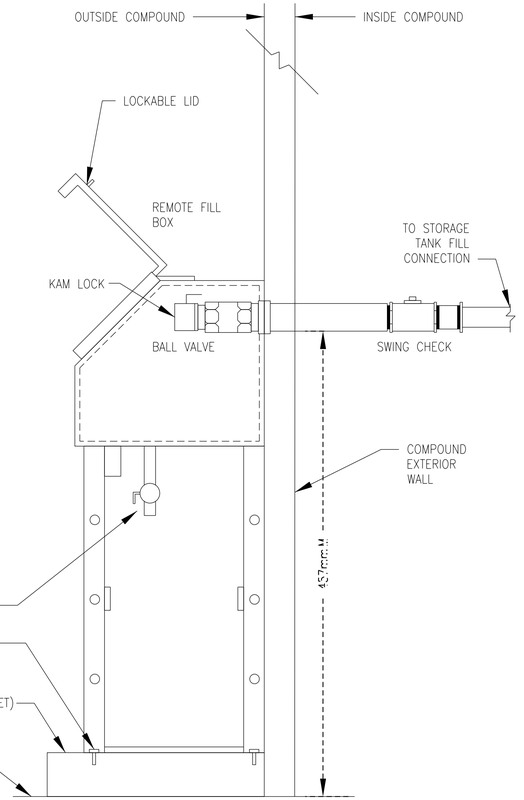
PRODUCTS	SYMBOL
GASOLINE PRODUCTS & VAPOR LINES	CIRCLE
OTHER DISTILLATES	HEXAGON
FUEL PRODUCTS CONTAINING EXTENDERS SUCH AS ALCOHOL	BORDER (BLACK AROUND WHITE AND WHITE AROUND ALL OTHERS)

EXAMPLES

SYMBOL & COLOR	PRODUCT
	LOWER UNLEADED GASOLINE
	DIESEL

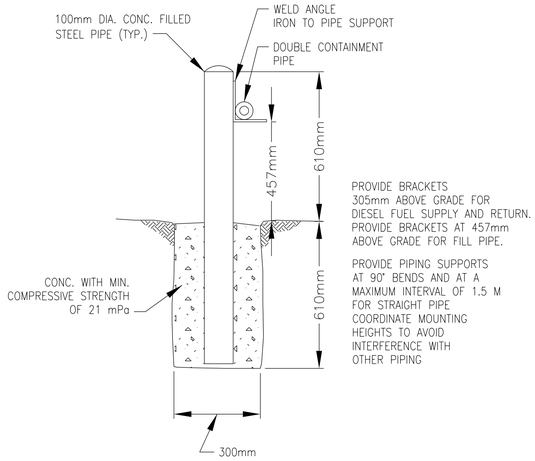
PROVIDE SIGNAGE AT EACH REMOTE FILL STATION IN ACCORDANCE WITH API REQUIREMENTS INCLUDE SIGNAGE IN BOTH ENGLISH AND ARABIC





1 M-504 **REMOTE FILL STATION DETAIL**

SCALE: NTS



2 M-504 **FUEL PIPE SUPPORT DETAIL**

SCALE: NTS

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AFGHANISTAN ENGINEER DISTRICT

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PLOT DATE: AUTOMATIC
SIZE: ANSI D
FILE NAME: U02_M-504XXX.DWG

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STANDARD DESIGN
VARIOUS LOCATIONS, AFGHANISTAN

U02 - FUEL GENERATOR CANOPY

FUEL SYSTEMS DETAILS

SHEET IDENTIFICATION
M-504
SHEET 14 OF 18

POWER

- DISTRIBUTION PANELBOARD
- NEW PANELBOARD – SURFACE
- NEW PANELBOARD – RECESSED
- EXISTING PANELBOARD
- (G) GENERATOR
- TVSS TRANSIENT VOLTAGE SURGE SURPRESSOR
- TRANSFORMER (DRAWN TO SIZE)
- PS POWER SUPPLY
- CP CONTROL PANEL
- TC TIME CLOCK
- TIM ASTRONOMICAL TIME CLOCK– "SEE SPEC."
- R RELAY WITH RATING AND NUMBER OF POLES AS NOTED ON DRAWINGS– "SEE SPEC."
- JUNCTION BOX
- (J) JUNCTION BOX – CEILING
- PB PULL BOX
- —BD— BUS DUCT HORIZONTAL
- BUS DUCT VERTICAL
- D EMERGENCY POWER OFF PUSH BUTTON
- J NON–FUSIBLE SAFETY SWITCH
- J FUSIBLE SAFETY SWITCH
- (M) MOTOR
- ^{M} MOTOR STARTING SWITCH – 20A RATED
- ^{K} KEY SWITCH – 20A RATED
- FC FAN COIL – FURNISHED BY MECHANICAL CONTRACTOR, ELECTRICAL CONTRACTOR SHALL INSTALL AND PROVIDE POWER CONNECTION
- UH UNIT HEATER – FURNISHED BY MECHANICAL CONTRACTOR, ELECTRICAL CONTRACTOR SHALL INSTALL AND PROVIDE POWER CONNECTION
- JUNCTION BOX FOR CONNECTION TO GARBAGE DISPOSAL
- CF LIGHT/HEATER/FAN – FURNISHED BY MECHANICAL CONTRACTOR, ELECTRICAL CONTRACTOR SHALL INSTALL AND PROVIDE POWER CONNECTION
- ELECTRIC WATER HEATER
- WEATHERPROOF / EXPLOSION PROOF EMERGENCY POWER OFF PUSH–BUTTON TO BE INTERCONNECTED WITH GENERATOR SHUT DOWN CONTROL
- CEILING FAN – REFER TO SPECIFICATION SECTION 26 20 00

RECEPTACLES

- DUPLEX 20A BRITISH STANDARD UNSWITCHED SOCKETS
- ^{GF} DUPLEX 20A BRITISH STANDARD UNSWITCHED SOCKETS – 10mA GROUND FAULT INTERRUPTER TYPE
- ^{WPGF} DUPLEX 20A BRITISH STANDARD UNSWITCHED SOCKETS – 10mA GROUND FAULT INTERRUPTER TYPE WITH WEATHERPROOF COVER
- ^{EXP} DUPLEX 20A BRITISH STANDARD UNSWITCHED SOCKETS – EXPLOSION PROOF
- * INDICATES MOUNT DEVICE ABOVE COUNTER TOP

LIGHTNING PROTECTION

- AIR TERMINAL 1/2"O.D. X 12' SOLID COPPER, NICKEL PLATED ON ADHESIVE BASE.
- EQ EQUIPMENT AIR TERMINAL
- TEST WELL WITH GROUND ROD(S)
- GROUND ROD
- G GROUND PLATE
- MAIN GROUND CONDUCTER CONCEALED WITHIN CONSTRUCTION
- MAIN GROUND CONDUCTOR EXPOSED ON EXPOSED ON BUILDING EXTERIOR SURFACE
- GROUND CONDUCTOR CAD WELDED TO GROUND CABLE OR EQUIPMENT
- GROUND CONDUCTOR CAD WELDED TO BUILDING STEEL COLUMN
- GROUND ROD TRIPOD, SPACED 10 FEET APART.
- LEVEL TO LEVEL CABLE

LIGHTING

- LIGHTING FIXTURE – SEE FIXTURE SCHEDULE FOR MORE INFORMATION
- LIGHTING FIXTURE – SEE FIXTURE SCHEDULE FOR MORE INFORMATION
- DOWNLIGHT
- LIGHTING FIXTURE ON NORMAL/EMERGENCY
- WALL MOUNTED LIGHT FIXTURE
- E EXIT SIGN – DIRECTIONAL ARROWS AS INDICATED ON DRAWINGS
- BATTERY PACK WITH HEADS AS INDICATED ON DRAWINGS
- REMOTE HEAD FOR BATTERY PACK
- $ SINGLE POLE SWITCH – 20A RATED
- ^{3} 3–WAY SWITCH – 20A RATED
- ^{4} 4–WAY SWITCH – 20A RATED
- PC PHOTOCELL VOLTAGE TO MATCH CIRCUITRY
- LC LIGHTING CONTACTOR
- POLE MOUNTED SITE LIGHTING FIXTURE– NUMBER OF FIXTURES PER POLE AS INDICATED ON DRAWINGS
- EXTERIOR DIRECTIONAL LIGHTING FIXTURE
- a SMALL CASE LETTERS REPRESENTS LAMP(S) / SWITCHES. WHEN USED WITH AN OCCUPANCY SENSOR THIS INDICATES SENSOR WITH MANUAL OVERRIDE SWITCH

TELECOMMUNICATIONS

- TELEPHONE OUTLET(S) @ 18" AFF. UNO WITH 3/4" RACEWAY TERMINATED ABOVE NEAREST ACCESSIBLE CEILING OR TO TELEPHONE TERMINAL BOARD IF NO ACCESSIBLE CEILING AVAILABLE. SEE TELE/DATA RISER DIAGRAM FOR OUTLET AND CABLE DESCRIPTION
- DATA OUTLET(S) @ 18" AFF. UNO WITH 3/4" RACEWAY TERMINATED ABOVE NEAREST ACCESSIBLE CEILING OR TO DATA EQUIPMENT RACK IF NO ACCESSIBLE CEILING AVAILABLE. SEE TELE/DATA RISER DIAGRAM FOR OUTLET AND CABLE DESCRIPTION

TELECOMMUNICATIONS (CONTINUED)

- COMBINATION TELEPHONE/DATA OUTLET(S) @ 18" AFF. U.N.O. WITH 1" RACEWAY TERMINATED ABOVE NEAREST ACCESSIBLE CEILING OR TO TELE/DATA TERMINAL AREA IF NO ACCESSIBLE CEILING AVAILABLE. SEE TELE/DATA RISER DIAGRAM FOR OUTLET AND CABLE DESCRIPTION
- W WALL MTD. TELEPHONE OUTLET WITH 3/4" RACEWAY TERMINATED ABOVE NEAREST ACCESSIBLE CEILING OR TO TELEPHONE TERMINAL BOARD IF NO ACCESSIBLE CEILING AVAILABLE. SEE TELE/DATA RISER DIAGRAM FOR OUTLET AND CABLE DESCRIPTION
- (x)T INDICATES NUMBER OF TELEPHONE OUTLET(S) AND ASSOCIATED CABLING
- (x)D INDICATES NUMBER OF DATA OUTLET(S) AND ASSOCIATED CABLING
- (x)TF INDICATES NUMBER OF TELEPHONE OUTLETS AND ASSOCIATED CABLING WITH 1 OUTLET AND CABLE DEDICATED FOR FAX

SINGLE LINE SYMBOLS

- SWITCH
- BREAKER
- FUSE
- TRANSFORMER
- CAPACITOR
- GROUND
- CONTACT (NORMALLY OPEN)
- CONTACT (NORMALLY CLOSED)
- AUTOMATIC TRANSFER SWITCH
- MANUAL DOUBLE THROW SWITCH
- CURRENT TRANSFORMER
- INDICATES NEW ELECTRICAL EQUIPMENT
- C INDICATES NEW CONTROL WIRING AND CONDUIT
- EQUIPMENT OUTLINE

MISCELLANEOUS

- BRANCH CIRCUIT WIRING CONCEALED ABOVE CEILINGS, SURFACE MOUNTED ON WALLS
- BRANCH CIRCUIT WIRING – #10 AWG
- BRANCH CIRCUIT WIRING – UNDER FLOOR
- HOME RUN BACK TO PANEL
- CONDUIT TURNED DOWN
- CONDUIT TURNED UP
- LV LOW VOLTAGE WIRING AND CONDUIT
- CT–x CABLE TRAY ("X" DENOTES WIDTH)
- INDICATES CONTINUATION OF LINE

FIRE ALARM

- FACP FIRE ALARM CONTROL PANEL WITH BATTERY BACKUP
- FIRE ALARM PULL STATION

FIRE ALARM (CONTINUED)

- FIRE ALARM STROBE – WALL MOUNTED
- F FIRE ALARM AUDIBLE/STROBE – WM
- F FIRE ALARM HORN/STROBE – WM
- SMOKE DETECTOR
- H HEAT DETECTOR CEILING MOUNTED
- D DUCT DETECTOR – PROVIDED BY EC, INSTALLED BY MC AND CONNECTED BY EC

DENOTATIONS & ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
C	CEILING MOUNTED
E	EMERGENCY
EC	ELECTRICAL CONTRACTOR
EPO	EMERGENCY POWER OFF
EXP	EXPLOSION PROOF
F	FIRE ALARM
FF	FLUSH FLOOR MOUNTED
FL	FLUORESCENT
FO	FIBER OPTIC
FSS	FUSED SAFETY SWITCH
G	GROUND FAULT INTERRUPTER
GC	GENERAL CONTRACTOR
HOA	HAND–OFF AUTO
I	INFRARED
ICD	INCANDESCENT
IG	ISOLATED GROUND
K	KEY
LV	LOW VOLTAGE
M	MOTOR
MC	MECHANICAL CONTRACTOR
NE	NORMAL/EMERGENCY
NFSS	NON–FUSED SAFETY SWITCH
PA	PAGING SYSTEM
PLC	PLUMBING CONTRACTOR
REL	RELOCATE
RED	RELOCATED
SL	SINGLE LINE
SS	SURGE SUPPRESSION
T	TELEPHONE
TL	TWIST LOCK

DENOTATIONS & ABBREVIATIONS (CONT.)

TP	TAMPER PROOF
UE	UNDERGROUND ELECTRIC
UF	UNDERGROUND FIBER
UNO	UNLESS NOTED OTHERWISE
UT	UNDERGROUND TELEPHONE
W	WALL MOUNTED
WG	WIRE GUARD
WP	WEATHERPROOF
WPG	WEATHERPROOF/GROUND FAULT INTERRUPTER
WT	WATER TIGHT

GENERAL PROJECT NOTES:

G1. UNLESS OTHERWISE NOTED, PROVIDE ALL EQUIPMENT SHOWN ON THE PLANS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL SYMBOLS SHOWN ON THE PLANS WITH THE SYMBOL LIST. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE INTENT OF ANY SYMBOL THAT IS SHOWN ON THE PLANS AND NOT INDICATED ON THE SYMBOL LIST WITH THE ENGINEER PRIOR TO BID.

G2. COORDINATE THE FINAL LOCATIONS OF ALL LIGHT FIXTURES WITH THE ARCHITECT'S REFLECTED CEILING PLANS. REPORT ANY DISCREPANCIES TO THE ARCHITECT PRIOR TO INSTALLATION.

G3. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES WITHIN THE CONSTRUCTION AREA THREE (3) WORKING DAYS NOTICE BEFORE COMMENCE DIGGING. NOTIFY THE LOCAL OR STATE AUTHORITY HAVING JURISDICTION AND WAIT THE REQUIRED TIME BEFORE COMMENCING TO DIG.

G4. THE CONTRACTOR SHALL COORDINATE CONDUIT RUNS, CABLE TRAY, LIGHTING FIXTURES AND OTHER EQUIPMENT LOCATIONS WITH THE OTHER TRADE CONTRACTORS TO AVOID CONFLICTS.

G5. WHERE VOLTAGES AND FREQUENCIES ON THE DRAWINGS AND IN THE SPECIFICATIONS DIFFER FROM THE LOCAL ONES, ALL WORK SHALL BE PERFORMED USING THE LOCAL VOLTAGES AND FREQUENCIES.

G6. THE MINIMUM WIRE SIZE ON THE PROJECT SHALL BE 4mm2. THE MINIMUM CONDUIT SIZE SHALL BE 20mm. THE MINIMUM BREAKER SIZE SHALL BE 20 AMPS.

G7. THE CONTRACTOR SHALL PUT A MAXIMUM OF 6 DUPLEX SOCKETS ON A 20A SINGLE POLE CIRCUIT.

G8. WHERE THE 1010 SCOPE REVIEW, 1015 TECHNICAL REVIEW, DRAWINGS, AND SPECIFICATIONS DIFFER FROM AMERICAN CODES OR STANDARDS THE 1010, 1015, DRAWINGS, AND SPECIFICATIONS SHALL RULE.

G9. WORK FOR THE AMMUNITION SUPPLY POINT SHALL BE DONE IN ACCORDANCE WITH DEPARTMENT OF DEFENSE STANDARD DOD 6055.9–STD.

G10. ALL CONDUIT AND DEVICES SHALL BE SURFACE MOUNTED UNLESS OTHERWISE INDICATED.

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SUBMITTED BY: | CONTRACT NO.:
PLOT SCALE: 1 | PLOT DATE: 20071220111 | FILE NUMBER:
SIZE: ANSI D | FILE NAME: U02_E-101XXX.DWG

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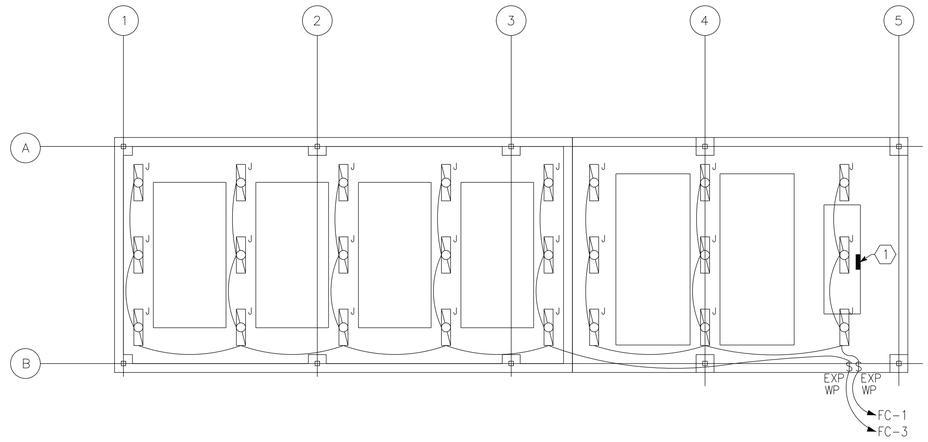
STANDARD DESIGN
VARIOUS LOCATIONS, AFGHANISTAN

U02 - FUEL GENERATOR CANOPY

ELECTRICAL SYMBOLS AND ABBREVIATIONS

SHEET IDENTIFICATION
E-101
SHEET 15 OF 18



GENERAL NOTE:

1. REFER TO DRAWING E-101 FOR ELECTRICAL SYMBOLS LIST.
2. REFER TO DRAWING E-102 FOR LIGHTING FIXTURE SCHEDULE.
3. ALL 'J' FIXTURES LOCATED IN THE FUEL/GENERATOR CANOPY SHALL BE FURNISHED WITH A LOW TEMPERATURE BALLAST.
4. WIRING FOR LIGHT FIXTURES AND SWITCHES SHALL MEET THE REQUIREMENTS OF NEC ARTICLES 500 AND 501.

