UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT

USAID
FROM THE AMERICAN PEOPLE

USAID THREE TOWERS PROTOTYPE DESIGN AFGHANISTAN

NOT FOR CONSTRUCTION

NOTE: A3 SIZE REDUCED TO HALF SCALE.

PROTOTYPE DESIGN SUBMITTAL

This project was made possible by the United States Agency for International Development and the generous support of the American People through USAID Global Architecture and Engineering IQC Contracts.

SYMB	DESCRIPTION	DATE	APR
A	PROTOTYPE DESIGN SUBMITTAL	08/15/10	SGW

DESIGNED BY: PJB
DRAWN BY: PJB
CHECKED BY: SGW
DATE: 08-15-10
SUBMITTED BY: TETRA TECH
FILE NO.: TWR00-G-000

USAID FROM THE AMERICAN PEOPLE

TETRA TECH

USAID THREE TOWERS
PROTOTYPE DESIGN, AFGHANISTAN

TITLE SHEET

SHEET REFERENCE NUMBER:
TWR00
G-000

INDEX OF DRAWINGS
PROTOTYPE DESIGN

SHEET REFERENCE NUMBER	ISSUE STATUS	DATE OF ISSUE	DRAWING TITLE
GENERAL DRAWINGS			
TWR00-G-000	REV A	08-15-10	TITLE SHEET
TWR00-G-001	REV A	08-15-10	INDEX OF DRAWINGS
STRUCTURAL DRAWINGS			
TWR00-S-001	REV A	08-15-10	GENERAL NOTES SHEET 1 OF 2
TWR00-S-002	REV A	08-15-10	GENERAL NOTES SHEET 2 OF 2
TWR00-S-100	REV A	08-15-10	TOWER PLAN & ELEVATION
TWR00-S-200	REV A	08-15-10	TOWER FOUNDATION PLAN & ELEVATION SHEET 1 OF 2
TWR00-S-201	REV A	08-15-10	TOWER FOUNDATION PLAN & ELEVATION SHEET 2 OF 2
TWR00-S-300	REV A	08-15-10	BRACE CONFIGURATION DETAILS SHEET 1 OF 5
TWR00-S-301	REV A	08-15-10	BRACE CONFIGURATION DETAILS SHEET 2 OF 5
TWR00-S-302	REV A	08-15-10	BRACE CONFIGURATION DETAILS SHEET 3 OF 5
TWR00-S-303	REV A	08-15-10	BRACE CONFIGURATION DETAILS SHEET 4 OF 5
TWR00-S-304	REV A	08-15-10	BRACE CONFIGURATION DETAILS SHEET 5 OF 5
TWR00-S-305	REV A	08-15-10	MEMBER SCHEDULE
TWR00-S-500	REV A	08-15-10	DAIGONAL CONNECTION DETAILS SHEET 1 OF 2
TWR00-S-501	REV A	08-15-10	DAIGONAL CONNECTION DETAILS SHEET 2 OF 2
TWR00-S-502	REV A	08-15-10	BOLT CONNECTION DETAILS
TWR00-S-503	REV A	08-15-10	FIXED CLIMBING LADDER DETAILS

SHEET REFERENCE NUMBER	ISSUE STATUS	DATE OF ISSUE	DRAWING TITLE
ELECTRICAL DRAWINGS			
TWR00-E-001	REV A	08-15-10	GROUNDING LAYOUT
TWR00-E-002	REV A	08-15-10	GROUNDING DETAILS
TWR00-E-003	REV A	08-15-10	TOWER ELEVATION VIEW AND OBSTRUCTION LIGHTING MATERIALS
TWR00-E-004	REV A	08-15-10	TOWER PLAN VIEW OBSTRUCTION LIGHTING SCHEMATICS

SHEET REFERENCE NUMBER	ISSUE STATUS	DATE OF ISSUE	DRAWING TITLE

NOT FOR CONSTRUCTION

NOTE: A3 SIZE REDUCED TO HALF SCALE.

PROTOTYPE DESIGN SUBMITTAL

This project was made possible by the United States Agency for International Development and the generous support of the American People through USAID Global Architecture and Engineering IQC Contracts.

A	PROTOTYPE DESIGN SUBMITTAL	08/15/10	SGW
SYMB	DESCRIPTION	DATE	APR

DESIGNED BY: PJB | DRAWN BY: PJB | CHECKED BY: SGW | DATE: 08-15-10 | SUBMITTED BY: TETRA TECH | FILE NO.: TWR00-G-001

USAID FROM THE AMERICAN PEOPLE

TETRA TECH

USAID THREE TOWERS
PROTOTYPE DESIGN, AFGHANISTAN

INDEX OF DRAWINGS

SHEET REFERENCE NUMBER:
TWR00
G-001

GENERAL NOTES:

1. ALL LINEAR DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE (UNO).
2. ALL DIMENSIONS AND CONDITIONS SHALL BE VERIFIED IN THE FILED BY THE CONTRACTOR AND ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTING OFFICER BEFORE PROCEEDING WITH THE AFFECTED PORTION OF THE WORK.
3. CONTRACTOR SHALL INFORM THE CONTRACTING OFFICER OF ALL DISCREPANCIES BETWEEN DRAWINGS OF DIFFERENT TRADES, PRIOR TO INITIATION OF ANY WORK.
4. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CONTRACTING OFFICER WHEN, IN THE COURSE OF CONSTRUCTION, CONDITIONS ARE UNCOVERED WHICH ARE UNANTICIPATED OR OTHERWISE APPEAR TO PRESENT A DANGEROUS CONDITION.
5. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH CIVIL SHOP DRAWINGS.
6. SECTIONS AND DETAILS SHOWN ARE TO BE CONSIDERED TYPICAL FOR ALL SIMILAR CONDITIONS.
7. WORK NOT INDICATED AS PART OF THE DRAWINGS BUT REASONABLY IMPLIED TO BE SIMILAR TO THAT SHOWN AT CORRESPONDING LOCATIONS SHALL BE INCLUDED.

DESIGN LOADS:

ALL LOADS ARE IN ACCORDANCE WITH TIA-222-G UNO.

1. DEAD LOADS: TOWERS, ACCESSORIES, AND ATTACHMENTS
2. LIVE LOADS: NOT APPLICABLE
3. WIND LOADS:

BASIC WIND SPEED:	145 KM/H (WITHOUT ICE)
	64.4 KM/H (WITH ICE)
DEFLECTION CALCULATIONS:	96.6 KM/H
STRUCTURE CLASS:	III
EXPOSURE CATEGORY:	C
TOPOGRAPHIC CATEGORY:	1
CREST HEIGHT:	0.00 M

4. ICE LOADS:

ICE DENSITY	897 KG/CM
ICE THICKNESS	50.8 MM (NOMINAL)
ICE THICKNESS CONSIDERED TO INCREASE WITH HEIGHT	

SEISMIC DESIGN: SEISMIC SPECTRAL RESPONSE BASED ON Ss=1.25 AND S1=0.60, SITE CLASS D, IMPORTANCE FACTOR I = 1.00. IN ACCORDANCE WITH ASCE 7-05. COMBINATION OF ORTHOGONAL SEISMIC LOADS IS NOT REQUIRED FOR NON-BUILDING STRUCTURES PER ASCE 7-05, SECTION 12.5, AND IS NOT REQUIRED BY TIA-222-G. THEREFORE TRANSVERSE AND LONGITUDINAL EARTHQUAKE LOADING ARE CONSIDERED SEPARATELY AND INDEPENDENTLY.

5. EQUIPMENT LOADS ARE BASED ON THE TABLE TITLED "EQUIPMENT LOADS."

FOUNDATIONS:

1. FOUNDATIONS HAVE BEEN DESIGNED FOR THE FOLLOWING ASSUMED GEOTECHNICAL PARAMETERS:

   ALLOWABLE BEARING CAPACITY = 1.0 kg/cm² [2000 PSF]
   MODULUS OF SUBGRADE REACTION = 27.145 MPa/m [100 PSI/IN]
   Ka = 0.33
   Kp = 3.0
   Ko = 0.50

2. THE CONTRACTOR SHALL VERIFY ACTUAL SUBSURFACE CONDITIONS MEET ASSUMED GEOTECHNICAL DESIGN PARAMETERS.
3. ALL FOOTINGS SHALL BE PLACED ON NATURAL UNDISTURBED SOIL OR ON COMPACTED SELECT GRANULAR MATERIAL FILL PREPARED AS FOLLOWS:
   (A) REMOVE UNSUITABLE MATERIAL BELOW THE FOOTING AND REPLACE WITH COMPACTED SELECT GRANULAR MATERIAL FILL TO A DEPTH WHERE NATURAL SOIL AND OR COMPACTED FILL IS ENCOUNTERED.
   (B) FILL MATERIAL MUST BE PLACED IN LIFTS UP TO A MINIMUM OF 150mm THICKNESS. EACH LIFT SHALL BE COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D1557 AT MOISTURE CONTENT WITHIN MINUS 1% TO PLUS 2% OF THE OPTIMUM.
4. ALL DIMENSIONS, ELEVATIONS AND EXISTING CONDITIONS SHALL BE VERIFIED IN THE FIELD
5. BEARING SOIL SHALL BE INSPECTED AND APPROVED BY THE QUALITY CONTROL ENGINEER BEFORE CONSTRUCTING ANY FOOTINGS. NO FOUNDATION CONCRETE SHALL BE PLACED IN WATER OR ON FROZEN SUBGRADE MATERIAL.

ABBREVIATIONS AND SYMBOLS

ADD'L	ADDITIONAL	FIN. GR.	FINISHED GRADE	T&B	TOP AND BOTTOM
ALT.	ALTERNATE	FTG	FOOTING	T.O.	TOP OF
ARCH	ARCHITECTURAL	INFO	INFORMATION	T.O.S.	TOP OF STEEL
BOT.	BOTTOM	JT.	JOINT	TYP.	TYPICAL
B.O.	BOTTOM OF	LLH	LONG LEG HORIZONTAL	U.N.O.	UNLESS NOTED OTHERWISE
BSMT	BASEMENT	LLV	LONG LEG VERTICAL	VERT.	VERTICAL
CLR	CLEAR	MFR.	MANUFACTURER	VIF	VERIFY IN FIELD
CONT.	CONTINUOUS	MAX.	MAXIMUM	WP	WORKING POINT
COL	COLUMN	MIN.	MINIMUM		
COORD.	COORDINATE	N-S	NORTH-SOUTH		
CTR.	CENTER	NO.	NUMBER		
DEMO	DEMOLITION	O.C.	ON CENTER		
DIA.	DIAMETER	O.D.	OUTSIDE DIAMETER		
DN	DOWN	OPN'G	OPENING		
DWG	DRAWING	PL	PLATE		
E-W	EAST-WEST	PROP.	PROPOSED		
E.F.	EACH FACE	PSF	POUNDS PER SQUARE FOOT		
EL.	ELEVATION	REINF.	REINFORCING		
EOD	EDGE OF DECK	SIM	SIMILAR		
EOS	EDGE OF SLAB	SQ.	SQUARE		
EQ.	EQUAL	SS	STAINLESS STEEL		
E.W.	EACH WAY	STD	STANDARD		
EXIST	EXISTING	STIFF	STIFFENER		
FDN	FOUNDATION	STRUCT	STRUCTURAL		

CONSTRUCTION JOINT
DIRECTION OF SLOPE
DIRECTION OF SPAN
℄ PLATE
℄ CENTERLINE
DO DITTO

FOUNDATIONS (CONT.):

6. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE TEMPORARY SUPPORT AS NECESSARY DURING EXCAVATION AND UNDERPINNING TO MAINTAIN THE INTEGRITY OF ANY ADJACENT EXISTING STRUCTURES AND/OR INFRASTRUCTURE.
7. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CONTRACTING OFFICER IF THE EXISTING SOIL CONDITIONS DO NOT MEET THE MINIMUM REQUIREMENTS, AND IF LOADING CRITERIA DIFFERS FROM WHAT IS PRESENTED HEREIN.

