

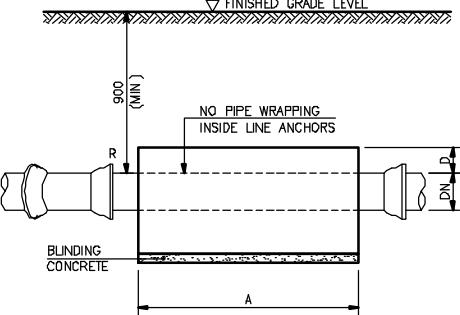
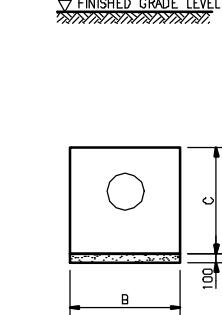
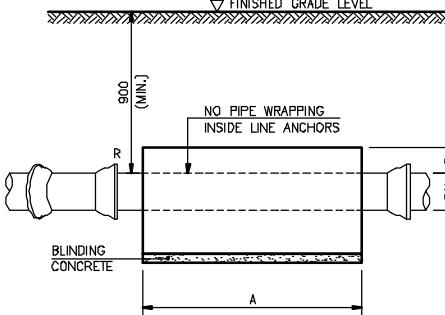
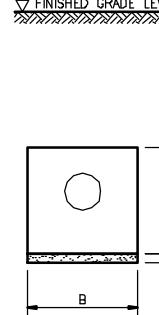
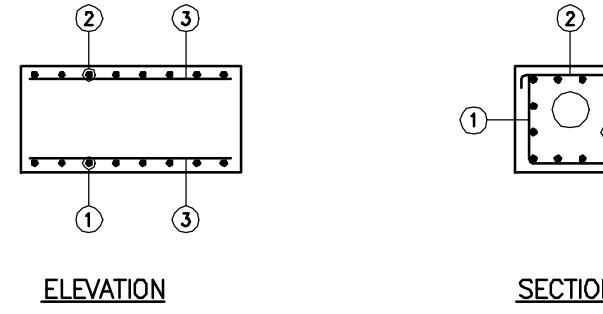
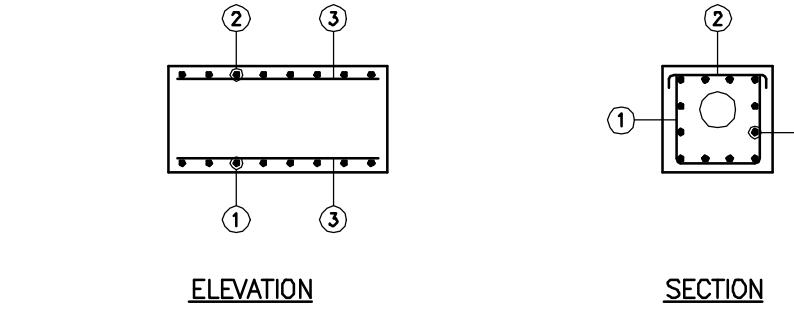
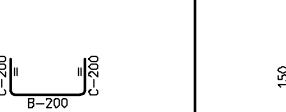
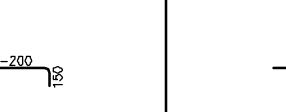
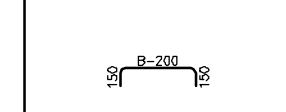
A	B	C	D	E	F	G	H															
LINE ANCHOR BLOCKS FOR 90° RESTRAINED BENDS AND DEAD ENDS																						
TYPE-X		TYPE-Y			TYPE-Z																	
 <u>ELEVATION</u>	 <u>SECTION</u>	 <u>ELEVATION</u>	 <u>SECTION</u>	 <u>ELEVATION</u>	 <u>SECTION</u>	GENERAL NOTES																
1 UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MILLIMETRES. 2. REINFORCEMENT BARS SHALL BE HIGH YIELD STEEL BARS (DEFORMED TYPE-II) WITH A CHARACTERISTIC STRENGTH OF $f_y=460\text{N/mm}^2$ (BS 4449). 3. MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE AS PER SPECIFICATIONS. 4. MINIMUM OVERLAP LENGTH OF REINFORCEMENT BARS SHALL BE $45\times\text{DIA. OF BAR}$. 5. CONCRETE GRADE SHALL BE C40 (BS 8110) WITH A MINIMUM CUBE STRENGTH OF 40N/mm^2 AT 28 DAYS. 6. CONCRETE FOR BLINDING SHALL BE GRADE MASS/20, OPC WITH A MINIMUM CUBE STRENGTH OF 20N/mm^2 . 7. LINE ANCHOR BLOCKS SHALL BE CONSTRUCTED ON A LAYER OF 100mm THK. MASS CONCRETE. 8. SOIL SURROUND LINE ANCHOR BLOCKS SHALL BE UNDISTURBED OR THOROUGHLY COMPACTED BEFORE TESTING. 9. MINIMUM GROUND COVER ON TOP OF PIPE SHALL BE 900mm. 10. ALL CONCRETE EXTERNAL SURFACES SHALL BE PAINTED WITH TWO LAYERS OF BITUMINOUS PAINT (TOTAL OF 300 MICRONS). 11. VOLUME OF CONCRETE, LENGTH OF REINFORCEMENT BARS, WEIGHT OF BARS etc. SHOWN ARE ONLY APPROXIMATE. 12. THIS DRAWING IS FOR SANDY SOILS. REFER TO PROJECT DRAWINGS FOR DETAILS OF LINE ANCHORS IN OTHER THAN SANDY SOILS. 13. R DENOTES RESTRAINED JOINT.																						
PIPE SIZE DN TYPE OF BLOCK NUMBER OF BLOCKS REQD. PER LOCATION	A		B		C		D															
100	X	1	600	400	550	200	0.13															
150	X	1	700	600	750	250	0.30															
200	X	1	800	800	950	300	0.58															
250	X	1	1500	900	1100	400	1.40															
300	X	1	1900	1050	1250	400	2.34															
400	X	1	3100	1250	1500	400	5.37															
500	Y	1	5300	1300	1700	300	8.07															
600	Y	1	5100	1600	2000	400	11.82															
800	Z	2	4300	1600	2000	300	$9.12 \times 2 = 18.24$															
900	Z	2	4500	1800	2200	350	$11.97 \times 2 = 23.94$															
1000	Z	2	4700	2000	2400	400	$15.51 \times 2 = 31.02$															
REINFORCEMENT DETAILS																						
TYPE-X		TYPE-Y			TYPE-Z																	
 <u>ELEVATION</u>	 <u>SECTION</u>	 <u>ELEVATION</u>	 <u>SECTION</u>	 <u>ELEVATION</u>	 <u>SECTION</u>	REFERENCE DRAWINGS																
2 W-P-TD-005 GENERAL DETAILS & TYPICAL DETAILS OF THRUST BLOCKS FOR TEES (9 BAR TEST PRESSURE - BURIED CONDITIONS)																						
3																						
BAR MARK		1	2	3	4	5																
BAR SHAPE		C-200 (UPTO DN400) C-700 (DN500 & ABOVE)			B-200 B-200																	
4		A-200			B-200 300																	
PIPE SIZE DN		TYPE OF BLOCK		BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	TOTAL WEIGHT (kg)		
100	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
150	X	10	1500	250	3	10	700	250	3	10	500	235	8	-	-	-	-	-	-	-	-	7
200	X	10	2100	200	4	10	900	200	4	10	600	225	12	-	-	-	-	-	-	-	-	12
250	X	10	2500	260	6	10	1000	260	6	10	1300	230	14	-	-	-	-	-	-	-	-	34
300	X	10	2950	240	8	10	1150	240	8	10	1700	210	18	-	-	-	-	-	-	-	-	39
400	X	12	3650	240	13	12	1350	240	13	12	2900	260	18	-	-	-	-	-	-	-	-	105
500	Y	12	3100	285	19	12	1400	285	19	12	5100	210	26	12	1400	260	10	12	2050	210	12	198
600	Y	12	4000	220	23	12	1700	220	23	12	4900	205	20	12	1400	260	10	12	2050	205	16	271
800	Z	12	4000	255	17	12	1700	255	17	12	4100	270	20	12	1400	260	10	12	2050	270	12	$194 \times 2 = 388$
900	Z	12	4600	240	19	12	1900	240	19	12	4300	260	24	12	1600	260	10	12	2050	260	14	$241 \times 2 = 482$
1000	Z	12	5200	195	24	12	2100	195	24	12	4500	220	32	12	1800	260	10	12	2050	220	18	$332 \times 2 = 664$
A	B	C	D	E	F	G	H															

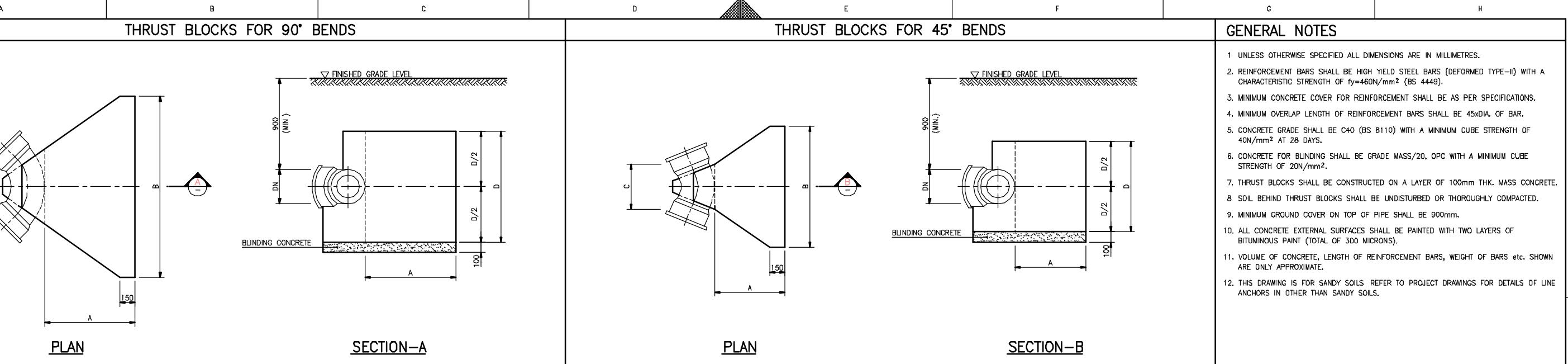
STANDARD DRAWINGS FOR WATER WORKS
TYPICAL DETAILS OF LINE ANCHOR BLOCKS
FOR 90° RESTRAINED BENDS AND DEAD ENDS
(9 BAR TEST PRESSURE-BURIED CONDITIONS)

FILE NO.	SCALE	SIZE	DOCUMENT NUMBER	REV.
W-P-TD-001	N.T.S.	A3	W-P-TD-001	0

ABU DHABI
WATER & ELECTRICITY AUTHORITY
UNITED ARAB EMIRATES

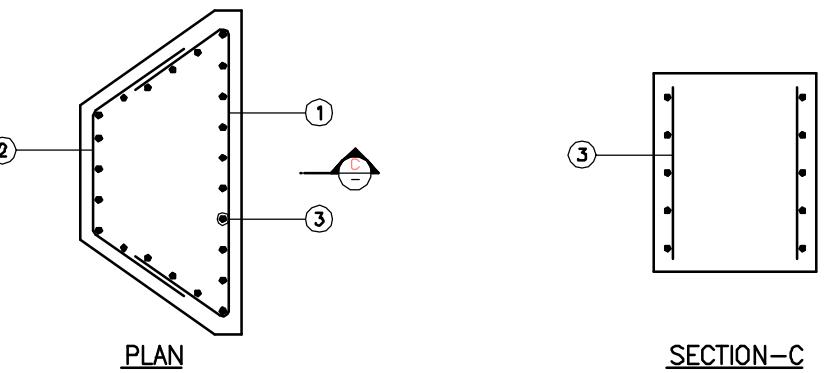
امارات العربية المتحدة
مملكة البحرين

A	B	C	D	E	F	G	H			
LINE ANCHOR BLOCKS FOR 45° RESTRAINED BENDS				LINE ANCHOR BLOCKS FOR 22½° & 11¼° RESTRAINED BENDS						
1						GENERAL NOTES				
2										
3										
4	REINFORCEMENT DETAILS				REINFORCEMENT DETAILS					
5										
6										
7	BAR MARK				BAR MARK					
8	BAR SHAPE				BAR SHAPE					
9	PIPE SIZE DN				PIPE SIZE DN					
10	BAR SIZE				BAR SIZE					
11	BAR LENGTH				BAR LENGTH					
12	C/C DIST.				C/C DIST.					
13	No. OF BARS				No. OF BARS					
14	BAR SIZE				BAR SIZE					
15	BAR LENGTH				BAR LENGTH					
16	C/C DIST.				C/C DIST.					
17	No. OF BARS				No. OF BARS					
18	BAR SIZE				BAR SIZE					
19	BAR LENGTH				BAR LENGTH					
20	C/C DIST.				C/C DIST.					
21	No. OF BARS				No. OF BARS					
22	TOTAL WEIGHT (kg)				TOTAL WEIGHT (kg)					
23	100				100					
24	150				150					
25	200				200					
26	250				250					
27	300				300					
28	400				400					
29	500				500					
30	600				600					
31	800				800					
32	900				900					
33	1000				1000					
34	A				B					
35	C				D					
36	E				F					
37	G				H					
38	REFERENCE DRAWINGS				W-P-TD-005 GENERAL DETAILS AND TYPICAL DETAILS OF THRUST BLOCKS FOR TEES (9 BAR TEST PRESSURE - BURIED CONDITIONS)					
39					ABU DHABI WATER & ELECTRICITY AUTHORITY UNITED ARAB EMIRATES					
40	DRG.TITLE				STANDARD DRAWINGS FOR WATER WORKS TYPICAL DETAILS OF LINE ANCHOR BLOCKS FOR 45°, 22½° & 11¼° RESTRAINED BENDS (9 BAR TEST PRESSURE-BURIED CONDITIONS)					
41	CAD FILE				SCALE					
42	W-P-TD-002				SIZE					
43	N.T.S.				DOCUMENT NUMBER					
44	A3				REV.					
45	W-P-TD-002				0					



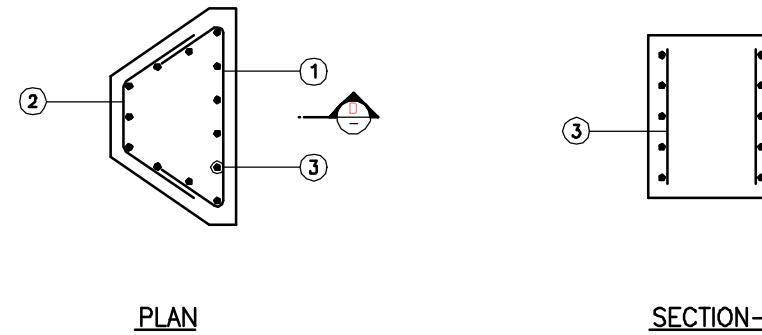
PIPE SIZE DN	A	B	C	D	VOLUME (m³)	VOLUME INCL PIPE SURR. (m³)	PIPE SIZE DN	A	B	C	D	VOLUME (m³)	VOLUME INCL PIPE SURR. (m³)
100	350	700	250	550	0.11	0.12	100	350	400	200	450	0.06	0.07
150	450	950	400	650	0.23	0.25	150	450	650	250	550	0.13	0.14
200	600	1200	550	750	0.43	0.47	200	550	800	300	650	0.22	0.24
250	700	1400	600	1000	0.76	0.84	250	600	1000	350	800	0.36	0.40
300	900	1800	700	1100	1.33	1.46	300	700	1200	450	900	0.57	0.63
400	1200	2400	900	1300	2.72	2.99	400	900	1600	500	1100	1.12	1.23
500	1500	3000	1100	1600	5.14	5.65	500	1200	2100	600	1300	2.25	2.48
600	1800	3600	1200	1800	8.10	8.91	600	1400	2500	700	1500	3.56	3.92
800	2400	4700	1300	2300	17.15	18.87	800	2000	3400	900	1800	8.08	8.89
900	2700	5100	1400	2500	22.63	24.89	900	2200	3700	1000	2100	11.28	12.41
1000	3000	5800	1500	2600	29.31	32.24	1000	2400	4000	1100	2300	14.58	16.04