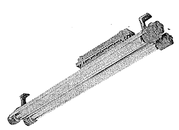
NUMBERED NOTE:

(1) PANEL 'FC'

(1 / E-102) RE-FUEL, GENERATOR, AND FUEL SUPPLY CANOPY LIGHTING PLAN

SCALE: 1:100

FIXTURE MARK 'J'



EXPLOSION-PROOF (2) LAMP FIXTURE PROVIDED WITH LAMPS. COPPER FREE, ALUMINUM HOUSING, TEMPERED BOROSILICATE GLASS, AND BIAX LAMPS WITH WIRE GUARD

J	EXPLOSION-PROOF (2) LAMP FIXTURE PROVIDED WITH LAMPS. COPPER FREE, ALUMINUM HOUSING, TEMPERED BOROSILICATE GLASS, AND BIAX LAMPS WITH WIRE GUARD	(2) 40W 3500K BIAX FLUORESCENT LAMPS	220V – 1ø 50HZ	PENDANT MOUNTED FROM SLOPED CEILINGS	FURNISHED WITH LAMPS AND WIRE GUARD

1 0 1 2 3 4 5 6 7 8 9
1:100

US Army Corps of Engineers
AFGHANISTAN ENGINEER DISTRICT

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DATE:
SOLICITATION NO.:
CONTRACT NO.:
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PLOT SCALE: 1:1000
SIZE: ANSI D
PLOT DATE: 10/7/2011
FILE NAME: U02_E-102XX.DWG

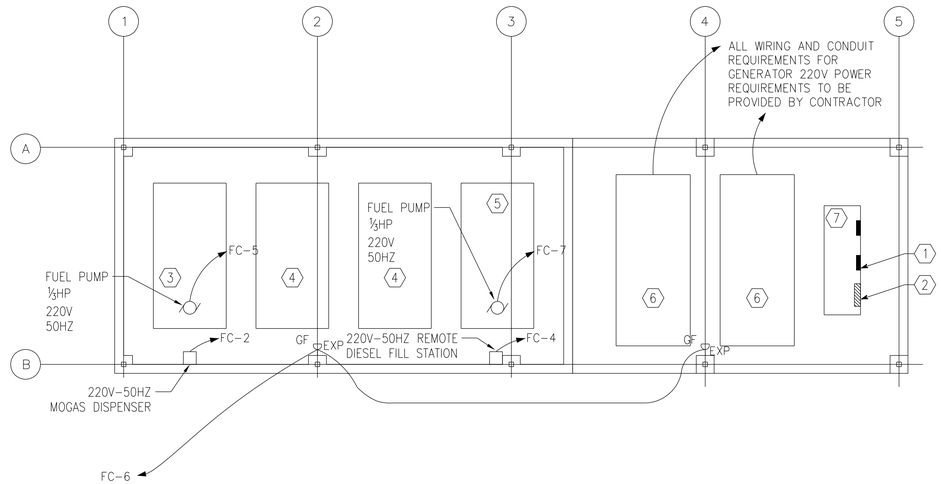
U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 96338

STANDARD DESIGN
VARIOUS LOCATIONS, AFGHANISTAN

U02 - FUEL GENERATOR CANOPY

LIGHTING PLAN

SHEET IDENTIFICATION
E-102
SHEET 16 OF 18



1 E-103

RE-FUEL, GENERATOR, AND FUEL SUPPLY CANOPY POWER PLAN

SCALE: 1:100

GENERAL NOTE:

1. REFER TO DRAWING #S-E0 FOR ELECTRICAL SYMBOLS LIST.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN OF THE POWER SYSTEM FOR THE COMPLETE SITE, AS WELL AS THE MAIN DISTRIBUTION PANEL.
3. THE DESIGN OF THE FUEL SUPPLY CANOPY LIGHTING AND 220V-1PH POWER SYSTEMS ARE SHOWN AS A MINIMUM REQUIREMENT FOR THE BUILDING. IF ADDITIONAL TANKS, GENERATORS OR OTHER EQUIPMENT IS REQUIRED FOR THE OVERALL POWER DISTRIBUTION SYSTEM, THE LIGHTING AND POWER REQUIREMENTS FOR THE FUEL SUPPLY CANOPY SHALL BE INCREASED ACCORDINGLY.
4. RECEPTACLES SHALL BE LOCATED MINIMUM OF 1000MM ABOVE FINISHED FLOOR.
5. WIRING FOR RECEPTACLES, FUEL PUMPS, AND FUEL DISPENSER EQUIPMENT SHALL MEET THE REQUIREMENTS OF NEC ARTICLES 500 AND 501.

NUMBERED NOTES:

1. CANOPY POWER PANEL 'FC'
2. MAIN DISTRIBUTION PANEL
3. MOGAS FUEL TANK
4. GENERATOR FUEL TANK
5. DIESEL FUEL TANK
6. GENERATOR
7. SWITCHGEAR

1 0 1 2 3 4 5 6 7 8 9
1:100

US Army Corps of Engineers
AFGHANISTAN ENGINEER DISTRICT

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DATE:
SOLICITATION NO.:
CONTRACT NO.:
PLOT SCALE: 1:1500
PLOT DATE:
SIZE: ANSI D
FILE NUMBER:
FILE NAME: U02_E-103XXX.DWG

STANDARD DESIGN
VARIOUS LOCATIONS, AFGHANISTAN

U02 - FUEL GENERATOR CANOPY

POWER PLAN

SHEET IDENTIFICATION
E-103
SHEET 17 OF 18

PANEL LOCATION: FUEL CANOPY

PANELBOARD FC SURFACE MOUNTED 35,000 ASYM. A.I.C. MIN. NEMA 3R

_____ AMP. MAIN LUGS (OR) 200 AMP. MAIN BREAKER W/ 200 AMP. TRIP

CIRCUIT BREAKER TYPE 380/220 VOLTS 3 PHASE 4 WIRE 50 HZ 225 AMP. BUS

CKT. NO.	TRIP AMPS	NO. POLES	WIRE MM 2	GND. MM2	CONDUIT MM	LOAD SERVED	LOAD-V.A. A0	LOAD-V.A. B0	LOAD-V.A. C0	LOAD-V.A. A0	LOAD-V.A. B0	LOAD-V.A. C0	LOAD SERVED	CONDUIT MM	GND. MM2	WIRE MM2	NO. POLES	TRIP AMPS	CKT. NO.
1	20	1				FUEL CANOPY LIGHTING	1500			100			MOGAS DISPENSER				1	20	2
3	20	1				FUEL CANOPY LIGHTING		900			100		DIESEL FILL STATION				1	20	4
5	20	1				MOGAS FUEL PUMP			250			360	FUEL CANOPY RECEPTS.				1	20	6
7	20	1				DIESEL FUEL PUMP	250						SPARE				1	20	8
9	20	1				SPARE							SPARE				1	20	10
11	20	1				SPARE							SPARE				1	20	12
13	20	1				SPARE							SPARE				1	20	14
15	20	1				SPARE							SPARE				1	20	16
17	20	1				SPARE							SPARE				1	20	18
19	20	1				SPARE							SPARE				1	20	20
21	20	1				SPARE							SPARE				1	20	22
23	20	1				SPARE							SPARE				1	20	24
25	20	1				SPACE							SPARE				1	20	26
27	20	1				SPACE							SPARE				1	20	28
29	20	1				SPACE							SPARE				1	20	30
31	20	1				SPACE							SPARE				1	20	32
33	20	1				SPACE							SPACE				1	20	34
35	20	1				SPACE							SPACE				1	20	36
37	20	1				SPACE							SPACE				1	20	38
39	20	1				SPACE							SPACE				1	20	40
41	20	1				SPACE							SPACE				1	20	42
							1750	900	250	100	100	360							

TOTAL CONN. LOAD PER PHASE (KVA): A0 1850 B0 1000 C0 610

TOTAL CONN. LOAD 3.46 KVA. .85 % DEMAND = ESTIMATED DEMAND LOAD 2.95

* MAIN BREAKER SHALL BE EARTH GROUND TYPE

US Army Corps of Engineers
AFGHANISTAN ENGINEER DISTRICT

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN DISTRICT
APO AE 96338

DESIGNED BY: DATE:
DWN BY: CKD BY: SOLICITATION NO.:
SUBMITTED BY: CONTRACT NO.:
PLOT SCALE: 1:1000 PLOT DATE: 10/7/2011 FILE NUMBER:
SIZE: ANSI D FILE NAME: U02_E-104XXX.DWG

STANDARD DESIGN
VARIOUS LOCATIONS, AFGHANISTAN

U02 - FUEL GENERATOR CANOPY

FUEL CANOPY PANEL SCHEDULE

SHEET IDENTIFICATION
E-104
SHEET 18 OF 18

c:\users\n2aenj\3\documents\pwwork1\dms54560\U02_E-104XXX.dwg
$DATE$ $TIME$

STANDARD BUILDING DESIGN
03
FUEL STORAGE AND VEHICLE REFUELING POINT

(VM03)

SHEET INDEX

FOR REFERENCE ONLY

US ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT

Mark	Description	Date	Appr.

Mark	Description	Date	Appr.

Date: 2/23/2010 | Rev: 0
Sheet file no.: G–001
Drawing code:
File name: AAAFSVRPS001
Plot date: 6/4/2010
Plot scale: 1:1

Designed by:
Dwn. by: JDS
Chkd. by: JDS
Reviewed by: LHM
Submitted by: BAKER

U.S. ARMY ENGINEER DISTRICT, AFGHANISTAN
CORPS OF ENGINEERS
APO AE 96338

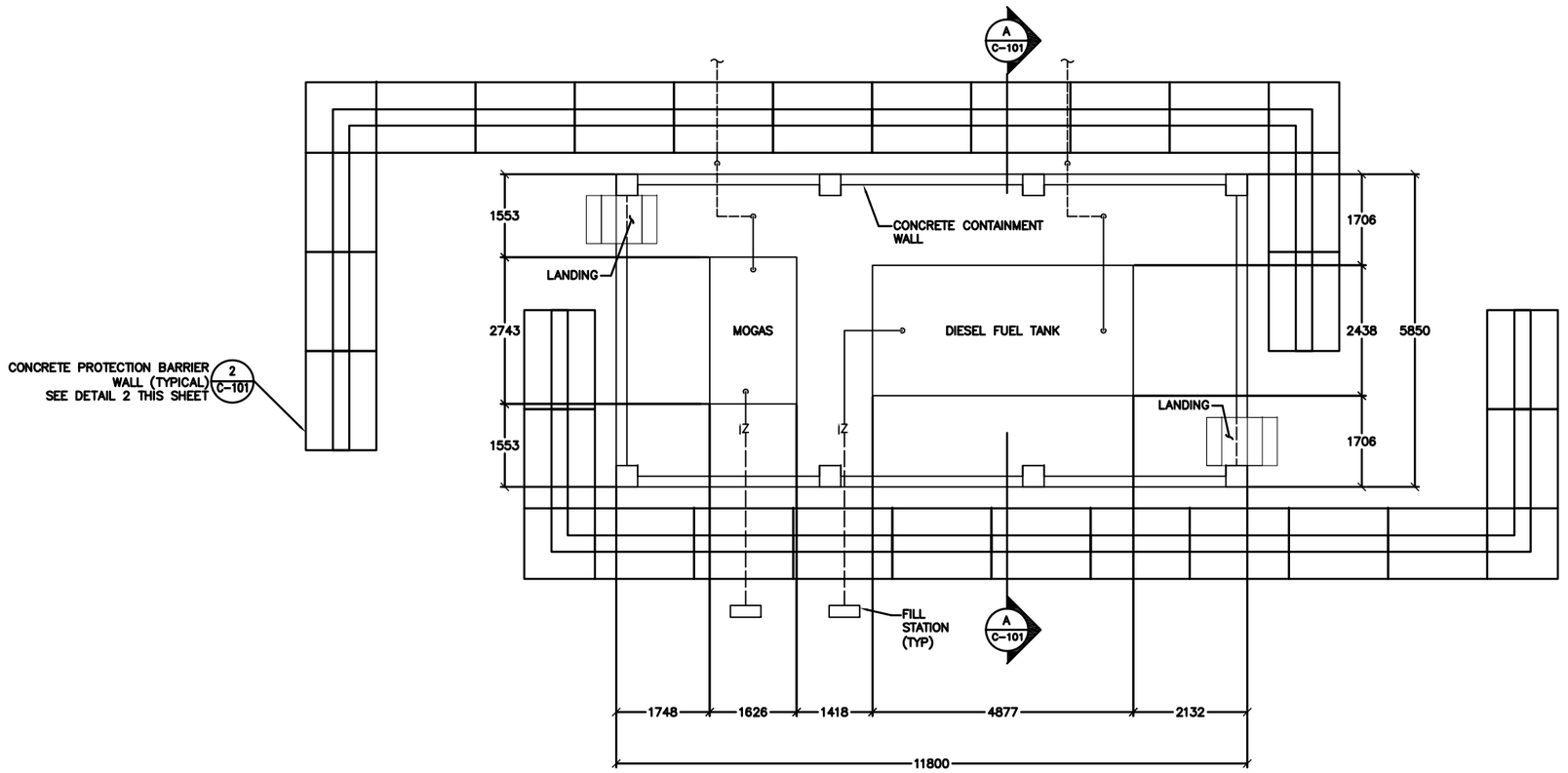
Michael Baker Jr., Inc.
A unit of Michael Baker Corporation
Airside Business Park
100 Airport Drive
Moon Township, PA 15108
www.mbakercorp.com

STANDARD DESIGN
VARIOUS PROJECTS
VARIOUS LOCATIONS, AFGHANISTAN

FUEL STORAGE AND VEHICLE REFUELING POINT

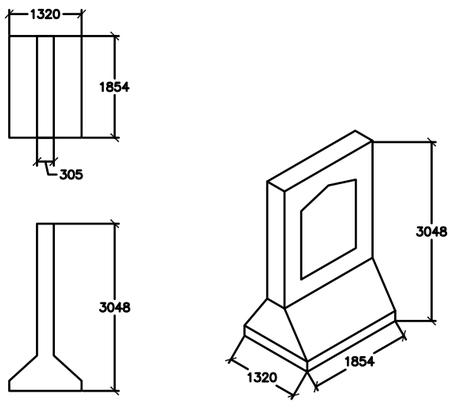
COVER SHEET

Sheet reference number:
G–001



NOTE:
PROVIDE EMERGENCY SHUT-OFF SWITCH IN FUEL OPERATOR'S BUILDING.

1 C-101 PLAN VIEW
SCALE: 1:50



2 C-101 PROTECTION WALL DETAIL
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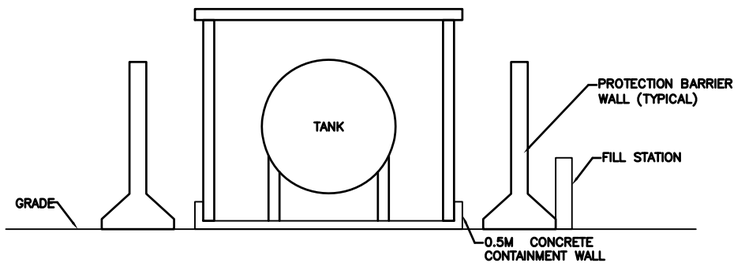


A C-101 SECTION A-A
SCALE: 1:50

0 500 1000 2000
SCALE: 1: 50

APPROVED:

A/E DESIGNER OF RECORD

SEAL:

US ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT

Mark	Description	Date	Appr.

Date: 2/23/10 | Rev: 0
Drawing no.: C-101
Drawing code:
File name: AAAFEWRPC101
Plot date: 6/4/2010
Plot scale: 1:50

Designed by: RCP
Drawn by: JTP
Checked by: LHM
Reviewed by: LHM
Submitted by: BAKER

U.S. ARMY ENGINEER DISTRICT, AFGHANISTAN
CORPS OF ENGINEERS
APO AE 96338

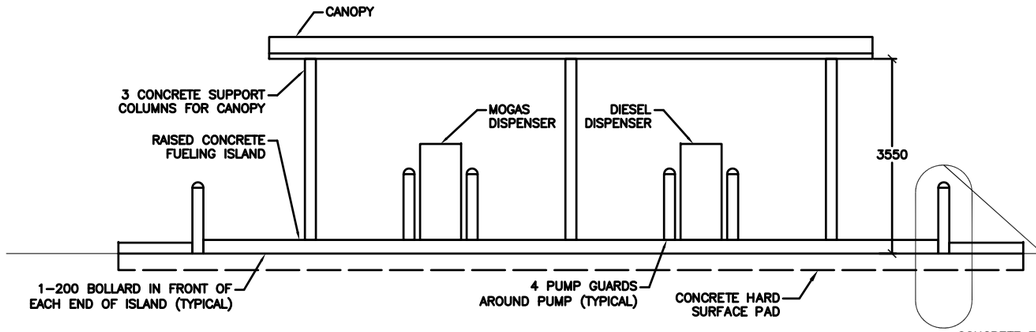
Michael Baker Jr, Inc
A unit of Michael Baker Corporation
Airside Business Park
100 Airport Drive
Moon Township, PA 15108
www.mbakercorp.com

STANDARD DESIGN
VARIOUS PROJECTS
VARIOUS LOCATIONS, AFGHANISTAN

FUEL STORAGE AND VEHICLE REFUELING POINT

PLAN AND DETAILS

Sheet reference number:
C-101



2 C-102 ELEVATION
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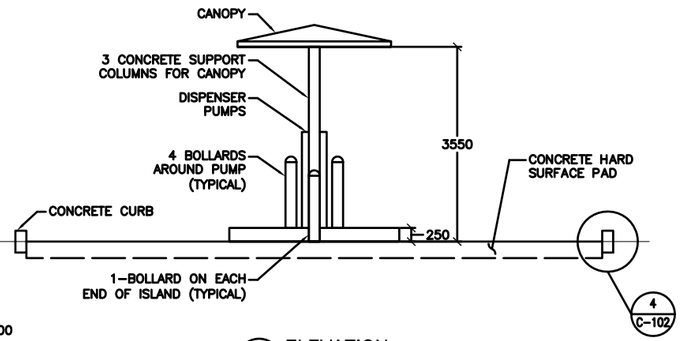

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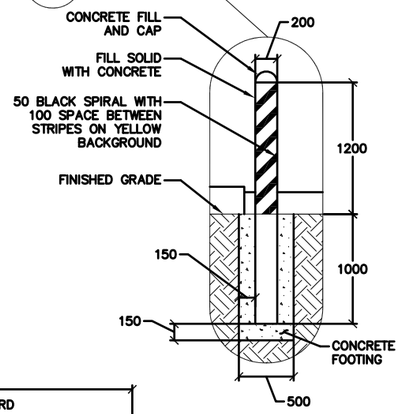
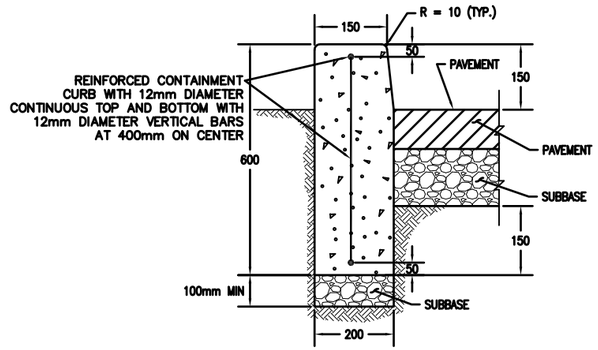
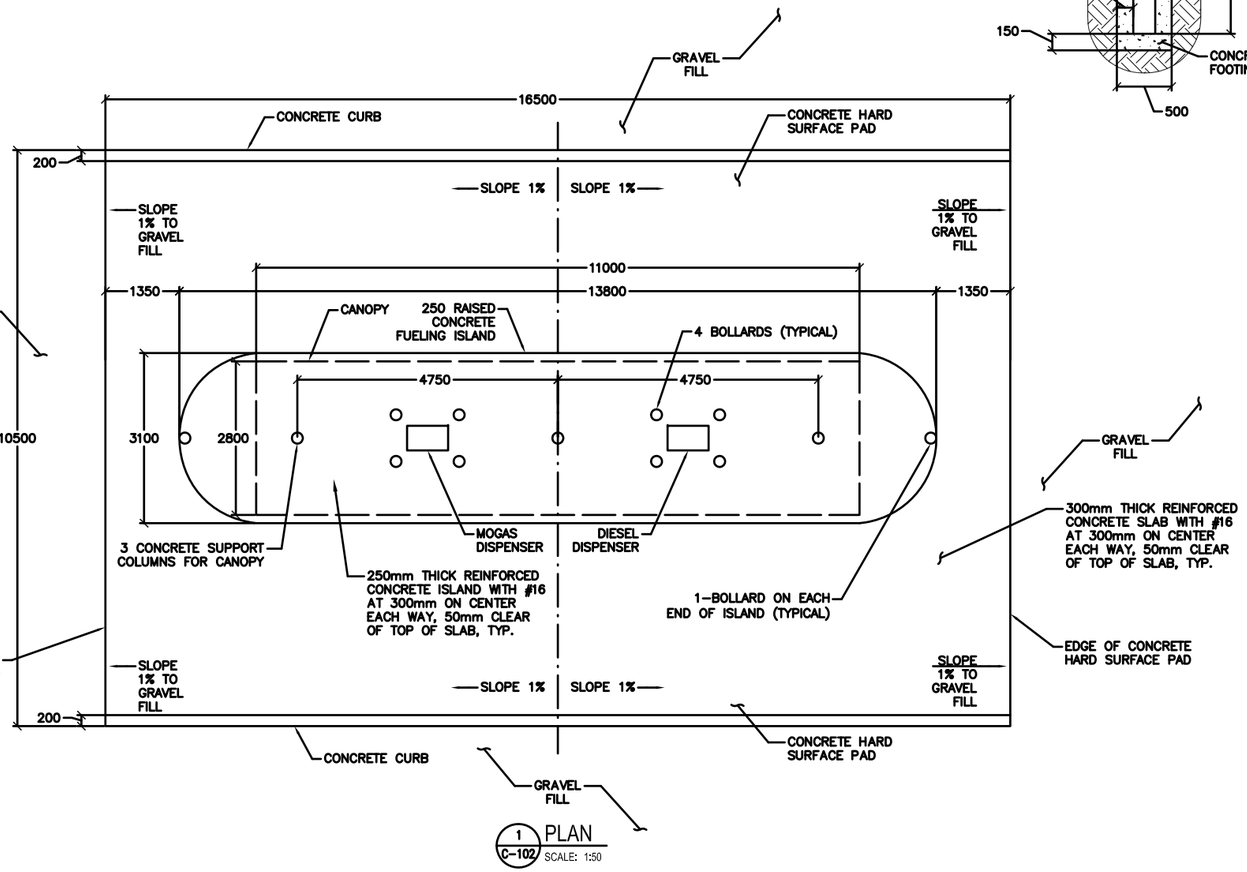




4 C-102 150mm CONCRETE CURB
SCALE: N.T.S.



1 C-102 PLAN
SCALE: 1:50

NOTES:
1. PROVIDE 6mm EXPANSION JOINT WITH PREFORMED JOINT FILLER AT ALL ANGLE POINTS AND THE BEGINNING AND END OF ALL CURVES. PROVIDE CONTRACTION JOINTS CONSISTING OF 25mm DEEP CUT SCORES AT 6 METERS O.C. MAX.
2. WHERE A WALK IS ADJACENT TO THE CURB THE JOINTS SHALL LINE WITH JOINTS IN THE WALK.