CAST IN PLACE CONCRETE:

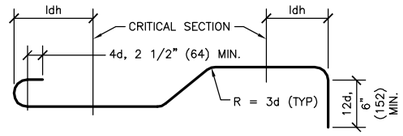
1. CONCRETE WORK SHALL CONFORM TO:
   ACI 301-05 - SPECIFICATIONS FOR STRUCTURAL CONCRETE.
   ACI 318-08 - BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE AND COMMENTARY.
2. CONCRETE SHALL HAVE A MINIMUM CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS, F'C = 28 MPa (4000 PSI). THE MAXIMUM WATER-CEMENT RATIO OF 0.45 (BY WEIGHT). ALL CONCRETE EXPOSED TO WEATHER SHALL BE AIR-ENTRAINED.
3. CONCRETE SHALL BE CONTROLLED NORMAL WEIGHT CONCRETE, PROPORTIONED, MIXED AND PLACED UNDER THE SUPERVISION OF AN APPROVED QUALITY CONTROL ENGINEER.
4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING:

(A) CONCRETE PLACED AGAINST THE EARTH	75mm
(B) SIDES OF FOOTINGS, & PEDESTALS	
18 ø BAR AND LARGER	50mm
16 ø BAR AND SMALLER	40mm
(C) BEAMS AND COLUMNS	40mm
(D) ELEVATED SLABS, WALLS, AND SLABS-ON-GRADE (FROM TOP)	40mm

5. CHAMFER EXPOSED EDGES 20mm U.N.O.
6. ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60. SEE SPLICE TABLE FOR LAP LENGTHS. MINIMUM YIELD STRENGTH FY = 4218 kg/cm²
7. DO NOT WELD OR BEND REINFORCEMENT IN FIELD UNLESS SPECIFICALLY SHOWN OR APPROVED BY ENGINEER.
8. REINFORCING BARS EXTEND 12 BAR DIAMETERS BUT NOT LESS THAN 300mm BEYOND BEND U.N.O.
9. NO BARS SHALL BE CUT OR OMITTED IN THE FIELD FOR CONDUIT. BARS MAY BE MOVED ASIDE WITHOUT CHANGE IN LEVEL WITH THE APPROVAL OF THE QUALITY CONTROL ENGINEER.
10. REINFORCEMENT STEEL SHALL BE CONTINUOUS THROUGH ALL CONSTRUCTION JOINTS. ALL CONSTRUCTION JOINTS SHALL BE KEYED U.N.O.
11. WHERE VERTICAL CONSTRUCTION JOINTS ARE NOT SHOWN, OR WHEN ALTERNATE LOCATIONS ARE PROPOSED, DRAWINGS SHOWING LOCATION OF CONSTRUCTION JOINTS AND CONCRETE PLACING SEQUENCE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PREPARATION OF THE REINFORCEMENT SHOP DRAWINGS. CONCRETE SHALL BE PLACED WITHOUT HORIZONTAL CONSTRUCTION JOINTS U.N.O.
12. ALL KEYS SHALL BE 50mm BY 100mm NOMINAL U.N.O.
13. DETAILING, FABRICATION, AND ERECTION OF REINFORCEMENT SHALL CONFORM TO ACI 318 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, ACI 315 DETAILS AND DETAILING OF CONCRETE REINFORCEMENT, AND CRSI MANUAL OF STANDARD PRACTICE.
14. CONTRACTOR SHALL COORDINATE LOCATIONS OF ELECTRICAL CONDUITS, GROUNDS, SLEEVES, INSERTS, ETC. WITH CONCRETE CONSTRUCTION. NO PIPES SHALL PASS THROUGH CONCRETE WITHOUT THE PERMISSION OF THE CONTRACTING OFFICER. STEEL PIPE SLEEVES SHALL BE PROVIDED AND SPACED A MINIMUM OF THREE PIPE DIAMETERS ON CENTER. CONDUIT AND OTHER EMBEDDED ITEMS SHALL BE CLEAN AND FREE OF OIL AND OTHER FOREIGN MATTER SUCH AS LOOSE COATINGS OR RUST, PAINT AND SCALE.
15. PROVIDE ALL NECESSARY CHAIRS, CHAIR BARS, SPACERS, ETC., WIRED SECURELY TO HOLD REINFORCEMENT IN POSITION. THESE ACCESSORIES SHALL BE PLASTIC BOOTED WHERE CONCRETE IS TO BE EXPOSED TO WEATHER OR MOISTURE. WIRE TIES SHALL BE 1.5 mm ø OR HEAVIER BLACK ANNEALED STEEL WIRE.
16. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING REINFORCING STEEL PLACEMENT, SCHEDULES, SIZES, GRADES, AND SPLICING AND BENDING DETAILS. DRAWINGS SHALL SHOW SUPPORT DETAILS INCLUDING TYPES, SIZES AND SPACING.
17. REINFORCEMENT SHALL BE STORED OFF THE GROUND ON PLATFORMS, SKIDS OR OTHER SUPPORTS.

LEGEND (FOR REINFORCING SHOWN IN PLAN OR ELEVATION)

	90° HOOK IN THE PLANE OF THE DRAWING				
	90° BEND PERPENDICULAR TO THE PLANE OF THE DRAWING				
	HOOK PERPENDICULAR TO THE PLANE OF THE DRAWING				
	180° HOOK IN THE PLANE OF THE DRAWING				
	OFFSET IN THE PLANE OF THE DRAWING				
BAR SIZE	ø10	ø12	ø16	ø20	ø25
ldh	190	230	305	380	475



180° HOOK 45° BEND 90° HOOK

NOTE: "d" = BAR DIAMETER.

BENDS IN REINFORCING BARS
N.T.S.

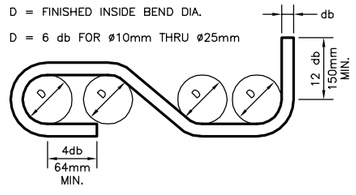
MINIMUM RE-BAR SPLICE LENGTHS mm*
fy = 60,000 psi f'c = 4,000 psi

BAR SIZE ømm	TOP BARS*	OTHER BARS
10	650	500
12	815	635
16	1016	788
20	1220	940
25	2032	1550

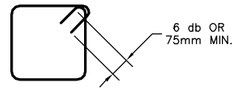
SPLICE NOTES

1. BASED ON NORMAL WEIGHT CONCRETE, UNCOATED BARS, CLEAR SPACING NOT LESS THAN FOUR BAR DIAMETERS, AND CLEAR COVER NOT LESS THAN 40mm.
2. WHERE SPACING BETWEEN BARS IS LESS THAN FOUR BAR DIAMETERS, OR CLEAR COVER IS LESS THAN TWO BAR DIAMETERS, INCREASE SPLICE LENGTHS SHOWN BY 50%.
3. ** HORIZONTAL BARS WITH MORE THAN 300mm OF CONCRETE CAST BELOW THE BARS AS DEFINED BY A.C.I. 318. WHERE HORIZONTAL WALL REINFORCEMENT IS UNIFORMLY SPACED IN A VERTICAL PLANE AT 300mm MAXIMUM SPACING, LENGTHS MAY BE AS FOR 'OTHER BARS'.

BEND DIAMETER SCHEDULE
db = BAR DIAMETER
D = FINISHED INSIDE BEND DIA.
D = 6 db FOR ø10mm THRU ø25mm



STANDARD HOOKS AND BENDS
WALL BARS SHALL BE TIED TOGETHER



PEDESTAL TIES
SPLICES FOR SUCCESSIVE TIES TO BE PLACED AT ALTERNATE CORNERS

TYPICAL REINFORCING BAR STIRRUPS AND TIES
N.T.S.

NOT FOR CONSTRUCTION

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

NOTE: A3 SIZE REDUCED TO HALF SCALE.

PROTOTYPE DESIGN SUBMITTAL

SYMB	DESCRIPTION	DATE	APR
A	PROTOTYPE DESIGN SUBMITTAL	08/15/10	SGW

This project was made possible by the United States Agency for International Development and the generous support of the American People through USAID Global Architecture and Engineering IQC Contracts.

DESIGNED BY: FPH | DATE: 08-15-10
DRAWN BY: WAS | SUBMITTED BY: TETRA TECH
CHECKED BY: FPH | FILE NO.: TWR00-S-001

USAID FROM THE AMERICAN PEOPLE
TETRA TECH

USAID THREE TOWERS
PROTOTYPE DESIGN, AFGHANISTAN

GENERAL NOTES
SHEET 1 OF 2

SHEET REFERENCE NUMBER:
TWR00
S-001

p:\1298\127-1298-10001-it0013\CAD\SheetFiles\TWR00_ALL\04_Structural\TWR00-S-001.dwg 8/13/2010 3:08:11 PM Loridas, Stephen

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL WORK SHALL CONFORM TO:
   AISC – CODE OF STANDARD PRACTICE FOR STEEL BUILDING AND BRIDGES, 13TH EDITION
   AISC – SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS
   AWS D1.1–05 – STRUCTURAL WELDING CODE – STEEL
   AISC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS

2. STRUCTURAL STEEL SHALL CONFORM TO:
   A. W SHAPES, ANGLES, PLATES AND BARS SHALL CONFORM TO ASTM A36, MIN. YIELD STRENGTH = 248 MPa (36 KSI).
   B. CONNECTION BOLTS SHALL CONFORM TO ASTM A325 OR A490.
   C. ANCHOR BOLTS SHALL CONFORM TO ASTM A 307 USING A 36 STEEL.
   D. WELDED HOOKED OR HEADED STUDS SHALL CONFORM TO AWSD1.1 – TYPE B
   E. STRUCTURAL STEEL PIPE SHALL ALL CONFORM TO ELECTRIC RESISTANCE WELDED OR SEAMLESS PER DIN, BS, AISC, OR EN STANDARDS, WITH MINIMUM YIELD STRENGTH OF 345 MPa.

3. ALL WELDING SHALL BE SHOP WELDS DONE BY APPROVED WELDERS WITH E70XX ELECTRODES BY AN APPROVED FABRICATOR. NO FIELD WELDING WILL BE ALLOWED. WELDS SHALL BE FULL PENETRATION GROOVE WELDS AND SHALL DEVELOP THE FULL STRENGTH OF THE MATERIALS BEING WELDED, U.N.O. MINIMUM FILLET WELD SHALL BE 5mm.

4. FIELD CUTTING OF STRUCTURAL STEEL OR ANY FIELD MODIFICATIONS OF STRUCTURAL STEEL SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL OF THE ENGINEER FOR EACH SPECIFIC CASE.

5. NON–SHRINK GROUT SHALL BE USED BELOW THE BEARING PLATES.

6. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING MATERIAL, SIZES, SPACING AND LOCATIONS OF STRUCTURAL MEMBERS AND CONNECTIONS. INDICATE WELDED CONNECTIONS AND NET WELD LENGTHS.

7. SPLICING STRUCTURAL MEMBERS WHERE NOT DETAILED ON THE DRAWINGS IS PROHIBITED WITHOUT PRIOR APPROVAL OF THE ON–SITE REPRESENTATIVE.

8. THE CONTRACTOR SHALL SUPPLY ALL PLATES, CLIPS, SEAT ANGLES, CONNECTIONS ETC., AS REQUIRED FOR COMPLETION OF THE STRUCTURAL WORK. EVEN IF SUCH ITEMS ARE NOT EXPLICITLY CALLED FOR ON THE DRAWINGS.

9. ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIP GALVANIZED PER ASTM A123. ALL BOLTS EXPOSED TO WEATHER SHALL BE HOT DIP GALVANIZED PER ASTM A153. UNLESS NOTED OTHERWISE IN THE DRAWINGS.

10. THE CONTRACTOR HAS THE OPTION TO REPLACE FIELD WELDED CONNECTIONS WITH FIELD BOLTED CONNECTIONS. CONTRACTOR SHALL SUBMIT PROPOSED BOLTED CONNECTION DETAIL AND CALCULATION TO THE USACE ON–SITE REPRESENTATIVE FOR APPROVAL PRIOR TO BEGINNING FABRICATION.

11. ALL STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC'S "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS," 2005.

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

NOTE: A3 SIZE REDUCED TO HALF SCALE.

PROTOTYPE DESIGN SUBMITTAL

This project was made possible by the United States Agency for International Development and the generous support of the American People through USAID Global Architecture and Engineering IQC Contracts.