REINFORCEMENT DETAILS



PLAN

SECTION-C



PLAN

SECTION-D

REFERENCE DRAWINGS

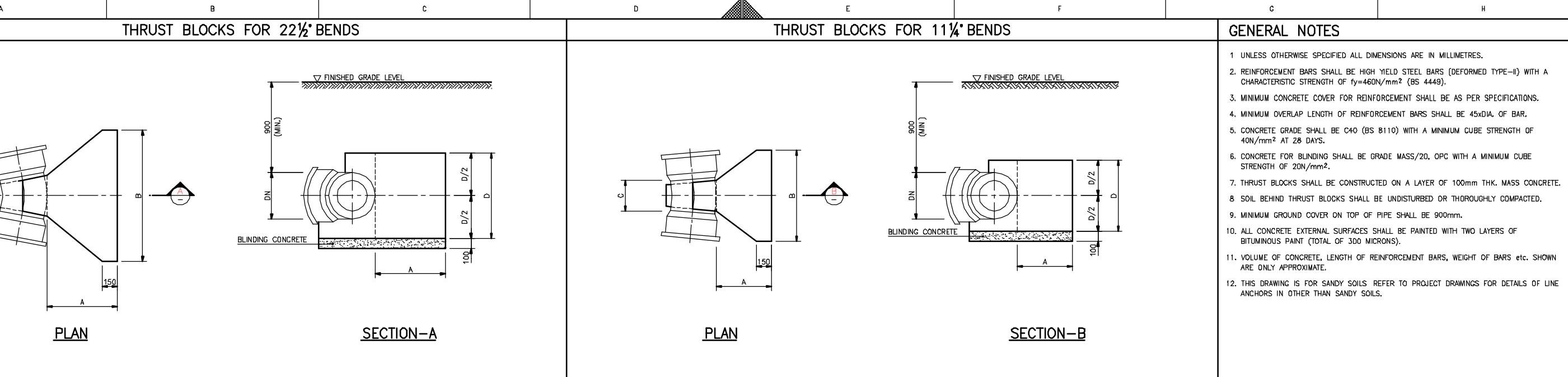
W-P-TD-005 GENERAL DETAILS AND TYPICAL DETAILS OF THRUST BLOCKS FOR TEES
(9 BAR TEST PRESSURE - BURIED CONDITIONS)



CLIENT:	ABU DHABI WATER & ELECTRICITY AUTHORITY		
UNITED ARAB EMIRATES			WATER & ELECTRICITY AUTHORITY
			United Arab Emirates
DRG.TITLE:	STANDARD DRAWINGS FOR WATER WORKS TYPICAL DETAILS OF THRUST BLOCKS FOR 90° & 45° BENDS (9 BAR TEST PRESSURE-BURIED CONDITIONS)		
REV.	W-P-TD-003		
DATE:	N.T.S.		
BY CHK.	A3		
ENG. APP.	W-P-TD-003		

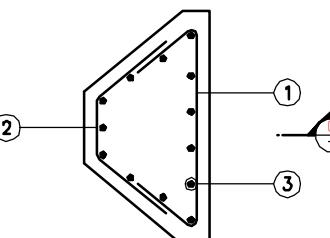
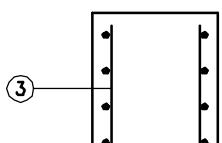
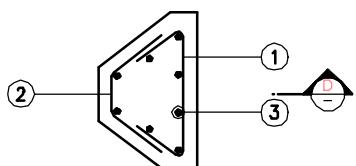
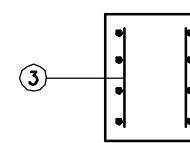
BAR MARK	1				2				3				BAR MARK	1				2				3						
	BAR SHAPE				BAR SHAPE				BAR SHAPE					BAR SHAPE				BAR SHAPE				BAR SHAPE						
BAR SIZE	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	TOTAL WEIGHT (kg)	PIPE SIZE DN	CONCRETE COVER	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	TOTAL WEIGHT (kg)				
PIPE SIZE DN																												
100	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-				
150	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	-	-	-	-	-	-	-	-	-				
200	10	1700	170	4	10	1200	170	4	8	550	190	12	8	200	-	-	-	-	-	-	-	-	-	-				
250	10	2100	190	5	10	1400	190	5	10	800	180	16	19	250	100	10	1500	190	4	10	1000	190	4	10	600	160	12	7
300	10	2800	210	5	10	1800	210	5	10	900	170	23	27	300	100	10	1900	170	5	10	1300	170	5	10	700	200	12	15
400	12	3800	210	6	12	2400	210	6	12	1100	200	27	59	400	100	10	2600	170	6	10	1600	170	6	10	900	200	17	25
500	12	4800	170	9	12	3000	170	9	12	1400	200	35	106	500	100	12	3500	180	7	12	2100	180	7	12	1100	200	24	57
600	16	5900	220	8	16	3600	220	8	12	1600	220	38	174	600	100	12	4200	180	8	12	2500	180	8	12	1300	200	29	81
800	16	7400	200	11	16	4300	200	11	16	2100	220	48	362	800	150	12	5400	190	9	12	3200	190	9	12	1600	180	43	130
900	16	8100	200	12	16	4700	200	12	16	2300	190	62	430	900	150	16	6000	230	10	16	3600	230	10	16	1900	220	39	272
1000	16	9300	180	14	16	5300	180	14	16	2400	200	67	577	1000	150	16	6500	200	11	16	4000	200	11	16	2100	220	42	321

CAD FILE	SCALE	SIZE	DOCUMENT NUMBER	REV.
W-P-TD-003	N.T.S.	A3	W-P-TD-003	0



PIPE SIZE DN	A	B	C	D	VOLUME (m³)	VOLUME INCL. PIPE SURR. (m³)	PIPE SIZE DN	A	B	C	D	VOLUME (m³)	VOLUME INCL. PIPE SURR. (m³)
100	300	300	100	350	0.03	0.03	100	250	250	100	300	0.02	0.02
150	350	450	150	450	0.06	0.07	150	300	350	150	400	0.04	0.04
200	450	600	200	500	0.11	0.12	200	350	450	150	450	0.06	0.07
250	500	800	300	600	0.19	0.21	250	400	600	200	500	0.10	0.11
300	600	1000	350	700	0.32	0.35	300	450	700	250	550	0.14	0.15
400	700	1300	400	850	0.56	0.62	400	550	900	300	700	0.26	0.29
500	800	1500	450	1050	0.90	0.99	500	650	1200	350	800	0.45	0.50
600	900	1800	550	1200	1.38	1.52	600	750	1400	400	900	0.68	0.75
800	1150	2300	700	1450	2.68	2.95	800	900	1800	450	1200	1.34	1.47
900	1200	2500	750	1700	3.54	3.89	900	1000	2000	500	1350	1.84	2.02
1000	1400	2700	800	1800	4.66	5.13	1000	1100	2200	600	1500	2.49	2.74

REINFORCEMENT DETAILS

PLANSECTION-CPLANSECTION-D

REFERENCE DRAWINGS

W-P-TD-005 GENERAL DETAILS AND TYPICAL DETAILS OF THRUST BLOCKS FOR TEES
(9 BAR TEST PRESSURE – BURIED CONDITIONS)



01.11.2001	FIRST ISSUE			
REV. DATE		DESCRIPTION	BY	CHK. ENG. APP.

CLIENT: ABU DHABI
WATER & ELECTRICITY AUTHORITY
UNITED ARAB EMIRATES

DRG.TITLE: STANDARD DRAWINGS FOR WATER WORKS
TYPICAL DETAILS OF THRUST BLOCKS
FOR 22½° & 11¼° BENDS
(9 BAR TEST PRESSURE-BURIED CONDITIONS)

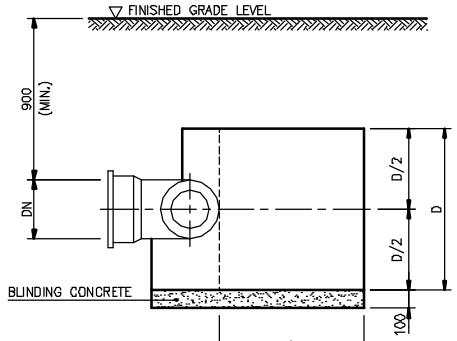
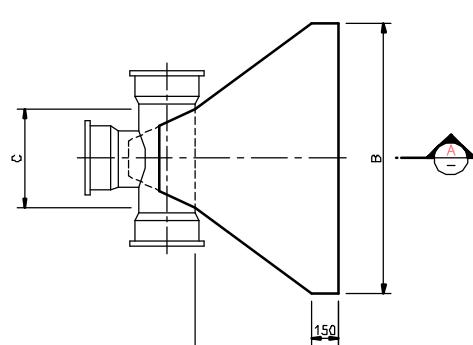
CAD FILE: W-P-TD-004 N.T.S. DOCUMENT NUMBER: A3 REV. 0
F: W-P-TD-004 N.T.S. A3 W-P-TD-004 0

BAR MARK	1				2				3				BAR SHAPE	1				2				3						
	BAR SHAPE				BAR SHAPE				BAR SHAPE					BAR SHAPE				BAR SHAPE				BAR SHAPE						
PIPE SIZE DN	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	BAR SIZE	PIPE SIZE DN	CONCRETE COVER	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	
100	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
150	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
200	-	-	-	-	-	-	-	-	-	-	-	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
250	-	-	-	-	-	-	-	-	-	-	-	-	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
300	10	1500	180	4	10	1000	180	4	10	500	180	11	6	300	-	-	-	-	-	-	-	-	-	-	-	-	-	
400	10	2100	200	4	10	1300	200	4	10	650	200	13	13	400	100	10	1400	150	4	10	900	150	4	10	500	210	8	6
500	10	2400	200	5	10	1500	200	5	10	850	200	16	20	500	100	10	1800	180	4	10	1100	180	4	10	600	200	12	8
600	10	2800	190	6	10	1700	190	6	10	1000	200	19	29	600	100	10	2200	160	5	10	1300	160	5	10	700	190	15	17
800	12	3300	200	7	12	2000	200	7	12	1250	200	23	59	800	150	10	2500	190	6	10	1500	190	6	10	1000	180	18	26
900	12	3600	180	9	12	2200	180	9	12	1500	200	25	79	900	150	12	2900	180	7	12	1700	180	7	12	1150	200	19	48
1000	12	4000	190	9	12	2400	190	9	12	1600	200	28	91	1000	150	12	3200	180	8	12	1900	180	8	12	1300	200	21	60

A B C D E F G H

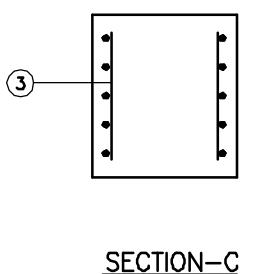
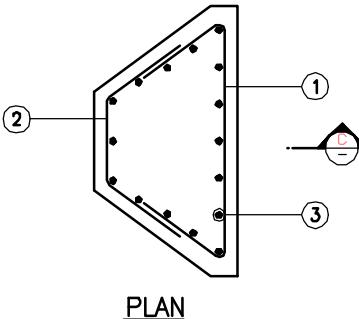
A

THRUST BLOCKS FOR TEES



PIPE SIZE DN	A	B	C	D	VOLUME (m³)	VOLUME INCL. PIPE SURR. (m³)
100	400	450	250	500	0.08	0.09
150	500	700	300	600	0.17	0.19
200	600	900	350	700	0.29	0.32
250	700	1200	450	800	0.51	0.56
300	800	1500	550	900	0.80	0.88
400	950	2000	650	1150	1.56	1.72
500	1150	2400	800	1450	2.84	3.12
600	1400	3000	900	1650	4.77	5.25
800	1850	4100	1100	2000	10.07	11.08
900	2000	4600	1250	2200	13.42	14.76
1000	2200	5100	1400	2300	17.08	18.79

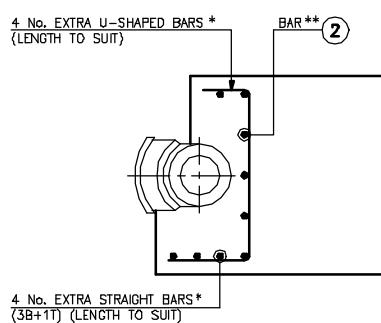
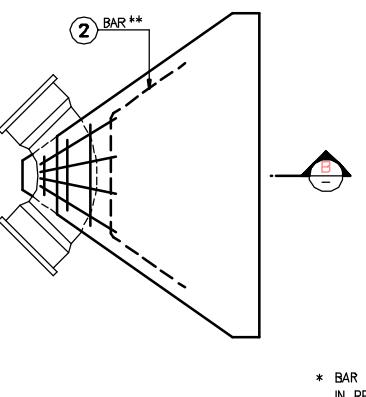
REINFORCEMENT DETAILS



BAR MARK	1			2			3			TOTAL WEIGHT (kg)
	BAR SHAPE	B-240 (UPTO DN600) B-460 (DN800 TO DN1000)		C-120 (UPTO DN600) C-140 (DN800 & ABOVE)		D-200				
100	-	-	-	-	-	-	-	-	-	-
150	-	-	-	-	-	-	-	-	-	-
200	10	1400	220	3	10	1000	220	3	10	500
250	10	1900	180	4	10	1300	180	4	10	600
300	10	2400	160	5	10	1500	160	5	10	700
400	10	3100	180	6	10	1900	180	6	10	950
500	12	3800	200	7	12	2300	200	7	12	1250
600	12	4800	200	8	12	2800	200	8	12	1450
800	16	6300	220	9	16	3600	220	9	12	1800
900	16	6500	210	10	16	4000	210	10	16	2000
1000	16	7800	200	11	16	4400	200	11	16	2100

GENERAL DETAILS

TYP. EXTRA REINFORCEMENT BARS FOR CONCRETE PIPE SURROUNDING AT BENDS & TEES



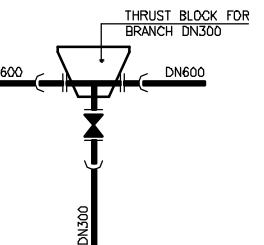
* BAR SIZE SIMILAR TO BAR MARK-1 AS MENTIONED IN RELEVANT BAR SCHEDULE OF THRUST BLOCKS

** BAR MARK-2 SHOWN IN RELEVANT BAR SCHEDULE OF THRUST BLOCKS

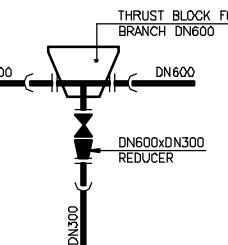
GENERAL NOTES

- 1 UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MILLIMETRES.
2. REINFORCEMENT BARS SHALL BE HIGH YIELD STEEL BARS (DEFORMED TYPE-II) WITH A CHARACTERISTIC STRENGTH OF $f_y=460\text{N/mm}^2$ (BS 4449).
3. MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE AS PER SPECIFICATIONS.
4. MINIMUM OVERLAP LENGTH OF REINFORCEMENT BARS SHALL BE $45\times\text{DIA.}$ OF BAR.
5. CONCRETE GRADE SHALL BE C40 (BS 8110) WITH A MINIMUM CUBE STRENGTH OF 40N/mm^2 AT 28 DAYS.
6. CONCRETE FOR BLINDING SHALL BE GRADE MASS/20, OPC WITH A MINIMUM CUBE STRENGTH OF 20N/mm^2 .
7. THRUST BLOCKS SHALL BE CONSTRUCTED ON A LAYER OF 100mm THK. MASS CONCRETE.
8. SOIL BEHIND THRUST BLOCKS SHALL BE UNDISTurbed OR THOROUGHLY COMPACTED.
9. MINIMUM GROUND COVER ON TOP OF PIPE SHALL BE 900mm.
10. ALL CONCRETE EXTERNAL SURFACES SHALL BE PAINTED WITH TWO LAYERS OF BITUMINOUS PAINT (TOTAL OF 300 MICRONS).
11. VOLUME OF CONCRETE, LENGTH OF REINFORCEMENT BARS, WEIGHT OF BARS etc. SHOWN ARE ONLY APPROXIMATE.
12. FOR REDUCING TEES, AN EQUAL TEE THRUST BLOCK SHALL BE SELECTED OF THE SAME DIAMETER AS THE BRANCH DIAMETER.
13. THIS DRAWING IS FOR SANDY SOILS. REFER TO PROJECT DRAWINGS FOR DETAILS OF LINE ANCHORS IN OTHER THAN SANDY SOILS.
14. R DENOTES RESTRAINED JOINT.