GENERAL NOTES:

1. ALL BOLLARDS ARE THE SAME SIZE FOR THIS PROJECT
2. PAINTING REQUIREMENTS, INCLUDING COLOR AND STRIPING SHOULD BE COORDINATED WITH THE USER

0 500 1000 2000
SCALE: 1:50

APPROVED:

A/E DESIGNER OF RECORD

SEAL:

US ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT

Mark	Description	Date	Appr.

Date: 2/23/10 | Rev: 0
Designed by: GPH | Cad by: MB | File no. C-102
Drawn by: JDS | Reviewed by: LHM | Drawing code:
Approved by: | Submitted by: BAKER | File name: AAAFEWRPC102 | Plot date: 6/4/2010 | Plot scale: 1:50

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Michael Baker Jr, Inc
A unit of Michael Baker Corporation
Airside Business Park
100 Airport Drive
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www.mbakercorp.com

STANDARD DESIGN
VARIOUS PROJECTS
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FUEL STORAGE AND VEHICLE REFUELING POINT
PLAN AND DETAILS

Sheet reference number:
C-102

STRUCTURAL ABBREVIATIONS:

ACI	AMERICAN CONCRETE INSTITUTE
ADD'L	ADDITIONAL
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AISI	AMERICAN IRON AND STEEL INSTITUTE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
ARCH	ARCHITECTURAL
B	BOTTOM
BLDG	BUILDING
BOTT	BOTTOM
℄	CENTER LINE
CFMRF	COLD FORM METAL ROOF FRAME
CFMF	COLD FORM METAL FRAME
CFS	COLD FORMED STEEL
CIP	CAST-IN-PLACE
CIPL	CAST-IN-PLACE LINTEL
CJ	CONTROL JOINT
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COEFF	COEFFICIENT
COL	COLUMN
CONC	CONCRETE
CONT	CONTINUOUS
COORD	COORDINATE
CRSI	CONCRETE REINFORCING STEEL INSTITUTE
CSJ	CONSTRUCTION JOINT
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DWG	DRAWING
DWL	DOWEL
EA	EACH
EF	EACH FACE
ELEC	ELECTRICAL
ELEV	ELEVATION
EMBED	EMBEDMENT
EQUIV	EQUIVALENT
ETC	ET CETERA
EW	EACH WAY
EXP	EXPANSION
EXT	EXTERIOR
FTG	FOOTING
GA	GAUGE
h	HOUR
HP	HIGH POINT
HORIZ	HORIZONTAL
HRS	HOURS
IBC	INTERNATIONAL BUILDING CODE
INFO	INFORMATION
INT	INTERIOR
kg	KILOGRAM
km	KILOMETER
kN	KILONEWTON
kPa	KILOPASCAL
Ld	LENGTH OF DEVELOPMENT
L#	ANGLE (# INDICATES SIZE)
LLV	LONG LEG VERTICAL
LONG	LONGITUDINAL
LP	LOW POINT
m	METER
MAX	MAXIMUM
MECH	MECHANICAL
MFG	MANUFACTURER
MID	MIDDLE
MIN	MINIMUM
MISC	MISCELLANEOUS
mm	MILLIMETER
MPa	MEGAPASCAL
MTL	METAL
MWFRS	MAIN WIND FORCE RESISTING SYSTEM
N	NEWTON
N	NORTH
N/A	NOT APPLICABLE
#	NUMBER SYMBOL FOR REBAR SIZE
NTS	NOT TO SCALE
OC	ON CENTER
OPNG	OPENING
PL or PL	PLATE
RB	ROOF BEAM
REINF	REINFORCED
REQ'D	REQUIRED
SIM	SIMILAR
SPECS	SPECIFICATIONS
STD	STANDARD
STRUCT	STRUCTURAL
SW	SHEAR WALL
T	TOP
T/	TOP OF
T/ELEV	TOP ELEVATION
T/SLAB	TOP OF SLAB
T&B	TOP AND BOTTOM
THK	THICK
TPER	THERMOPLASTIC ELASTOMERIC RUBBER
TYP	TYPICAL
UFC	UNIFIED FACILITIES CRITERIA
UON	UNLESS OTHERWISE NOTED
VERT	VERTICAL
VRP	VEHICLE REFUELING POINT
W	WIDTH
W/	WITH

1.0 GENERAL NOTES:

1.1 THIS PROJECT HAS BEEN DESIGNED FOR THE WEIGHTS AND MATERIALS INDICATED ON THE SHEETS AND FOR THE LIVE LOADS INDICATED IN THE DESIGN DATA. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALLOWABLE CONSTRUCTION LOADS AND TO PROVIDE PROPER DESIGN AND CONSTRUCTION OF FALSEWORK, FORMWORK, STAGING, BRACING, SHEETING AND SHORING, ETC.

1.1 COORDINATE THESE SHEETS WITH THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, AND CIVIL SHEETS. ALL DIMENSIONS SHOWN ON THE SHEETS ARE MILLIMETERS UNLESS NOTED OTHERWISE.

1.2 THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL FLOOR AND ROOF OPENING SIZES AND LOCATIONS, EQUIPMENT PAD SIZES AND LOCATIONS, ANCHOR BOLT LAYOUTS, ETC WITH EQUIPMENT SELECTED. THE CONTRACTOR SHALL MAKE ANY REQUIRED MODIFICATIONS AT NO ADDITIONAL COST.

1.3 THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING SHEETS FOR SLEEVES, CURBS, INSERTS OR OPENINGS, ETC. NOT HEREIN INDICATED.

1.4 WORK NOT INCLUDED ON THE SHEETS BUT IMPLIED TO BE SIMILAR TO THAT SHOWN AT CORRESPONDING PLACES ELSEWHERE ON THE SHEETS SHALL BE REPEATED.

1.5 IN CASE OF CONFLICT BETWEEN THE NOTES, DETAILS AND SPECIFICATIONS THE MOST RIGID REQUIREMENTS SHALL GOVERN.

1.6 SEE ARCHITECTURAL SHEETS FOR LOCATIONS OF MASONRY AND NON-LOAD BEARING PARTITIONS. PROVIDE COMPRESSIBLE FIRESAFING AT TOP OF WALL AS REQUIRED BY ARCHITECTURAL SHEETS.

1.7 COORDINATE FINISHED FLOOR DATUM ELEVATION 0.0m WITH THE CIVIL SHEETS.

2.0 FOUNDATION NOTES

2.1 THE GEOTECHNICAL ANALYSIS FOR THIS PROJECT IS THE RESPONSIBILITY OF THE CONTRACTOR AWARDED THE WORK. AN ASSUMED ALLOWABLE SOIL BEARING VALUE OF 72 kPa HAS BEEN USED IN THE STRUCTURAL ANALYSIS OF THE BUILDING HEREIN AND SHALL BE CONFIRMED AND VERIFIED AS PART OF THE GEOTECHNICAL INVESTIGATION. VALUES WHICH DO NOT MEET THE REQUIREMENTS INDICATED ON THE BASIS OF DESIGN SHEET SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CONTRACTING OFFICER FOR CONSIDERATION AND DETERMINATION ON THE NEXT APPROPRIATE COURSE OF ACTION.

2.2 SEE THE SPECIFICATION FOR ADDITIONAL REQUIREMENTS TO THOSE OUTLINED IN THE GEOTECHNICAL INVESTIGATION FOR EXCAVATION AND PREPARATION OF THE FOUNDATION AND THE SLAB ON GRADE SUBGRADE INCLUDING COMPACTION PROCEDURES.

2.3 EXCAVATIONS FOR FOOTINGS SHALL HAVE THE SIDES AND BOTTOMS TEMPORARILY LINED WITH 0.25mm POLYETHYLENE IF PLACEMENT OF CONCRETE DOES NOT OCCUR WITHIN 24 HRS OF THE EXCAVATION OF THE FOOTING.

2.4 FOUNDATION CONDITIONS NOTED DURING CONSTRUCTION WHICH DIFFER FROM THOSE DESCRIBED IN THE GEOTECHNICAL REPORT SHALL BE REPORTED TO THE GENERAL CONTRACTOR BEFORE FURTHER CONSTRUCTION IS ATTEMPTED. SEE PROJECT SPECIFICATIONS.

2.5 NO FOOTINGS OR SLABS SHALL BE POURED INTO OR AGAINST SUBGRADE CONTAINING FREE WATER, FROST, ICE OR LOOSE MATERIAL. FROST DEPTH ASSUMED TO BE 800mm.

2.6 ALL SLAB-ON-GRADE, TRENCH BOTTOMS AND OTHER ON-GRADE INTERIOR HORIZONTAL SURFACES SHALL BE PLACED OVER A 0.25mm POLYETHYLENE VAPOR RETARDER OVER A 100mm #57 STONE WATER CAPILLARY BARRIER PLACED ON SUBGRADE PROPERLY PREPARED IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS. (UON)

2.7 PRIOR TO START OF FOUNDATION OR SLAB-ON-GRADE CONSTRUCTION, EXISTING SUBGRADES SHALL BE COMPACTED TO MINIMUM OF 95% MAXIMUM DRY DENSITY OBTAINED THRU ASTM D 1557 MODIFIED PROCTOR TESTING.

2.8 SEE PLUMBING, ELECTRICAL & CIVIL SHEETS FOR REQUIRED UNDERSLAB UTILITIES.

2.9 SEE ARCHITECTURAL SHEETS FOR ALL WATERPROOFING DETAILS AND MATERIALS.

2.10 IF UNDERMINING OF FOOTINGS OCCURS, FILL VOIDS WITH 18 MPa CONCRETE. DO NOT ATTEMPT TO REPLACE AND RE-COMPACT SOIL.

3.0 CONCRETE

3.1 CONCRETE SHALL HAVE THE UNIT WEIGHT OF 2400 kg/m³ AND A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 28 MPa AT 28 DAYS. ALL CONCRETE SHALL HAVE A WATER-CEMENT RATIO OF 0.45. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION. ENTRAIN AIR TO PRODUCE TOTAL AIR CONTENT ACCORDING TO THE SPECIFICATIONS FOR CONCRETE EXPOSED TO FREEZING TEMPERATURES (EXTERIOR FOOTINGS, SLAB TURNDOWNS, EXTERIOR SLABS AND SLABS-ON-GRADE, EXTERIOR RETAINING WALLS, AND EXTERIOR GRADE BEAMS.)

3.2 NO CALCIUM CHLORIDE SHALL BE USED IN ANY CONCRETE.

3.3 MIXING, TRANSPORTING AND PLACING OF CONCRETE SHALL CONFORM TO ACI 301M-05.

3.4 ALL CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICAN CONCRETE INSTITUTE (ACI) 318M MANUAL (metric), "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", AND REQUIREMENTS OUTLINED IN THE CONTRACT SPECIFICATIONS. WHEN THERE IS A CONFLICT BETWEEN ACI AND THE SPECIFICATIONS, THE MORE STRINGENT SHALL GOVERN.

3.5 CHAMFER ALL EXPOSED EXTERNAL CORNERS OF CONCRETE WITH 20mm x45 DEGREE CHAMFER UON.

3.6 CONCRETE REINFORCEMENT BARS SHALL CONFORM TO ASTM A615M-96a, GRADE 420 MPa, REINFORCING BARS SHALL NOT BE TACK WELDED, WELDED, HEATED OR CUT, UNLESS INDICATED ON THE CONTRACT DOCUMENTS. ALL LAP SPLICES SHALL BE CLASS "B" UON.

3.7 HORIZONTAL FOOTING AND HORIZONTAL WALL REINFORCEMENT SHALL BE CONTINUOUS AND SHALL HAVE 90 DEGREE BENDS AND EXTENSIONS, OR CORNER BARS OF EQUIVALENT SIZE LAPPED WITH A CLASS B TENSION SPLICE AT CORNERS AND INTERSECTIONS. TOP BAR CRITERIA SHALL APPLY IF 300mm OR MORE OF FRESH CONCRETE IS PLACED BELOW BAR.

3.8 SLABS-ON-GRADE SHALL HAVE CONSTRUCTION JOINTS OR CRACK CONTROL JOINTS AS SHOWN ON THE DRAWINGS. CONSTRUCTION JOINTS CAN BE USED AT CONTROL JOINT LOCATIONS AT CONTRACTORS OPTION. SEE SLAB PLANS & JOINT DETAILS FOR ADDITIONAL INFORMATION. FOR AREAS NOT SHOWN ON DWGS, THE MAXIMUM SPACING OF CONSTRUCTION/ CRACK CONTROL JOINTS SHALL BE 4800mm

3.9 ALL CONCRETE REINFORCEMENT SHALL BE DETAILED, FABRICATED, LABELED, SUPPORTED, AND SPACED IN FORMS AND SECURED IN PLACE IN ACCORDANCE WITH THE PROCEDURES AND REQUIREMENTS OUTLINED IN THE LATEST EDITION OF THE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", ACI 318M, AND THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315M, LATEST EDITION. BASED ON IN COUNTRY REINFORCEMENT AVAILABILITY, IT IS THE CONTRACTOR'S OPTION TO ROUND DESIGNATED ODD NUMBERED REINFORCEMENT SIZES UP (1) ONE BAR SIZE.

3.10 ALL DOWELS SHALL MATCH SIZE AND NUMBER OF MAIN REINFORCING, UNLESS NOTED OTHERWISE ON THE SHEETS.

3.11 ADDITIONAL BARS SHALL BE PROVIDED AROUND ALL FLOOR AND WALL OPENINGS AS SHOWN ON THE SHEETS.

3.12 SEE ARCHITECTURAL SHEETS FOR TYPE AND LOCATION OF ALL FLOOR FINISHES.

3.13 THE CONTRACTOR SHALL COORDINATE ADDITIONAL WALL/SLAB OPENINGS NOT SHOWN ON STRUCTURAL SHEETS. SEE MECHANICAL, ELECTRICAL, PLUMBING AND CIVIL SHEETS.

3.14 UNLESS NOTED OTHERWISE, ALL CURBS SHALL BE REINFORCED WITH AT LEAST (1)-#13 CONTINUOUS AND #13 AT 300mm O.C. DOWELS TO STRUCTURE BELOW.

3.15 THE CONTRACTOR SHALL VERIFY ALL OPENINGS, PAD SIZES, AND ANCHOR BOLTS WITH EQUIPMENT SELECTED.

3.16 FOR ALL WALLS & PIERS, PROVIDE DOWELS INTO FOOTING AT EACH VERT REINF BAR, UON DOWEL SIZE SHALL BE SAME AS VERT REINF.

3.17 PROVIDE CONCRETE POUR STOPS OR FORMED AS REQUIRED FOR INSTALLATION OF ALL CONCRETE WORK.

3.18 PROVIDE ADDITIONAL (2)-#13 x 600mm REINFORCING BARS IN SLAB-ON GRADE AT ALL RE-ENTRANT CORNERS. PLACE BARS AT MID-DEPTH OF SLAB WITH A CLEARANCE OF 50mm FROM CORNER UON.

3.19 COLD-WEATHER PLACEMENT: COMPLY WITH ACI 306.1 AND AS FOLLOWS. PROTECT CONCRETE WORK FROM PHYSICAL DAMAGE OR REDUCED STRENGTH THAT COULD BE CAUSED BY FROST, FREEZING ACTIONS, OR LOW TEMPERATURES. SUBMIT A COLD WEATHER CONCRETING PLAN FOR APPROVAL.

3.20 PROVIDE BONDING COMPOUND PER ASTM C 1059-99: SPECIFICATION FOR LATEX AGENTS FOR BONDING FRESH CONCRETE (GROUT) TO HARDENED CONCRETE.

3.21 THE FORMED SURFACES FOR REINFORCED CONCRETE SHALL ACHIEVE A "CLASS A" FINISH WHEN RECEIVING PAINT OR A "CLASS B" FINISH WHEN RECEIVING PLASTER OR TILE AS PER SPECIFICATION SECTION 03 31 00 CAST-IN-PLACE STRUCTURAL CONCRETE.

3.22 AT INTERSECTING GRADE BEAMS AND SHEAR WALLS, PROVIDE CORNER BARS AT INTERSECTIONS WITH SAME QUANTITY, SIZE AND SPACING AS HORIZONTAL BARS WITH LEG LENGTH = 50db.

3.23 REFER TO S-800 SERIES REINFORCING BAR PLACEMENT DRAWINGS DEFINING LENGTHS, BENDS, AND SPACINGS FOR ALL STRUCTURAL CONCRETE. THE S-800 SERIES DRAWING ARE BASED ON THE S-400, S-500, S-600, AND S-700 SERIES DRAWING SCHEDULES, DETAILS, AND DIAGRAMS.

4.0 COLD-FORMED METAL FRAMING

4.1 ALL COLD-FORMED METAL FRAMING MEMBERS SHALL CONFORM TO ASTM A1003M, STRUCTURAL GRADE ST340 (MPa), WITH A GALVANIZED COATING OF Z275 OR BETTER IN ACCORDANCE WITH ASTM A653M.

4.2 ALL COLD-FORMED METAL FRAMING MEMBERS SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES:

a. MINIMUM METAL THICKNESS:
TRACK = 1.37mm;
STUD/OTHER = 1.09mm

b. MINIMUM FLANGE WIDTH:
TRACK = 38mm;
STUD/OTHER = 35mm

c. MINIMUM MEMBER DEPTH:
ALL SECTIONS = 152.2mm

d. PURLIN (HAT CHANNEL)
DEPTHxWIDTH(FLAT TOP)xTHICK = 25mmx42mmx1.59mm

4.3 ALL CONNECTIONS SHALL BE MADE WITH CORROSION RESISTANT (ASTM A153M), SELF-DRILLING, SELF-TAPPING STEEL DRILL SCREWS IN ACCORDANCE WITH ASTM C1513. SCREWS SHALL HAVE A LOW PROFILE HEAD BENEATH ROOF DECK, AND STANDARD HEAD ALL OTHER LOCATIONS.

4.4 FABRICATE COLD FORMED METAL FRAMING AND ACCESSORIES PLUMB, SQUARE AND TRUE TO LINE, WITH CONNECTIONS SECURELY FASTENED ACCORDING TO AISI STANDARD FOR COLD FORMED STEEL FRAMING.

4.5 CUT FRAMING MEMBERS BY SAWING OR SHEATHING, DO NOT TORCH CUT.

4.6 INSTALL FRAMING MEMBERS IN ONE-PIECE LENGTHS UNLESS SPLICE CONNECTIONS ARE INDICATED FOR TRACK OR TENSION MEMBERS

4.7 INSTALL TEMPORARY BRACING AND SUPPORTS TO SECURE FRAMING DURING CONSTRUCTION. MAINTAIN BRACING AND SUPPORTS IN PLACE UNTIL THE STRUCTURE HAS BEEN COMPLETED WITH ALL CONNECTIONS AND PERMANENT BRACING SECURED.