SYMB	DESCRIPTION	DATE	APR
A	PROTOTYPE DESIGN SUBMITTAL	08/15/10	SGW

DESIGNED BY: FPH | DATE: 08–15–10
DRAWN BY: WAS | SUBMITTED BY: TETRA TECH
CHECKED BY: FPH | FILE NO.: TWR00–S–002

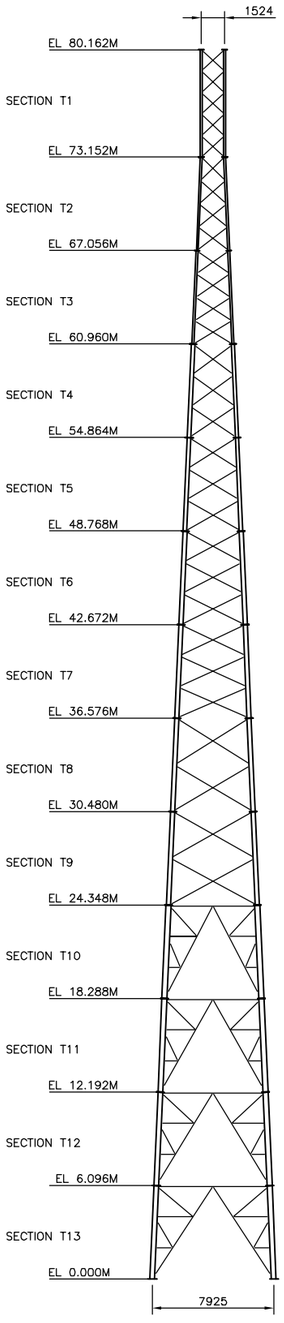
USAID FROM THE AMERICAN PEOPLE

TETRA TECH

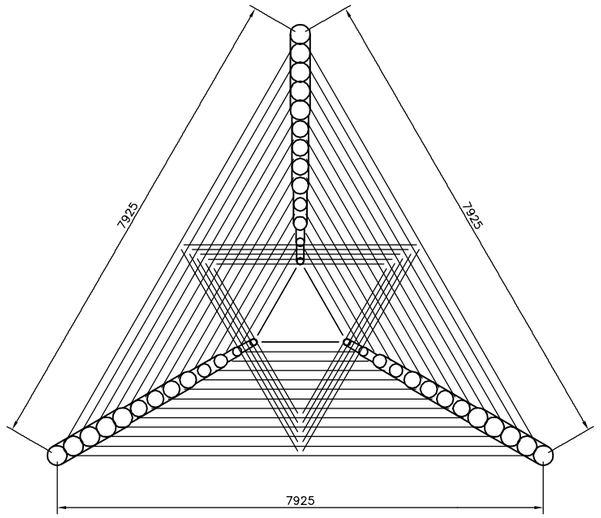
USAID THREE TOWERS
PROTOTYPE DESIGN, AFGHANISTAN

GENERAL NOTES
SHEET 2 OF 2

SHEET REFERENCE NUMBER:
TWR00
S–002



TOWER ELEVATION
SCALE 1:200



TOWER PLAN VIEW
SCALE 1:50

GENERAL NOTES:

1. FOR GENERAL NOTES SEE SHEETS S–001 AND S–002.
2. FOR FOUNDATION SEE SHEET S–200.
3. FOR TOWER SECTIONS SEE SHEETS S–300 THRU S–304.
4. ELEVATIONS ARE BASED ON ASSUMED DATUM AT BOTTOM OF LEG BASE PLATE OF 0.000M.

NOT FOR CONSTRUCTION

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

1:50 scale: 1 0 1 2 3 4
1:200 scale: 5 0 5 10 15

NOTE: A3 SIZE REDUCED TO HALF SCALE.

PROTOTYPE DESIGN SUBMITTAL

A	PROTOTYPE DESIGN SUBMITTAL	08/15/10	SGW APR
SYMB	DESCRIPTION	DATE	

This project was made possible by the United States Agency for International Development and the generous support of the American People through USAID Global Architecture and Engineering IQC Contracts.

DESIGNED BY: FPH
DRAWN BY: WAS
CHECKED BY: FPH
DATE: 08–15–10
SUBMITTED BY: TETRA TECH
FILE NO.: TWR00–S–100

USAID FROM THE AMERICAN PEOPLE

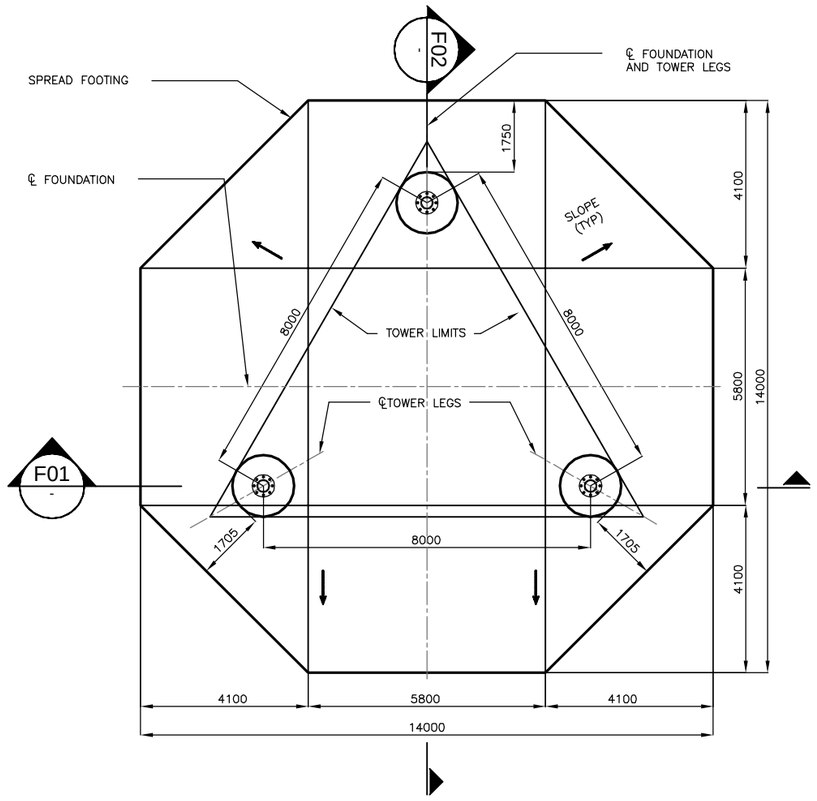
TETRA TECH

USAID THREE TOWERS PROTOTYPE DESIGN, AFGHANISTAN

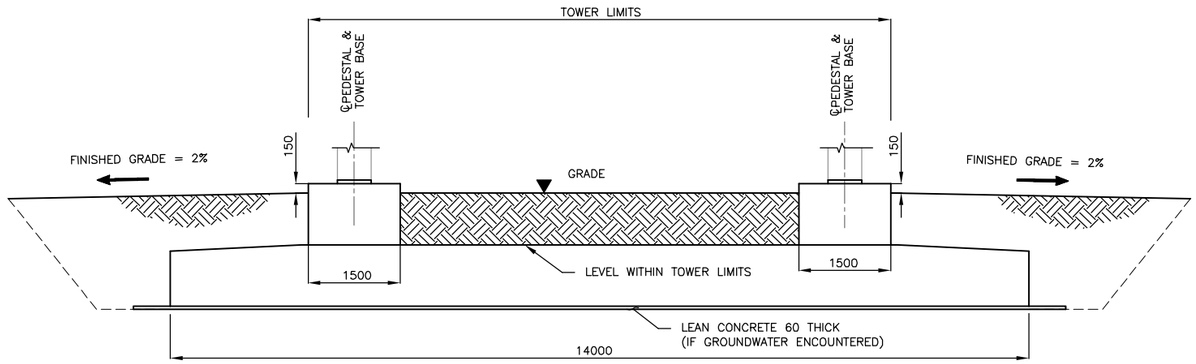
TOWER PLAN & ELEVATION

SHEET REFERENCE NUMBER:
TWR00
S–100

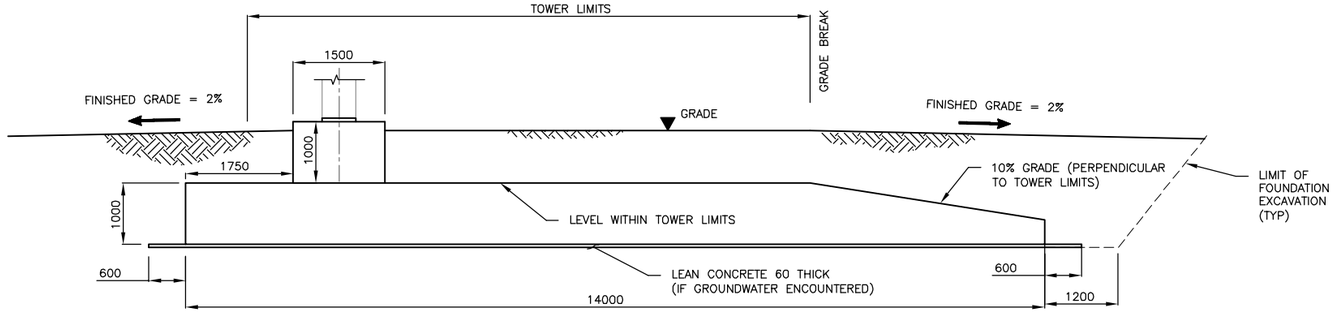
p:\1298\127–1298–10001–it0013\CAD\SheetFiles\TWR00_ALL\04_Structural\TWR00–S–100.dwg 8/13/2010 3:08:23 PM Loridas, Stephen



TOWER FOUNDATION PLAN VIEW
SCALE 1:75



TOWER FOUNDATION SECTION
SCALE 1:50 — F01



TOWER FOUNDATION SECTION
SCALE 1:50 — F02

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

1 0 1 2 3 4
1:50
5 0 5 10 15
1:200
NOTE: A3 SIZE REDUCED TO HALF SCALE.

PROTOTYPE DESIGN SUBMITTAL

	DESCRIPTION	DATE	
0	PROTOTYPE DESIGN SUBMITTAL	08/15/10	SGW APR

This project was made possible by the United States Agency for International Development and the generous support of the American People through USAID Global Architecture and Engineering IQC Contracts.

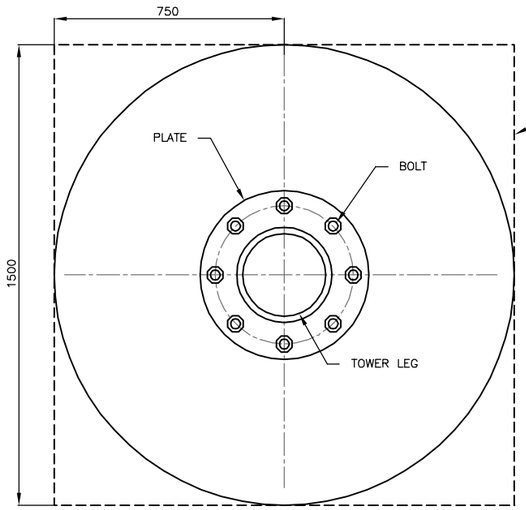
DESIGNED BY: JDD
DRAWN BY: RAP
CHECKED BY: RJT
DATE: 08/15/10
SUBMITTED BY: TETRA TECH
FILE NO.: 133-01304-10001