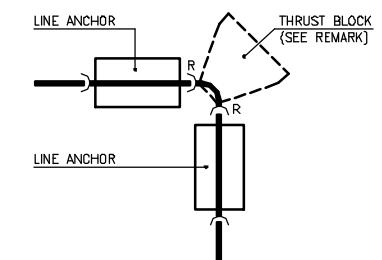
TYPICAL EXAMPLES



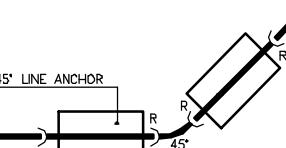
EXAMPLE-1



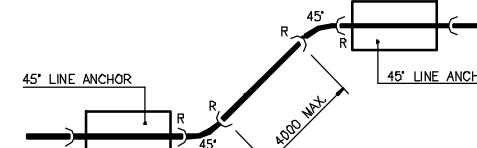
EXAMPLE-2

REMARK:
IN RESTRICTED AREAS CONSTRUCT 2 LINE ANCHORS AS ALTERNATIVE TO ONE THRUST BLOCK AS SHOWN

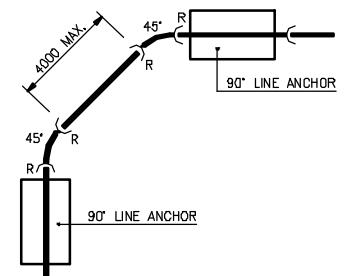
EXAMPLE-3



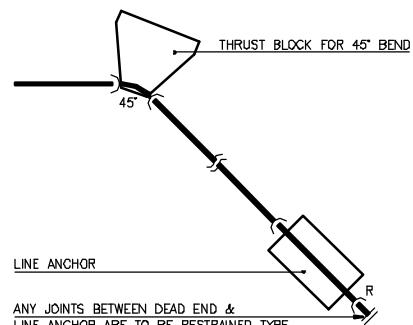
EXAMPLE-4



EXAMPLE-5

ANY JOINTS BETWEEN DEAD END &
LINE ANCHOR ARE TO BE RESTRAINED TYPE

EXAMPLE-6



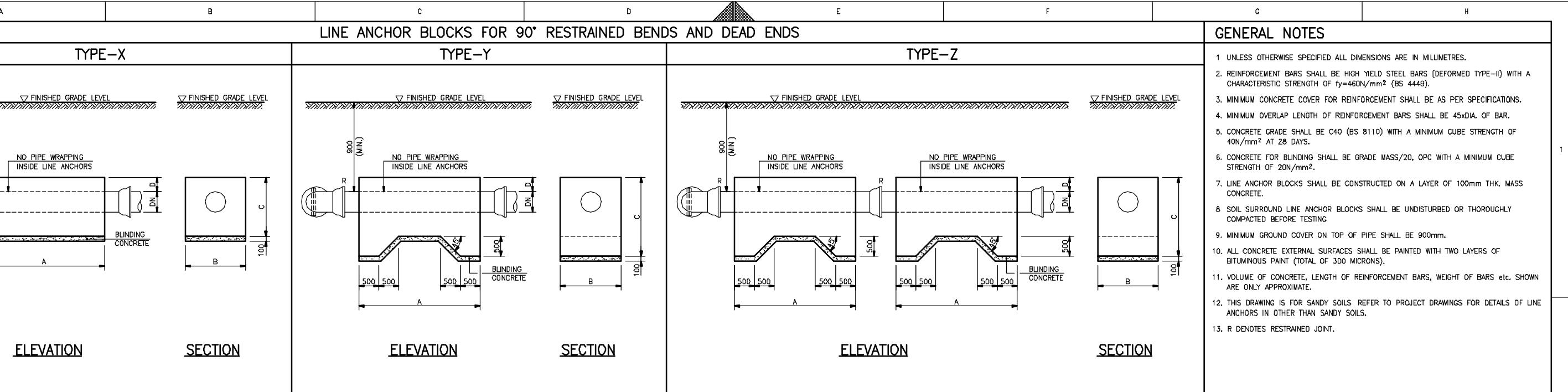
EXAMPLE-7



01.11.2001	FIRST ISSUE	REV. DATE	DESCRIPTION	BY CHK. ENG. APP.
ABU DHABI	WATER & ELECTRICITY AUTHORITY	UNITED ARAB EMIRATES		

STANDARD DRAWINGS FOR WATER WORKS
GENERAL DETAILS & TYPICAL DETAILS
OF THRUST BLOCKS FOR TEES
(9 BAR TEST PRESSURE-BURIED CONDITIONS)

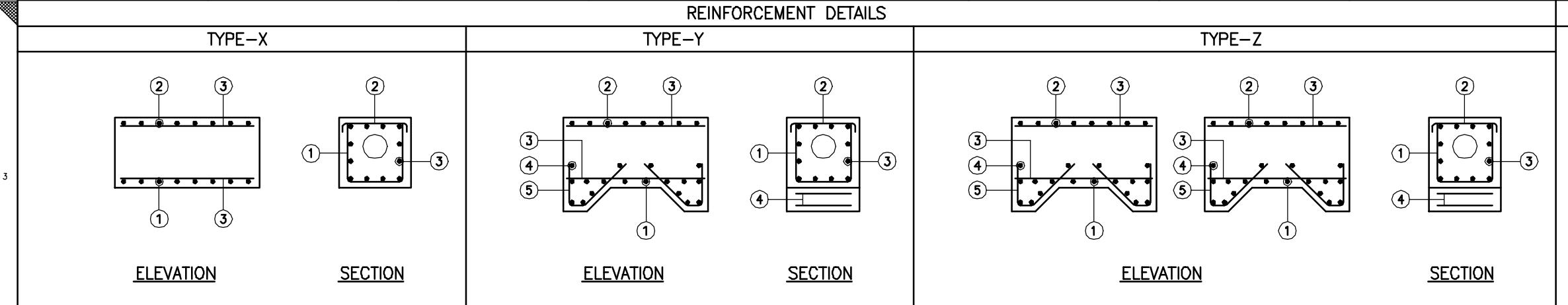
CAD FILE	SCALE	SIZE	DOCUMENT NUMBER	REV.
W-P-TD-005	N.T.S.	A3	W-P-TD-005	0



GENERAL NOTES

- 1 UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MILLIMETRES.
- 2 REINFORCEMENT BARS SHALL BE HIGH YIELD STEEL BARS (DEFORMED TYPE-II) WITH A CHARACTERISTIC STRENGTH OF $f_y=460\text{N/mm}^2$ (BS 4449).
- 3 MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE AS PER SPECIFICATIONS.
- 4 MINIMUM OVERLAP LENGTH OF REINFORCEMENT BARS SHALL BE $45\times\text{DIA. OF BAR}$.
- 5 CONCRETE GRADE SHALL BE C40 (BS 8110) WITH A MINIMUM CUBE STRENGTH OF 40N/mm^2 AT 28 DAYS.
- 6 CONCRETE FOR BLINDING SHALL BE GRADE MASS/20, OPC WITH A MINIMUM CUBE STRENGTH OF 20N/mm^2 .
- 7 LINE ANCHOR BLOCKS SHALL BE CONSTRUCTED ON A LAYER OF 100mm THK. MASS CONCRETE.
- 8 SOIL SURROUND LINE ANCHOR BLOCKS SHALL BE UNDISTURBED OR THOROUGHLY COMPACTED BEFORE TESTING.
- 9 MINIMUM GROUND COVER ON TOP OF PIPE SHALL BE 900mm.
- 10 ALL CONCRETE EXTERNAL SURFACES SHALL BE PAINTED WITH TWO LAYERS OF BITUMINOUS PAINT (TOTAL OF 300 MICRONS).
- 11 VOLUME OF CONCRETE, LENGTH OF REINFORCEMENT BARS, WEIGHT OF BARS etc. SHOWN ARE ONLY APPROXIMATE.
- 12 THIS DRAWING IS FOR SANDY SOILS. REFER TO PROJECT DRAWINGS FOR DETAILS OF LINE ANCHORS IN OTHER THAN SANDY SOILS.
- 13 R DENOTES RESTRAINED JOINT.

PIPE SIZE DN	TYPE OF BLOCK	NUMBER OF BLOCKS REQD. PER LOCATION	A	B	C	D	VOLUME (m³)
100	X	1	1400	500	650	250	0.44
150	X	1	1800	700	900	300	1.09
200	X	1	2300	900	1100	300	2.19
250	X	1	2600	1100	1300	400	3.56
300	X	1	2400	1300	1600	500	4.79
400	Y	1	4300	1500	1800	400	8.88
500	Y	1	5100	1850	2100	500	15.35
600	Y	1	5200	2200	2500	500	22.88
800	Z	2	6300	2000	2300	450	$20.67 \times 2 = 41.34$
900	Z	2	6100	2250	2600	500	$26.23 \times 2 = 52.46$
1000	Z	2	6400	2500	2800	600	$33.15 \times 2 = 66.30$



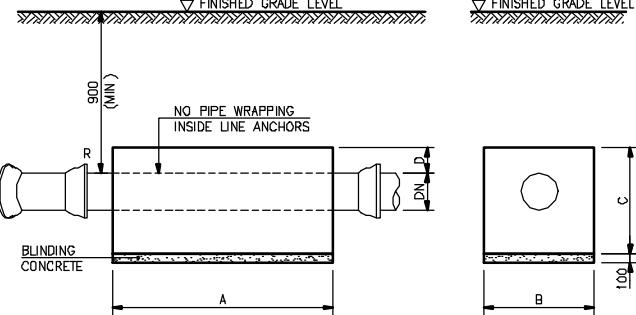
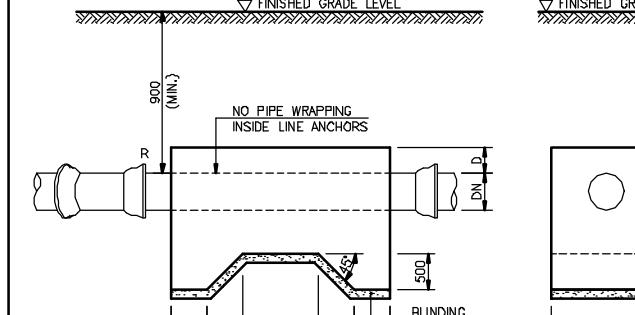
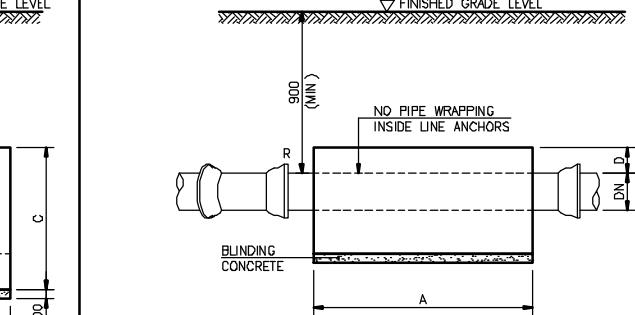
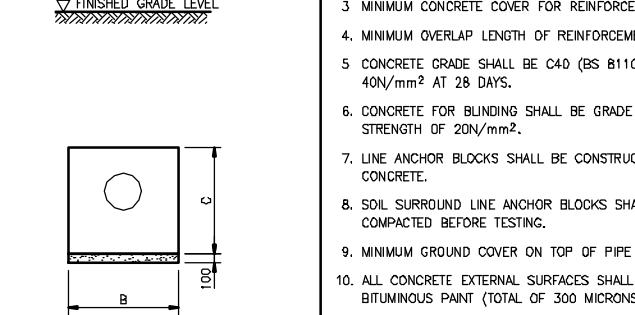
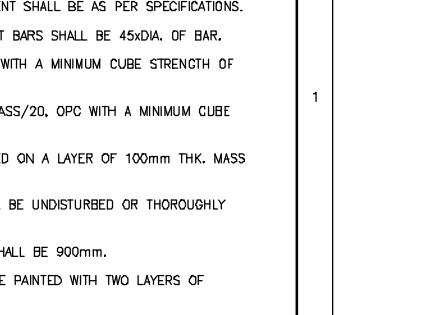
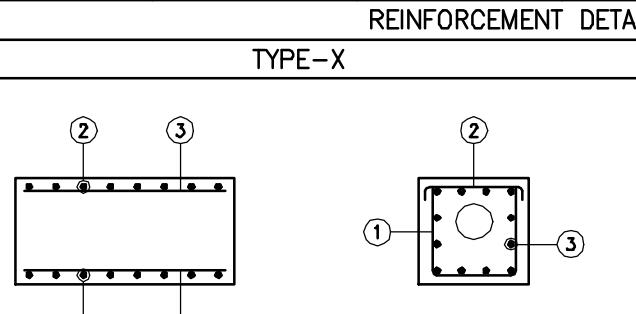
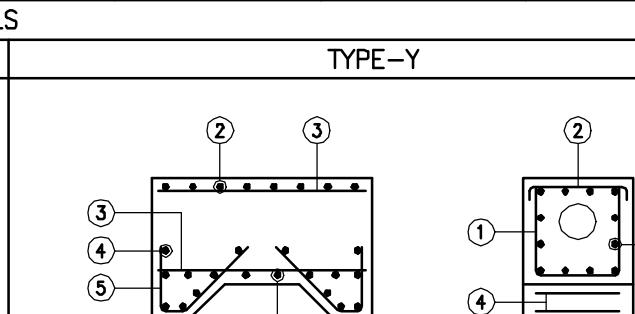
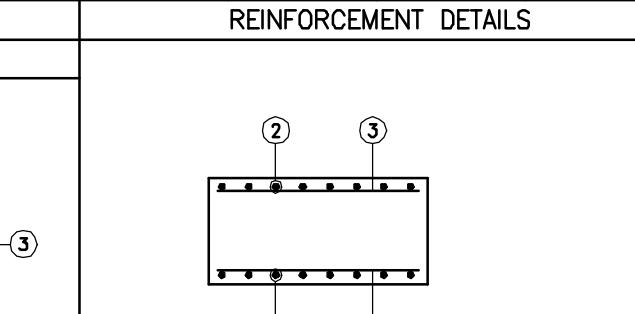
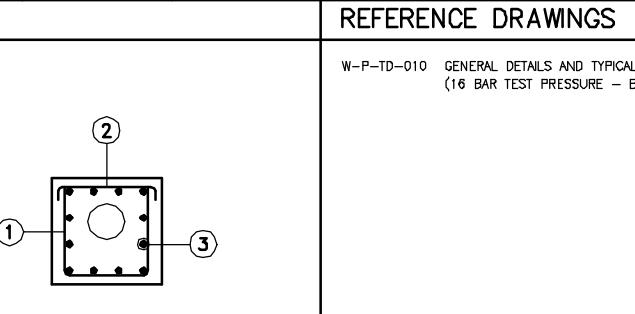
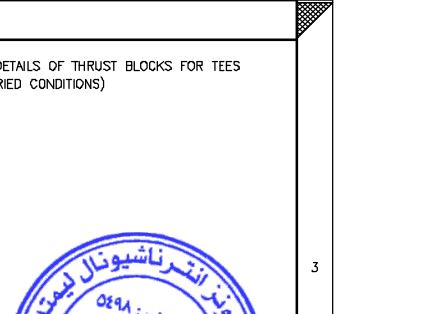
BAR MARK	1	2	3	4	5																	
BAR SHAPE	C-200 (UPTO DN400) C-700 (DN500 & ABOVE)	B-200	B-200	A-200	B-200																	
PIPE SIZE DN	TYPE OF BLOCK	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	TOTAL WEIGHT (kg)				
100	X	10	1200	240	6	10	600	240	6	10	1200	185	8	-	-	-	-	-	8			
150	X	12	1900	225	8	12	800	225	8	12	1600	240	10	-	-	-	-	-	33			
200	X	12	2500	210	11	12	1000	210	11	12	2100	200	16	-	-	-	-	-	64			
250	X	12	3100	265	10	12	1200	265	10	12	2400	220	18	-	-	-	-	-	77			
300	X	12	3900	245	10	12	1400	245	10	12	2200	190	26	-	-	-	-	-	98			
400	Y	12	3500	270	16	12	1600	270	16	12	4100	215	22	12	1300	215	10	12	2050	215	14	190
500	Y	12	4450	185	27	12	1950	185	27	12	4900	200	30	12	1650	260	10	12	2050	200	18	331
600	Y	12	5600	185	28	12	2300	185	28	12	5000	200	42	12	2000	260	10	12	2050	200	22	441
800	Z	12	5000	200	31	12	2100	200	31	12	6100	190	36	12	1800	260	10	12	2050	190	20	$443 \times 2 = 886$
900	Z	12	5850	200	30	12	2350	200	30	12	5900	230	34	12	2050	260	10	12	2050	230	20	$451 \times 2 = 902$
1000	Z	12	6500	185	34	12	2600	185	34	12	6200	210	42	12	2300	260	10	12	2050	210	24	$540 \times 2 = 1140$

REFERENCE DRAWINGS

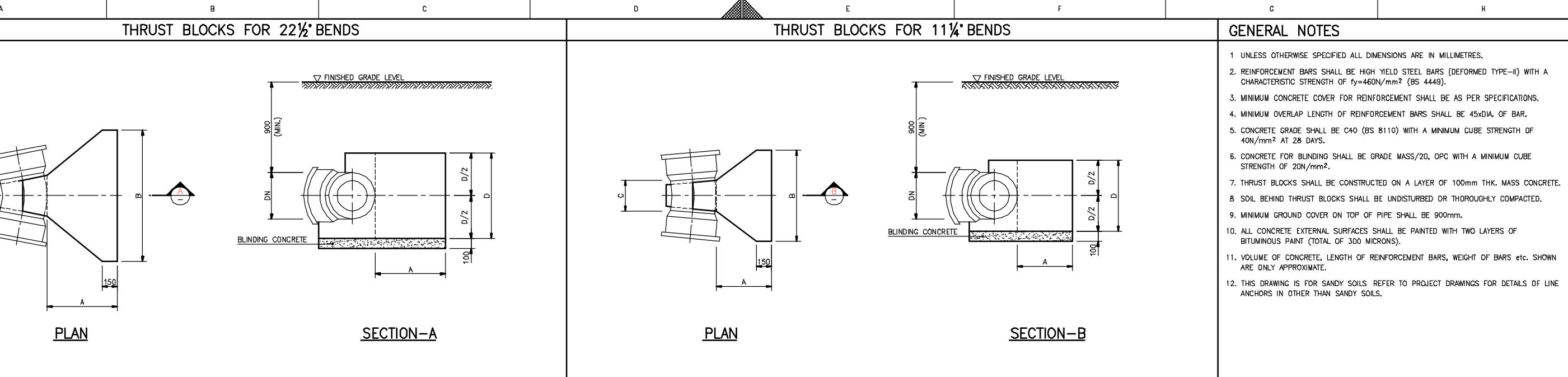
W-P-TD-010 GENERAL DETAILS AND TYPICAL DETAILS OF THRUST BLOCKS FOR TEES (16 BAR TEST PRESSURE – BURIED CONDITIONS)