5.0 STRUCTURAL DESIGN CRITERIA

5.1 ALL DESIGNS SHALL CONFORM TO THE PROVISIONS OF THE IBC 2006 AND UFC AS APPLICABLE.

5.2 DESIGN LOADS

5.2.1 DEAD LOADS (PER IBC 2006 & UFC 3-310-01)

COLD-FORMED FRAMING	0.20 kPa
METAL ROOF PANEL	0.14 kPa
	0.34 kPa

5.2.2 LIVE LOADS (PER IBC 2006 & UFC 3-310-01)

ROOF	1.00 kPa
SLAB ON GRADE	4.80 kPa

5.2.3 SNOW LOADS (PER IBC 2006 & UFC 3-310-01)

GROUND SNOW LOAD (Pg)	1.2 kPa
SNOW IMPORTANCE FACTOR (I)	1.0
SNOW EXPOSURE FACTOR (Ce)	1.0
THERMAL FACTOR (Ct)	1.0

5.2.4 WIND LOADS (PER IBC 2006)

BASIC WIND SPEED	137 km/h
WIND IMPORTANCE FACTOR	1.0
WIND EXPOSURE CATEGORY	D
DIRECTIONALITY COEFFICIENT (Kd)	0.85
TOPOGRAPHIC FACTOR (Kzt)	1.0

5.2.5 SEISMIC LOADS (PER IBC 2006 & UFC 3-310-04)

OCCUPANCY USE CATEGORY	II
SEISMIC IMPORTANCE FACTOR (Ie)	1.0
SEISMIC SITE CLASS	D
S_a = 1.5 (REDUCED FROM 2.4 PER ASCE 7-05 12.8.1.3 FOR STRUCTURE WITHOUT IRREGULARITIES)	
S_1 = 1.20	
S_{DS} = 1.0 S_{D1} = 1.20	
SEISMIC DESIGN CATEGORY	E
SEISMIC RESISTING SYSTEM:	
-SPECIAL REINFORCED CONCRETE MOMENT FRAME (CANTILEVERED COLUMN)	
RESPONSE MODIFICATION FACTOR (R)	2.5
RESPONSE COEFFICIENT (Cs)	0.4
SEISMIC ANALYTICAL PROCEDURE = EQUIV LATERAL FORCE	
SEISMIC BASE SHEAR	
DISPENSING	70 kN
FUEL STORAGE	250 kN

APPROVED:

A/E DESIGNER OF RECORD

SEAL:

US ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT

Mark	Description	Date	Appr.

Mark	Description	Date	Appr.

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AFGHANISTAN ENGINEER DISTRICT
APO AE 96338

Michael Baker Jr, Inc.
A unit of Michael Baker Corporation
Airside Business Park
100 Airport Drive
Moon Township, PA 15108
www.mbakercorp.com

Designed by: JAC
Drawn by: RCC
Checked by: CWW
Reviewed by: LHM
Submitted by: BAKER

Date: 2/23/10
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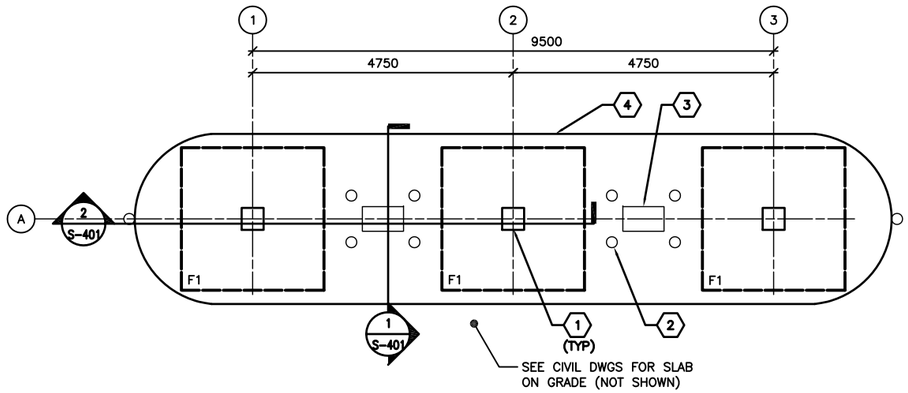
STANDARD DESIGN
VARIOUS PROJECTS
VARIOUS LOCATIONS, AFGHANISTAN

FUEL STORAGE AND VEHICLE REFUELING POINT

GENERAL NOTES & DESIGN CRITERIA

Sheet reference number:
S-001



1 S-101 VRP FOUNDATION/SLAB PLAN

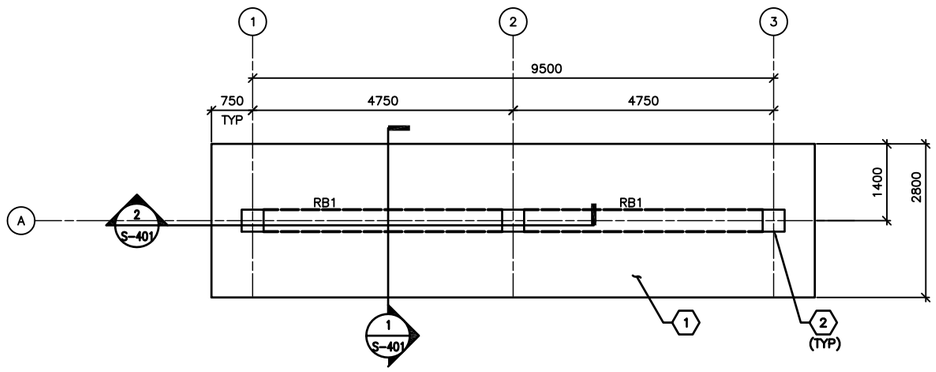
SCALE: 1:50

FOUNDATION/SLAB PLAN NOTES:

1. REFER TO SHEET S-001 FOR STRUCTURAL NOTES AND DESIGN CRITERIA.
2. T/SLAB ELEVATION SHALL BE (DATUM 0.00) ALL PLUS OR MINUS DIMENSIONS INDICATED ON PLAN OR REFERRED TO IN NOTES RELATE TO T/SLAB ELEVATION.
3. SEE CIVIL DRAWINGS FOR CONCRETE SLAB, AND ISLAND.
4. TOP OF FOOTINGS SHALL BE -400.
5. COLUMN FOOTINGS INDICATED BY F# ON PLAN. REFER TO COLUMN FOOTING SCHEDULE ON SHEET S-601.
6. SEE SHEET S-601 FOR COLUMN SCHEDULE.

FOUNDATION/SLAB PLAN KEY NOTES: (X)

1. REINF CONC COLUMN
2. BOLLARD (SEE TYPICAL DETAILS ON SHEET S-702)
3. FUEL DISPENSER (SEE CIVIL DWGS)
4. CONC ISLAND (SEE CIVIL DWGS)



2 S-101 VRP ROOF FRAMING PLAN

SCALE: 1:50

ROOF FRAMING PLAN NOTES:

1. REFER TO SHEET S-001 FOR STRUCTURAL NOTES AND BASIS OF DESIGN.
2. TOP OF ROOF SLAB ELEVATION = 3750 UNLESS NOTED OTHERWISE.
3. ROOF SLAB IS 200 WITH #13 @ 300 OC EW T&B.
4. ROOF BEAM INDICATED BY RB# ON PLAN. REFER TO BEAM SCHEDULE ON SHEET S-601.
5. COLD-FORMED METAL OVERBUILD ROOF FRAMING NOT SHOWN FOR CLARITY. SEE OVERBUILD ROOF FRAMING DETAILS AND SECTIONS ON SHEET S-701 AND S-702.
6. OVERHANG AREAS OF ROOF SLAB CONTAINS ROOF VENT PENETRATIONS. REFERENCE ARCHITECTURAL DRAWINGS FOR INFORMATION.

ROOF FRAMING PLAN KEY NOTES: (X)

1. CONC ROOF SLAB (BELOW ROOF OVERBUILD)
2. REINF CONC COLUMN (BELOW CONC ROOF SLAB)

0 1000 2000

SCALE: 1:50

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ON DRAWINGS ARE IN MILLIMETERS (mm)

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A/E DESIGNER OF RECORD

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US ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT

Mark	Description	Date	Appr.

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AFGHANISTAN ENGINEER DISTRICT
APO AE 96338

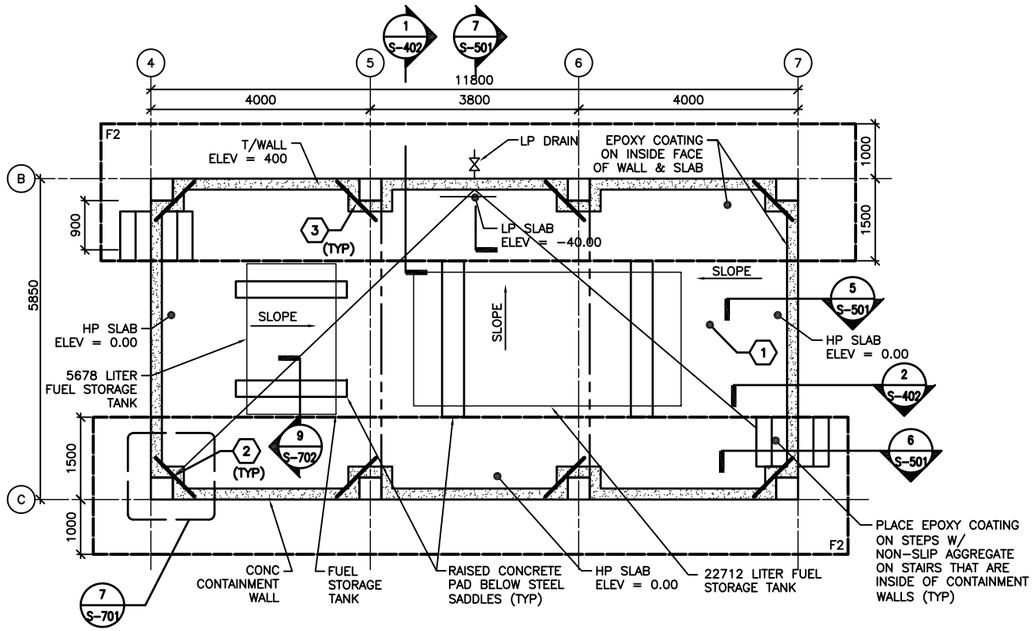
Michael Baker Jr, Inc.
A unit of Michael Baker Corporation
Airside Business Park
100 Airport Drive
Moon Township, PA 15108
www.mbakercorp.com

STANDARD DESIGN
VARIOUS PROJECTS
VARIOUS LOCATIONS, AFGHANISTAN

FUEL STORAGE AND VEHICLE REFUELING POINT

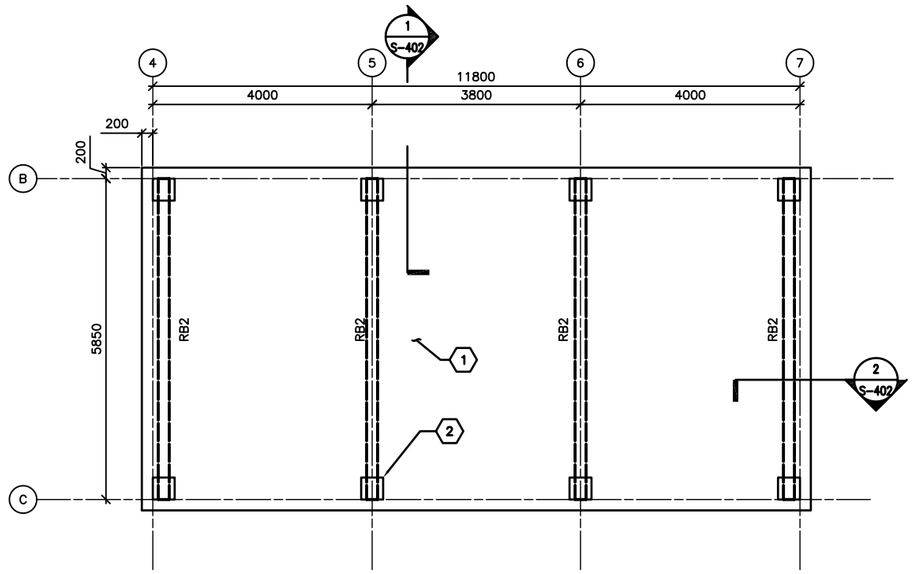
DISPENSING FOUNDATION/SLAB & ROOF FRAMING PLAN

Sheet reference number:
S-101



1 S-102 MOTOR POOL FUEL STORAGE FOUNDATION/SLAB PLAN

SCALE: 1:50



2 S-102 MOTOR POOL FUEL STORAGE ROOF FRAMING PLAN

SCALE: 1:50

FOUNDATION/SLAB PLAN NOTES:

1. REFER TO SHEET S-001 FOR STRUCTURAL NOTES AND DESIGN CRITERIA.
2. FINISH SLAB ELEVATION SHALL BE (DATUM 0.00) ALL PLUS OR MINUS DIMENSIONS INDICATED ON PLAN OR REFERRED TO IN NOTES RELATE TO FINISH SLAB ELEVATION.
3. SLAB-ON-GRADE IS 200 WITH #13 @ 300 OC EW T & B LOCATED 40 FROM T & B OF SLAB.
4. TOP OF COLUMN FOOTINGS SHALL BE -350 UNLESS OTHERWISE INDICATED.
5. COLUMN FOOTINGS INDICATED BY F# ON PLAN.
6. REFER TO COLUMN SCHEDULE ON SHEET S-601.
7. SEE MECHANICAL AND ELECTRICAL SHEETS FOR CONCRETE PAD LOCATIONS, SIZES, AND THICKNESS NOT SHOWN. SEE SHEET S-701 FOR DETAILS.

FOUNDATION/SLAB PLAN KEY NOTES: (X)

1. REINF CONC SLAB-ON-GRADE
2. REINF CONC COLUMN
3. (2)-#13 RE-ENTRANT CORNER BARS - SEE SHEET S-701 FOR INFORMATION

FOUNDATION/SLAB PLAN LEGEND:

CONTROL JOINT

CONC CONTAINMENT WALL

ROOF FRAMING PLAN NOTES:

1. REFER TO SHEET S-001 FOR STRUCTURAL NOTES AND BASIS OF DESIGN.
2. TOP OF ROOF SLAB ELEVATION = 3900 UNLESS NOTED OTHERWISE.
3. ROOF SLAB IS 200 WITH #13 @ 300 OC EW T&B.
4. ROOF BEAM INDICATED BY RB# ON PLAN. REFER TO BEAM SCHEDULE ON SHEET S-601.
5. COLD-FORMED METAL OVERBUILD ROOF FRAMING NOT SHOWN FOR CLARITY. SEE OVERBUILD ROOF FRAMING DETAILS AND SECTIONS ON SHEETS S-701 AND S-702.
6. OVERHANG AREAS OF ROOF SLAB CONTAIN ROOF VENT PENETRATIONS.

ROOF FRAMING PLAN KEY NOTES: (X)

1. CONC ROOF SLAB (BELOW ROOF OVERBUILD)
2. REINF CONC COLUMN (BELOW CONC ROOF SLAB)

0 1000 2000

SCALE: 1:50

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ON DRAWINGS ARE IN MILLIMETERS (mm)

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A/E DESIGNER OF RECORD

SEAL:

US ARMY CORPS OF ENGINEERS
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Mark	Description	Date	Appr.
Mark	Description	Date	Appr.

Date: 2/23/10 Rev: 0
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AFGHANISTAN ENGINEER DISTRICT
APO AE 96338

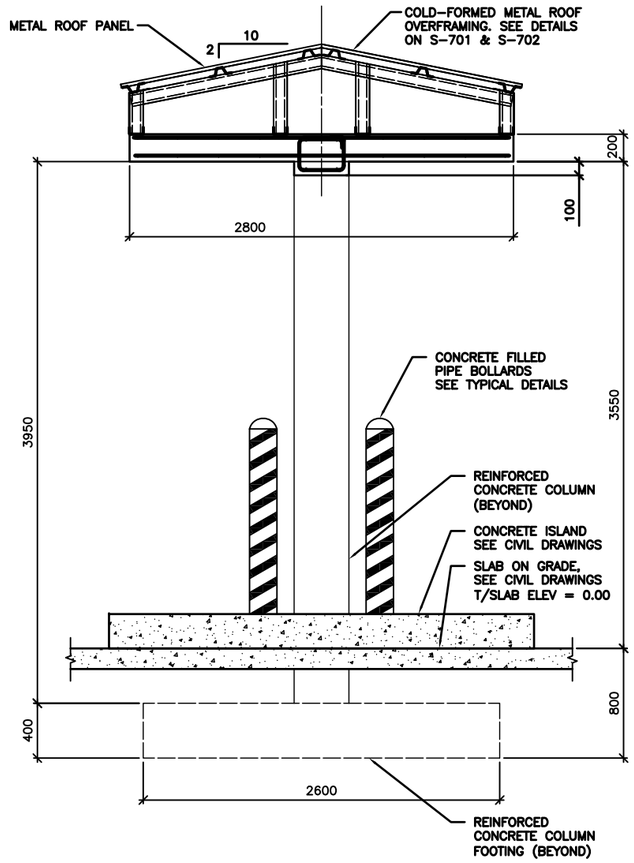
Michael Baker Jr., Inc.
A unit of Michael Baker Corporation
Airside Business Park
100 Airport Dr.
Moon Township, PA 15108
www.mbakercorp.com

STANDARD DESIGN
VARIOUS PROJECTS
VARIOUS LOCATIONS, AFGHANISTAN

FUEL STORAGE AND VEHICLE REFUELING POINT

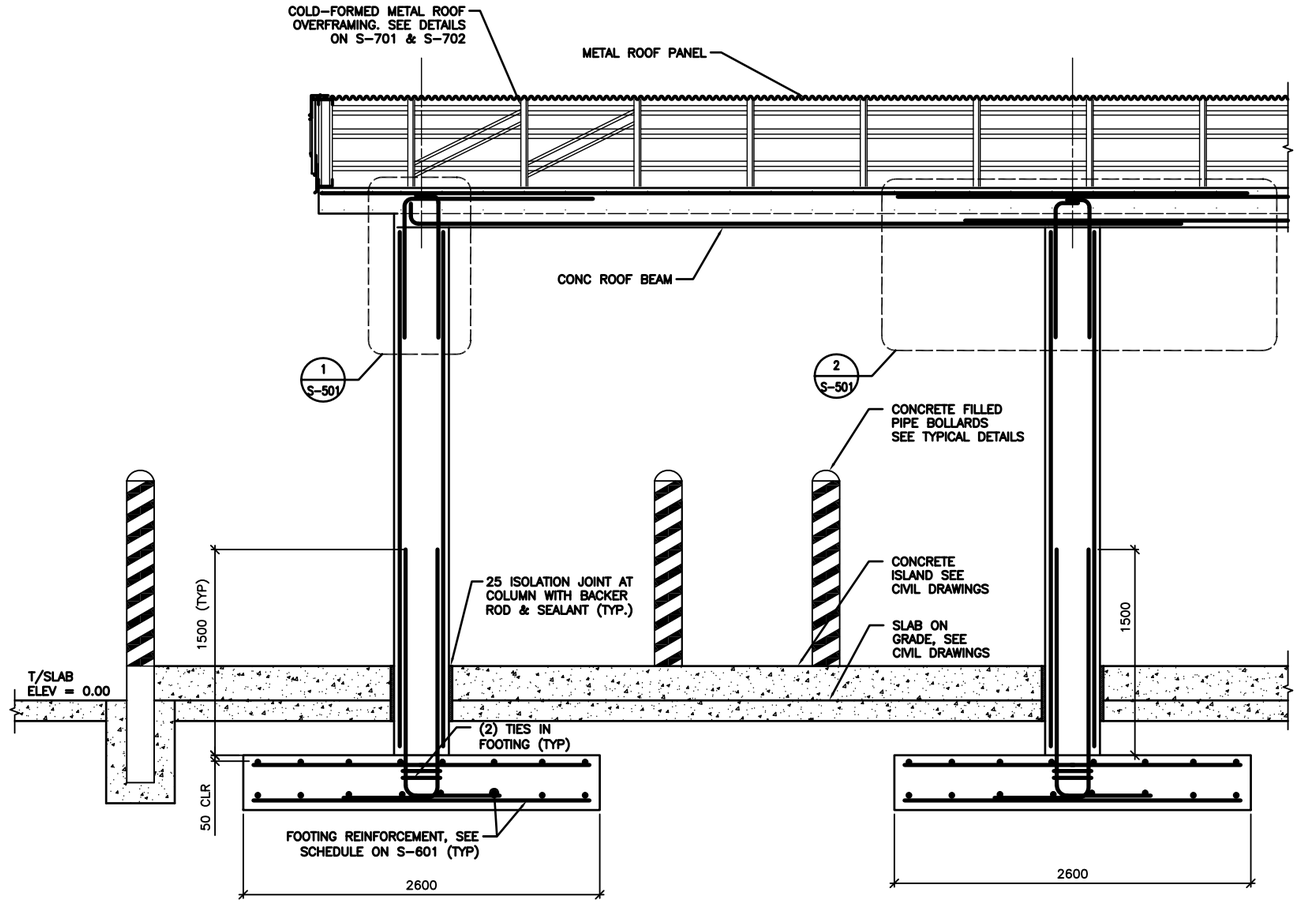
FUEL STORAGE FOUNDATION/SLAB & ROOF FRAMING PLAN

Sheet reference number:
S-102



SECTION NOTE:
1. COLUMN TIES NOT SHOWN FOR CLARITY.