USAID FROM THE AMERICAN PEOPLE
TETRA TECH

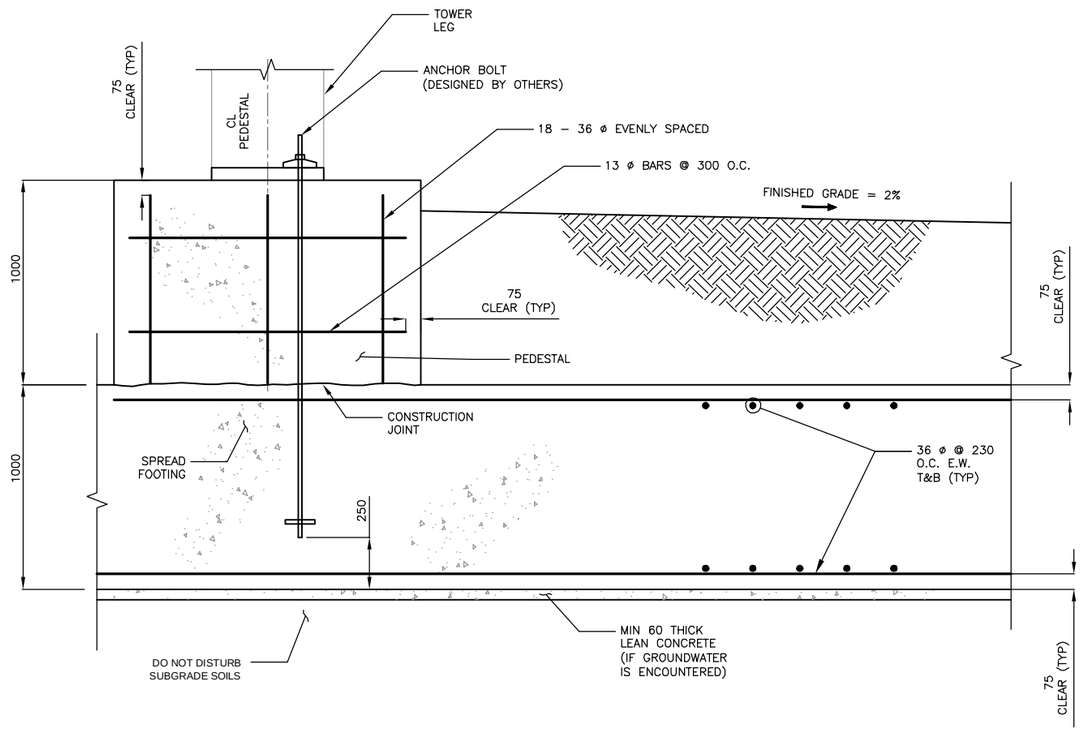
USAID THREE TOWERS
PROTOTYPE DESIGN, AFGHANISTAN

TOWER FOUNDATION PLAN & ELEVATION
SHEET 1 OF 2

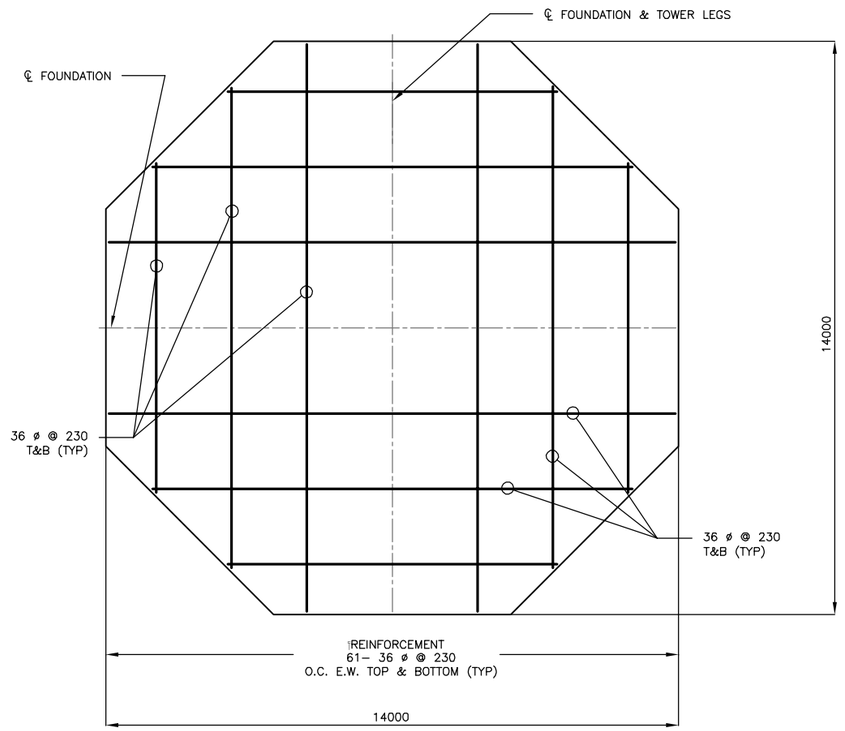
SHEET REFERENCE NUMBER:
TWR00
S-200



TYPICAL PEDESTAL TOWER BASE PLAN VIEW
SCALE 1:10



PEDESTAL AND SPREAD FOOTING REINFORCEMENT DETAIL
SCALE 1:15



SPREAD FOOTING REINFORCEMENT PLAN DETAIL
SCALE 1:75

GENERAL NOTES:

1. ALL CONCRETE WORK SHALL CONFORM TO ACI–301–05 AND ACI–318–08.
2. SPREAD FOOTING SHALL BE PLACED ON NATURAL UNDISTURBED SOIL.
3. THE SPREAD FOOTING SHALL BEAR ON FIRM TO HARD UNIFORM MATERIALS AT UNIFORM ELEVATION. SUBGRADE MUST BE APPROVED BY GEOTECHNICAL ENGINEER.
4. MINIMUM 28–DAY CONCRETE COMPRESSIVE STRENGTH FOR SPREAD FOOTING: 281 kg/cm² (4000 psi).
5. MINIMUM 28–DAY CONCRETE COMPRESSIVE STRENGTH FOR PEDESTAL: 281 kg/cm² (4000 psi).
6. CONCRETE SHALL BE AIR–ENTRAINED.
7. 36 ø BAR = #11 IMPERIAL, 13 ø BAR = #4 IMPERIAL
8. MINIMUM REBAR SPLICE LENGTH = 2000.
9. MINIMUM CLEARANCE ALL REBAR = 75.
10. MINIMUM YIELD STRENGTH OF REINFORCING BAR = 4218 kg/cm² (60 ksi).
11. MINIMUM SOIL BEARING PRESSURE = 1.0 kg/cm² (2,000 psf)
12. FILL MATERIAL MUST BE PLACED IN 150 LIFTS AND COMPACTED TO WITHIN 95% MAXIMUM DRY DENSITY AND BE WITHIN PLUS OR MINUS 2% OF OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D–1557.

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

1 0 1 2 3 4
1:50
5 0 5 10 15
1:200
NOTE: A3 SIZE REDUCED TO HALF SCALE.

PROTOTYPE DESIGN SUBMITTAL

SYMB	DESCRIPTION	DATE	APR
0	PROTOTYPE DESIGN SUBMITTAL	08/15/10	SGW

This project was made possible by the United States Agency for International Development and the generous support of the American People through USAID Global Architecture and Engineering IQC Contracts.

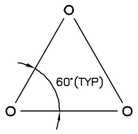
DESIGNED BY: JDD | DATE: 08/15/10
DRAWN BY: RAP | SUBMITTED BY: TETRA TECH
CHECKED BY: RJT | FILE NO.: 133–01304–10001

USAID FROM THE AMERICAN PEOPLE
TETRA TECH

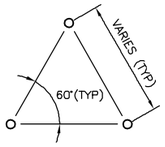
USAID THREE TOWERS
PROTOTYPE DESIGN, AFGHANISTAN

TOWER FOUNDATION PLAN & ELEVATION
SHEET 2 OF 2

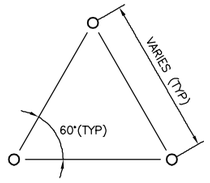
SHEET REFERENCE NUMBER:
TWR00
S–201



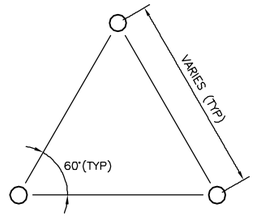
PLAN VIEW



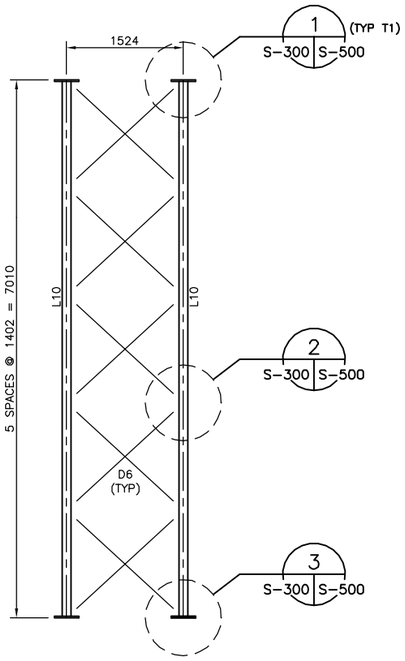
PLAN VIEW



PLAN VIEW

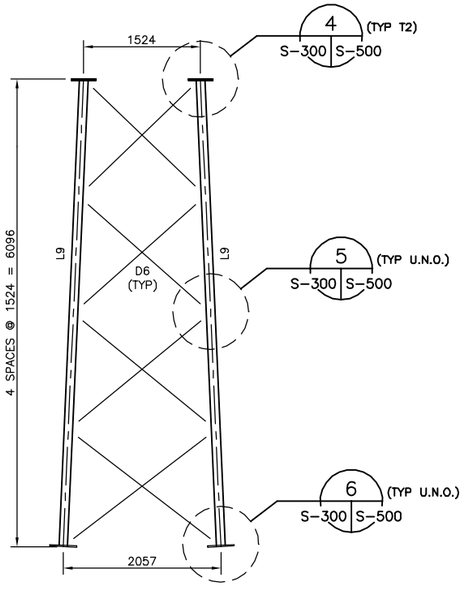


PLAN VIEW



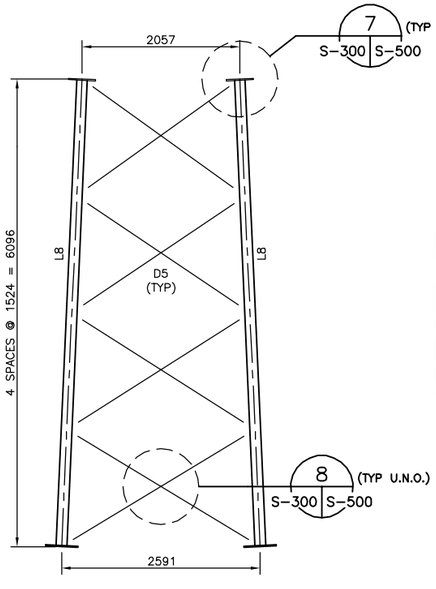
ELEVATION

SECTION T1
SCALE 1:40



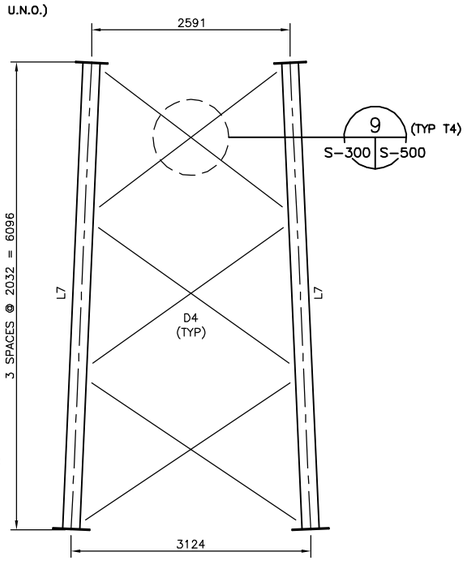
ELEVATION

SECTION T2
SCALE 1:40



ELEVATION

SECTION T3
SCALE 1:40



ELEVATION

SECTION T4
SCALE 1:40

GENERAL NOTES:

1. FOR GENERAL NOTES, SEE SHEETS S-001 AND S-002.
2. FOR CONNECTION PLATE DETAILS, SEE SHEET S-502.
3. FOR MEMBER SIZES, SEE SHEET S-305.

This project was made possible by the United States Agency for International Development and the generous support of the American People through USAID Global Architecture and Engineering IQC Contracts.

PROTOTYPE DESIGN SUBMITTAL

SYMB	DESCRIPTION	DATE	APR
A	PROTOTYPE DESIGN SUBMITTAL	08/15/10	SGW

DESIGNED BY: FPH | DATE: 08-15-10
DRAWN BY: WAS | SUBMITTED BY: TETRA TECH
CHECKED BY: FPH | FILE NO.: TWR00-S-300

USAID FROM THE AMERICAN PEOPLE

TETRA TECH

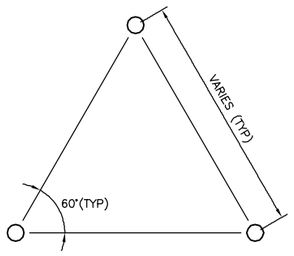
USAID THREE TOWERS
PROTOTYPE DESIGN, AFGHANISTAN

BRACE CONFIGURATION DETAILS
SHEET 1 OF 5

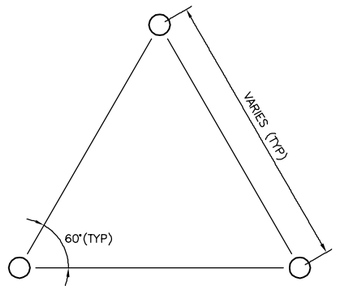
SHEET REFERENCE NUMBER:
TWR00
S-300

0 .5 1 2 3 4
1:40
NOTE: A3 SIZE REDUCED TO HALF SCALE.

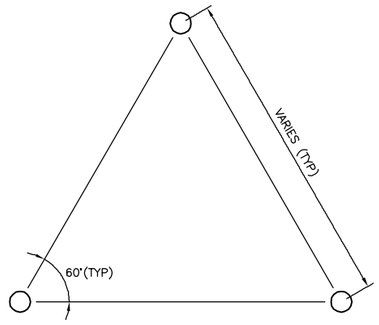
UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.