01.11.2001	FIRST ISSUE	BY CHK. ENG. APP.		
REV. DATE	DESCRIPTION			
CLIENT: ABU DHABI WATER & ELECTRICITY AUTHORITY UNITED ARAB EMIRATES				
DRG.TITLE: STANDARD DRAWINGS FOR WATER WORKS TYPICAL DETAILS OF LINE ANCHOR BLOCKS FOR 90° RESTRAINED BENDS AND DEAD ENDS (16 BAR TEST PRESSURE-BURIED CONDITIONS)				
CAD FILE	SCALE	SIZE	DOCUMENT NUMBER	REV.
W-P-TD-006	N.T.S.	A3	W-P-TD-006	0

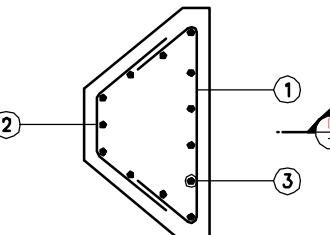
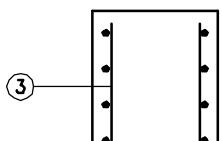
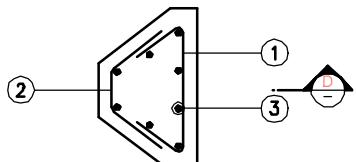
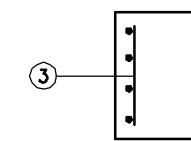
A	B	C	D	E	F	G	H	
LINE ANCHOR BLOCKS FOR 45° RESTRAINED BENDS								
TYPE-X				TYPE-Y				
1							GENERAL NOTES	
2							<p>1 UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MILLIMETRES.</p> <p>2. REINFORCEMENT BARS SHALL BE HIGH YIELD STEEL BARS (DEFORMED TYPE-II) WITH A CHARACTERISTIC STRENGTH OF $f_y=460\text{N/mm}^2$ (BS 4449).</p> <p>3 MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE AS PER SPECIFICATIONS.</p> <p>4. MINIMUM OVERLAP LENGTH OF REINFORCEMENT BARS SHALL BE $45\times\text{DIA. OF BAR}$.</p> <p>5 CONCRETE GRADE SHALL BE C40 (BS B110) WITH A MINIMUM CUBE STRENGTH OF 40N/mm^2 AT 28 DAYS.</p> <p>6. CONCRETE FOR BLINDING SHALL BE GRADE MASS/20, OPC WITH A MINIMUM CUBE STRENGTH OF 20N/mm^2.</p> <p>7. LINE ANCHOR BLOCKS SHALL BE CONSTRUCTED ON A LAYER OF 100mm THK. MASS CONCRETE.</p> <p>8. SOIL SURROUND LINE ANCHOR BLOCKS SHALL BE UNDISTURBED OR THOROUGHLY COMPACTED BEFORE TESTING.</p> <p>9. MINIMUM GROUND COVER ON TOP OF PIPE SHALL BE 900mm.</p> <p>10. ALL CONCRETE EXTERNAL SURFACES SHALL BE PAINTED WITH TWO LAYERS OF BITUMINOUS PAINT (TOTAL OF 300 MICRONS).</p> <p>11. VOLUME OF CONCRETE, LENGTH OF REINFORCEMENT BARS, WEIGHT OF BARS etc. SHOWN ARE ONLY APPROXIMATE.</p> <p>12. THIS DRAWING IS FOR SANDY SOILS. REFER TO PROJECT DRAWINGS FOR DETAILS OF LINE ANCHORS IN OTHER THAN SANDY SOILS.</p> <p>13. R DENOTES RESTRAINED JOINT.</p>	
3	REINFORCEMENT DETAILS				REINFORCEMENT DETAILS			
4							REFERENCE DRAWINGS	
5	BAR MARK				BAR MARK			
6	BAR SHAPE				BAR SHAPE			
7	PIPE SIZE DN				PIPE SIZE DN			
8	TYPE OF BLOCK				TYPE OF BLOCK			
9	BAR SIZE				BAR SIZE			
10	BAR LENGTH				BAR LENGTH			
11	C/C DIST.				C/C DIST.			
12	No. OF BARS				No. OF BARS			
13	BAR SIZE				BAR SIZE			
14	BAR LENGTH				BAR LENGTH			
15	C/C DIST.				C/C DIST.			
16	No. OF BARS				No. OF BARS			
17	BAR SIZE				BAR SIZE			
18	BAR LENGTH				BAR LENGTH			
19	C/C DIST.				C/C DIST.			
20	No. OF BARS				No. OF BARS			
21	BAR SIZE				BAR SIZE			
22	BAR LENGTH				BAR LENGTH			
23	C/C DIST.				C/C DIST.			
24	No. OF BARS				No. OF BARS			
25	BAR SIZE				BAR SIZE			
26	BAR LENGTH				BAR LENGTH			
27	C/C DIST.				C/C DIST.			
28	No. OF BARS				No. OF BARS			
29	BAR SIZE				BAR SIZE			
30	BAR LENGTH				BAR LENGTH			
31	C/C DIST.				C/C DIST.			
32	No. OF BARS				No. OF BARS			
33	BAR SIZE				BAR SIZE			
34	BAR LENGTH				BAR LENGTH			
35	C/C DIST.				C/C DIST.			
36	No. OF BARS				No. OF BARS			
37	BAR SIZE				BAR SIZE			
38	BAR LENGTH				BAR LENGTH			
39	C/C DIST.				C/C DIST.			
40	No. OF BARS				No. OF BARS			
41	BAR SIZE				BAR SIZE			
42	BAR LENGTH				BAR LENGTH			
43	C/C DIST.				C/C DIST.			
44	No. OF BARS				No. OF BARS			
45	BAR SIZE				BAR SIZE			
46	BAR LENGTH				BAR LENGTH			
47	C/C DIST.				C/C DIST.			
48	No. OF BARS				No. OF BARS			
49	BAR SIZE				BAR SIZE			
50	BAR LENGTH				BAR LENGTH			
51	C/C DIST.				C/C DIST.			
52	No. OF BARS				No. OF BARS			
53	BAR SIZE				BAR SIZE			
54	BAR LENGTH				BAR LENGTH			
55	C/C DIST.				C/C DIST.			
56	No. OF BARS				No. OF BARS			
57	BAR SIZE				BAR SIZE			
58	BAR LENGTH				BAR LENGTH			

A	B	C	D	E	F	G	H				
THRUST BLOCKS FOR 90° BENDS				THRUST BLOCKS FOR 45° BENDS							
1			GENERAL NOTES								
2			<p>1 UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MILLIMETRES.</p> <p>2. REINFORCEMENT BARS SHALL BE HIGH YIELD STEEL BARS (DEFORMED TYPE-II) WITH A CHARACTERISTIC STRENGTH OF $f_y=460\text{N/mm}^2$ (BS 4449).</p> <p>3. MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE AS PER SPECIFICATIONS.</p> <p>4. MINIMUM OVERLAP LENGTH OF REINFORCEMENT BARS SHALL BE $45\times\text{DIA. OF BAR}$.</p> <p>5. CONCRETE GRADE SHALL BE C40 (BS B110) WITH A MINIMUM CUBE STRENGTH OF 40N/mm^2 AT 28 DAYS.</p> <p>6. CONCRETE FOR BLINDING SHALL BE GRADE MASS/20, OPC WITH A MINIMUM CUBE STRENGTH OF 20N/mm^2.</p> <p>7. THRUST BLOCKS SHALL BE CONSTRUCTED ON A LAYER OF 100mm THK. MASS CONCRETE.</p> <p>8. SOIL BEHIND THRUST BLOCKS SHALL BE UNDISTurbed OR THOROUGHLY COMPACTED.</p> <p>9. MINIMUM GROUND COVER ON TOP OF PIPE SHALL BE 900mm.</p> <p>10. ALL CONCRETE EXTERNAL SURFACES SHALL BE PAINTED WITH TWO LAYERS OF BITUMINOUS PAINT (TOTAL OF 300 MICRONS).</p> <p>11. VOLUME OF CONCRETE, LENGTH OF REINFORCEMENT BARS, WEIGHT OF BARS etc. SHOWN ARE ONLY APPROXIMATE.</p> <p>12. THIS DRAWING IS FOR SANDY SOILS REFER TO PROJECT DRAWINGS FOR DETAILS OF LINE ANCHORS IN OTHER THAN SANDY SOILS</p>								
3	REINFORCEMENT DETAILS				REINFORCEMENT DETAILS						
4			REFERENCE DRAWINGS								
5											
6											
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PIPE SIZE DN	A	B	C	D	VOLUME (m³)	VOLUME INCL. PIPE SURR. (m³)	PIPE SIZE DN	A	B	C	D	VOLUME (m³)	VOLUME INCL. PIPE SURR. (m³)
100	500	600	100	350	0.07	0.08	100	400	400	100	400	0.04	0.04
150	700	700	150	450	0.15	0.17	150	500	500	150	400	0.08	0.09
200	800	800	200	600	0.27	0.30	200	600	600	150	500	0.13	0.14
250	900	1100	300	800	0.55	0.61	250	700	900	200	600	0.26	0.29
300	1100	1200	300	900	0.80	0.88	300	900	900	200	700	0.38	0.42
400	1300	1600	400	1100	1.53	1.68	400	1000	1200	300	900	0.74	0.81
500	1600	2000	400	1300	2.66	2.93	500	1200	1500	300	1100	1.29	1.42
600	1700	2600	500	1400	3.91	4.30	600	1300	1800	400	1200	1.84	2.02
800	2200	3300	600	1800	8.08	8.89	800	1800	2400	400	1500	4.01	4.41
900	2200	3600	700	2100	10.40	11.44	900	1800	2700	500	1700	5.18	5.70
1000	2300	4300	800	2200	13.48	14.83	1000	1900	3400	600	1600	6.42	7.06

REINFORCEMENT DETAILS

PLANSECTION-CPLANSECTION-D

REFERENCE DRAWINGS

W-P-TD-010 GENERAL DETAILS AND TYPICAL DETAILS OF THRUST BLOCKS FOR TEES
(16 BAR TEST PRESSURE – BURIED CONDITIONS)

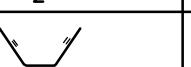
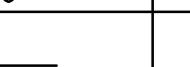
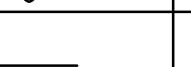


0 01.11.2001	FIRST ISSUE		BY CHK. ENG. APP.	

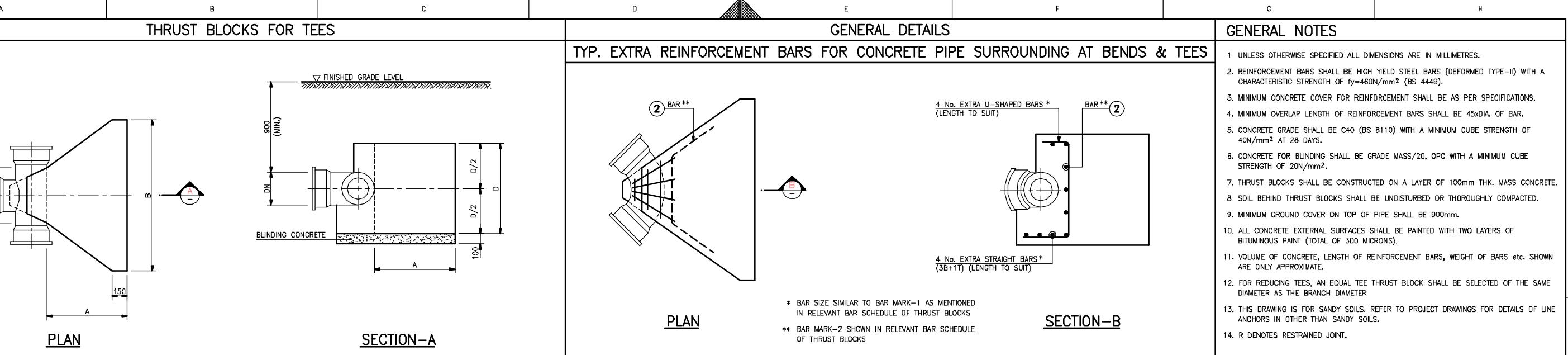
CLIENT: ABU DHABI
WATER & ELECTRICITY AUTHORITY
UNITED ARAB EMIRATES
الإمارات العربية المتحدة

DRG.TITLE: STANDARD DRAWINGS FOR WATER WORKS
TYPICAL DETAILS OF THRUST BLOCKS
FOR 22½° & 11¼° BENDS
(16 BAR TEST PRESSURE-BURIED CONDITIONS)

CAD FILE: W-P-TD-009 N.T.S. DOCUMENT NUMBER: A3 REV. 0

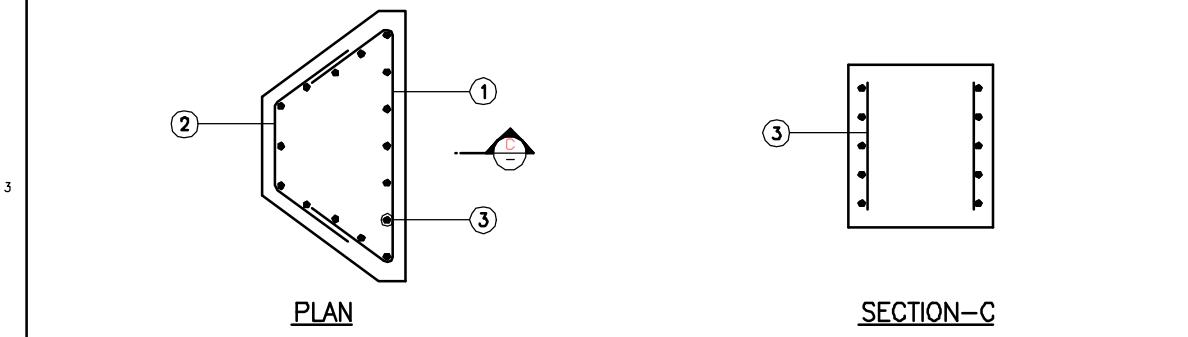
BAR MARK	1				2				3				BAR MARK	1				2				3			
BAR SHAPE	 B-240 (UPTO DN600) B-460 (DN600 & ABOVE)				 C-120 (UPTO DN600) C-140 (DN600 & ABOVE)				 D-200				BAR SHAPE	 B-240 (UPTO DN600) B-460 (DN600 & ABOVE)				 C-120 (UPTO DN600) C-140 (DN600 & ABOVE)				 D-200			
PIPE SIZE DN	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	PIPE SIZE DN	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	TOTAL WEIGHT (kg)			
100	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-		
150	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	-	-	-	-	-	-	-	-		
200	10	1500	200	3	10	1000	200	3	10	400	210	9	4	200	-	-	-	-	-	-	-	-	-		
250	10	2000	200	4	10	1300	200	4	10	600	200	13	13	250	10	1500	200	3	10	900	200	3	10	400	
300	10	2300	180	5	10	1500	180	5	10	700	200	15	18	300	10	1700	170	4	10	1100	170	4	10	500	
400	12	3000	220	5	12	1900	220	5	12	900	200	20	39	400	10	2200	230	4	10	1400	230	4	10	700	
500	12	3800	220	6	12	2300	220	6	12	1100	220	23	55	500	10	2800	180	6	10	1700	180	6	10	900	
600	12	4600	190	7	12	2600	190	7	12	1200	200	32	81	600	12	3200	250	5	12	2000	250	5	12	1000	
800	16	5600	220	8	16	3200	220	8	12	1600	210	37	164	800	12	4100	180	8	12	2400	180	8	12	1300	
900	16	6000	230	9	16	3400	230	9	16	1900	240	34	235	900	12	4400	180	9	12	2500	180	9	12	1500	
1000	16	7000	240	9	16	3800	240	9	16	2000	240	40	279	1000	12	5400	170	9	12	2900	170	9	12	1400	