1 / S–101 VRP SECTION
SCALE: 1:20



SECTION NOTES:
1. COLUMN TIES & BEAM STIRRUPS NOT SHOWN FOR CLARITY.
2. LONGITUDINAL SLAB STEEL NOT SHOWN FOR CLARITY

2 / S–101 VRP SECTION
SCALE: 1:20

0 400 800
SCALE: 1:20

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ON DRAWINGS ARE IN MILLIMETERS (mm)

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SEAL:

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AFGHANISTAN ENGINEER DISTRICT

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Mark	Description	Date	Appr.

Designed by: JAC
Drawn by: RCC
Checked by: CWW
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Rev: 0

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AFGHANISTAN ENGINEER DISTRICT
APO AE 96338

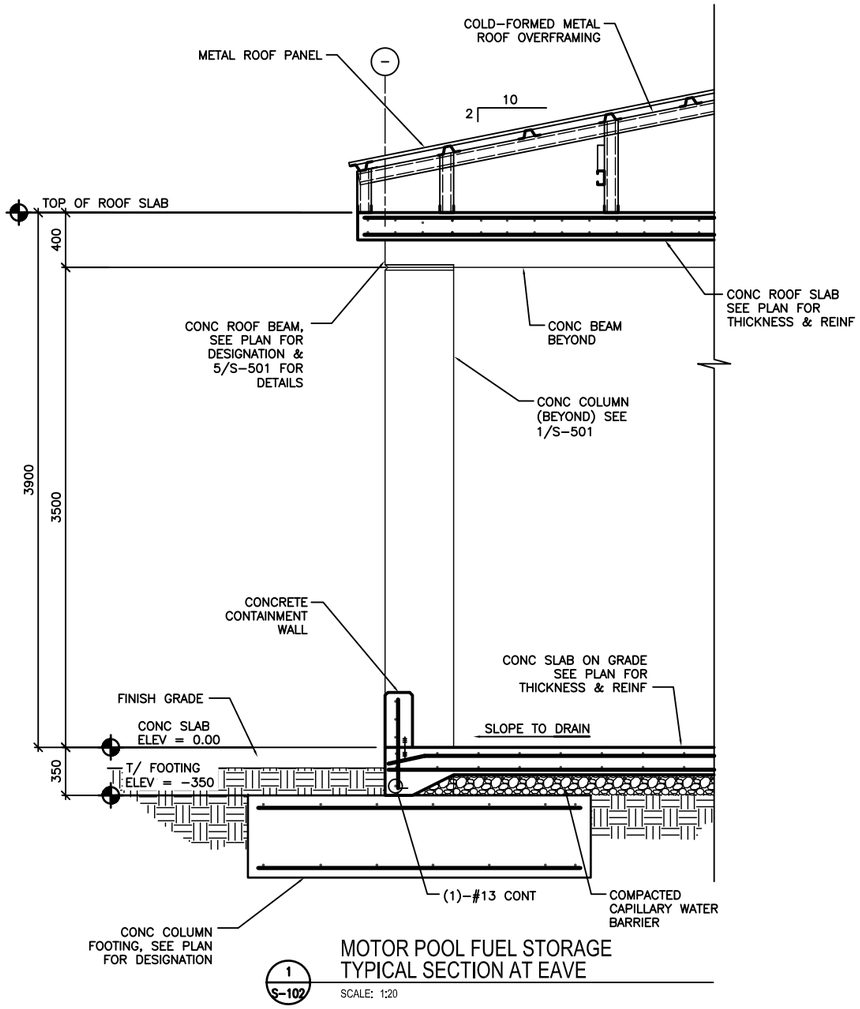
Michael Baker Jr, Inc.
A unit of Michael Baker Corporation
Airside Business Park
100 Airport Drive
Moon Township, PA 15108
www.mbakercorp.com

STANDARD DESIGN
VARIOUS PROJECTS
VARIOUS LOCATIONS, AFGHANISTAN

FUEL STORAGE AND VEHICLE REFUELING POINT

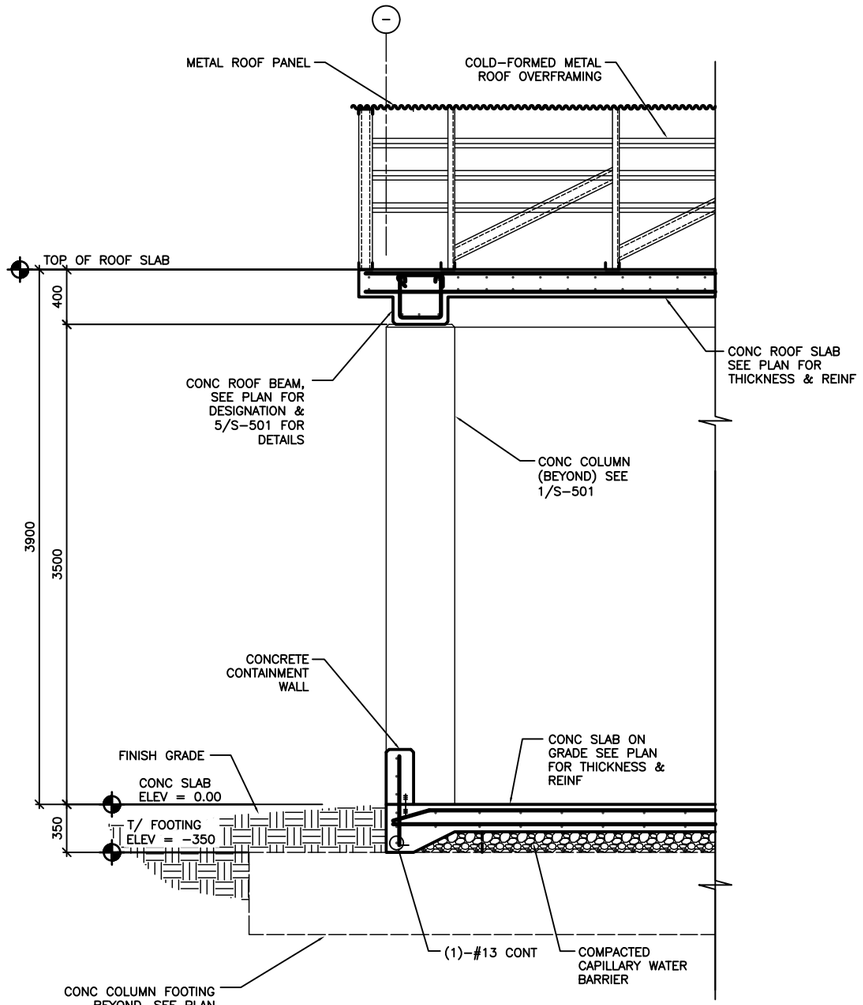
DISPENSING SECTIONS

Sheet reference number:
S–401



1 S–102 MOTOR POOL FUEL STORAGE TYPICAL SECTION AT EAVE

SCALE: 1:20



2 S–102 MOTOR POOL FUEL STORAGE TYPICAL SECTION AT GABLE END

SCALE: 1:20

0 400 800

SCALE: 1:20

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ON DRAWINGS ARE IN MILLIMETERS (mm)

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Detailed by: RCS
Reviewed by: LHM
Submitted by: BAKER

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APO AE 96338

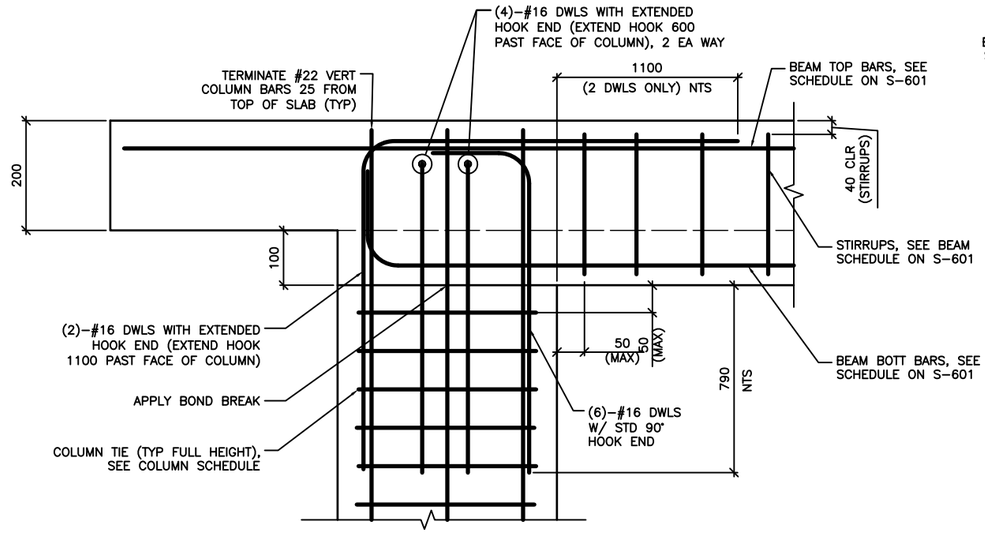
Michael Baker Jr., Inc.
A unit of Michael Baker Corporation
Airside Business Park
100 Airport Drive
Moon Township, PA 15108
www.mbakercorp.com

STANDARD DESIGN
VARIOUS PROJECTS
VARIOUS LOCATIONS, AFGHANISTAN

FUEL STORAGE AND VEHICLE REFUELING POINT

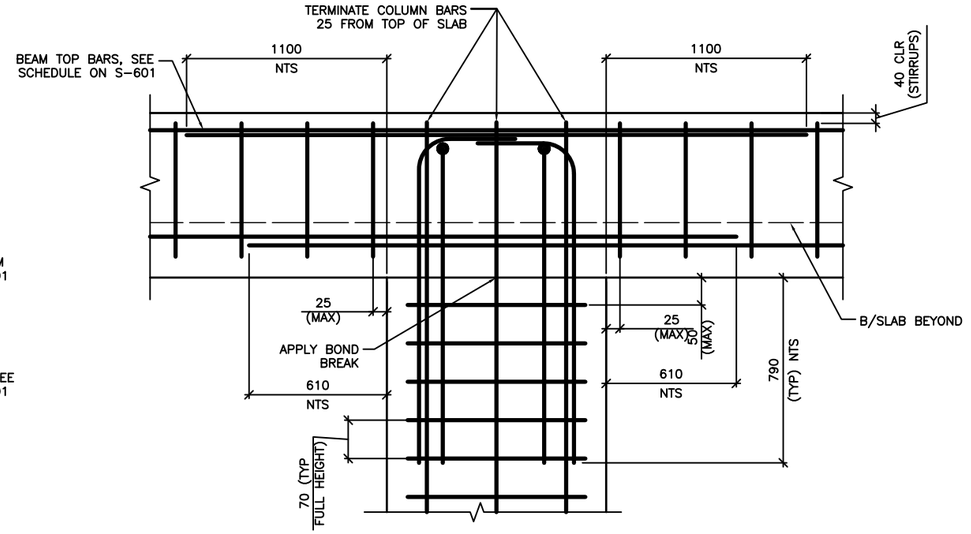
FUEL STORAGE BUILDING SECTIONS

Sheet reference number:
S–402



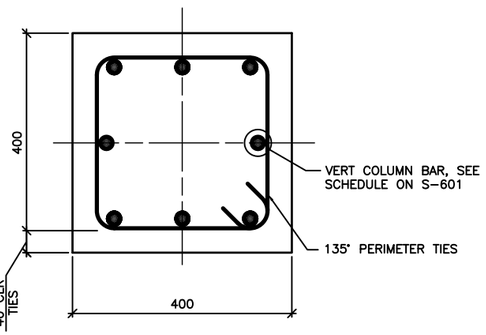
DETAIL NOTE:
1. SLAB REINFORCEMENT NOT SHOWN FOR CLARITY

1 / S–401 SECTION @ TOP OF VRP END COLUMN
SCALE: 1:5



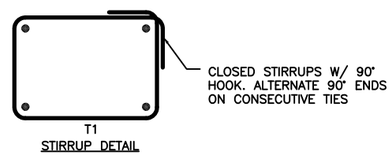
DETAIL NOTE:
1. SLAB REINFORCEMENT NOT SHOWN FOR CLARITY

2 / S–401 SECTION @ TOP OF VRP CENTER COLUMN
SCALE: 1:5



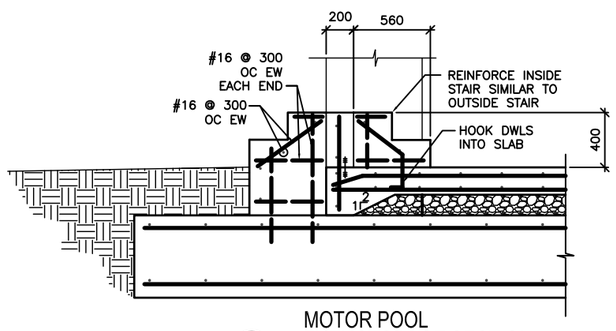
DETAIL NOTE:
1. CENTER COLUMN SIMILAR

3 / S–501 TYPICAL COLUMN SECTION @ MID-HEIGHT
SCALE: 1:5

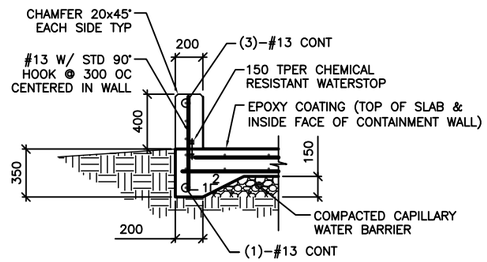


STIRRUP DETAIL

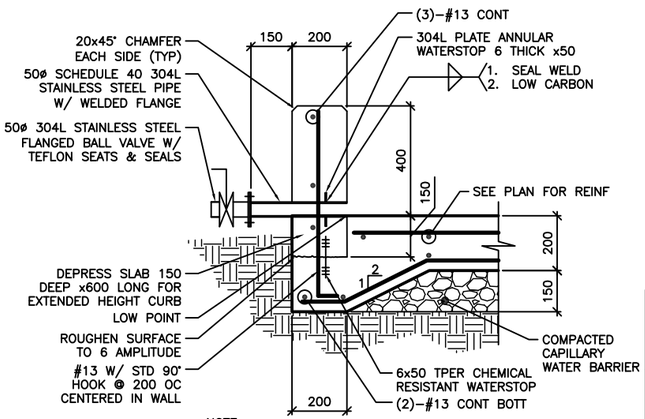
4 / S–501 BEAM REINFORCEMENT DETAILS
SCALE: NTS



6 / S–102 MOTOR POOL FUEL STORAGE SECTION
SCALE: 1:20



5 / S–102 MOTOR POOL FUEL STORAGE TYPICAL CONCRETE CONTAINMENT WALL
SCALE: 1:20



NOTE:
1. INVERT OF 50ø DRAIN PIPE TO MATCH LOW POINT ELEVATION OF CONTAINMENT.

7 / S–102 MOTOR POOL FUEL STORAGE LOW POINT DRAIN
SCALE: 1:10

0 100 200
SCALE: 1:5
0 200 400
SCALE: 1:10
0 400 800
SCALE: 1:20

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ON DRAWINGS ARE IN MILLIMETERS (mm)

APPROVED:

A/E DESIGNER OF RECORD

SEAL:

US ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT

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Reviewed by: LHM
Submitted by: BAKER

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AFGHANISTAN ENGINEER DISTRICT
APO AE 96338

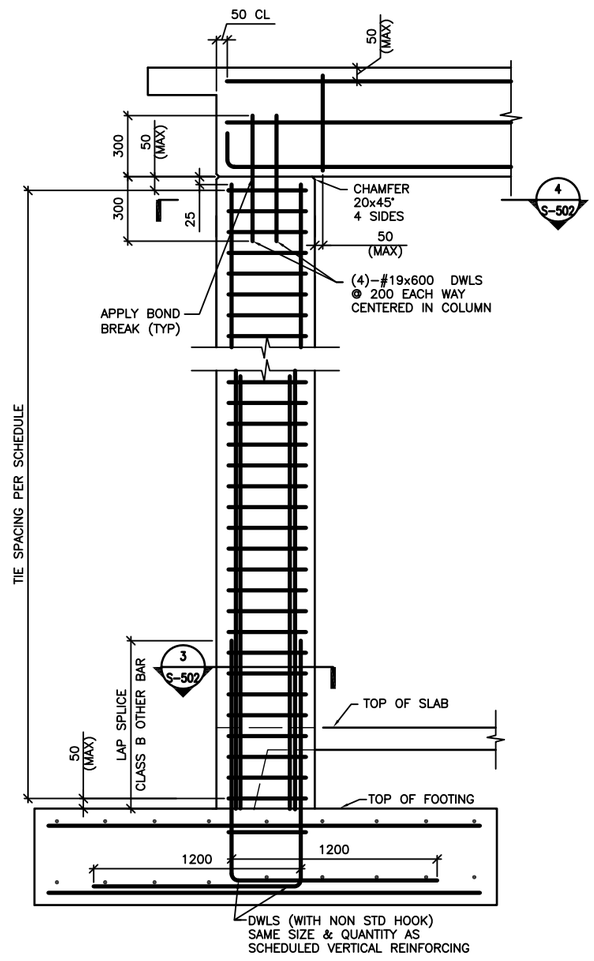
Michael Baker Jr., Inc.
A unit of Michael Baker Corporation
Airside Business Park
100 Airport Drive
Moon Township, PA 15108
www.mbakercorp.com

STANDARD DESIGN
VARIOUS PROJECTS
VARIOUS LOCATIONS, AFGHANISTAN

FUEL STORAGE AND VEHICLE REFUELING POINT

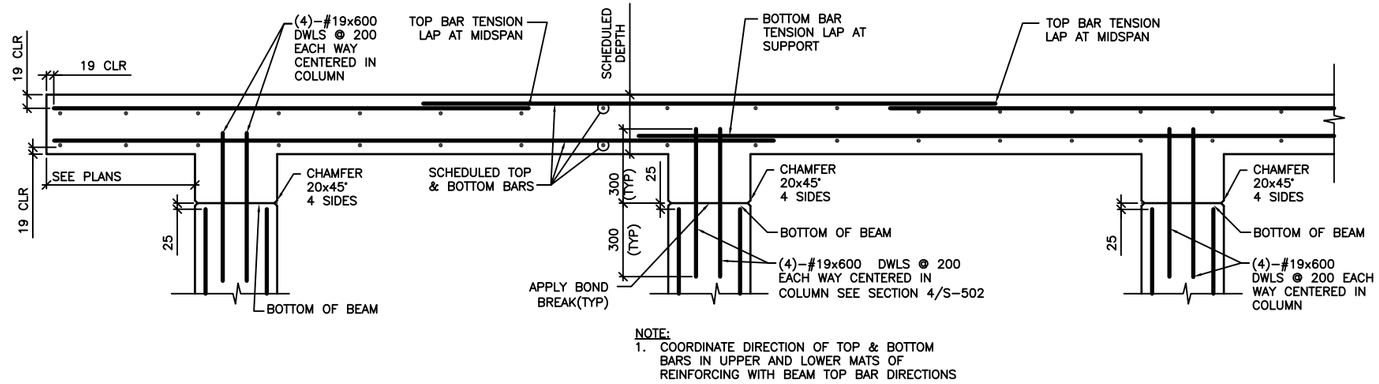
DISPENSING SECTIONS & DETAILS

Sheet reference number:
S–501



1 S-502 MOTOR POOL FUEL STORAGE COLUMN REINF DETAILS

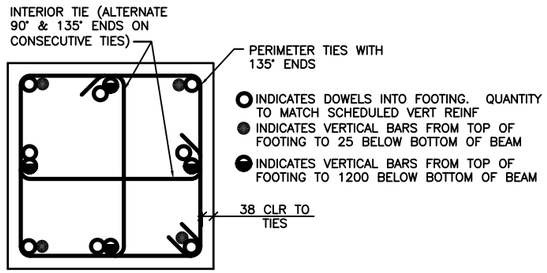
SCALE: NTS



NOTE:
1. COORDINATE DIRECTION OF TOP & BOTTOM BARS IN UPPER AND LOWER MATS OF REINFORCING WITH BEAM TOP BAR DIRECTIONS

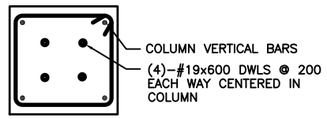
2 S-502 MOTOR POOL FUEL STORAGE FRAMED SLAB REINFORCING DETAIL

SCALE: NTS



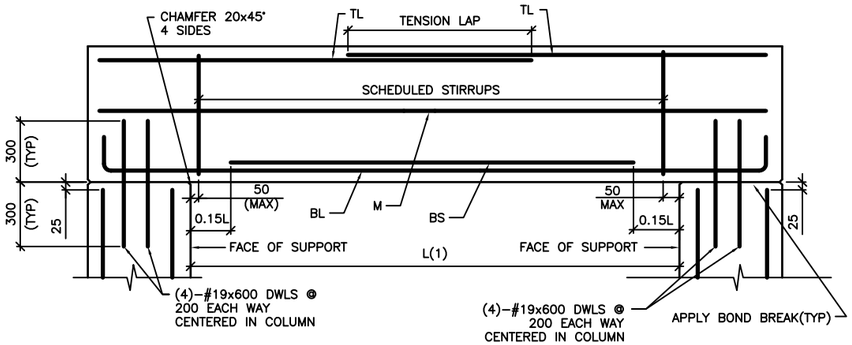
3 S-502 8 BAR COLUMN

SCALE: NTS



4 S-502 4 BAR COLUMN TOP

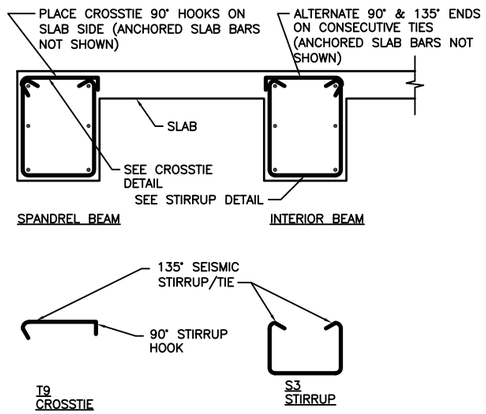
SCALE: NTS



NOTES:
1. ROOF SLAB NOT SHOWN FOR CLARITY

5 S-502 SINGLE SPAN ROOF BEAM REINFORCING DETAIL

SCALE: NTS



A S-502 BEAM REINFORCEMENT DETAILS

SCALE: NTS

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ON DRAWINGS ARE IN MILLIMETERS (mm)