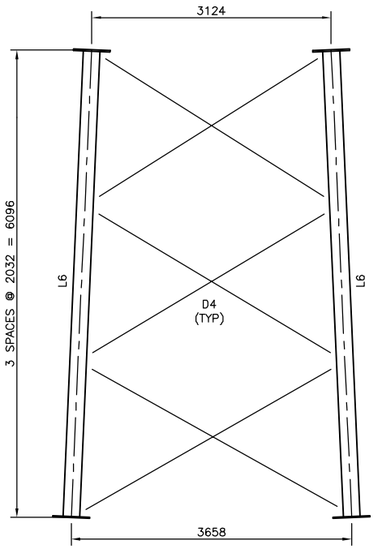
PLAN VIEW



PLAN VIEW

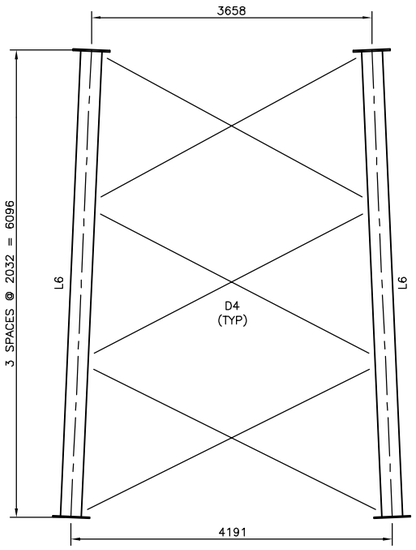


PLAN VIEW



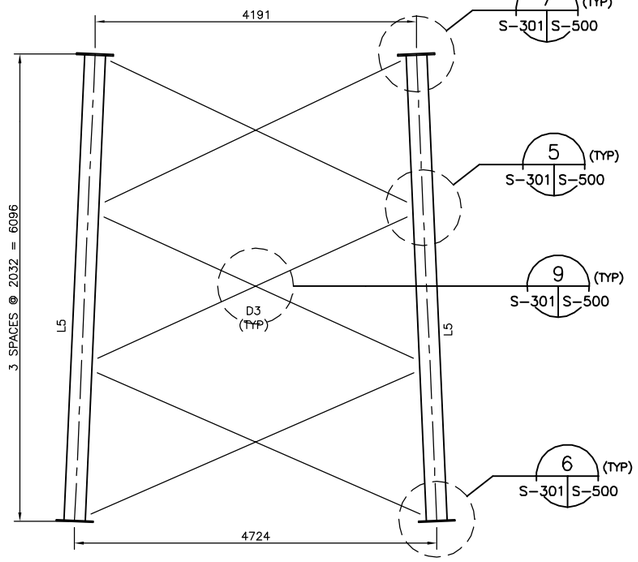
ELEVATION

SECTION T5
SCALE 1:40



ELEVATION

SECTION T6
SCALE 1:40



ELEVATION

SECTION T7
SCALE 1:40

GENERAL NOTES:

1. FOR GENERAL NOTES, SEE SHEETS S-001 AND S-002.
2. FOR CONNECTION PLATE DETAILS, SEE SHEET S-502.
3. FOR MEMBER SIZES, SEE SHEET S-305.

This project was made possible by the United States Agency for International Development and the generous support of the American People through USAID Global Architecture and Engineering IQC Contracts.

PROTOTYPE DESIGN SUBMITTAL

A	PROTOTYPE DESIGN SUBMITTAL	08/15/10	SGW	APR
SYMB	DESCRIPTION	DATE		

DESIGNED BY: FPH
DRAWN BY: WAS
CHECKED BY: FPH
DATE: 08-15-10
SUBMITTED BY: TETRA TECH
FILE NO.: TWR00-S-301

USAID FROM THE AMERICAN PEOPLE

TETRA TECH

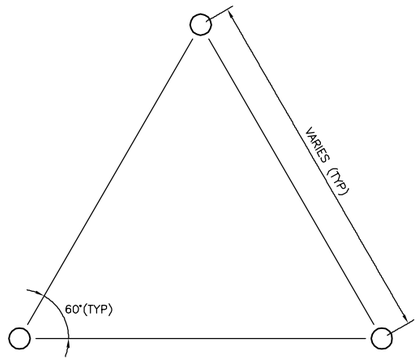
USAID THREE TOWERS
PROTOTYPE DESIGN, AFGHANISTAN

BRACE CONFIGURATION DETAILS
SHEET 2 OF 5

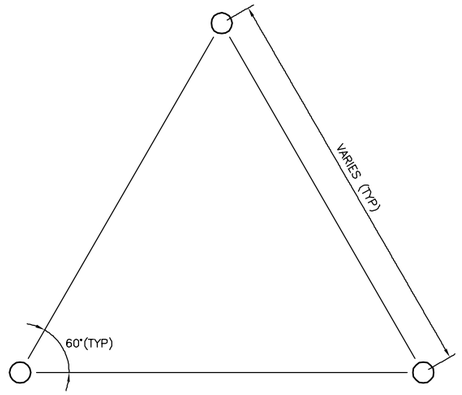
SHEET REFERENCE NUMBER:
TWR00
S-301

0 .5 1 2 3 4
1:40
NOTE: A3 SIZE REDUCED TO HALF SCALE.

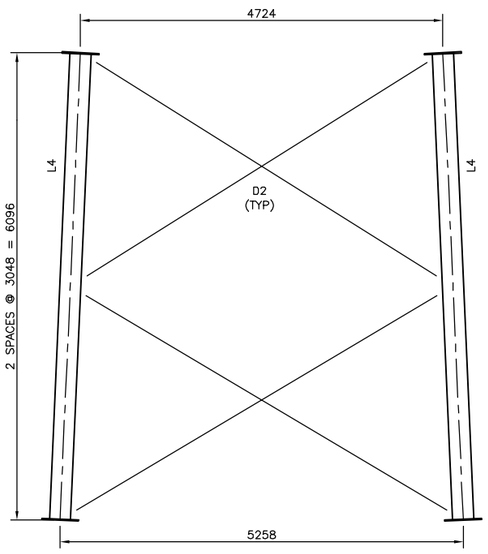
UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.



PLAN VIEW

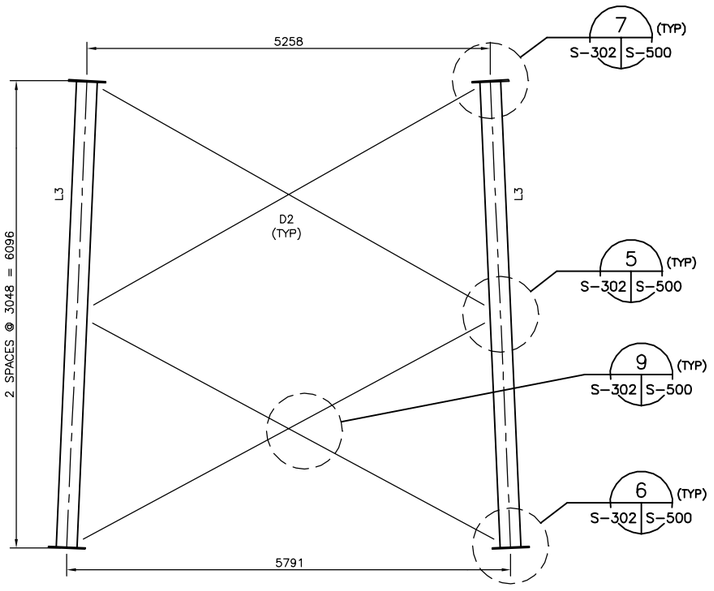


PLAN VIEW



ELEVATION

SECTION T8
SCALE 1:40



ELEVATION

SECTION T9
SCALE 1:40

GENERAL NOTES:

1. FOR GENERAL NOTES, SEE SHEETS S-001 AND S-002.
2. FOR CONNECTION PLATE DETAILS, SEE SHEET S-502.
3. FOR MEMBER SIZES, SEE SHEET S-305.

This project was made possible by the United States Agency for International Development and the generous support of the American People through USAID Global Architecture and Engineering IQC Contracts.

PROTOTYPE DESIGN SUBMITTAL

SYMB	DESCRIPTION	DATE	SGW APR
A	PROTOTYPE DESIGN SUBMITTAL	08/15/10	

DESIGNED BY: FPH
DRAWN BY: WAS
CHECKED BY: FPH
DATE: 08-15-10
SUBMITTED BY: TETRA TECH
FILE NO.: TWR00-S-302

USAID FROM THE AMERICAN PEOPLE

TETRA TECH

USAID THREE TOWERS
PROTOTYPE DESIGN, AFGHANISTAN

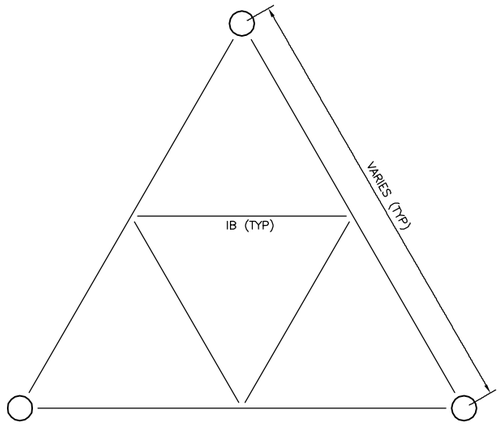
BRACE CONFIGURATION DETAILS
SHEET 3 OF 5

SHEET REFERENCE NUMBER:
TWR00
S-302

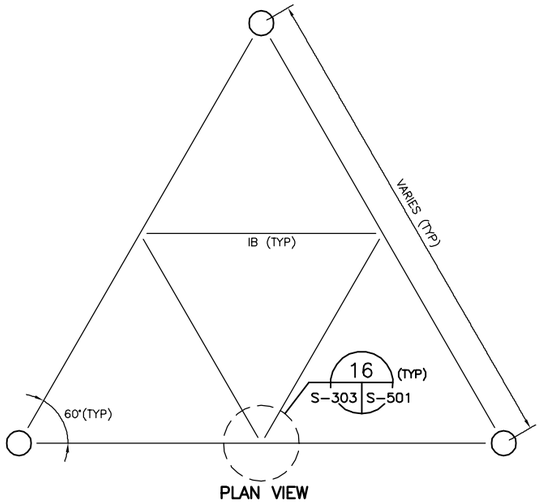
0 .5 1 2 3 4
1:40
NOTE: A3 SIZE REDUCED TO HALF SCALE.

NOT FOR CONSTRUCTION

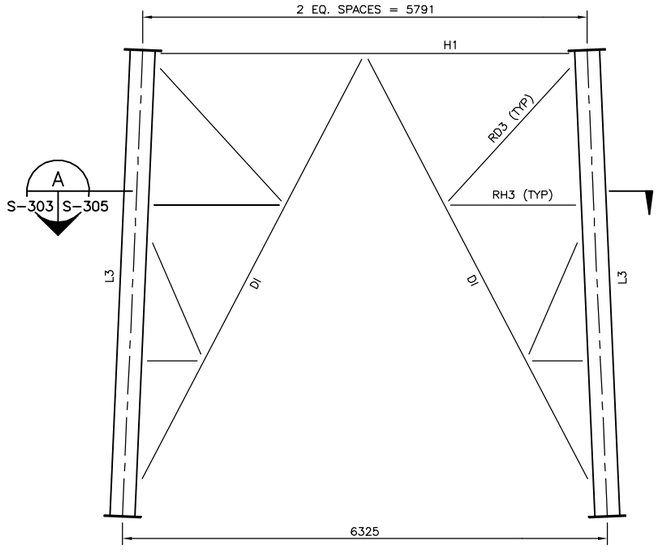
UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.



PLAN VIEW

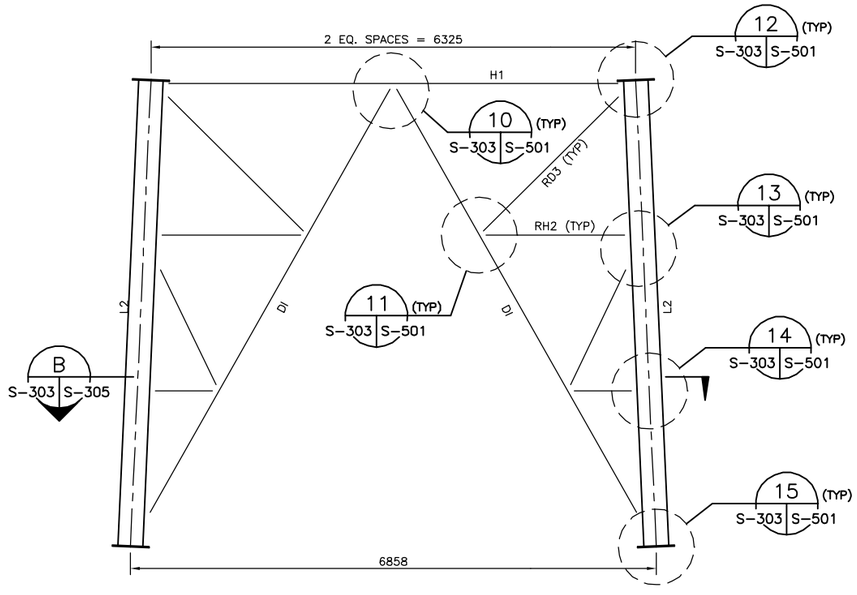


PLAN VIEW



ELEVATION

SECTION T10
SCALE 1:40



ELEVATION

SECTION T11
SCALE 1:40

GENERAL NOTES:

1. FOR GENERAL NOTES, SEE SHEETS S-001 AND S-002.
2. FOR CONNECTION PLATE DETAILS, SEE SHEET S-502.
3. FOR MEMBER SIZES, SEE SHEET S-305.

This project was made possible by the United States Agency for International Development and the generous support of the American People through USAID Global Architecture and Engineering IQC Contracts.