A B C D E F G H



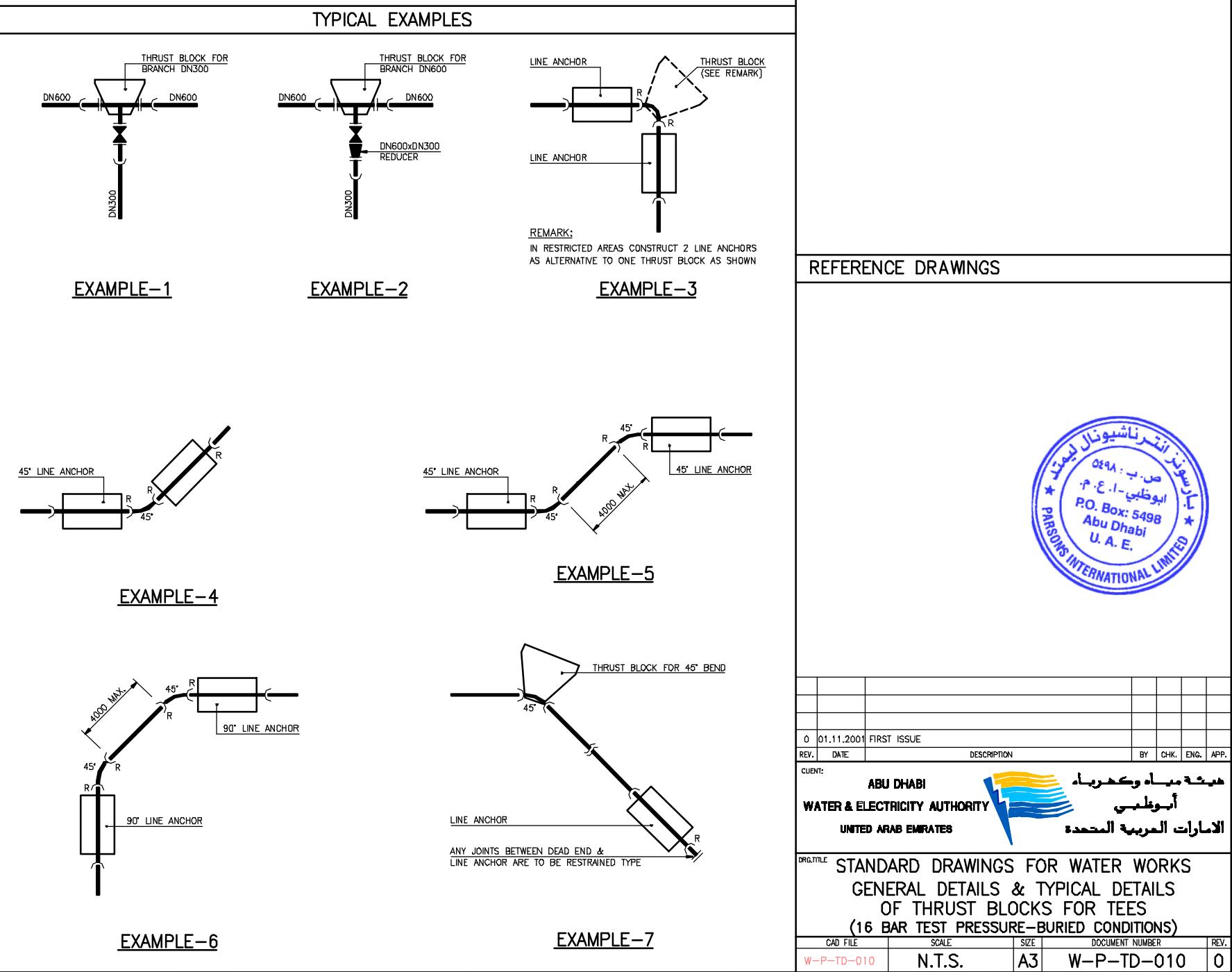
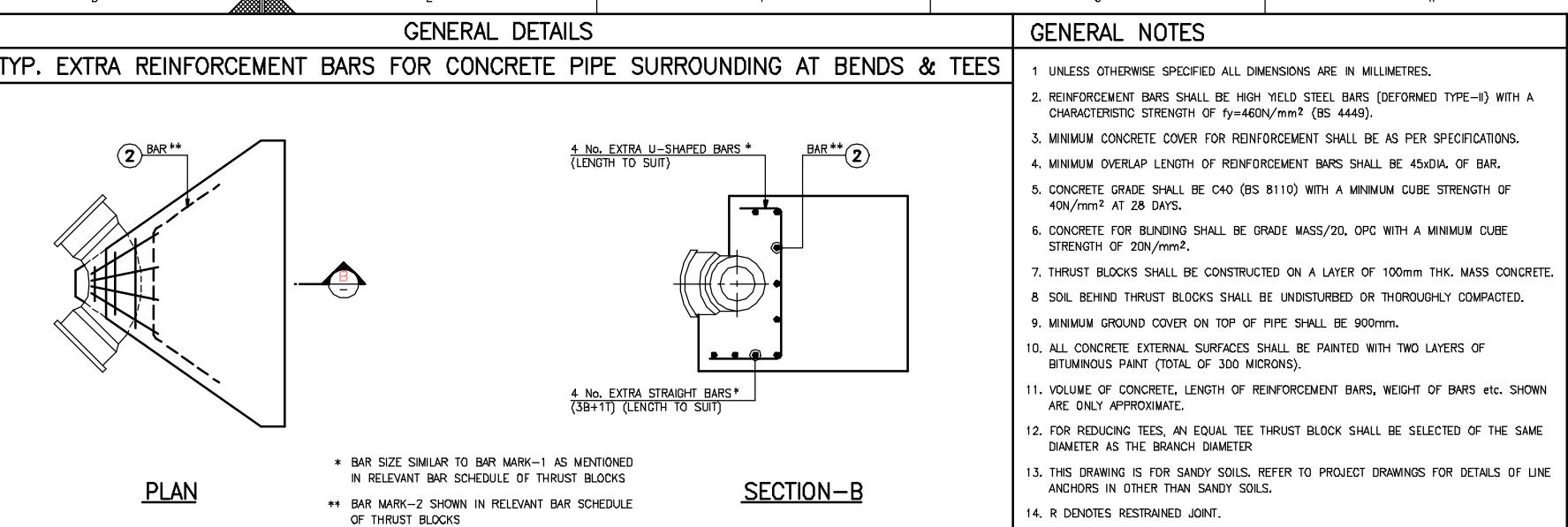
PIPE SIZE DN	A	B	C	D	VOLUME (m^3)	VOLUME INCL. PIPE SURR. (m^3)
100	550	800	250	500	0.17	0.19
150	700	1200	300	600	0.36	0.40
200	800	1500	350	800	0.66	0.73
250	1000	2000	450	1000	1.34	1.47
300	1150	2400	550	1100	2.02	2.22
400	1350	3000	650	1400	3.70	4.07
500	1600	3700	800	1700	6.49	7.14
600	1900	4400	900	1900	10.07	11.08
800	2400	5600	1100	2400	20.11	22.12
900	2600	6200	1250	2600	26.15	28.77
1000	2900	7100	1400	2700	34.43	37.87

REINFORCEMENT DETAILS



PIPE SIZE DN	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	BAR SIZE	BAR LENGTH	C/C DIST.	No. OF BARS	TOTAL WEIGHT (kg)
100	-	-	-	-	-	-	-	-	-	-	-	-	-
150	10	1900	200	3	10	1100	200	3	10	400	200	12	6
200	10	2400	200	4	10	1400	200	4	10	600	200	15	15
250	10	3200	200	5	10	1800	200	5	10	800	180	24	27
300	10	3900	180	6	10	2100	180	6	10	900	200	26	43
400	12	4800	200	7	12	2600	200	7	12	1200	220	30	78
500	12	5900	180	9	12	3100	180	9	12	1500	190	43	129
600	12	7000	170	11	12	3700	170	11	12	1700	170	57	191
800	16	8700	210	11	16	4500	210	11	16	2200	230	52	410
900	16	9600	210	12	16	5000	210	12	16	2400	210	64	520
1000	16	11000	200	13	16	5600	200	13	16	2500	200	77	645

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01.11.2001	FIRST ISSUE	DESCRIPTION	BY CHK. ENG. APP.
REV. DATE			
CLIENT:	ABU DHABI WATER & ELECTRICITY AUTHORITY UNITED ARAB EMIRATES		
ORG. TITLE:	STANDARD DRAWINGS FOR WATER WORKS GENERAL DETAILS & TYPICAL DETAILS OF THRUST BLOCKS FOR TEES (16 BAR TEST PRESSURE-BURIED CONDITIONS)		
CAD FILE	SCALE	SIZE	DOCUMENT NUMBER
W-P-TD-010	N.T.S.	A3	W-P-TD-010
			0

A	B	C	D	E	F	G	H																																																																																																																																																				
			TOP VIEW OF COVER SLAB																																																																																																																																																								
1	<p>VALVE (GATE/ BUTTERFLY) FLANGE ADAPTOR (SEE NOTE-10) SEALING FLANGE ANCHORING FLANGE SPIGOT ALUMINIUM LADDER 300x300x12D DEEP SUMP WITH ALUMINIUM GRATING COVER</p>			<p>VENT PIPE (TYP.) OWNER INFORMATION PLATE SURFACE BOX (LOCATION FOR GATE VALVE) CHAMBER INDICATION PLATE SURFACE BOX (LOCATION FOR BUTTERFLY VALVE) LIFTING HOOK (TYP.) 600mm DIA. D.I. MANHOLE COVER</p>																																																																																																																																																							
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4	<p>USE DOUBLE FLANGED PIPE WITH ANCHOR FLANGE WHEN VALVE IS CLOSE TO THE TEE VALVE SUPPORT XX @ YYY c/c T&B (REFER TABLE) CONSTR. JOINT (SEE NOTE-11) SLEEVE OR COLLAR SHALL BE INSTALLED WHEN PIPE IS IN STRAIGHT RUN (TYP.)</p>						<p>01.11.2001 FIRST ISSUE REV. DATE DESCRIPTION BY CHK. ENG. APP. CUST: ABU DHABI WATER & ELECTRICITY AUTHORITY UNITED ARAB EMIRATES DRAFTER: STANDARD DRAWINGS FOR WATER WORKS TYPICAL DETAILS OF LINE VALVE CHAMBER DN 100mm - DN 1000mm CAD FILE SCALE SIZE DOCUMENT NUMBER REV. W-P-TD-011 N.T.S. A3 W-P-TD-011 0</p>																																																																																																																																																				