APPROVED:

A/E DESIGNER OF RECORD

SEAL:

US ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT

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Submitted by: BAKER

Cst. by: CWW

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AFGHANISTAN ENGINEER DISTRICT
APO AE 96338

Michael Baker Jr, Inc.
A unit of Michael Baker Corporation
Airside Business Park
100 Airport Drive
Moon Township, PA 15108
www.mbakercorp.com

STANDARD DESIGN
VARIOUS PROJECTS
VARIOUS LOCATIONS, AFGHANISTAN

FUEL STORAGE AND VEHICLE REFUELING POINT

FUEL STORAGE
COLUMN & BEAM DETAILS

Sheet reference number:
S-502

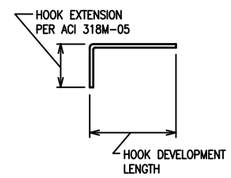
COLUMN FOOTING SCHEDULE

MARK	FOOTING SIZE (mm)			FOOTING REINFORCING
	LENGTH	WIDTH	THICKNESS	
F1	2600	2600	400	(8)–#19– EW TOP & BOTTOM
F2	13900	2500	600	#16 @ 400 OC T&B SHORT
				(6)–#16 T&B CONT LONG LAP 580 MIDWAY BETWEEN COLUMNS

STANDARD HOOKS IN TENSION PER (ACI 318M–05)

HOOK DEVELOPMENT LENGTH (mm)

BAR SIZE	f'c 28 MPa
#10	180
#13	250
#16	300
#19	380
#22	430
#25	480
#29	560
#32	610
#36	690



NOTES:
1. CONCRETE IS NORMAL WEIGHT CONCRETE.
2. BAR YIELD STRENGTH, fy = 420 MPa
3. SIDE COVER REQUIREMENTS OF ACI SECT. 12.5.3 ARE ASSUMED TO NOT BE MET.
4. TIE OR STIRRUP REQUIREMENTS OF ACI SECT. 12.5.3 ARE ASSUMED TO NOT BE MET.
5. REDUCTION FOR EXCESS REINFORCEMENT IS NOT TAKEN.
6. HOOK DEVELOPMENT LENGTH IS VALID FOR 180° HOOKS ALSO.

CONCRETE REINFORCEMENT TENSION DEVELOPMENT/LAP SPLICE SCHEDULE

f'c = 28 MPa	LAP CLASS	UNCOATED BARS			
		TOP BARS		OTHER BARS	
BAR SIZES		CASE 1	CASE 2	CASE 1	CASE 2
#10 TO #19	A	50 BAR DIA	74 BAR DIA	38 BAR DIA	57 BAR DIA
	B	64 BAR DIA	96 BAR DIA	50 BAR DIA	74 BAR DIA
#22 TO #57	A	62 BAR DIA	93 BAR DIA	48 BAR DIA	71 BAR DIA
	B	80 BAR DIA	121 BAR DIA	62 BAR DIA	93 BAR DIA

NOTES:
1. TABULATED TENSION DEVELOPMENT LENGTH VALUES ARE TAKEN FROM CRSI DESIGN HANDBOOK 2008 10TH ED.
2. TENSION DEVELOPMENT & TENSION LAP SPLICE LENGTHS ARE EXPRESSED AS MULTIPLES OF BAR DIAMETERS.
3. TABULATED VALUES ARE BASED ON MINIMUM YIELD STRENGTH OF REINFORCEMENT, fy, OF 420MPa.
4. CONCRETE IS NORMAL WEIGHT (2400Kg/m^3) AND 28 DAY COMPRESSIVE STRENGTH = 28MPa.
5. TABULATED VALUES FOR BEAMS & COLUMNS ARE BASED ON TRANSVERSE REINFORCEMENT AND CONCRETE COVER MEETING MINIMUM CODE REQUIREMENTS.
6. CASES 1 & 2, WHICH DEPEND ON THE TYPE OF STRUCTURAL MEMBER, CONCRETE COVER, AND CENTER–TO–CENTER SPACING OF THE BARS ARE DEFINED IN THE TABLE BELOW.
7. LAP SPLICE LENGTHS (MINIMUM 300mm) ARE MULTIPLES OF TENSION DEVELOPMENT LENGTHS: CLASS A = 1.0(TENSION DEVELOPMENT LENGTH) & CLASS B = 1.3(TENSION DEVELOPMENT LENGTH)
8. TOP BARS ARE HORIZONTAL REINFORCEMENT WITH MORE THAN 300mm OF CONCRETE CAST BELOW THE BARS.
9. IT SHALL BE PERMISSIBLE TO CALCULATE WALL AND SLAB REINFORCEMENT TENSION DEVELOPMENT/SPLICE LENGTHS IN ACCORDANCE WITH ACI 12.2.3 OR TABLE 5.3(b) OF CRSI 2008 IN LIEU OF VALUES TABULATED ABOVE.

BEAMS, COLUMNS	CASE 1	CONCRETE COVER AT LEAST 1 BAR DIA AND CENTER–TO–CENTER SPACING AT LEAST 2 BAR DIA
	CASE 2	CONCRETE COVER LESS THAN 1 BAR DIA OR CENTER–TO–CENTER SPACING LESS THAN 2 BAR DIA
ALL OTHERS	CASE 1	CONCRETE COVER AT LEAST 1 BAR DIA AND CENTER–TO–CENTER SPACING AT LEAST 3 BAR DIA
	CASE 2	CONCRETE COVER LESS THAN 1 BAR DIA OR CENTER–TO–CENTER SPACING LESS THAN 3 BAR DIA

BEAM SCHEDULE

MARK	BEAM SIZE (mm)		BEAM REINFORCING						STIRRUPS		
	DEPTH	WIDTH	BL	BS	TL	TS	TC	M	SIZE	TYPE	SPACING
ROOF BEAMS											
RB1	300	400	(2)–#16	---	(2)–#16	---	---	---	#13	T1	120
RB2	400	300	(2)–#19	---	(2)–#19	---	---	---	#13	S3+T9	d/2

NOTES:
1. WORK THIS SCHEDULE WITH BEAM REINFORCING DETAILS ON SHEETS S–503 AND S–504.
2. HOOKS SHOWN ON SECTIONS AND DETAILS SHALL BE 90° STD UON.
3. USE ONLY (1) TC AT BEAM COLUMN INTERSECTION WHERE REQ'D.

COLUMN SCHEDULE

DESCRIPTION \ COLUMN MARK	A1–A3	B4–B7 C4–C7	---	---
TYPE	8–BAR	8–BAR	---	---
DIMENSION	400mm SQ	500mm SQ	---	---
VERTICAL REINFORCEMENT	(8)–#22	(8)–#25	---	---
TIES	#13 @ 85	#13 @ 100	---	---
TOP OF ROOF ELEVATION	3750mm	3900mm	---	---
TOP OF GRADE BEAM ELEVATION	N/A	0.0mm	---	---
TOP OF FOOTING ELEVATION	–400mm	–350mm	---	---

NOTES:
1. WORK THIS SCHEDULE WITH COLUMN DETAILS ON SHEETS S–501 & S–502.
2. SEE COLUMN DETAILS ON SHEET S–501& S–502 FOR REINFORCEMENT CONFIGURATION.
3. SEE FOOTING SCHEDULE ON THIS SHEET FOR FOOTING INFORMATION.

CONCRETE COVER SCHEDULE

MINIMUM CONCRETE COVER PROTECTION FOR REINFORCEMENT BARS SHALL BE AS LISTED BELOW: (SEE ACI 318M–05, SECTION 7.7 FOR CONDITIONS NOT NOTED). DIMENSIONS FOR BAR PLACEMENT GIVEN IN SECTIONS AND DETAILS SHALL SUPERSEDE MINIMUM COVER REQUIREMENTS GIVEN HERE. DIMENSIONS ARE IN mm. PROVIDE STANDARD BAR CHAIRS AND SUPPORT BARS @1200mm MAXIMUM AS REQUIRED TO MAINTAIN CONCRETE PROTECTION SPECIFIED.

FOOTINGS (EARTH FORMED):		70
COLUMNS / PIERS (TO TIES)		40
GRADE BEAMS OR SLAB TURNED DOWN EDGES:		
TOP		40
BOTTOM (EARTH FORMED)		70
SIDES (EARTH FORMED)		70
SIDES (BOARD FORMED)	#16 BAR & SMALLER	40
	#19 THRU #36 BAR	50
ELEVATED BEAMS & SLABS:		
BEAM TIES & STIRRUPS (NOT EXPOSED TO WEATHER)		40
BEAM TIES & STIRRUPS (EXPOSED TO WEATHER)		40
FLOOR SLABS (NOT EXPOSED TO WEATHER)		20
FLOOR SLABS (EXPOSED TO WEATHER)		
#19 & LARGER		50
#13 & SMALLER		40
ROOF SLAB BARS		25
SLABS ON GRADE		
NOT EXPOSED TO WEATHER (FROM TOP)		20
EXPOSED TO WEATHER (FROM TOP)		40
UTILITY TUNNEL WALLS, RETAINING WALLS AND SHEAR WALLS. (NO SURFACES SHALL BE EARTH FORMED)		
EARTH SIDE AND FRONT SIDE (EXPOSED TO WEATHER)		
#16 BAR AND SMALLER		40
#19 THRU #36 BAR		50

APPROVED:

A/E DESIGNER OF RECORD

SEAL:

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Mark	Description	Date	Appr.

Designed by: JAC
Drawn by: RC/S
Checked by: CWW
Reviewed by: LHM
Submitted by: BAKER
Date: 2/23/10
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Airside Business Park
100 Airport Drive
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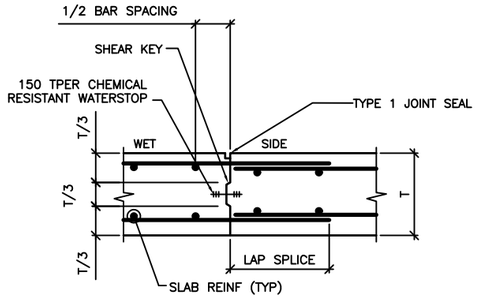
STANDARD DESIGN
VARIOUS PROJECTS
VARIOUS LOCATIONS, AFGHANISTAN

FUEL STORAGE AND VEHICLE REFUELING POINT

SCHEDULES

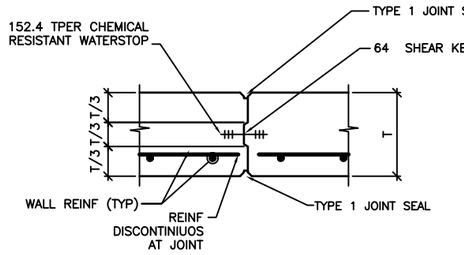
Sheet reference number:
S–601



DETAIL NOTES:
1. MAXIMUM SPACING BETWEEN JOINTS = 36T UNLESS OTHERWISE NOTED ON THE PLANS.

1 S-701 CONST JOINT DETAIL AT SPILL CONTAINMENT STRUCTURE BASE SLAB

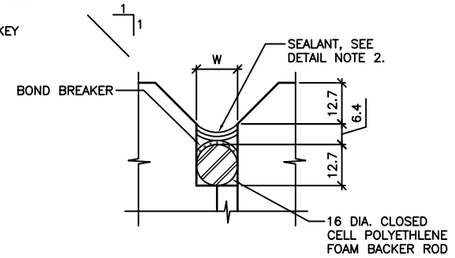
SCALE: NTS



DETAIL NOTES:
1. MAXIMUM SPACING BETWEEN JOINTS = 5050 OC
2. LAP SPLICE BAR TO MATCH WALL HORIZ REINF EXCEPT #10 SIZE

2 S-701 WALL CONST JOINT DETAIL AT SPILL CONTAINMENT WALL

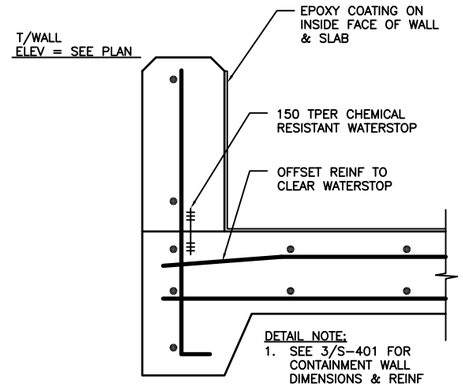
SCALE: NTS



DETAIL NOTES:
1. USE THIS DETAIL AT CONSTRUCTION AND CONTROL JOINTS.
2. USE TWO-COMPONENT POLYURETHANE SEALANT FOR SUBMERGED AND NONSUBMERGED APPLICATIONS.
3. UNLESS OTHERWISE NOTED W= 12.7

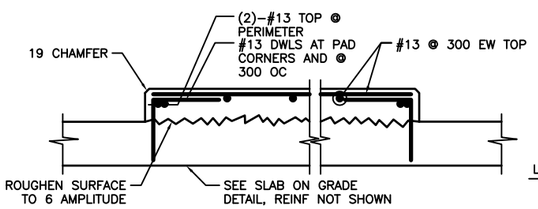
3 S-701 TYPE 1 JOINT SEAL DETAIL (EXPOSED TO PUBLIC VIEW)

SCALE: NTS



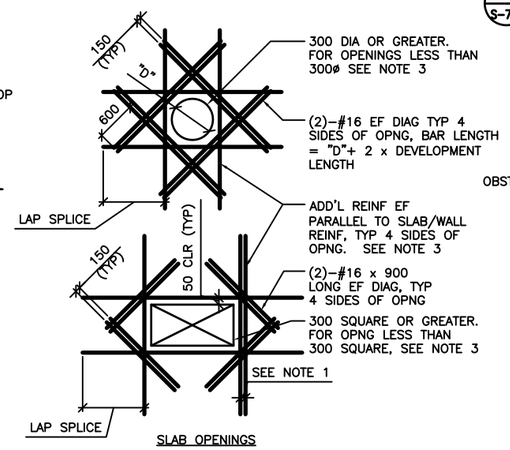
4 S-701 WATERSTOP DETAIL AT BASE OF SPILL CONTAINMENT WALL

SCALE: NTS



5 S-701 EQUIPMENT PAD DETAIL

SCALE: NTS

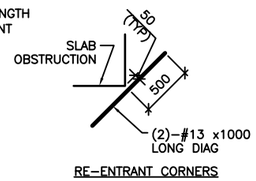


SLAB OPENINGS

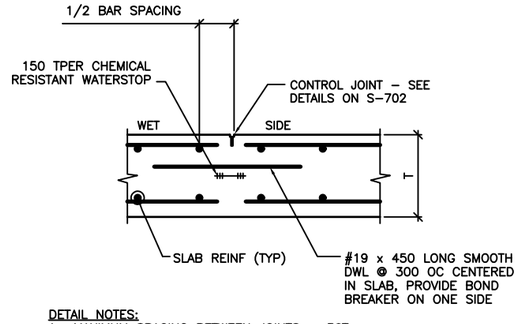
DETAIL NOTES:
1. WHERE MORE THAN ONE ADDITIONAL BAR IS REQUIRED PARALLEL TO THE EXISTING SLAB/WALL REINFORCING THE ADDITIONAL REINFORCING BARS SHALL BE SPACED AT 100 ON CENTER.
2. ADDITIONAL REINFORCING PARALLEL TO THE SLAB/WALL REINFORCING SHALL BE #16 BARS THAT PROVIDE A STEEL AREA ON EACH SIDE OF THE OPENING EQUAL TO 1/2 THE AREA OF THE REINFORCING CUT BY THE OPENING.
3. FOR OPENINGS WITH SIDES OR DIAMETERS LESS THAN 300 SPREAD THE SLAB/WALL REINFORCING TO CLEAR THE OPENING.

6 S-701 ADD'L CONCRETE REINFORCEMENT DETAILS

SCALE: NTS



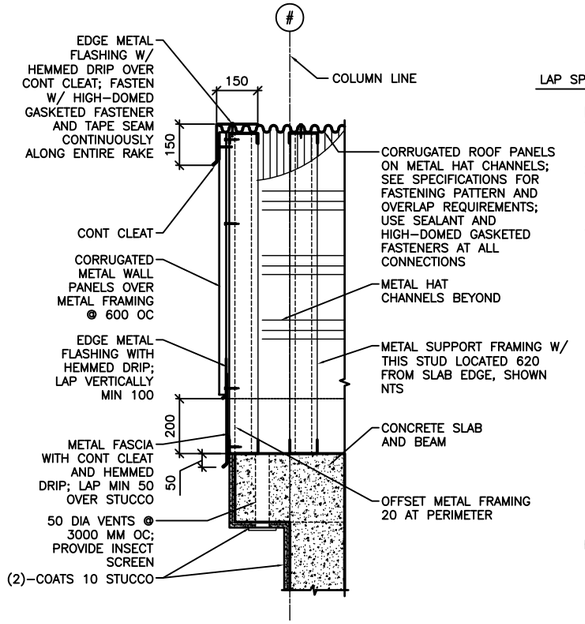
RE-ENTRANT CORNERS



DETAIL NOTES:
1. MAXIMUM SPACING BETWEEN JOINTS = 36T UNLESS OTHERWISE NOTED ON THE PLANS.

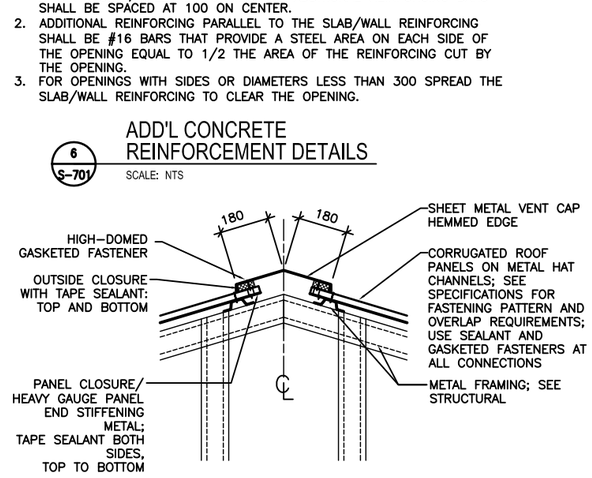
7 S-701 CONTROL JOINT DETAIL AT SPILL CONTAINMENT STRUCTURE BASE SLAB

SCALE: NTS



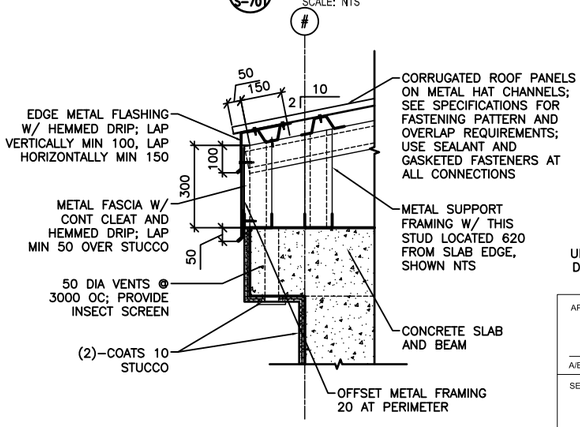
8 S-701 RAKE/EAVE DETAIL

SCALE: NTS



9 S-701 RIDGE VENT DETAIL

SCALE: NTS



10 S-701 EAVE DETAIL

SCALE: NTS

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ON DRAWINGS ARE IN MILLIMETERS (mm)

APPROVED:

A/E DESIGNER OF RECORD

SEAL:

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Mark	Description	Date	Appr.