PROTOTYPE DESIGN SUBMITTAL

A	PROTOTYPE DESIGN SUBMITTAL	08/15/10	SGW APR
SYMB	DESCRIPTION	DATE	

DESIGNED BY: FPH
DRAWN BY: WAS
CHECKED BY: FPH
DATE: 08-15-10
SUBMITTED BY: TETRA TECH
FILE NO.: TWR00-S-303

USAID FROM THE AMERICAN PEOPLE
TETRA TECH

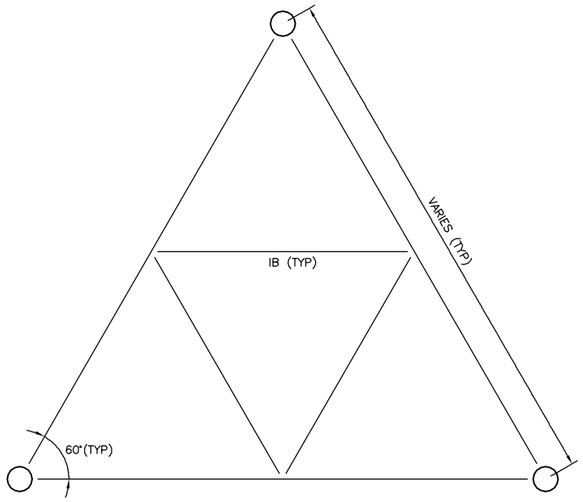
USAID THREE TOWERS
PROTOTYPE DESIGN, AFGHANISTAN

BRACE CONFIGURATION DETAILS
SHEET 4 OF 5

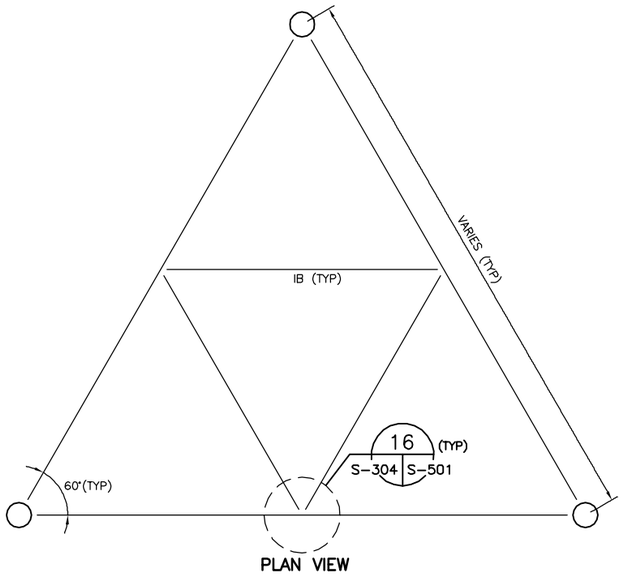
SHEET REFERENCE NUMBER:
TWR00
S-303

0 .5 1 2 3 4
1:40
NOTE: A3 SIZE REDUCED TO HALF SCALE.

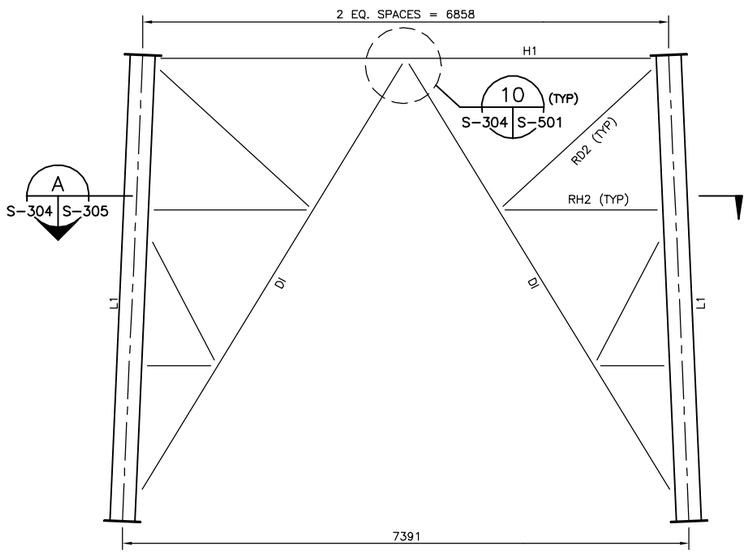
UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.



PLAN VIEW

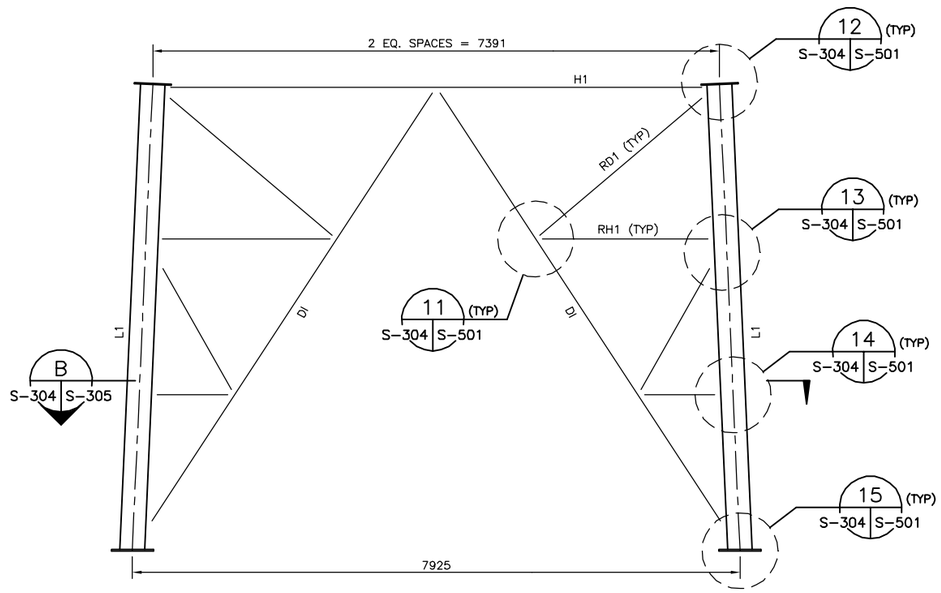


PLAN VIEW



ELEVATION

SECTION T12
SCALE 1:40



ELEVATION

SECTION T13
SCALE 1:40

GENERAL NOTES:

1. FOR GENERAL NOTES, SEE SHEETS S-001 AND S-002.
2. FOR CONNECTION PLATE DETAILS, SEE SHEET S-502.
3. FOR MEMBER SIZES, SEE SHEET S-305.

This project was made possible by the United States Agency for International Development and the generous support of the American People through USAID Global Architecture and Engineering IQC Contracts.

PROTOTYPE DESIGN SUBMITTAL

A	PROTOTYPE DESIGN SUBMITTAL	08/15/10	SGW APR
SYMB	DESCRIPTION	DATE	

DESIGNED BY: FPH | DATE: 08-15-10
DRAWN BY: WAS | SUBMITTED BY: TETRA TECH
CHECKED BY: FPH | FILE NO.: TWR00-S-304

USAID FROM THE AMERICAN PEOPLE

TETRA TECH

USAID THREE TOWERS
PROTOTYPE DESIGN, AFGHANISTAN

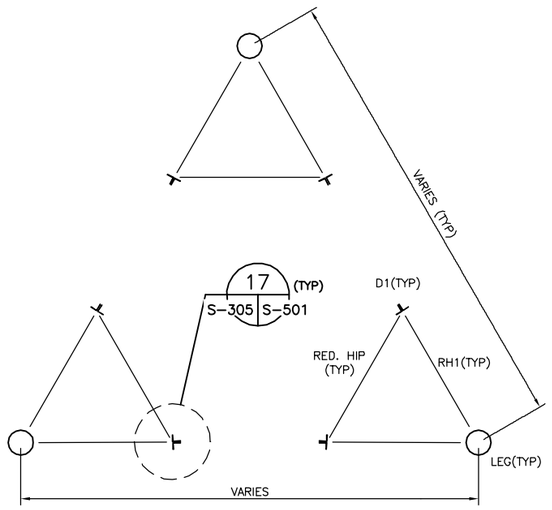
BRACE CONFIGURATION DETAILS
SHEET 5 OF 5

SHEET REFERENCE NUMBER:
TWR00
S-304

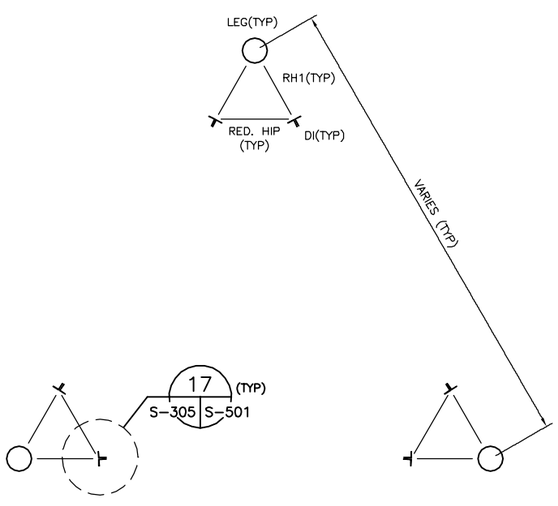
NOT FOR CONSTRUCTION

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

0 .5 1 2 3 4
1:40
NOTE: A3 SIZE REDUCED TO HALF SCALE.



DETAIL A
SCALE 1:40



DETAIL B
SCALE 1:40

LEG SCHEDULE

MK. NO.	NOM. DIA (MM)	ACTUAL DIA (MM) x WALL (MM)	MATERIAL
L10	90	101.6 x 6.020	ASTM A500-GR.B (375KPa)
L9	100	114.3 x 11.125	
L8	150	168.275 x 14.275	
L7	200	219.075 x 12.700	
L6	250	273.05 x 15.088	
L5	250	273.05 x 18.263	
L4	300	323.85 x 17.475	
L3	300	323.85 x 19.050	
L2	300	323.85 x 21438	
L1	300	323.85 x 25.400	

BRACING SCHEDULE

DESIGNATION	MK. NO.	SECTION	MATERIAL
DIAGONALS	D6	L 76x76x4.8	ASTM A36
	D5	L 89x89x6.4	
	D4	2L 64x64x4.8	
	D3	2L 76x76x4.8	
	D2	2L 76x76x4.8	
	D1	2L 89x89x7.9	
TOP GIRTS	TG1	L 38x38x6.4	
HORIZONTALS	H1	2L 89x89x7.9	
REDUNDANT HORIZONTAL	RH3	L 89x89x4.8	
	RH2	L 89x89x6.4	
	RH1	L 89x89x7.9	
REDUNDANT DIAGONAL	RD2	L 89x89x6.4	
	RD1	L 89x89x7.9	
REDUNDANT HIPS	HIP	L 38x38x3.2	
INNER BRACE	IB	L 38x38x3.2	

GENERAL NOTES:

1. FOR GENERAL NOTES, SEE SHEETS S-001 AND S-002.
2. SCHEDULES APPLY TO TOWER SECTIONS AS SHOWN ON SHEETS S-300 THRU S-304

This project was made possible by the United States Agency for International Development and the generous support of the American People through USAID Global Architecture and Engineering IQC Contracts.

PROTOTYPE DESIGN SUBMITTAL

A	PROTOTYPE DESIGN SUBMITTAL	08/15/10	SGW	APR
SYMB	DESCRIPTION	DATE		

DESIGNED BY: FPH | DATE: 08-15-10
DRAWN BY: WAS | SUBMITTED BY: TETRA TECH
CHECKED BY: FPH | FILE NO.: TWR00-S-305

USAID FROM THE AMERICAN PEOPLE

TETRA TECH

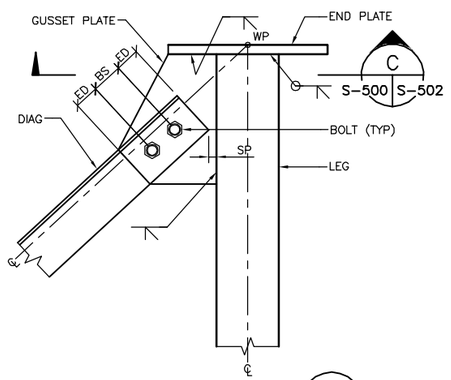
USAID THREE TOWERS
PROTOTYPE DESIGN, AFGHANISTAN

MEMBER SCHEDULE

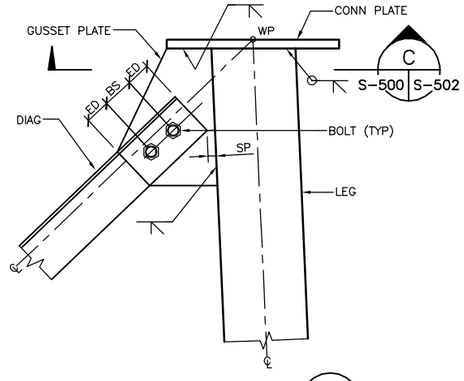
SHEET REFERENCE NUMBER:
TWR00
S-305

0 .5 1 2 3 4
1:40
NOTE: A3 SIZE REDUCED TO HALF SCALE.