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<p>300x300x120 DEEP SUMP WITH ALUMINUM CRATING COVER (TYP.) ANCHORING FLANGED SPICOT SEE NOTE-17 ALUMINUM LADDER (TYP.) SEE NOTE-17 DN1xDN2 FLANGED BRANCH LEVEL INVERT TEE FLANGED SOCKET PIECE (RESTRAINED JOINT) TIED DISMANTLING JOINT A 300 B 300 C 250</p>			<p>OWNER INFORMATION PLATE LIFTING HOOK (TYP.) 600mm DIA. D.I. MANHOLE COVER (TYP.) CHAMBER INDICATION PLATE SURFACE BOX VENT PIPE (TYP.)</p>				<p>1 UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MILLIMETRES.</p> <p>2 REINFORCEMENT BARS SHALL BE HIGH YIELD STEEL BARS (DEFORMED TYPE-II) WITH A CHARACTERISTIC STRENGTH OF $f_y=460\text{N/mm}^2$ (BS 4449).</p> <p>3 CONCRETE COVER FOR REINFORCEMENT SHALL BE AS PER SPECIFICATIONS AND ALL CONCRETE EDGES SHALL HAVE 20mm CHAMFER.</p> <p>4 MINIMUM OVERLAP LENGTH OF REINFORCEMENT BARS SHALL BE 45xDIA. OF BAR.</p> <p>5 CONCRETE GRADE SHALL BE C40 (BS 8110) WITH A MINIMUM CUBE STRENGTH OF 40N/mm^2 AT 28 DAYS.</p> <p>6 CONCRETE FOR BLINDING SHALL BE GRADE MASS/20, OPC WITH A MINIMUM CUBE STRENGTH OF 20N/mm^2</p> <p>7 COVER SLAB SHALL BE PRECAST. SIZE OF PRECAST UNIT SHALL BE DECIDED ON SITE TO SUIT EASY HANDLING. EACH UNIT SHALL HAVE 4 NO. LIFTING HOOKS.</p> <p>8 600mm DIA HEAVY DUTY D.I. COVER AND FRAME SHALL BE USED AT ROADS AND MEDIUM DUTY AT PAVING/ SIDEWALKS.</p> <p>9 VALVE SHALL BE EQUIPPED WITH EXTENSION SPINDLE TO ENABLE VALVE OPERATION FROM THE SURFACE AND SURFACE BOX SHALL BE INSTALLED STRAIGHT ABOVE VALVE SPINDLE.</p> <p>10 25mm END PLAY SHALL BE LEFT AT TIED DISMANTLING JOINT TO ALLOW REMOVAL OF VALVE.</p> <p>11 CONSTRUCTION JOINT SHALL BE CLEANED AND ROUGHENED UP PRIOR TO POURING CONCRETE FOR WALLS.</p> <p>12 VALVE IN CHAMBER SHALL BE PROVIDED WITH CONCRETE SUPPORT. THE SUPPORT SHAPE SHALL SUIT THE BODY OF VALVE. SUPPORT REBARS SHALL BE ANCHORED TO FLOOR SLAB.</p> <p>13 LOCATION OF VENT PIPES, OWNER INFORMATION AND CHAMBER INDICATION PLATES, SURFACE BOX, LIFTING HOOKS etc. SHOWN ARE ONLY INDICATIVE, AND SHALL BE DETERMINED BY THE ENGINEER ON SITE.</p> <p>14 THIS DRAWING IS PREPARED FOR DN 600 MAIN PIPELINE SIZE. DIMENSIONS FOR OTHER SIZE MAIN PIPELINES SHALL BE AS SHOWN IN THE TABLE.</p> <p>15 THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL REFERENCED TYPICAL DETAIL DRAWINGS AND SPECIFICATIONS</p> <p>16 THIS DRAWING HAS BEEN PREPARED BASED ON THE FOLLOWING DESIGN PARAMETERS: - SAFE BEARING CAPACITY OF SOIL IS MINIMUM 100 kN/m . - MINIMUM EARTH COVER TO TOP OF PIPE IS 900mm. - MAXIMUM EARTH COVER TO TOP OF PIPE IS 2000mm. - SURROUNDING SOIL TO BE APPROVED GRANULAR MATERIAL AND THOROUGHLY COMPACTED BEFORE TESTING. (RE-DESIGN IS REQUIRED IF ACTUAL SITE CONDITIONS ARE DIFFERENT)</p> <p>17 ISOLATING VALVE SHALL BE PROVIDED IN MAIN PIPELINE NEAR DRAIN/WASHOUT CHAMBER TO MINIMIZE THE LENGTH OF PIPELINE TO BE DRAINED IN ONE STRETCH.</p>																																																																														
SECTION-A			TYPICAL ARRANGEMENT OF DRAIN/ WASHOUT TEE AT MAIN LINE				REFERENCE DRAWINGS																																																																														
<p>SURFACE BOX VENT PIPE (TYP.) XX @ 150 c/c T&B (REFER TABLE) FINISHED GRADE LEVEL ▽ SPINDLE PROTECTION TUBE (PVC) SPINDLE EXTENSION CONCRETE PROTECTION (TYP.) 4-T 16 (TYP.) (EXTRA BARS) VALVE SUPPORT PVC WATER STOP (TYP.) CONSTR. JOINT (SEE NOTE-11) BLINDING CONCRETE 1000 GAUGE POLYTHENE SHEET XX @ YYY c/c T&B (REFER TABLE)</p>			<p>DN1xDN2 FLANCED BRANCH LEVEL INVERT TEE ANCHOR BLOCK AS REQUIRED FLANGED SOCKET PIECE (RESTRAINED JOINT) DOUBLE FLANGED 45° BEND DN1xDN2 FLANCED BRANCH TEE ANCHOR BLOCK AS REQUIRED FLANGED SOCKET PIECE (RESTRAINED JOINT)</p> <p>FOR DN 300 AND ABOVE MAIN LINE FOR DN250 AND SMALLER MAIN LINE</p>				<p>W-P-TD-017 TYPICAL DETAILS OF LETTERING ON COVERS, CHAMBER INDICATION PLATE AND OWNER INFORMATION PLATE</p> <p>W-P-TD-018 TYPICAL DETAILS OF LIFTING HOOK, VENT PIPE & LADDER</p> <p>W-P-TD-019 TYPICAL DETAILS OF SURFACE BOX, VALVE CHAMBER, PIPE INLET PROTECTION & EXTRA REINFORCEMENT AROUND OPENING</p> <p style="text-align: center;">TABLE OF DIMENSIONS & REINFORCEMENT</p> <table border="1"> <thead> <tr> <th>MAIN LINE DN1</th><th>DRAIN LINE DN2</th><th>A</th><th>B</th><th>C</th><th>XX</th><th>YYY</th></tr> </thead> <tbody> <tr><td>150</td><td>80</td><td>1100</td><td>1300</td><td>1400</td><td>T 12</td><td>200</td></tr> <tr><td>200</td><td>80</td><td>1100</td><td>1300</td><td>1400</td><td>T 12</td><td>200</td></tr> <tr><td>250</td><td>100</td><td>1100</td><td>1300</td><td>1400</td><td>T 12</td><td>200</td></tr> <tr><td>300</td><td>100</td><td>1100</td><td>1300</td><td>1400</td><td>T 12</td><td>200</td></tr> <tr><td>400</td><td>150</td><td>1200</td><td>1500</td><td>1500</td><td>T 12</td><td>200</td></tr> <tr><td>500</td><td>150</td><td>1200</td><td>1500</td><td>1500</td><td>T 12</td><td>200</td></tr> <tr><td>600</td><td>200</td><td>1200</td><td>1500</td><td>1500</td><td>T 12</td><td>150</td></tr> <tr><td>800</td><td>200</td><td>1200</td><td>1500</td><td>1500</td><td>T 12</td><td>150</td></tr> <tr><td>900</td><td>200</td><td>1200</td><td>1500</td><td>1500</td><td>T 12</td><td>150</td></tr> <tr><td>1000</td><td>200</td><td>1200</td><td>1500</td><td>1500</td><td>T 12</td><td>150</td></tr> </tbody> </table>		MAIN LINE DN1	DRAIN LINE DN2	A	B	C	XX	YYY	150	80	1100	1300	1400	T 12	200	200	80	1100	1300	1400	T 12	200	250	100	1100	1300	1400	T 12	200	300	100	1100	1300	1400	T 12	200	400	150	1200	1500	1500	T 12	200	500	150	1200	1500	1500	T 12	200	600	200	1200	1500	1500	T 12	150	800	200	1200	1500	1500	T 12	150	900	200	1200	1500	1500	T 12	150	1000	200	1200	1500	1500	T 12	150
MAIN LINE DN1	DRAIN LINE DN2	A	B	C	XX	YYY																																																																															
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<p>Parsons International Limited P.O. Box: 5498 Abu Dhabi U.A.E.</p> <p>WATER & ELECTRICITY AUTHORITY UNITED ARAB EMIRATES</p>																																																																																					
<p>ORG.TITLE STANDARD DRAWINGS FOR WATER WORKS TYPICAL DETAILS OF DRAIN/ WASHOUT CHAMBER MAIN PIPELINE DN150mm – DN1000mm</p> <table border="1"> <thead> <tr> <th>CAD FILE</th><th>SCALE</th><th>SIZE</th><th>DOCUMENT NUMBER</th><th>REV.</th></tr> </thead> <tbody> <tr><td>W-P-TD-012</td><td>N.T.S.</td><td>A3</td><td>W-P-TD-012</td><td>0</td></tr> </tbody> </table>									CAD FILE	SCALE	SIZE	DOCUMENT NUMBER	REV.	W-P-TD-012	N.T.S.	A3	W-P-TD-012	0																																																																			
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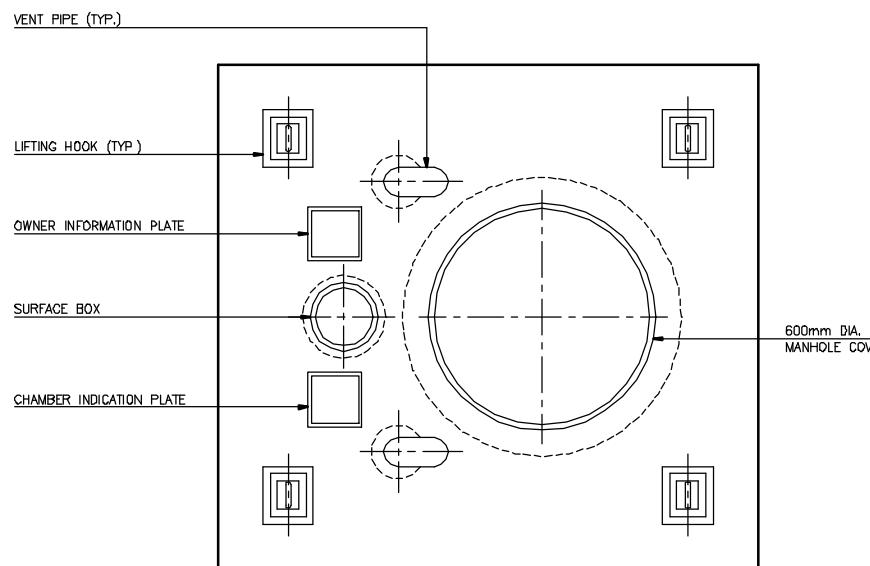
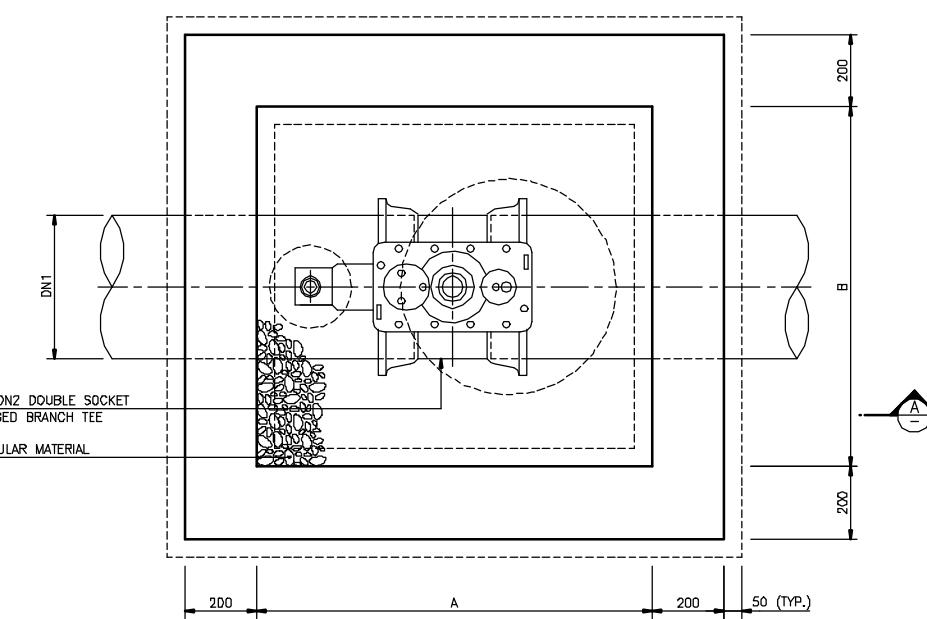
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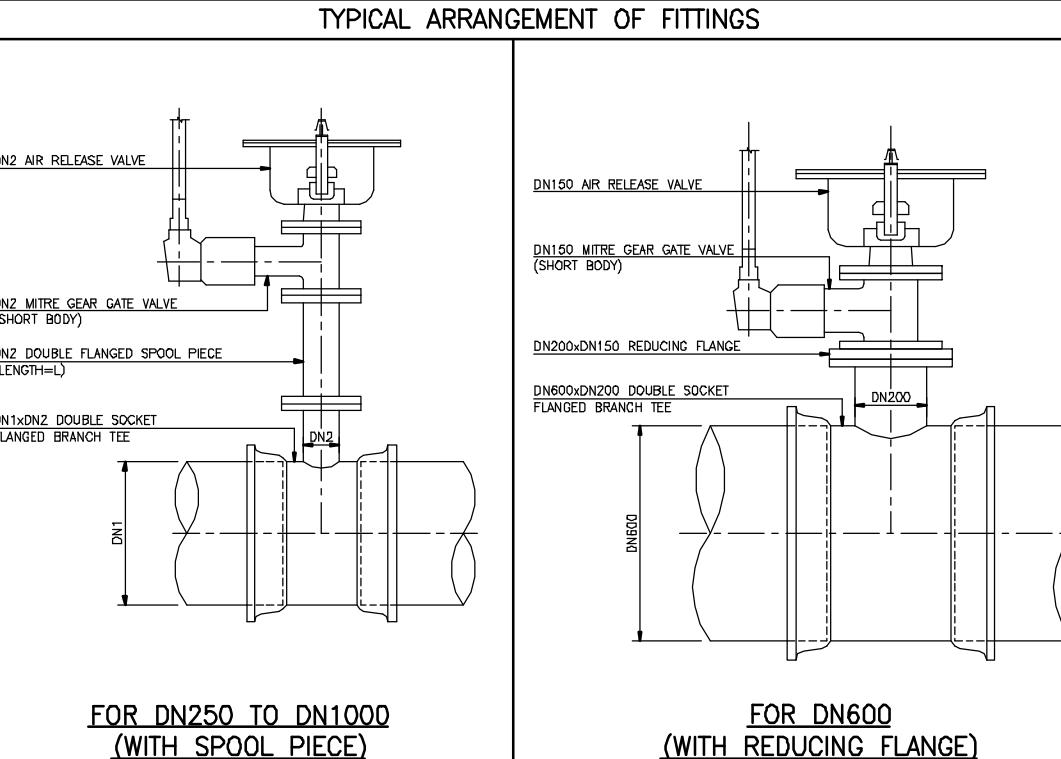
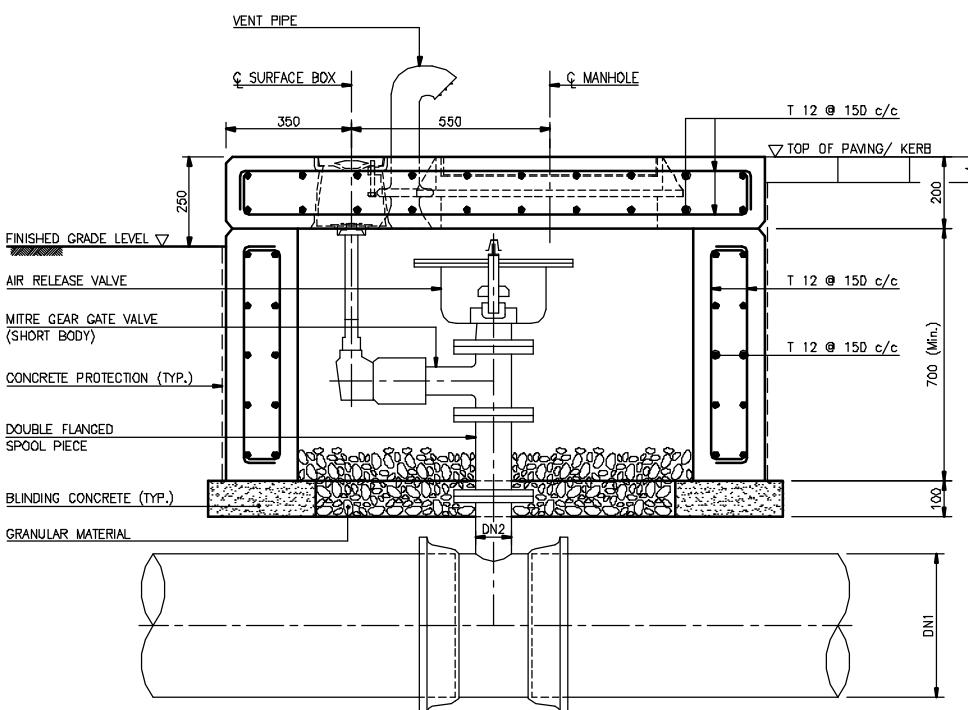
TOP VIEW OF COVER SLAB

GENERAL NOTES

- 1 UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MILLIMETRES.
- 2 REINFORCEMENT BARS SHALL BE HIGH YIELD STEEL BARS (DEFORMED TYPE-II) WITH A CHARACTERISTIC STRENGTH OF $f_y=460\text{N/mm}^2$ (BS 4449).
- 3 CONCRETE COVER FOR REINFORCEMENT SHALL BE AS PER SPECIFICATIONS.
- 4 MINIMUM OVERLAP LENGTH OF REINFORCEMENT BARS SHALL BE $45\times\text{DIA. OF BAR}$.
- 5 CONCRETE GRADE SHALL BE C40 (BS 8110) WITH A MINIMUM CUBE STRENGTH OF 40N/mm^2 AT 28 DAYS.
- 6 CONCRETE FOR BLINDING SHALL BE GRADE MASS/20, OPC WITH A MINIMUM CUBE STRENGTH OF 20N/mm^2 .
- 7 COVER SLAB SHALL BE PRECAST. EACH UNIT SHALL HAVE 4 NO. LIFTING HOOKS.
- 8 600mm DIA. HEAVY DUTY D.J. COVER AND FRAME SHALL BE USED AT ROADS AND MEDIUM DUTY AT PAVING/ SIDEWALKS.
- 9 VALVE SHALL BE EQUIPPED WITH EXTENSION SPINDLE TO ENABLE VALVE OPERATION FROM THE SURFACE AND SURFACE BOX SHALL BE INSTALLED STRAIGHT ABOVE VALVE SPINDLE.
- 10 LOCATION OF OWNER INFORMATION AND CHAMBER INDICATION PLATES, SURFACE BOX, LIFTING HOOKS etc SHOWN ARE ONLY INDICATIVE AND SHALL BE DETERMINED BY THE ENGINEER ON SITE.
- 11 THIS DRAWING IS PREPARED FOR DN400 PIPE SIZE. DIMENSIONS FOR OTHER SIZE PIPES SHALL BE AS SHOWN IN THE TABLE.
- 12 THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL REFERENCED TYPICAL DETAIL DRAWINGS AND SPECIFICATIONS.
- 13 DIMENSIONS AND WALL THICKNESS SHOWN ARE ONLY BASIC AND SHOWS THE MINIMUM REQUIREMENT. CONTRACTOR SHALL ALTER THE SIZES IF REQUIRED BASED ON ACTUAL SOIL CONDITIONS.
- 14 MINIMUM DISTANCE BETWEEN AIR RELEASE VALVE BOX AND THE TOP OF PIPE SHALL BE 200mm.



SECTION-A



REFERENCE DRAWINGS

- W-P-TD-017 TYPICAL DETAILS OF LETTERING ON COVERS, CHAMBER INDICATION PLATE & OWNER INFORMATION PLATE
 W-P-TD-018 TYPICAL DETAILS OF LIFTING HOOK, VENT PIPE & LADDER
 W-P-TD-019 TYPICAL DETAILS OF SURFACE BOX, VALVE CHAMBER, PIPE INLET PROTECTION & EXTRA REINFORCEMENT AROUND OPENING



TABLE OF DIMENSIONS

MAIN LINE DN1	BRANCH LINE DN2	AIR RELEASE VALVE/GATE VALVE SIZE	A	B	L
250	80	80	1100	800	250
300	80	80	1100	800	250
400	100	100	1100	1000	250
500	100	100	1100	1000	250
600	200	150	1100	1100	32
800	150	150	1100	1200	-
900	200	200	1200	1300	-
1000	200	200	1200	1400	-

01.11.2001	FIRST ISSUE	REV. DATE	DESCRIPTION	BY CHK. ENG. APP.
CLIENT: ABU DHABI WATER & ELECTRICITY AUTHORITY UNITED ARAB EMIRATES				
ORG. TITLE: STANDARD DRAWINGS FOR WATER WORKS TYP. DETAILS OF AIR RELEASE VALVE BOX DN250mm - DN1000mm				
CAD FILE: W-P-TD-013	SCALE: N.T.S.	SIZE: A3	DOCUMENT NUMBER: W-P-TD-013	REV. 0

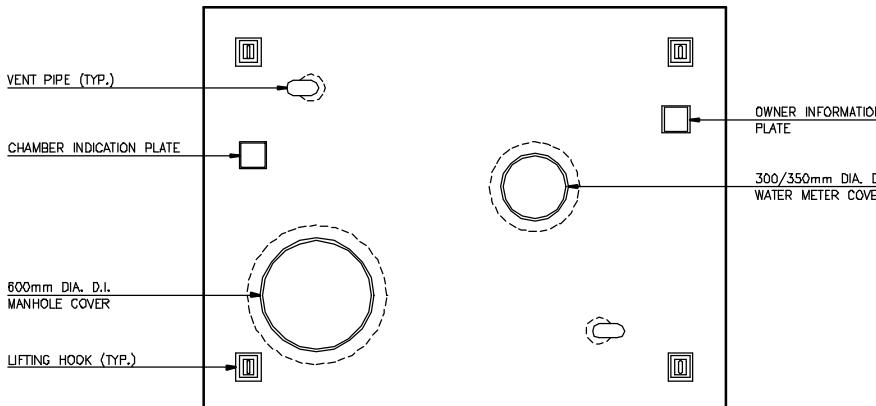
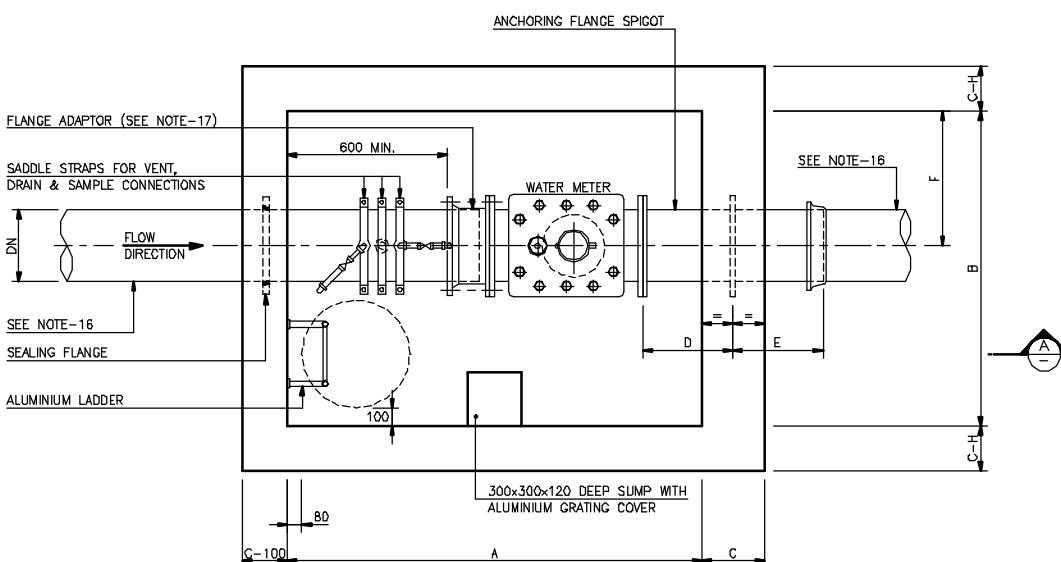
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SECTION-A			TYPICAL ARRANGEMENT OF FITTINGS (SCHEMATIC)						REFERENCE DRAWINGS																																																																																																																																																
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			<p>0 01.11.2001 FIRST ISSUE FOR IDC</p> <p>REV. DATE DESCRIPTION BY CHK. ENG. APP.</p> <p>CUST: ABU DHABI WATER & ELECTRICITY AUTHORITY UNITED ARAB EMIRATES</p> <p>DRG.TITLE STANDARD DRAWINGS FOR WATER WORKS TYPICAL DETAILS OF CONTROL VALVE CHAMBER DN150mm – DN1000mm</p>						<p>CAD FILE N.T.S. SCALE A3 DOCUMENT NUMBER W-P-TD-014 REV. 0</p>																																																																																																																																																