Designed by: JAC
Drawn by: RCG
Reviewed by: LHM
Submitted by: BAKER
Date: 2/23/10
Design file no.
Drawing code:
Cad by: CWW
File name: AANFSVRPS201
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Michael Baker Jr., Inc.
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Airside Business Park
100 Airport Drive
Moon Township, PA 15108
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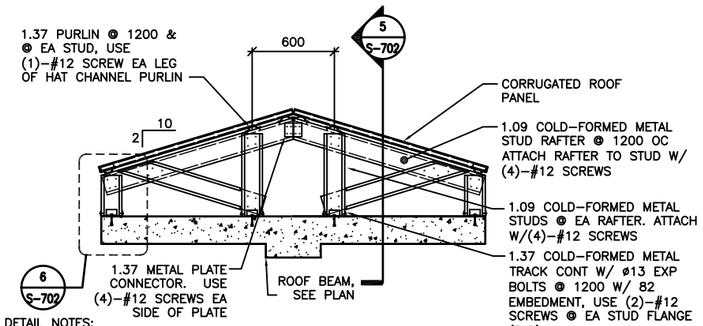
VARIOUS PROJECTS
VARIOUS LOCATIONS, AFGHANISTAN

FUEL STORAGE AND VEHICLE REFUELING POINT

TYPICAL DETAILS

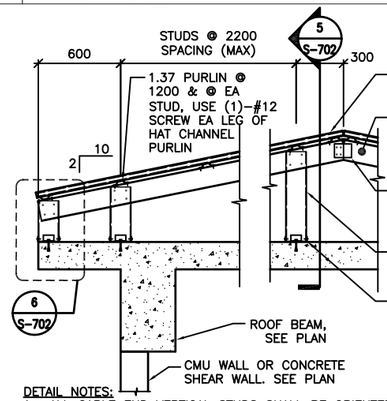
Sheet reference number:
S-701



DETAIL NOTES:
1. ALL GABLE END VERTICAL STUDS SHALL BE ORIENTED 90° TO INTERIOR STUDS & SPACED @ 600 OC. GABLE END RAFTER SHALL BE 1.37 METAL TRACK SPANNING CONTINUOUSLY OVER GABLE END STUDS. INSET GIRTS AT GABLE END SHALL BE 1.09 COLD–FORMED METAL STUDS @ 1200 OC ATTACHED VIA 1.37 THICKNESS CLIP ANGLE W/ (2) #12 SCREWS EA LEG.
2. ALL INTERIOR, NON–GABLE END VERTICAL STUDS GREATER THAN 2400 IN LENGTH SHALL BE BACK–TO–BACK W/ #12 SCREWS @ 200 OC STAGGERED.

1 S-702 DISPENSING TYPICAL OVERBUILT ROOF FRAMING DETAIL

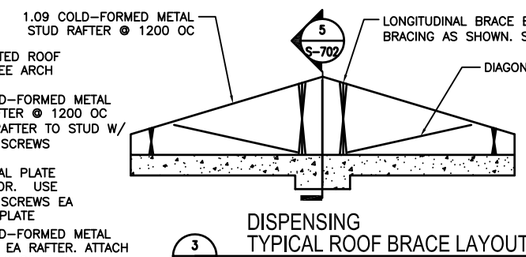
SCALE: NTS



DETAIL NOTES:
1. ALL GABLE END VERTICAL STUDS SHALL BE ORIENTED 90° TO INTERIOR STUDS & SPACED @ 600 OC. GABLE END RAFTER SHALL BE 1.37 METAL TRACK SPANNING CONTINUOUSLY OVER GABLE END STUDS. INSET GIRTS AT GABLE END SHALL BE 1.09 COLD–FORMED METAL STUDS @ 1200 OC ATTACHED VIA 1.37 THICKNESS CLIP ANGLE W/ (2) #12 SCREWS EA LEG.
2. ALL INTERIOR, NON–GABLE END VERTICAL STUDS GREATER THAN 2400 IN LENGTH SHALL BE BACK–TO–BACK W/ #12 SCREWS @ 200 OC STAGGERED.

2 S-702 FUEL STORAGE TYPICAL OVERBUILT ROOF FRAMING DETAIL

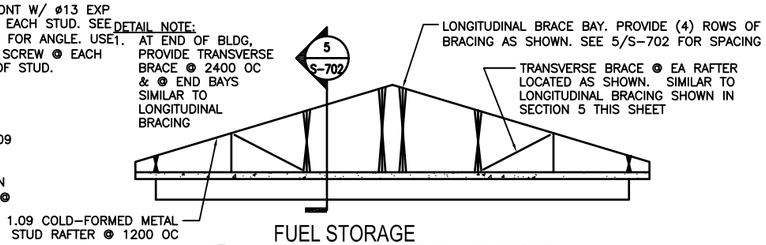
SCALE: NTS



3 S-702 DISPENSING TYPICAL ROOF BRACE LAYOUT

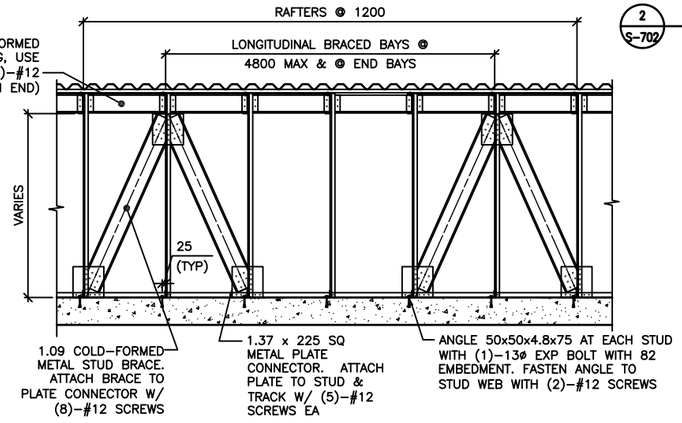
SCALE: NTS

DETAIL NOTE:
AT END OF BLDG, PROVIDE TRANSVERSE BRACE @ 2400 OC & @ END BAYS SIMILAR TO LONGITUDINAL BRACING



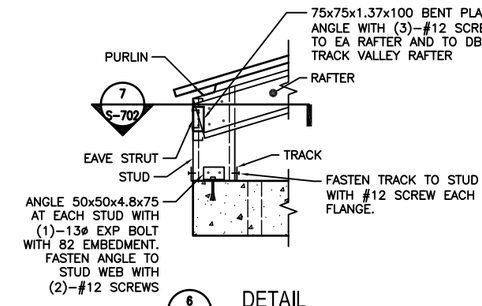
4 S-702 FUEL STORAGE TYPICAL ROOF BRACE LAYOUT

SCALE: NTS



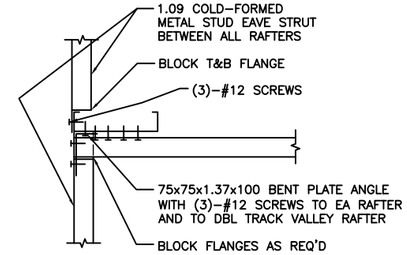
5 S-702 SECTION

SCALE: NTS



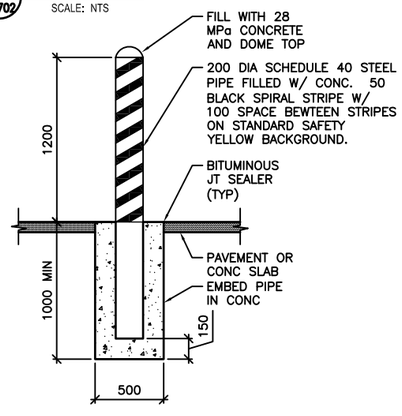
6 S-702 DETAIL

SCALE: NTS



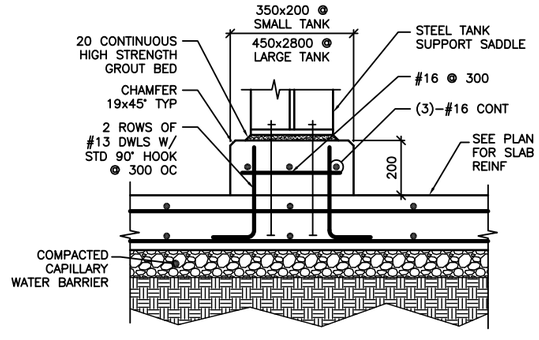
7 S-702 SECTION

SCALE: NTS



8 S-702 TYPICAL SECTION AT BOLLARD

SCALE: 1:20



9 S-702 FUEL TANK SADDLE SUPPORT PAD

SCALE: NTS

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS (mm)

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File name: AAAFSWRPS702
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Plot scale: 6/4

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Drawn by: RCC | Reviewed by: LHM
Submitted by: BAKER

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Michael Baker Jr., Inc.
A unit of Michael Baker Corporation
Airside Business Park
100 Airport Drive
Moon Township, PA 15108
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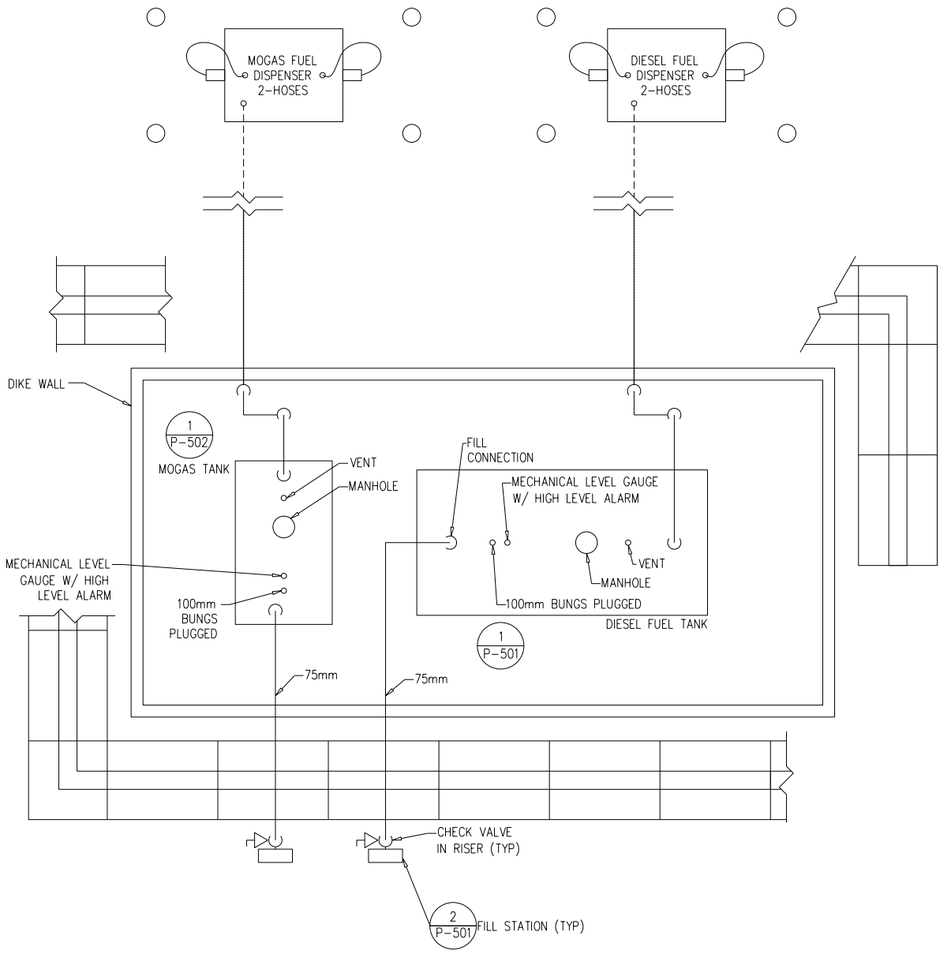
VARIOUS PROJECTS
VARIOUS LOCATIONS, AFGHANISTAN

FUEL STORAGE AND VEHICLE REFUELING POINT

TYPICAL DETAILS

Sheet reference number:
S–702



1
P-101

PLAN VIEW

SCALE: 1:50

NOTE:
PROVIDE EMERGENCY SHUT-OFF SWITCH
IN FUEL OPERATOR'S BUILDING.

0 500 1000 2000
SCALE: 1:50

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MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY:
DATE:
SOLICITATION NO.:
CONTRACT NO.:
PLOT SCALE: 1:1
PLOT STYLE TABLE:
PLOT DATE:
FILE NUMBER:
FILE NAME: AMAESVRPP-101.dwg
SIZE: ANSI D

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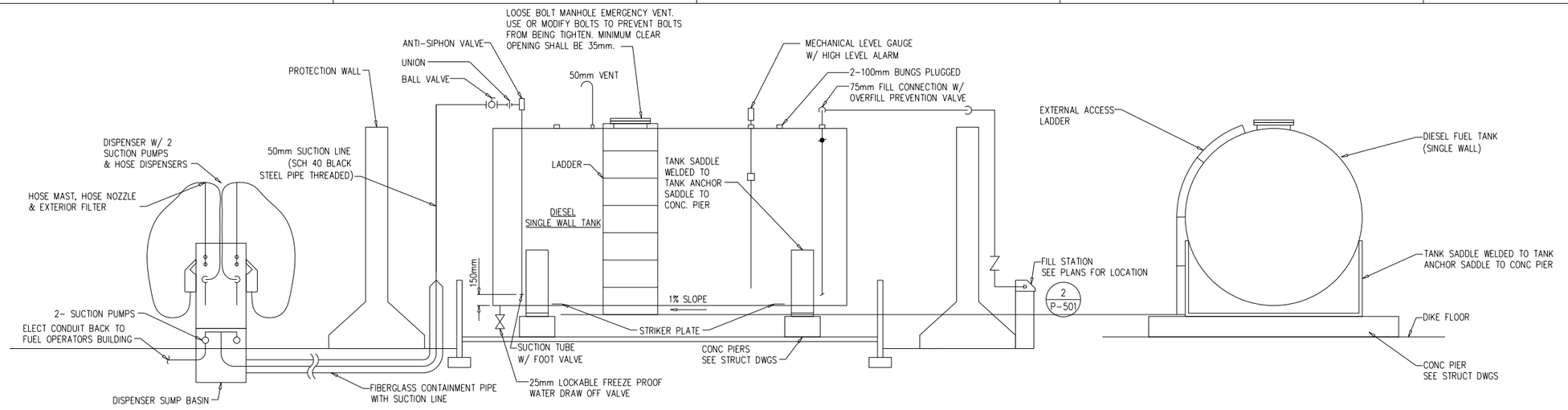
STANDARD BUILDING DESIGN
VARIOUS PROJECTS
VARIOUS LOCATIONS, AFGHANISTAN

VM03 - FUEL STORAGE & VEHICLE REFUELING POINT

PLAN VIEW

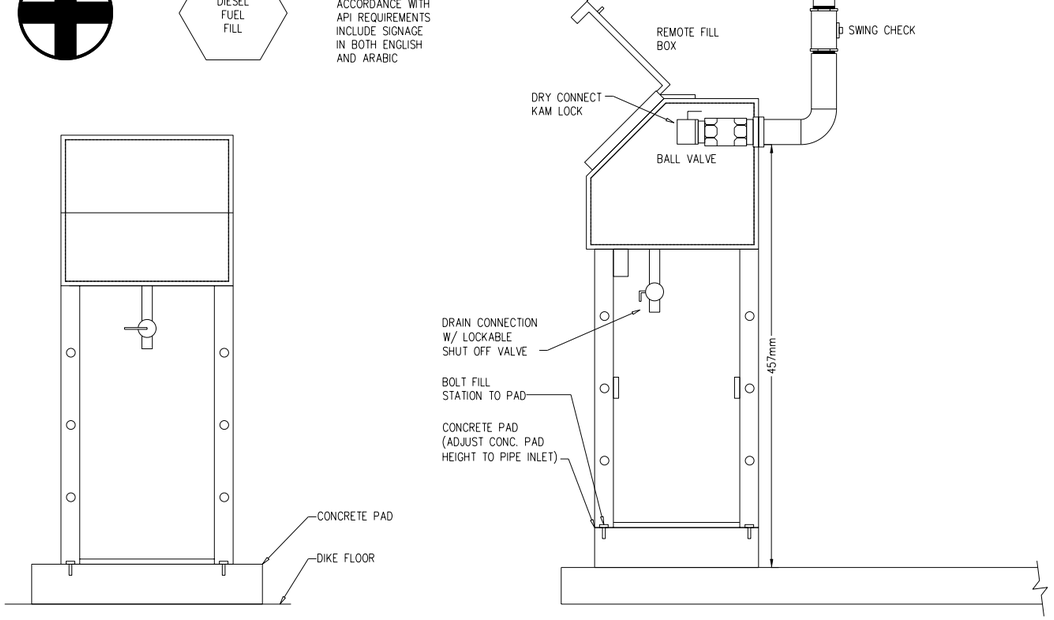
SHEET IDENTIFICATION
P-101
SHEET OF



1 P-501

DIESEL FUELING TANK DETAIL

SCALE: NONE



2 P-501

FILL STATION DETAIL

SCALE: NONE

AMERICAN PETROLEUM INSTITUTE (API) FILL PORT COLOR CODES AND SYMBOLS

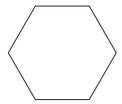
FILL PORT COLOR CODES

PRODUCT	COLOR
HIGH GASOLINE	RED
MIDDLE GASOLINE	BLUE
LOWER GASOLINE	WHITE
HIGHER UNLEADED GASOLINE	RED WITH WHITE CROSS
MIDDLE UNLEADED GASOLINE	BLUE WITH WHITE CROSS
LOWER UNLEADED GASOLINE	WHITE WITH BLACK CROSS
VAPOR RECOVERY	ORANGE
DIESEL	YELLOW

SYMBOLS

PRODUCTS	SYMBOL
GASOLINE PRODUCTS & VAPOR LINES	CIRCLE
OTHER DISTILLATES	HEXAGON
FUEL PRODUCTS CONTAINING EXTENDERS SUCH AS ALCOHOL	BORDER (BLACK AROUND WHITE AND WHITE AROUND ALL OTHERS)

EXAMPLES

SYMBOL & COLOR	PRODUCT
	LOWER UNLEADED GASOLINE
	DIESEL

NOTE: FUEL PUMPS / DISPENSERS SHALL BE DRESSER WAYNE MODEL RELIANCE G6200:
1 Lps; 380mm Hg; 0.75 KW; 220 VOLT,
1 PHASE, 50 Hz WITH METER/REGISTER OR EQUAL.

US Army Corps of Engineers
AFGHANISTAN ENGINEER DISTRICT

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY:
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CONTRACT NO:
FILE NUMBER:
PLOT SCALE: 1.0000
PLOT DATE:
SIZE: ANSI D
FILE NAME: ANAFSVRPP-501.dwg

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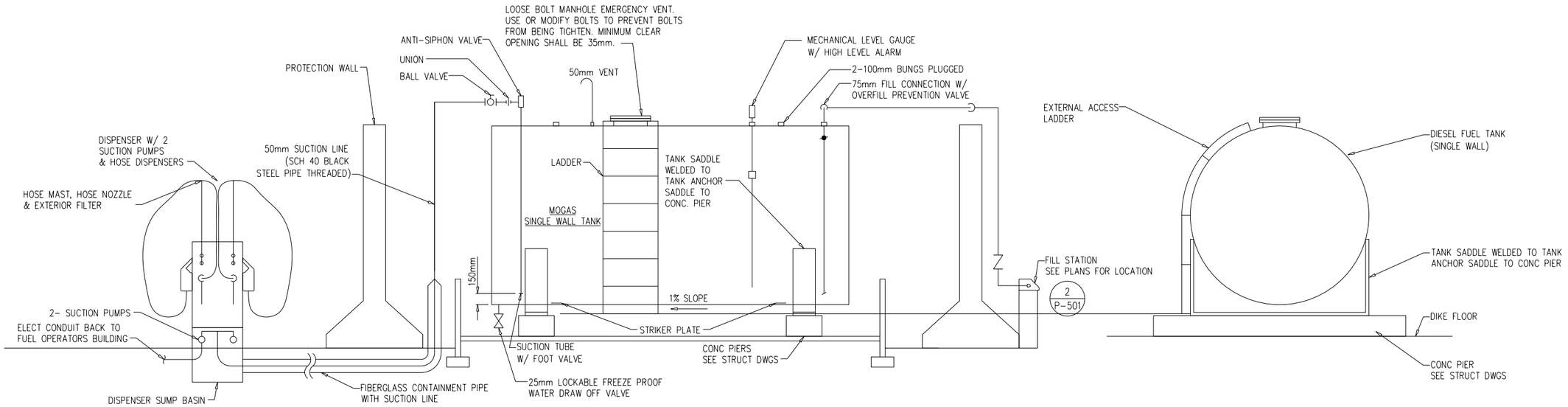
STANDARD BUILDING DESIGN
VARIOUS PROJECTS
VARIOUS LOCATIONS, AFGHANISTAN

VM03 - FUEL STORAGE & VEHICLE REFUELING POINT
FUEL STORAGE & VEHICLE REFUELING POINT DETAILS

SHEET IDENTIFICATION
P-501
SHEET OF



1 P-502

MOGAS FUELING TANK DETAIL

SCALE: NONE

NOTE: FUEL PUMPS / DISPENSERS SHALL BE DRESSER WAYNE MODEL RELIANCE G6200: 1 Lps; 380mm Hg; 0.75 KW; 220 VOLT, 1 PHASE, 50 Hz WITH METER/REGISTER OR EQUAL.