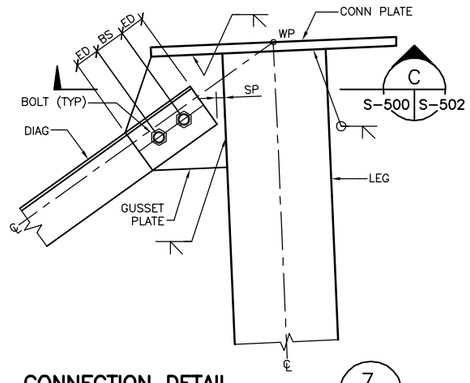
UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.



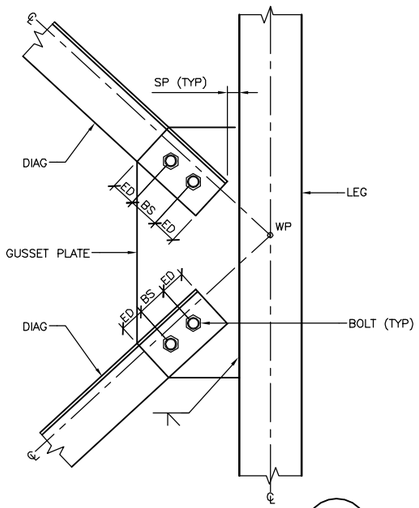
CONNECTION DETAIL 1
SCALE 1:5
S-300 S-500



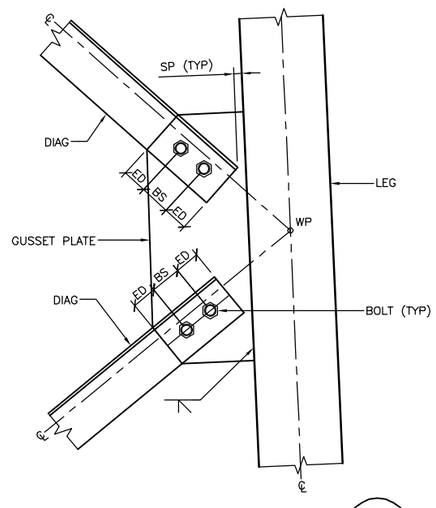
CONNECTION DETAIL 4
SCALE 1:5
S-300 S-500



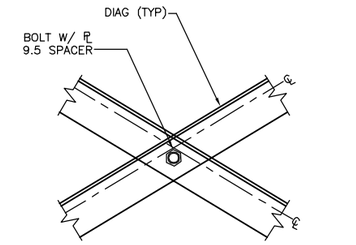
CONNECTION DETAIL 7
SCALE 1:5
S-300, S-301, S-302 S-500



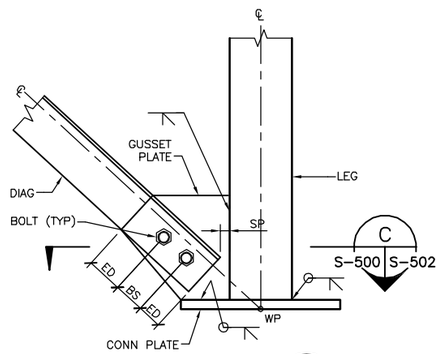
CONNECTION DETAIL 2
SCALE 1:5
S-300 S-500



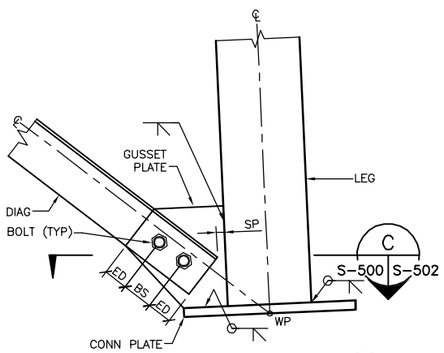
CONNECTION DETAIL 5
SCALE 1:5
S-300, S-301, S-302 S-500



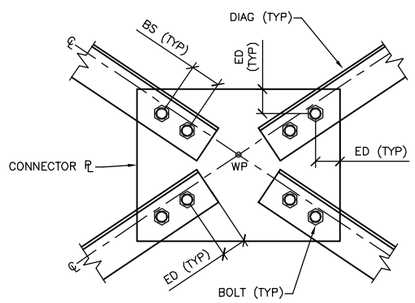
CONNECTION DETAIL 8
SCALE 1:5
S-300 S-500



CONNECTION DETAIL 3
SCALE 1:5
S-300 S-500



CONNECTION DETAIL 6
SCALE 1:5
S-300, S-301, S-302 S-500



CONNECTION DETAIL 9
SCALE 1:5
S-300, S-301, S-302 S-500

GENERAL NOTES:

1. FOR GENERAL NOTES, SEE SHEETS S-001 AND S-002.
2. CONTRACTOR TO SUBMIT GUSSET DETAILS FOR EACH JOINT BASED ON ITS SPECIFIC GEOMETRY AND THE FOLLOWING;
   CLEAR SPACE (SP) = 13 MIN.
   END DISTANCE (ED) = 40 MIN.
   BOLT SPACING (BS) = 50 MIN.
3. "ED" SHALL BE MAINTAINED IN ALL DIRECTIONS AROUND BOLTS ON GUSSET PLATES.
4. GUSSET WIDTH SHALL BE 150 MIN.
5. FOR LEG AND BRACING SIZES SEE SECTION SCHEDULES.
6. GUSSET PLATE THICKNESS:
   SECTION T1-T9: 9.5
   SECTION T10-T13: 12.7

This project was made possible by the United States Agency for International Development and the generous support of the American People through USAID Global Architecture and Engineering IQC Contracts.

PROTOTYPE DESIGN SUBMITTAL

SYMB	DESCRIPTION	DATE	
A	PROTOTYPE DESIGN SUBMITTAL	08/15/10	SGW APR

DESIGNED BY: FPH
DRAWN BY: WAS
CHECKED BY: FPH
DATE: 08-15-10
SUBMITTED BY: TETRA TECH
FILE NO.: TWR00-S-500

USAID FROM THE AMERICAN PEOPLE

TETRA TECH

USAID THREE TOWERS
PROTOTYPE DESIGN, AFGHANISTAN

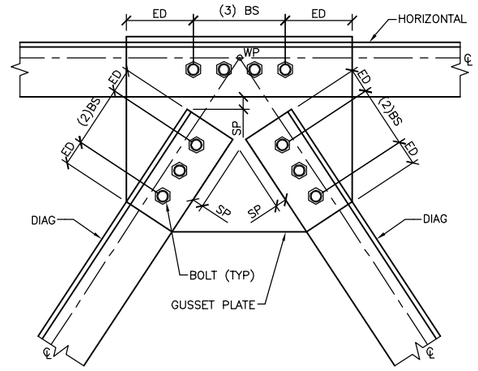
DIAGONAL CONNECTION DETAILS
SHEET 1 OF 2

SHEET REFERENCE NUMBER:
TWR00
S-500

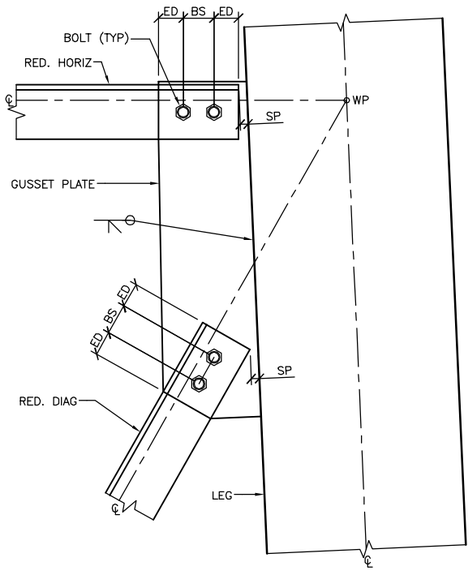
NOT FOR CONSTRUCTION

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

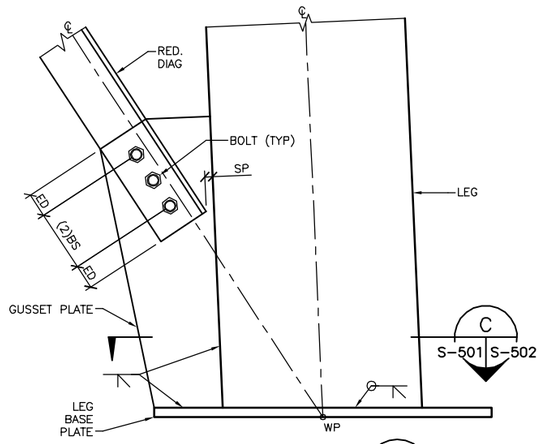
0 .10 .20 .30 .40 .50
1:5
NOTE: A3 SIZE REDUCED TO HALF SCALE.



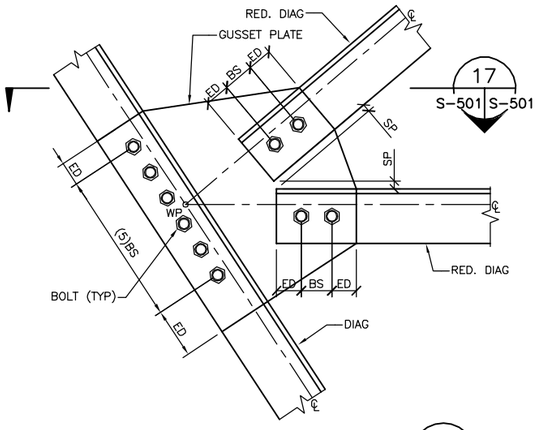
CONNECTION DETAIL 10
SCALE 1:5 S-303,S-304 S-501



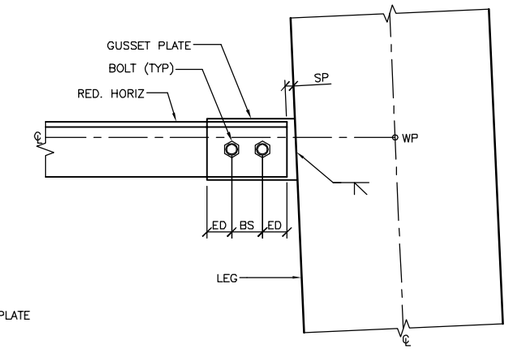
CONNECTION DETAIL 13
SCALE 1:5 S-303, S-304 S-501



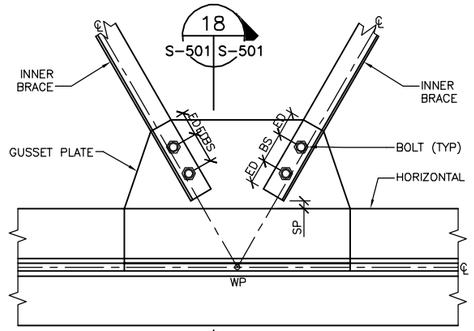
CONNECTION DETAIL 15
SCALE 1:5 S-303, S-304 S-501



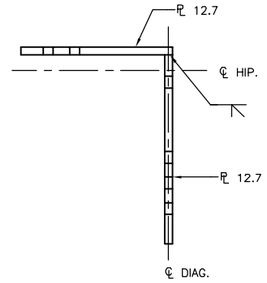
CONNECTION DETAIL 11
SCALE 1:5 S-303, S-304, S-501 S-501



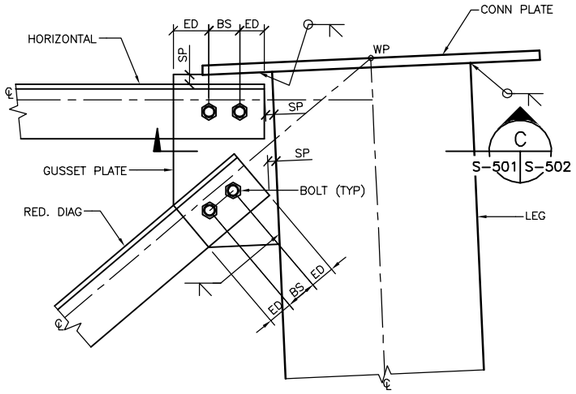
CONNECTION DETAIL 14
SCALE 1:5 S-303, S-304 S-501



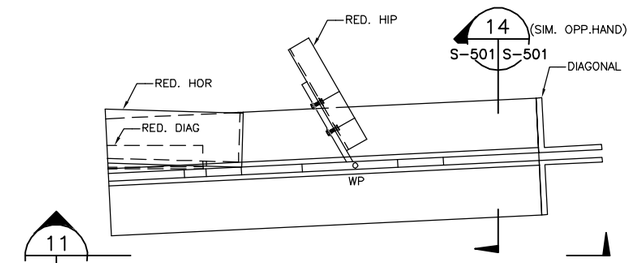
CONNECTION DETAIL 16
SCALE 1:5 S-303, S-304 S-501



CONNECTION PLATE DETAIL 18
SCALE 1:5 S-501 S-501



CONNECTION DETAIL 12
SCALE 1:5 S-303, S-304 S-501



CONNECTION DETAIL 17
SCALE 1:5 S-305, S-501 S-501

GENERAL NOTES:

1. FOR GENERAL NOTES, SEE SHEETS S-001 AND S-002.
2. FOR CONNECTION NOTES, SEE SHEET S-500.

PROTOTYPE DESIGN SUBMITTAL

A	PROTOTYPE DESIGN SUBMITTAL	08/15/10	SGW APR
SYMB	DESCRIPTION	DATE	

This project was made possible by the United States Agency for International Development and the generous support of the American People through USAID Global Architecture and Engineering IQC Contracts.