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PLAN

TOP VIEW OF COVER SLAB

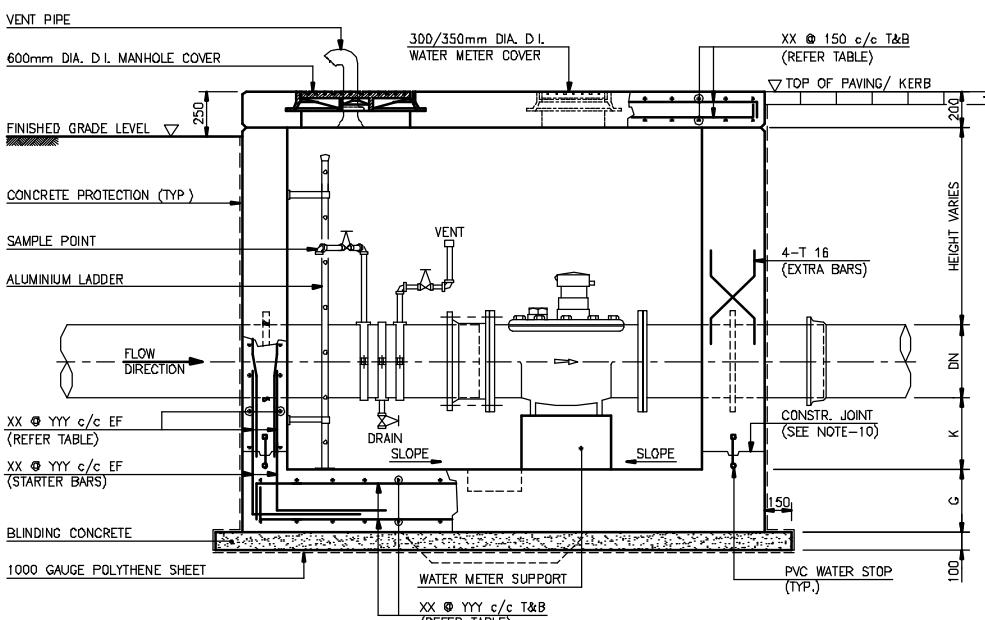
GENERAL NOTES



SECTION-A

TABLE OF DIMENSIONS & REINFORCEMENT

REFERENCE DRAWINGS



PIPE SIZE DN	A	B	C	D	E	F	G	H	K	XX	YYY
100	1900	1200	300	350	350	400	300	100	400	T 12	200
150	1900	1300	300	350	350	450	300	100	400	T 12	200
200	1900	1300	300	350	350	450	300	100	400	T 12	150
250	2000	1400	300	500	500	500	300	100	400	T 12	150
300	2000	1400	300	500	500	500	300	100	400	T 12	150
400	2300	1850	350	500	500	750	350	100	400	T 12	200
500	2400	2050	350	500	500	850	350	100	400	T 12	200
600	2400	2050	350	500	500	850	350	100	400	T 12	200
800	2800	2400	500	800	700	1000	400	200	400	T 12	150
900	2800	2400	500	800	700	1000	400	200	1000	T 12	150
1000	2800	2600	600	800	700	1100	400	200	1000	T 12	150

W-P-TD-017 TYPICAL DETAILS OF LETTERING ON COVERS, CHAMBER INDICATION PLATE & OWNER INFORMATION PLATE
W-P-TD-018 TYPICAL DETAILS OF LIFTING HOOK, VENT PIPE & LADDER
W-P-TD-019 TYPICAL DETAILS OF SURFACE BOX, VALVE CHAMBER, PIPE INLET PROTECTION & EXTRA REINFORCEMENT AROUND OPENING



01.11.2001	FIRST ISSUE			
REV. DATE	DESCRIPTION	BY CHK. ENG. APP.		
CLIENT:	ABU DHABI WATER & ELECTRICITY AUTHORITY			
DRG. TITLE:	STANDARD DRAWINGS FOR WATER WORKS TYPICAL DETAILS OF FLOW METER CHAMBER DN100mm - DN1000mm			
CAD FILE	SCALE	SIZE	DOCUMENT NUMBER	REV.
W-P-TD-015	N.T.S.	A3	W-P-TD-015	0

TYPICAL DETAILS OF VALVE SIGN POST

PLAN

1. Identification to be marked in black paint: WATER PIPELINE, TEE, BEND, WASHOUT, VALVE, AIR VALVE etc.

2. Direction of offset of pipeline to be arrow marked in black paint.

3. CONCRETE FOUNDATION (400x400x600)

4. T10 @ 100 LINKS

5. 12 Nos T10

6. 30 Wide ALUMINUM BRACKET (2 No. PER POST)

7. CONCRETE FOUNDATION (400x400x600)

FRONT VIEW (FOR PLATES ONLY) WITHOUT POST & FOUNDATION

8. TABLE OF ABBREVIATIONS

TYPE OF VALVE	ABBREVIATION
GATE VALVE	GV
BUTTERFLY VALVE	BFV
CONTROL VALVE	CV
AIR RELEASE VALVE	ARV

9. 300x300x8 THK. ALUMINUM PLATE BOLTED TO POST WITH BRACKET

10. 250x250x2 THK. ALUMINUM PLATE (LETTERS ENGRAVED) BOLTED TO 8 THK. ALUMINUM PLATE

11. TYPE OF VALVE (SEE TABLE FOR ABBREVIATIONS)

12. VALVE SIZE (in mm) - 300

13. DISTANCE (in Km) TO NEAREST VALVE ALONG PIPELINE - 3.5 11.2

14. ROUND OFF CORNERS

15. 300x300x8 THK. ALUMINUM PIPE (SEE NOTE-9)

16. 20x20 CHAMFER

17. T10 @ 100 EACH FACE

18. T10 @ 100 LINKS

19. CONCRETE PAINTED WITH TWO COATS OF BITUMINOUS PAINT

20. BLINDING CONCRETE

TYPICAL DETAILS OF PIPELINE MARKER POST

TOP VIEW OF PLATE

1. Identification to be marked in black paint: WATER PIPELINE

2. Direction of offset of pipeline to be arrow marked in black paint.

3. CONCRETE COVER FOR REINFORCEMENT SHALL BE AS PER SPECIFICATIONS.

4. MINIMUM OVERLAP LENGTH OF REINFORCEMENT BARS SHALL BE 45xDIA. OF BAR.

5. CONCRETE GRADE SHALL BE C40 (BS 8110) WITH A MINIMUM CUBE STRENGTH OF 40N/mm² AT 28 DAYS.

6. CONCRETE FOR BLINDING SHALL BE GRADE MASS/20, OPC WITH A MINIMUM CUBE STRENGTH OF 20N/mm².

7. NAME PLATES SHALL BE CAST ALUMINIUM WITH RAISED CHARACTERS AS REQUIRED.

8. PIPELINE MARKER POSTS SHALL BE INSTALLED AT UNPAVED AREAS IN THE DIRECTION OF WATER LINE AND SHALL NOT BE INSTALLED AT PAVED AREAS.

9. PIPE SHALL BE COATED WITH BLUE EPOXY AFTER THOROUGH CLEANING, DEGREASING AND APPLYING PRIMER.

10. 2 No. MARKER POSTS SHALL BE INSTALLED IN THE DIRECTION OF WATER LINE AT EACH VALVE CHAMBER, AIR RELEASE VALVE BOX AND SURFACE BOX. MARKER POSTS SHALL NOT BE INSTALLED AT EXISTING OR UNDER CONSTRUCTION PAVED AREAS.

11. CHAMBER MARKER POST ARRANGEMENT SHOWN IN THIS DRAWING IS FOR VALVE CHAMBER. MARKER POST ARRANGEMENT DETAILS ARE SIMILAR FOR AIR RELEASE VALVE BOX AND SURFACE BOX.

SECTION-C

1. Identification to be marked in black paint: WATER PIPELINE

2. CONCRETE PAINTED WITH TWO COATS OF BITUMINOUS PAINT (UNDERGROUND CONCRETE ONLY)

3. CONCRETE COVER FOR REINFORCEMENT SHALL BE AS PER SPECIFICATIONS.

4. MINIMUM OVERLAP LENGTH OF REINFORCEMENT BARS SHALL BE 45xDIA. OF BAR.

5. CONCRETE GRADE SHALL BE C40 (BS 8110) WITH A MINIMUM CUBE STRENGTH OF 40N/mm² AT 28 DAYS.

6. CONCRETE FOR BLINDING SHALL BE GRADE MASS/20, OPC WITH A MINIMUM CUBE STRENGTH OF 20N/mm².

7. NAME PLATES SHALL BE CAST ALUMINIUM WITH RAISED CHARACTERS AS REQUIRED.

8. PIPELINE MARKER POSTS SHALL BE INSTALLED AT UNPAVED AREAS IN THE DIRECTION OF WATER LINE AND SHALL NOT BE INSTALLED AT PAVED AREAS.

9. PIPE SHALL BE COATED WITH BLUE EPOXY AFTER THOROUGH CLEANING, DEGREASING AND APPLYING PRIMER.

10. 2 No. MARKER POSTS SHALL BE INSTALLED IN THE DIRECTION OF WATER LINE AT EACH VALVE CHAMBER, AIR RELEASE VALVE BOX AND SURFACE BOX. MARKER POSTS SHALL NOT BE INSTALLED AT EXISTING OR UNDER CONSTRUCTION PAVED AREAS.

11. CHAMBER MARKER POST ARRANGEMENT SHOWN IN THIS DRAWING IS FOR VALVE CHAMBER. MARKER POST ARRANGEMENT DETAILS ARE SIMILAR FOR AIR RELEASE VALVE BOX AND SURFACE BOX.

REFERENCE DRAWINGS

1. Identification to be marked in black paint: WATER PIPELINE

2. CONCRETE PAINTED WITH TWO COATS OF BITUMINOUS PAINT (UNDERGROUND CONCRETE ONLY)

3. CONCRETE COVER FOR REINFORCEMENT SHALL BE AS PER SPECIFICATIONS.

4. MINIMUM OVERLAP LENGTH OF REINFORCEMENT BARS SHALL BE 45xDIA. OF BAR.

5. CONCRETE GRADE SHALL BE C40 (BS 8110) WITH A MINIMUM CUBE STRENGTH OF 40N/mm² AT 28 DAYS.

6. CONCRETE FOR BLINDING SHALL BE GRADE MASS/20, OPC WITH A MINIMUM CUBE STRENGTH OF 20N/mm².

7. NAME PLATES SHALL BE CAST ALUMINIUM WITH RAISED CHARACTERS AS REQUIRED.

8. PIPELINE MARKER POSTS SHALL BE INSTALLED AT UNPAVED AREAS IN THE DIRECTION OF WATER LINE AND SHALL NOT BE INSTALLED AT PAVED AREAS.

9. PIPE SHALL BE COATED WITH BLUE EPOXY AFTER THOROUGH CLEANING, DEGREASING AND APPLYING PRIMER.

10. 2 No. MARKER POSTS SHALL BE INSTALLED IN THE DIRECTION OF WATER LINE AT EACH VALVE CHAMBER, AIR RELEASE VALVE BOX AND SURFACE BOX. MARKER POSTS SHALL NOT BE INSTALLED AT EXISTING OR UNDER CONSTRUCTION PAVED AREAS.

11. CHAMBER MARKER POST ARRANGEMENT SHOWN IN THIS DRAWING IS FOR VALVE CHAMBER. MARKER POST ARRANGEMENT DETAILS ARE SIMILAR FOR AIR RELEASE VALVE BOX AND SURFACE BOX.

TYPICAL DETAILS OF CHAMBER MARKER POST

SECTION-B

1. Identification to be marked in black paint: WATER PIPELINE

2. CONCRETE PAINTED WITH TWO COATS OF BITUMINOUS PAINT (UNDERGROUND CONCRETE ONLY)

3. CONCRETE COVER FOR REINFORCEMENT SHALL BE AS PER SPECIFICATIONS.

4. MINIMUM OVERLAP LENGTH OF REINFORCEMENT BARS SHALL BE 45xDIA. OF BAR.

5. CONCRETE GRADE SHALL BE C40 (BS 8110) WITH A MINIMUM CUBE STRENGTH OF 40N/mm² AT 28 DAYS.

6. CONCRETE FOR BLINDING SHALL BE GRADE MASS/20, OPC WITH A MINIMUM CUBE STRENGTH OF 20N/mm².

7. NAME PLATES SHALL BE CAST ALUMINIUM WITH RAISED CHARACTERS AS REQUIRED.

8. PIPELINE MARKER POSTS SHALL BE INSTALLED AT UNPAVED AREAS IN THE DIRECTION OF WATER LINE AND SHALL NOT BE INSTALLED AT PAVED AREAS.

9. PIPE SHALL BE COATED WITH BLUE EPOXY AFTER THOROUGH CLEANING, DEGREASING AND APPLYING PRIMER.

10. 2 No. MARKER POSTS SHALL BE INSTALLED IN THE DIRECTION OF WATER LINE AT EACH VALVE CHAMBER, AIR RELEASE VALVE BOX AND SURFACE BOX. MARKER POSTS SHALL NOT BE INSTALLED AT EXISTING OR UNDER CONSTRUCTION PAVED AREAS.

11. CHAMBER MARKER POST ARRANGEMENT SHOWN IN THIS DRAWING IS FOR VALVE CHAMBER. MARKER POST ARRANGEMENT DETAILS ARE SIMILAR FOR AIR RELEASE VALVE BOX AND SURFACE BOX.

SECTION-D

1. Identification to be marked in black paint: WATER PIPELINE

2. CONCRETE PAINTED WITH TWO COATS OF BITUMINOUS PAINT (UNDERGROUND CONCRETE ONLY)

3. CONCRETE COVER FOR REINFORCEMENT SHALL BE AS PER SPECIFICATIONS.

4. MINIMUM OVERLAP LENGTH OF REINFORCEMENT BARS SHALL BE 45xDIA. OF BAR.

5. CONCRETE GRADE SHALL BE C40 (BS 8110) WITH A MINIMUM CUBE STRENGTH OF 40N/mm² AT 28 DAYS.

6. CONCRETE FOR BLINDING SHALL BE GRADE MASS/20, OPC WITH A MINIMUM CUBE STRENGTH OF 20N/mm².

7. NAME PLATES SHALL BE CAST ALUMINIUM WITH RAISED CHARACTERS AS REQUIRED.

8. PIPELINE MARKER POSTS SHALL BE INSTALLED AT UNPAVED AREAS IN THE DIRECTION OF WATER LINE AND SHALL NOT BE INSTALLED AT PAVED AREAS.

9. PIPE SHALL BE COATED WITH BLUE EPOXY AFTER THOROUGH CLEANING, DEGREASING AND APPLYING PRIMER.

10. 2 No. MARKER POSTS SHALL BE INSTALLED IN THE DIRECTION OF WATER LINE AT EACH VALVE CHAMBER, AIR RELEASE VALVE BOX AND SURFACE BOX. MARKER POSTS SHALL NOT BE INSTALLED AT EXISTING OR UNDER CONSTRUCTION PAVED AREAS.

11. CHAMBER MARKER POST ARRANGEMENT SHOWN IN THIS DRAWING IS FOR VALVE CHAMBER. MARKER POST ARRANGEMENT DETAILS ARE SIMILAR FOR AIR RELEASE VALVE BOX AND SURFACE BOX.

GENERAL NOTES

1. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MILLIMETRES.

2. REINFORCEMENT BARS SHALL BE HIGH YIELD STEEL BARS (DEFORMED TYPE-II) WITH A CHARACTERISTIC STRENGTH OF $f_y=460\text{N/mm}^2$ (BS 4449).

3. CONCRETE COVER FOR REINFORCEMENT SHALL BE AS PER SPECIFICATIONS.

4. MINIMUM OVERLAP LENGTH OF REINFORCEMENT BARS SHALL BE 45xDIA. OF BAR.

5. CONCRETE GRADE SHALL BE C40 (BS 8110) WITH A MINIMUM CUBE STRENGTH OF 40N/mm² AT 28 DAYS.

6. CONCRETE FOR BLINDING SHALL BE GRADE MASS/20, OPC WITH A MINIMUM CUBE STRENGTH OF 20N/mm².

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11. CHAMBER MARKER POST ARRANGEMENT SHOWN IN THIS DRAWING IS FOR VALVE CHAMBER. MARKER POST ARRANGEMENT DETAILS ARE SIMILAR FOR AIR RELEASE VALVE BOX AND SURFACE BOX.