US Army Corps of Engineers® AFGHANISTAN ENGINEER DISTRICT

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

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AFGHANISTAN DISTRICT
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DWN BY: | CKD BY: | SOLICITATION NO.:
SUBMITTED BY: | CONTRACT NO.:
PLOT SCALE: N.T.S. | PLOT DATE: | FILE NUMBER:
SIZE: ANSI D | FILE NAME: ANAF9VRPP-A502.dwg

STANDARD BUILDING DESIGN
VARIOUS PROJECTS
VARIOUS LOCATIONS, AFGHANISTAN

VM03 - FUEL STORAGE & VEHICLE REFUELING POINT
FUEL STORAGE & VEHICLE REFUELING POINT
FUELING DETAILS

SHEET IDENTIFICATION
P-502
SHEET OF

LIGHTNING PROTECTION

AIR TERMINAL 20mm O.D. X 450mm SOLID COPPER, NICKEL PLATED ON ADHESIVE BASE

GROUND ROD

LIGHTING

LIGHTING FIXTURE – SEE FIXTURE SCHEDULE FOR MORE INFORMATION

MISCELLANEOUS

BRANCH CIRCUIT WIRING, SURFACE MOUNTED ON WALLS

HOME RUN BACK TO PANEL

POWER

J JUNCTION BOX

FUSIBLE SAFETY SWITCH

GENERAL PROJECT NOTES:

G1. UNLESS OTHERWISE NOTED, PROVIDE ALL EQUIPMENT SHOWN ON THE PLANS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL SYMBOLS SHOWN ON THE PLANS WITH THE SYMBOL LIST. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE INTENT OF ANY SYMBOL THAT IS SHOWN ON THE PLANS AND NOT INDICATED ON THE SYMBOL LIST WITH THE ENGINEER PRIOR TO BID.

G2. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES WITHIN THE CONSTRUCTION AREA THREE (3) WORKING DAYS NOTICE BEFORE COMMENCING DIGGING. NOTIFY THE LOCAL AUTHORITY HAVING JURISDICTION AND WAIT THE REQUIRED TIME BEFORE COMMENCING TO DIG.

GENERAL PROJECT NOTES: (CONT)

G3. THE CONTRACTOR SHALL COORDINATE CONDUIT RUNS, LIGHTING FIXTURES AND OTHER EQUIPMENT LOCATIONS WITH THE OTHER TRADE CONTRACTORS TO AVOID CONFLICTS.

G4. WHERE VOLTAGES AND FREQUENCIES ON THE DRAWINGS AND IN THE SPECIFICATIONS DIFFER FROM THE LOCAL ONES, ALL WORK SHALL BE PERFORMED USING THE LOCAL VOLTAGES AND FREQUENCIES.

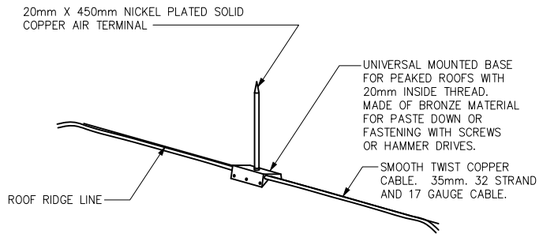
G5. THE MINIMUM WIRE SIZE ON THE PROJECT SHALL BE 4mm². THE MINIMUM CONDUIT SIZE SHALL BE 20mm. THE MINIMUM BREAKER SIZE SHALL BE 20 AMPS.

G6. THE CONTRACTOR SHALL PUT A MAXIMUM OF 6 DUPLEX RECEPTACLES ON A 20A SINGLE POLE CIRCUIT.

G7. WHERE THE 1010 SCOPE REVIEW, 1015 TECHNICAL REVIEW, DRAWINGS, AND SPECIFICATIONS DIFFER FROM AMERICAN CODES OR STANDARDS, THE 1010, 1015, DRAWINGS, AND SPECIFICATIONS SHALL RULE.

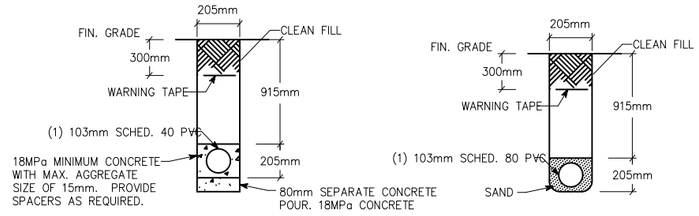
G8. ALL CONDUIT AND DEVICES SHALL BE SURFACE MOUNTED UNLESS OTHERWISE INDICATED.

G9. CONTRACTOR SHALL COORDINATE ALL WORK WITH ALL OTHER TRADES TO ENSURE ALL WORK IS COMPLETED IN A PROFESSIONAL, WORKMAN–LIKE MANNER.



1 E-001 LIGHTNING PROTECTION AIR TERMINAL DETAIL

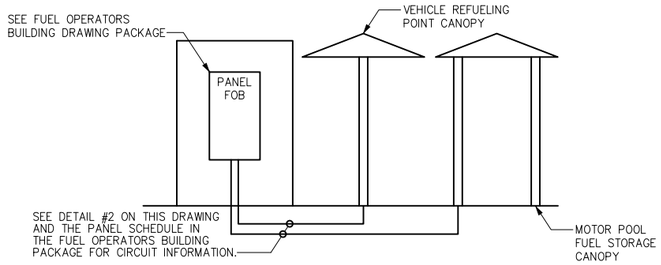
SCALE: N.T.S.



NOTE: PVC CONDUIT SHALL BE DIRECT BURIED SCHEDULE 80 FOR NO TRAFFIC AREAS AND CONCRETE–ENCASED SCHEDULE 40 FOR UNDER ROADWAYS OR TRAFFIC AREAS.

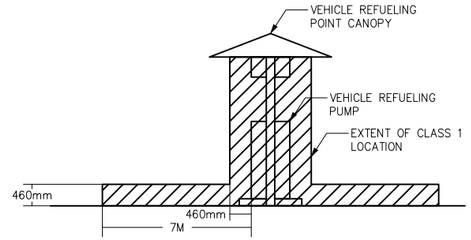
2 E-001 TYPICAL DUCT BANK DETAILS FOR CONDUIT IN SAND OR CONCRETE

SCALE: N.T.S.



3 E-001 MOTOR POOL CANOPIES RISER DIAGRAM

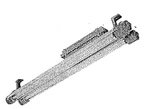
SCALE: N.T.S.

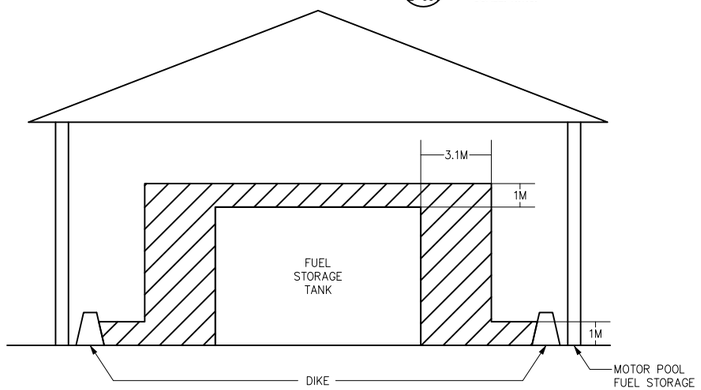


4 E-001 EXTENT OF CLASS 1 LOCATION AT VEHICLE REFUELING CANOPY

SCALE: N.T.S.

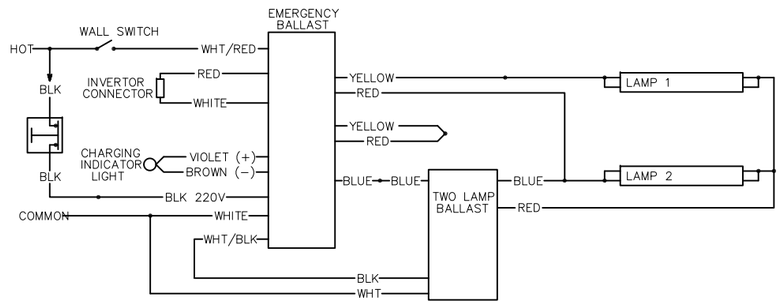
FIXTURE MARK 'J'





5 E-001 EXTENT OF CLASS 1 LOCATION AT FUEL STORAGE CANOPY

SCALE: N.T.S.



6 E-001 EMERGENCY FIXTURE WIRING DIAGRAM

SCALE: N.T.S.

LIGHT FIXTURE SCHEDULE

FIXTURE MARK	STYLE NUMBER AND TYPE	NUMBER AND TYPE OF LAMPS	VOLTAGE	MOUNTING	NOTES
J	EXPLOSION–PROOF (2) LAMP FIXTURE PROVIDED WITH LAMPS. COPPER FREE, ALUMINUM HOUSING, TEMPERED BOROSILICATE GLASS, AND BIAX LAMPS WITH WIRE GUARD	(2) 40W 3500K BIAX FLUORESCENT LAMPS	220V – 1ø 50HZ	PENDANT MOUNTED FROM CEILINGS	FURNISHED WITH LOW TEMPERATURE BALLASTS, LAMPS, AND WIRE GUARD
J2	SAME AS FIXTURE 'J' WITH EMERGENCY BALLAST	(2) 40W 3500K BIAX FLUORESCENT LAMPS	220V – 1ø 50HZ	PENDANT MOUNTED FROM CEILINGS	FURNISHED WITH LOW TEMPERATURE BALLASTS, LAMPS, EMERGENCY BALLAST WITH SELF TEST SWITCH AND WIRE GUARD

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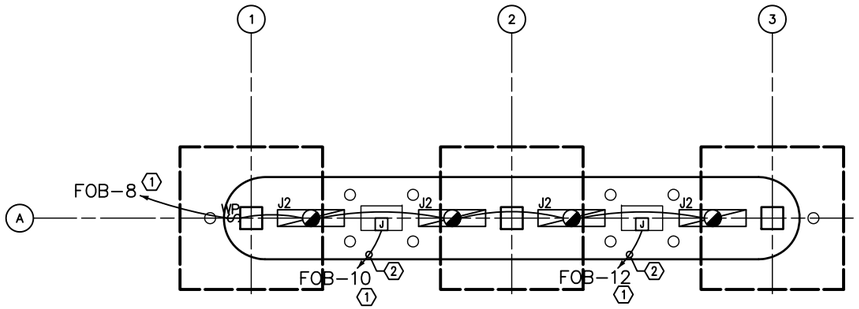
AFGHANISTAN ENGINEER DISTRICT
APO AE 96338

Michael Baker, Jr., Inc.
A unit of Michael Baker Corporation
Airside Business Park
100 Airport Drive
Moon Township, PA 15108
www.mbakercorp.com

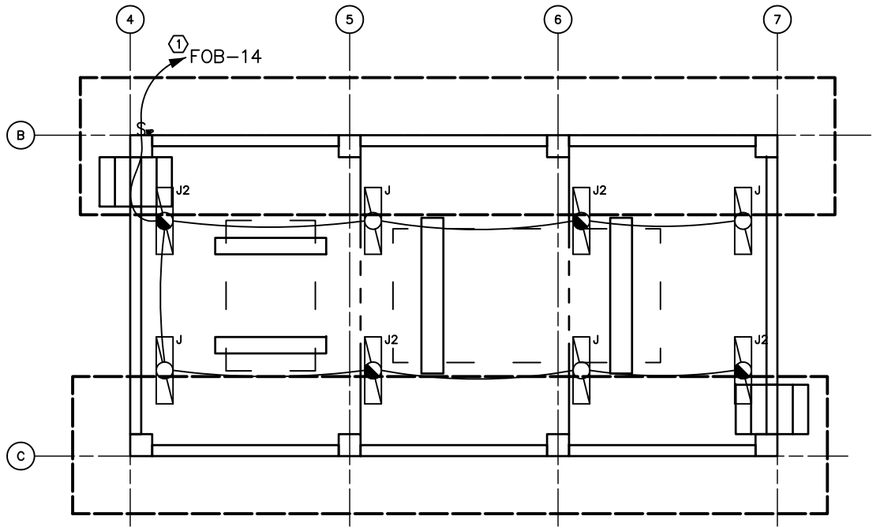
STANDARD DESIGN
VARIOUS PROJECTS
VARIOUS LOCATIONS, AFGHANISTAN

FUEL STORAGE AND VEHICLE REFUELING POINT
ELECTRICAL SYMBOLS, SCHEDULES, AND DETAILS

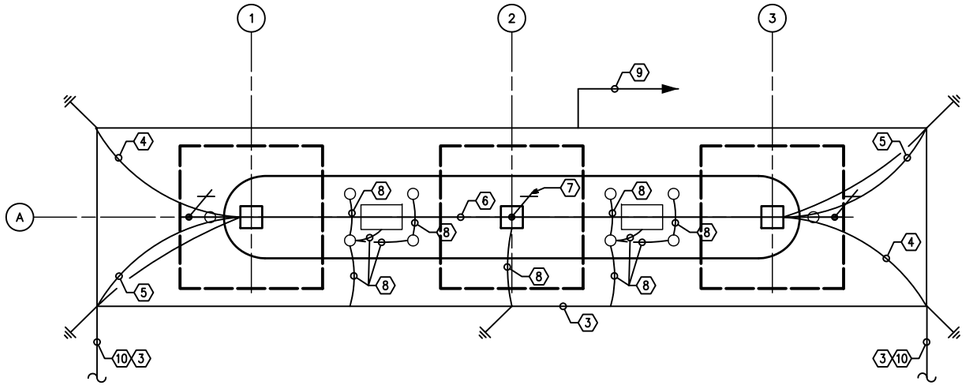
Sheet reference number:
E–001



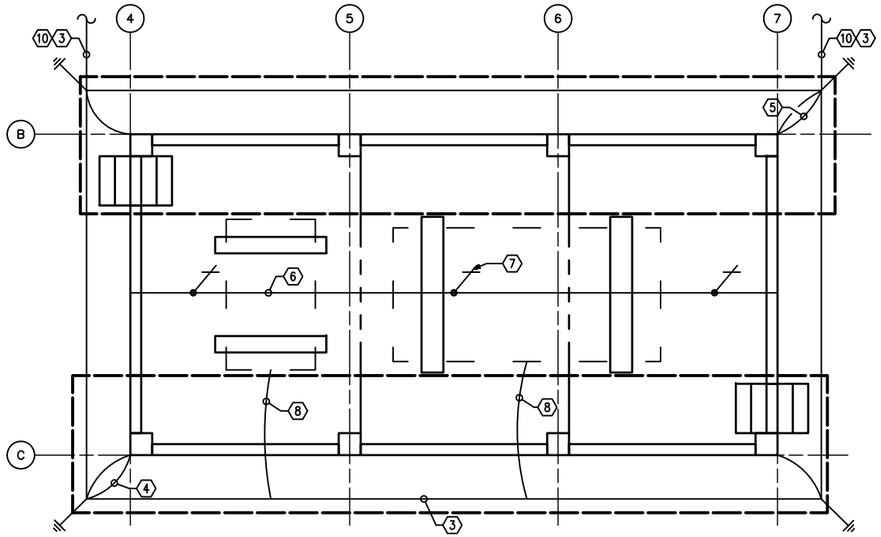
1 E-101 VEHICLE REFUELING POINT LIGHTING AND POWER PLAN
SCALE: 1:50



2 E-101 VEHICLE REFUELING POINT FUEL STORAGE LIGHTING AND POWER PLAN
SCALE: 1:50



3 E-101 VEHICLE REFUELING POINT LIGHTNING PROTECTION PLAN
SCALE: 1:50



4 E-101 VEHICLE REFUELING POINT FUEL STORAGE LIGHTNING PROTECTION PLAN
SCALE: 1:50

GENERAL NOTES:

1. REFER TO DRAWING #E-001 FOR THE ELECTRICAL SYMBOLS LIST.
2. REFER TO DRAWING #E-001 FOR THE LIGHTING FIXTURE SCHEDULE.
3. REFER TO DRAWING #E-001 FOR THE POWER RISER.
4. REFER TO FUEL OPERATORS BUILDING PACKAGE DRAWINGS #E-602 FOR PANEL SCHEDULES.

GENERAL NOTES (CONT.):

5. ALL PANELS, DEVICES, EQUIPMENT, ETC. SHALL BE EXPLOSION-PROOF OR SHALL BE PROVIDED WITH AN EXPLOSION-PROOF ENCLOSURE. ALL WORK IN THIS AREA SHALL BE IN ACCORDANCE WITH NEC ARTICLE 511. EXPLOSION-PROOF EQUIPMENT SHALL BE USED FOR ALL FIXTURES AND DEVICES. PROVIDE CONDUIT SEALS WHERE REQUIRED. ALL WIRING SHALL BE IN ACCORDANCE WITH NEC ARTICLE 501 FOR CLASS I LOCATIONS.

NUMBERED NOTES:

(1) THE HOMERUN FOR THIS CIRCUIT SHALL BE ROUTED TO A 220V, 20A/1P CIRCUIT BREAKER IN PANEL FOB SERVING THE FUEL OPERATORS BUILDING. CONDUIT SHALL BE RMC OR IMC WITH LISTED SEALS AND INSTALLED IN ACCORDANCE WITH NEC ART. 514. SEE FUEL OPERATORS BUILDING PACKAGE FOR THE LOADS FROM THESE PUMPS.

(2) THIS CIRCUIT SHALL BE CONTROLLED BY THE EMERGENCY CUT OFF SWITCH IN THE FUEL OPERATORS BUILDING. SEE THE FUEL OPERATORS BUILDING PACKAGE FOR THE APPROXIMATE LOCATION OF THESE CUT OFF SWITCHES.

NUMBERED NOTES (CONT.):

(3) (1) 120.0mm² BARE, TINNED, COPPER COUNTERPOISE GROUND 700mm BELOW GRADE FOR GROUNDING OF METALLIC EQUIPMENT AND CONNECTION TO LIGHTNING PROTECTION.

(4) INSTALL DOWN CONDUCTOR IN 25mm SCHEDULE 80 PVC CONDUIT TO 20mm DIAMETER X 3 METERS SOLID COPPER TINNED GROUND ROD. (TYPICAL)

(5) CADWELD TO CANOPY STRUCTURE AT 18 METERS ON CENTER AROUND THE ENTIRE PERIMETER OF THE STRUCTURE. (TYPICAL)

(6) 120mm² LIGHTNING PROTECTION CABLE INSTALLED ON THE TOP RIDGE OF THE ROOF.

NUMBERED NOTES (CONT.):

(7) AIR TERMINAL. TERMINALS SHALL BE PLACED AT A MAXIMUM OF 6M ON CENTER PER NFPA 780 PARA. 4.8.2.1 AND WITHIN 0.6M OF RIDGE ENDS PER NFPA 780 PARA. 4.8 (TYPICAL)

(8) 120.0mm² BARE, TINNED, COPPER FROM GROUNDING LOOP TO METALLIC EQUIPMENT AND REBAR.

(9) 120.0mm² BARE, TINNED, COPPER TO FUEL OPERATOR'S BUILDING GROUND SYSTEM.

(10) GROUNDING CONNECTION BETWEEN VEHICLE REFUELING POINT AND FUEL STORAGE.

0 1000 2000
SCALE: 1:50

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US ARMY CORPS OF ENGINEERS
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U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT
APO AE 96338

Michael Baker Jr, Inc
A unit of Michael Baker Corporation
Airside Business Park
100 Airport Drive
Moon Township, PA 15108
www.mbakercorp.com

STANDARD DESIGN
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VARIOUS LOCATIONS, AFGHANISTAN

FUEL STORAGE AND VEHICLE REFUELING POINT
ELECTRICAL LIGHTING, POWER, AND LIGHTNING PROTECTION PLAN

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