DESIGNED BY: FPH
DATE: 08-15-10
DRAWN BY: WAS
SUBMITTED BY: TETRA TECH
CHECKED BY: FPH
FILE NO.: TWR00-S-501

USAID FROM THE AMERICAN PEOPLE

TETRA TECH

USAID THREE TOWERS
PROTOTYPE DESIGN, AFGHANISTAN

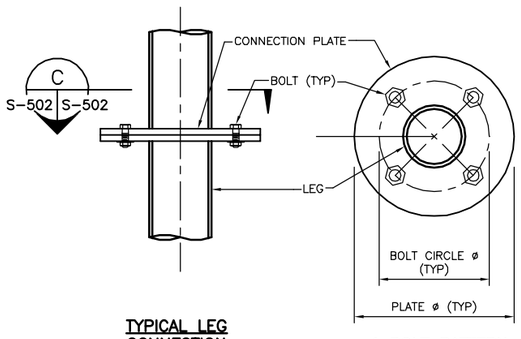
DIAGONAL CONNECTION DETAILS
SHEET 2 OF 2

SHEET REFERENCE NUMBER:
TWR00
S-501

NOT FOR CONSTRUCTION

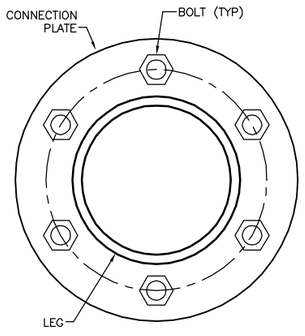
UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

0 .10 .20 .30 .40 .50
1:5
NOTE: A3 SIZE REDUCED TO HALF SCALE.

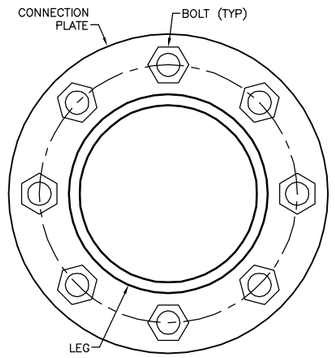


TYPICAL LEG CONNECTION

4 BOLT PATTERN



6 BOLT PATTERN

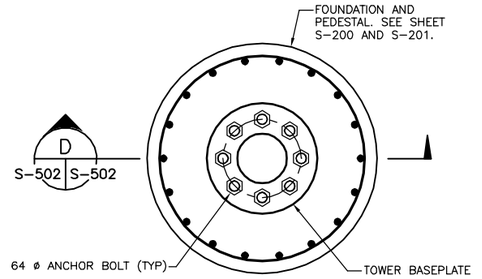


8 BOLT PATTERN

CONNECTION PLATE DETAILS
SCALE 1:5
C S-500, S-501 S-502

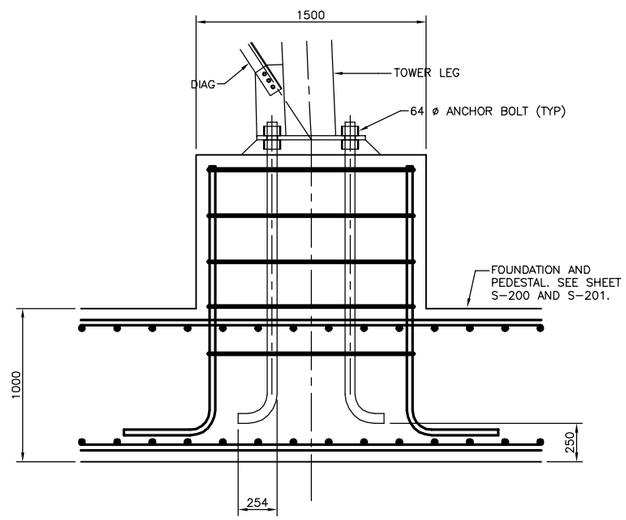
GENERAL NOTES:

1. FOR GENERAL NOTES, SEE SHEETS S-001 AND S-002.
2. FOR LEG SIZES, SEE SECTION SCHEDULES ON SHEET S-305.



BASEPLATE/PEDESTAL PLAN
SCALE 1:20

BOLT CONNECTION SCHEDULE			
LOCATION	BOLTS	BOLT CIRCLE DIA.	PLATE DIA.
T1 TOP	(4) 19 ø	180 ø	260 ø
T1/T2	(4) 19 ø	200 ø	280 ø
T2/T3	(6) 25 ø	250 ø	330 ø
T3/T4	(6) 33 ø	320 ø	400 ø
T4/T5	(6) 33 ø	360 ø	460 ø
T5/T6	(8) 33 ø	360 ø	460 ø
T6/T7	(8) 38 ø	380 ø	480 ø
T7/T8	(8) 38 ø	420 ø	520 ø
T8/T9	(8) 38 ø	420 ø	520 ø
T9/T10	(8) 44 ø	450 ø	550 ø
T10/T11	(8) 44 ø	450 ø	550 ø
T11/T12	(8) 44 ø	450 ø	550 ø
T12/T13	(8) 44 ø	450 ø	550 ø
T13 BASE	(8) 64 ø	520 ø	720 ø



BASEPLATE/PEDESTAL SECTION
SCALE 1:20
D S-502 S-502

NOT FOR CONSTRUCTION

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

0 .10 .20 .30 .40 .50
1:5
1 .50 0 1
:20
NOTE: A3 SIZE REDUCED TO HALF SCALE.

PROTOTYPE DESIGN SUBMITTAL

A	PROTOTYPE DESIGN SUBMITTAL	08/15/10	SGW APR
SYMB	DESCRIPTION	DATE	

This project was made possible by the United States Agency for International Development and the generous support of the American People through USAID Global Architecture and Engineering IQC Contracts.

DESIGNED BY: FPH
DRAWN BY: WAS
CHECKED BY: FPH
DATE: 08-15-10
SUBMITTED BY: TETRA TECH
FILE NO.: TWR00-S-502

USAID FROM THE AMERICAN PEOPLE

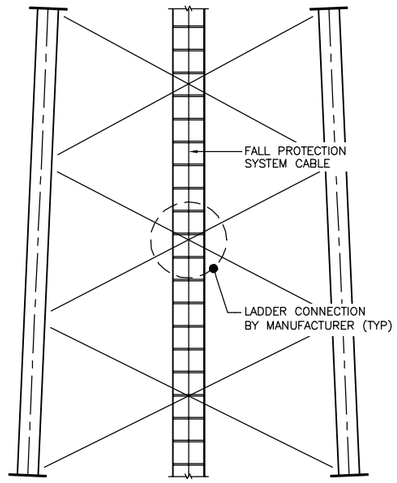
TETRA TECH

USAID THREE TOWERS
PROTOTYPE DESIGN, AFGHANISTAN

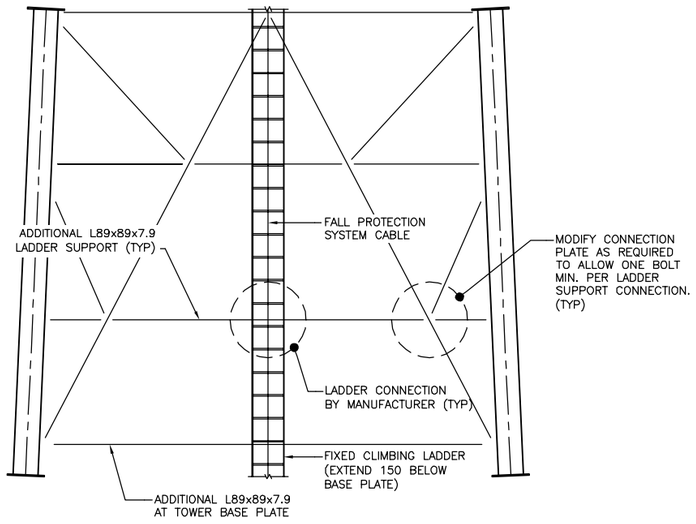
BOLT CONNECTION DETAILS

SHEET REFERENCE NUMBER:
TWR00
S-502

p:\1298\127-1298-10001-it0013\CAD\SheetFiles\TWR00_ALL\04_Structural\TWR00-S-502.dwg 8/13/2010 3:09:39 PM Loridas, Stephen



FIXED CLIMBING LADDER
AT X-BRACED SECTION
SCALE 1:40



FIXED CLIMBING LADDER
AT X-BRACED SECTION
SCALE 1:40

GENERAL NOTES:

1. FOR GENERAL NOTES, SEE SHEETS S-001 AND S-002.
2. FOR MEMBER SIZES, SEE SECTION SCHEDULES ON SHEET S-305.

LADDER NOTES:

1. CONTRACTOR SHALL PROVIDE A CONTINUOUS FIXED STEEL LADDER WITH FALL PROTECTION SYSTEM EXTENDING FULL HEIGHT OF TOWER.
2. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL LADDER, CONNECTION HARDWARE, ASSEMBLY HARDWARE, AND FALL PROTECTION SYSTEM, AND FALL PROTECTION EQUIPMENT FOR APPROVAL PRIOR TO DELIVERY TO THE SITE.
3. LADDER AND ALL COMPONENTS SHALL BE GALVANIZED AS REQUIRED IN THE SPECIFICATIONS.
4. FABRICATE VERTICAL LADDER CONFORMING TO SECTION 7 OF 29 CFR 1910.27.
5. LADDER STRINGERS SHALL BE 65 MM BY 10 MM STEEL FLATS.
6. RUNGS SHALL BE 20 MM DIAMETER STEEL RODS. RUNGS TO BE NOT LESS THAN 400 MM WIDE AND SPACED ONE FOOT APART
7. RUNGS SHALL BE PLUG WELDED OR SHOULDERED AND HEADED INTO STRINGERS.
8. LADDERS SHALL BE INSTALLED SO THE DISTANCE FROM RUNGS TO THE FINISHED SURFACE BEYOND SHALL NOT BE LESS THAN 175 MM.
9. PROVIDE HEAVY CLIP ANGLES RIVETED OR BOLTED TO THE STRINGER AND DRILLED AS REQUIRED. PROVIDE INTERMEDIATE CLIP ANGLES SPACED NO GREATER THAN 1200 MM ON CENTER.
10. PROVIDE CABLE TYPE FALL PROTECTION DEVICE FOR FULL HEIGHT OF LADDER DESIGNED FOR A LIVE LOAD OF 3560 N OR 4 WORKERS, WITH A SAFETY FACTOR OF AT LEAST 2.0.
    A. CABLE SYSTEM AND PERSONAL EQUIPMENT SHALL BE COMPATIBLE AND ALL SHALL BE FROM A SINGLE SUPPLIER.
    B. CABLE SLEEVE SHALL BE OPERABLE WITH ONE HAND AND PREVENT UPSIDE DOWN INSTALLATION WITH NO PINS, CHAINS, OR EXTERNAL PARTS.
    C. INTERMEDIATE CABLE GUIDES SHALL ALLOW CABLE SLEEVE TO PASS THROUGH UNINTERRUPTED.
    D. CABLE SLEEVE SHALL BE MADE OF CORROSION RESISTANT ALUMINUM AND STAINLESS STEEL.
    E. CONTRACTOR SHALL PROVIDE A MINIMUM OF TWO PERSONAL FALL ARREST SYSTEMS MEETING 29 CFR 1910.66, APPENDIX C.

This project was made possible by the United States Agency for International Development and the generous support of the American People through USAID Global Architecture and Engineering IQC Contracts.

PROTOTYPE DESIGN SUBMITTAL

A	PROTOTYPE DESIGN SUBMITTAL	08/15/10	SGW APR
SYMB	DESCRIPTION	DATE	

DESIGNED BY: FPH
DRAWN BY: WAS
CHECKED BY: FPH
DATE: 08-15-10
SUBMITTED BY: TETRA TECH
FILE NO.: TWR00-S-503

USAID FROM THE AMERICAN PEOPLE
TETRA TECH

USAID THREE TOWERS
PROTOTYPE DESIGN, AFGHANISTAN

FIXED CLIMBING LADDER DETAILS

SHEET REFERENCE NUMBER:
TWR00
S-503

0 .5 1 2 3 4
1:40
NOTE: A3 SIZE REDUCED TO HALF SCALE.

UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.