REFERENCE DRAWINGS

1. Identification to be marked in black paint: WATER PIPELINE

2. CONCRETE PAINTED WITH TWO COATS OF BITUMINOUS PAINT (UNDERGROUND CONCRETE ONLY)

3. CONCRETE COVER FOR REINFORCEMENT SHALL BE AS PER SPECIFICATIONS.

4. MINIMUM OVERLAP LENGTH OF REINFORCEMENT BARS SHALL BE 45xDIA. OF BAR.

5. CONCRETE GRADE SHALL BE C40 (BS 8110) WITH A MINIMUM CUBE STRENGTH OF 40N/mm² AT 28 DAYS.

6. CONCRETE FOR BLINDING SHALL BE GRADE MASS/20, OPC WITH A MINIMUM CUBE STRENGTH OF 20N/mm².

7. NAME PLATES SHALL BE CAST ALUMINIUM WITH RAISED CHARACTERS AS REQUIRED.

8. PIPELINE MARKER POSTS SHALL BE INSTALLED AT UNPAVED AREAS IN THE DIRECTION OF WATER LINE AND SHALL NOT BE INSTALLED AT PAVED AREAS.

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11. CHAMBER MARKER POST ARRANGEMENT SHOWN IN THIS DRAWING IS FOR VALVE CHAMBER. MARKER POST ARRANGEMENT DETAILS ARE SIMILAR FOR AIR RELEASE VALVE BOX AND SURFACE BOX.

STANDARD DRAWINGS FOR WATER WORKS

TYPICAL DETAILS OF PIPELINE MARKER POST, VALVE SIGN POST & CHAMBER MARKER POST

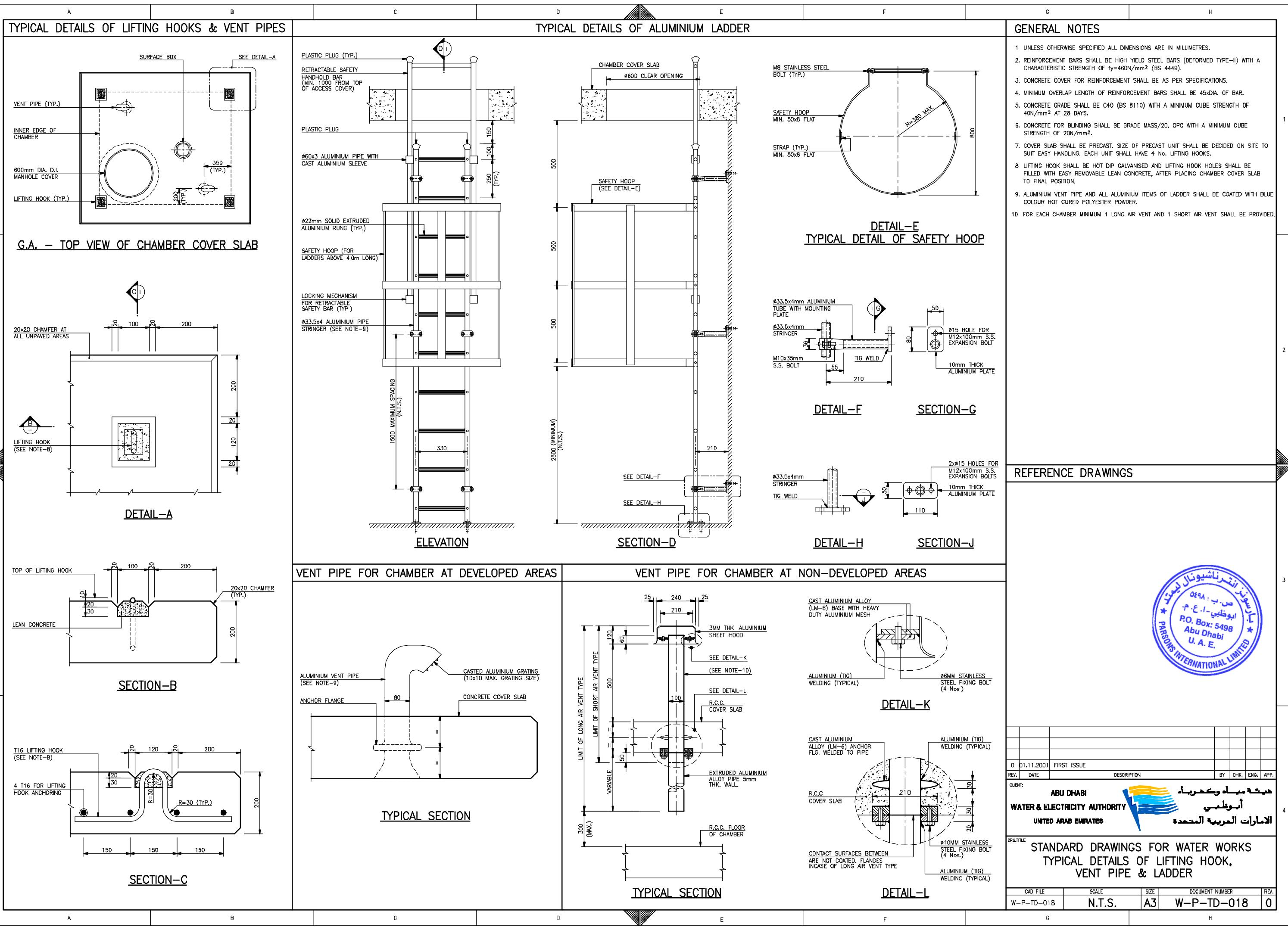
CAD FILE W-P-TD-016 **SCALE** N.T.S. **SIZE** A3 **DOCUMENT NUMBER** W-P-TD-016 **REV.** 0

PARSONS INTERNATIONAL LIMITED

ABU DHABI WATER & ELECTRICITY AUTHORITY

UNITED ARAB EMIRATES

A	B	C	D	E	F	G	H
		DUCTILE IRON COVERS	TYP. DETAILS OF CHAMBER INDICATION PLATE	TYP. DETAILS OF OWNER INFORMATION PLATE		GENERAL NOTES	
1	VALVE CHAMBER MANHOLE COVER	WATER METER COUNTER COVER	TOP VIEW FOR GATE VALVE CHAMBER	AADC INFORMATION PLATE		1 UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MILLIMETRES. 2. ALL DUCTILE IRON COVERS AND FRAMES SHALL BE COATED WITH ZINC EPOXY AND BLUE RAL 5015 EPOXY FINISH (YELLOW FOR FIRE HYDRANT COVERS). THICKNESS OF COATING SHALL BE 250 microns WITH 10% TOLERANCE. 3. ALL ALUMINUM COVERS AND FRAMES SHALL BE COATED WITH HOT CURED POLYESTER POWDER. COLOUR CODE SHALL BE BLUE RAL 5015 FOR CHAMBER COVERS AND SURFACE BOXES AND FLUORESCENT YELLOW RAL 1016 FOR FIRE HYDRANT COVERS. THICKNESS OF COATING SHALL BE 100 microns WITH 10% TOLERANCE. 4. HEAVY DUTY COVER AND FRAME SHALL BE USED AT DRIVE WAYS AND MEDIUM DUTY AT PAVING/ SIDEWALKS 5. ALL COVERS SHALL BE PROVIDED WITH LIFTING HOLES. 6. 2 No. OF LIFTING KEYS SHALL BE PROVIDED FOR EVERY 20 No. DUCTILE IRON AND ALUMINUM COVERS SUPPLIED (BUT A MINIMUM OF 2). 7. LETTERING ON COVERS SHALL BE AS PER ADWEA DECISION. 8. CHAMBER INDICATION AND OWNER INFORMATION PLATES SHALL BE OF BRONZE. 9. CHAMBER INDICATION AND OWNER INFORMATION PLATES SHALL BE TIED WITH REBAR OF SLAB PRIOR TO CONCRETING. TOP OF INFORMATION PLATE SHALL BE FLUSH WITH CONCRETE AND LETTERING LEVEL SHALL BE POLISHED.	1
2	ALUMINIUM FIRE HYDRANT COVER	DETAIL OF LIFTING KEY HOLE	15 THK. ANCHORING STRIP (TYP.) TYPE OF VALVE/ CHAMBER (SEE TABLE FOR OTHER ABBREVIATIONS) NOMINAL SIZE OF VALVE DIRECTION OF WATER MAIN	15 THK. ANCHORING STRIP (TYP.) شركة العين للتوزيع AADC	ADDC INFORMATION PLATE	2	
3	LARGER SIZE	SMALLER SIZE	TYPE OF VALVE/ CHAMBER ABBREVIATION BUTTERFLY VALVE BFV CONTROL VALVE CV AIR RELEASE VALVE ARV NON RETURN VALVE NRV WASHOUT CHAMBER WO	15 THK. ANCHORING STRIP (TYP.) شركة أبوظبي للتوزيع ADDC	TRANSCO INFORMATION PLATE	3	REFERENCE DRAWINGS
4	A.D.W.E.A WATER	A.D.W.E.A WATER	SECTION-A 2 No. 15 THK. ANCHORING STRIP 25 DIA. HOLE TO FIX STEEL REINFORCEMENT BAR	15 THK. ANCHORING STRIP (TYP.) شركة أبوظبي للنقل والتعمير TRANSCO	0 01.11.2001 FIRST ISSUE REV. DATE DESCRIPTION BY CHK. ENC. APP. CLIENT: ABU DHABI WATER & ELECTRICITY AUTHORITY UNITED ARAB EMIRATES ORG. TITLE STANDARD DRAWINGS FOR WATER WORKS TYPICAL DETAILS OF LETTERING ON COVERS, CHAMBER INDICATION PLATE & OWNER INFORMATION PLATE CAD FILE N.T.S. SCALE A3 DOCUMENT NUMBER REV. W-P-TD-017 N.T.S. A3 W-P-TD-017 0	4	PARSONS INTERNATIONAL LIMITED 0241: ٤٣ - ابوظبي - P.O. Box: 5498 Abu Dhabi U. A. E.



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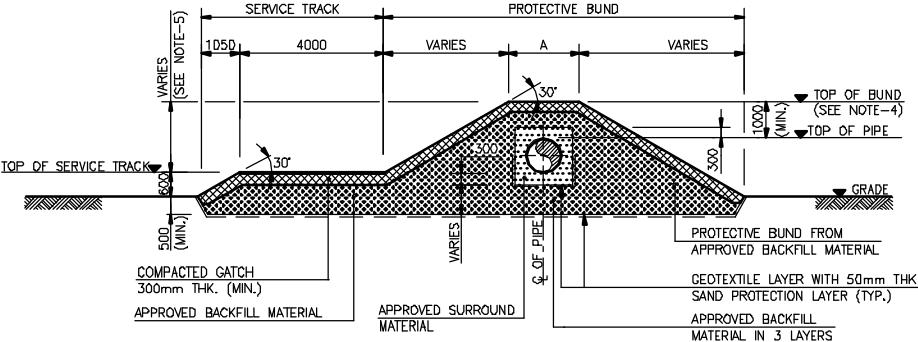
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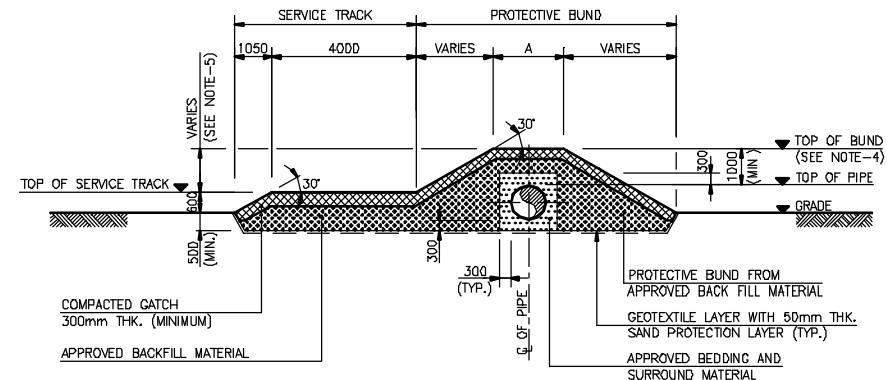
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TYPE-I (PIPELINES IN BUND FOR WET SOIL CONDITION)



TYPE-II (PIPELINES PARTIALLY BURIED FOR WET SOIL CONDITION)



GENERAL NOTES

- 1 ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
- 2 THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATIONS.
- 3 PIPES & FITTINGS SHALL BE EXTERNALLY PROTECTED AS PER SPECIFICATIONS.
- 4 CONTRACTOR SHALL DESIGN AND CONSTRUCT THE BUND IN SUCH A MANNER AS TO ACCOMMODATE THE MAJORITY OF GROUND MOVEMENTS PRIOR TO PIPE INSTALLATION. LONG-TERM GROUND SETTLEMENTS SHALL BE LIMITED AS TO AVOID EXCESSIVE DEFLECTIONS AND STRESSES TO PIPES AND DAMAGE TO PIPE JOINTS.
- 5 THIS DIMENSION VARIES DEPENDING ON FINAL PIPELINE PROFILE.
- 6 THE ARRANGEMENT OF THE BUND CONSTRUCTION/MATERIAL SHOWN ON THE TYPICAL SECTION IS ONLY INDICATIVE AND SHOWS THE GENERAL REQUIREMENTS. CONTRACTOR MAY PROPOSE ALTERNATIVE ARRANGEMENT TO SUIT HIS WORKING METHOD AND SUBMIT FOR APPROVAL OF ADWEA/ENGINEER.
- 7 THIS DIMENSION VARIES DEPENDING ON FINAL PIPELINE PROFILE AND SHALL BE DESIGNED TO ELIMINATE FLOATATION OF THE PIPES.
- 8 THE SECTION INDICATED IS THE MINIMUM REQUIREMENT OF BUND WHICH WILL BE CONSIDERED FOR PAYMENT PURPOSES CONTRACTOR MAY SUITABLY MODIFY THE SECTION BASED ON HIS CONSTRUCTION METHOD SUBJECT TO APPROVAL OF ADWEA/ENGINEER

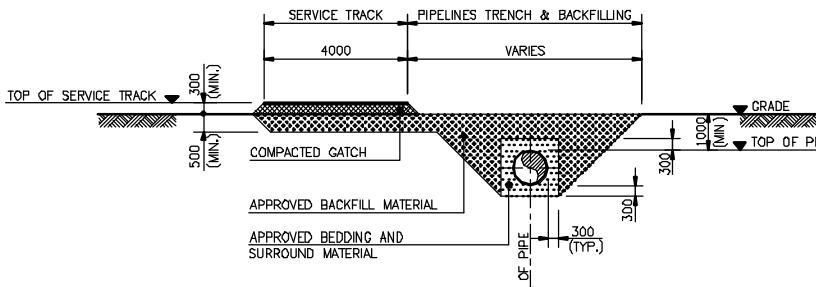
TYPICAL SECTION
(SEE NOTE-6)

SCHEDULE OF DIMENSIONS	
PIPE SIZE	A
DN600	1600
DN800	1800
DN900	1900
DN1000	2000

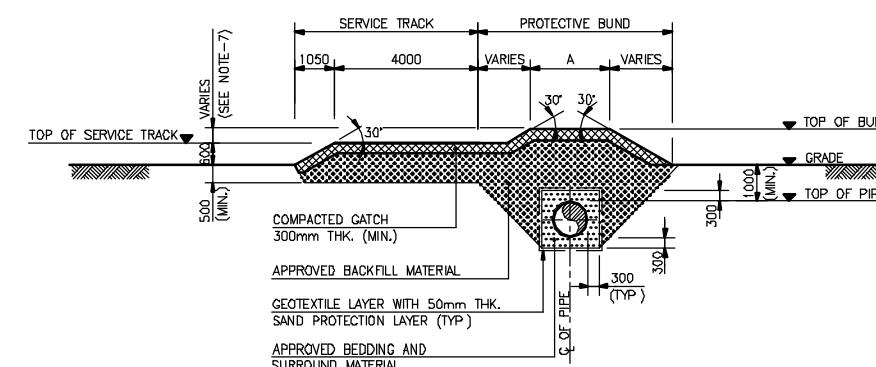
TYPICAL SECTION
(SEE NOTE-6)

SCHEDULE OF DIMENSIONS	
PIPE SIZE	A
DN600	1600
DN800	1800
DN900	1900
DN1000	2000

TYPE-III (PIPELINES IN DESERT AREA-SAND)



TYPE-IV (PIPELINES DIRECTLY BURIED IN TRENCH FOR WET SOIL CONDITION)



REFERENCE DRAWINGS



TYPICAL SECTION

TYPICAL SECTION
(SEE NOTE-6)

SCHEDULE OF DIMENSIONS	
PIPE SIZE	A
DN600	1600
DN800	1800
DN900	1900
DN1000	2000

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DRG. TITLE: STANDARD DRAWINGS FOR WATER WORKS			
TYPICAL SECTIONS OF TRANSMISSION PIPELINES			
CAD FILE	SCALE	SIZE	DOCUMENT NUMBER
W-P-TD-020	N.T.S	A3	W-P-TD-020
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