

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED
2. EXCEPT WHERE NOTED OTHERWISE, CONCRETE CLASS:
BASES AND BEAMS = 25/20
LEAN CONCRETE = 15/20

LEGEND:

- FGL FINISHED GROUND LEVEL
RHS RECTANGULAR HOLLOW SECTION

SPECIFICATIONS:

1. ALL TEXT TO BE HELVETICA (ARIAL) FONT TO THE SATISFACTION OF THE ENGINEER
2. COLOUR SPECIFICATION
 - WHITE: B.S 873 PART 1 - CLAUSE 1-3.2
 - BLACK: B.S 873 PART 1 - CLAUSE 1-3.2
 - BLUE: B.S 4800 No. 18 E 53
 - RED: B.S 381C No. 537
 - YELLOW: B.S 381C No. 355
 - GREEN: B.S 4800 No. 14C 39
3. THE COLOUR OF THE PAINT MUST CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS B.S 2660 No. 013
4. THE PAINT MUST BE DURABLE PAINT QUALITY
5. DURING THE DURATION OF THE PROJECT THE SIGN BOARD MUST BE MAINTAINED IN GOOD CONDITION AND REMOVED UPON PROJECT COMPLETION.

REV	DESCRIPTION	DATE



THIKA WATER AND SEWERAGE COMPANY

PROJECT:

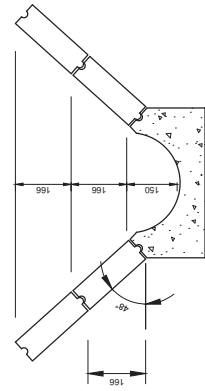
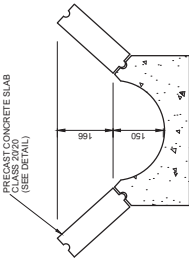
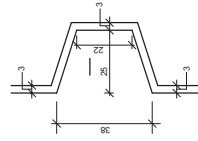
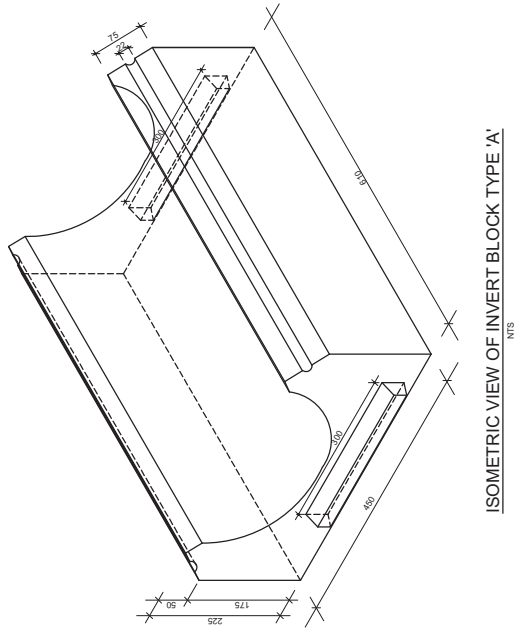
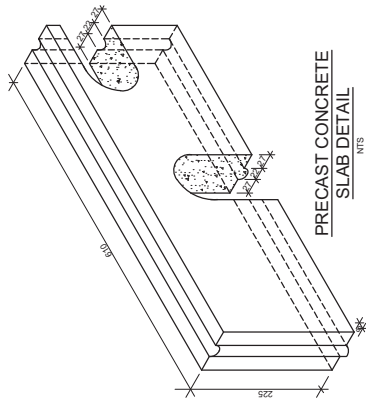
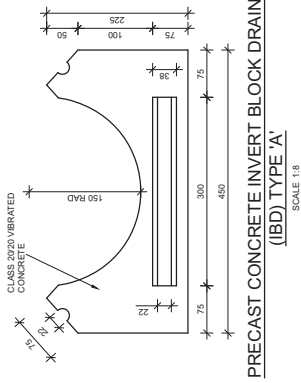
DRAWING TITLE
GENERAL DRAWINGS
SIGNBOARD DETAILS

DESIGNED BY: S.N	DRAWN BY: R.N
CHECKED BY: M.K	DATE: MAR 2021
SCALE: A3 SIZE AS SHOWN	SHEET No. 1 OF 1
DRG No. THIWASCO/SD/1.0	REV. 0

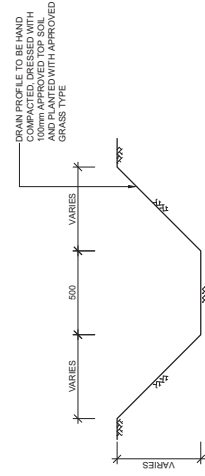
NOTES
ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED

ABBREVIATIONS

GL - GROUND LEVEL
mm - MILLIMETRES
R - RADIUS



DETAIL OF JOINT
SCALE 1:1



DRAIN PROFILE TO BE HAND
CAST AND PLANTED WITH
100mm APPROVED TOP SOIL
AND PLANTED WITH APPROVED
GRASS TYPE

NO.	DESCRIPTION	DATE



THIWASSCO
THIWA WATER AND SEWERAGE COMPANY

PROJECT: THIWA WATER AND SEWERAGE COMPANY

DESIGNED BY: S.N.	DRAWN BY: R.N.
CHECKED BY: M.K.	DATE: MAR 2018
SCALE: AS SHOWN	SHEET NO: 1 OF 1
DRWN: THIWASSCO/SD/10.0	REV:

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS STATED OTHERWISE

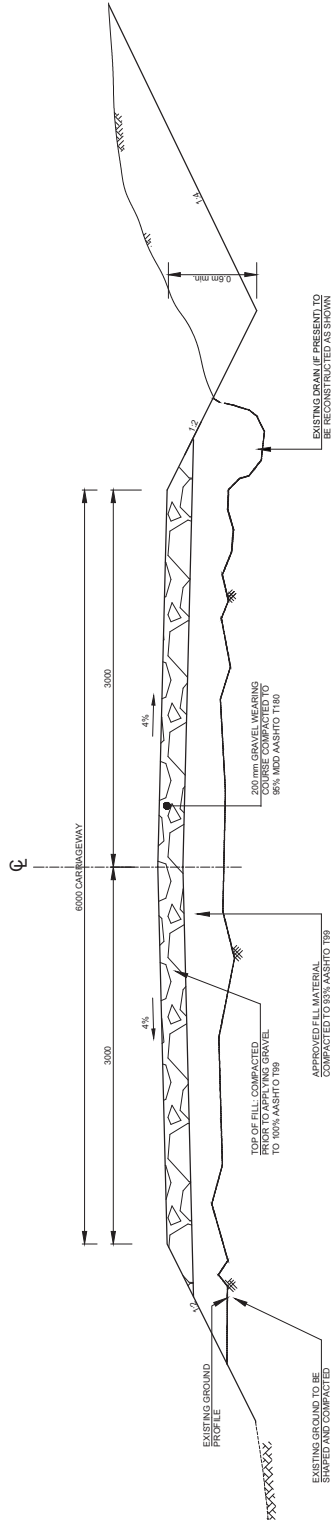
LEGEND:
P.C.C. - PRE-CAST CONCRETE

REV	DESCRIPTION	DATE

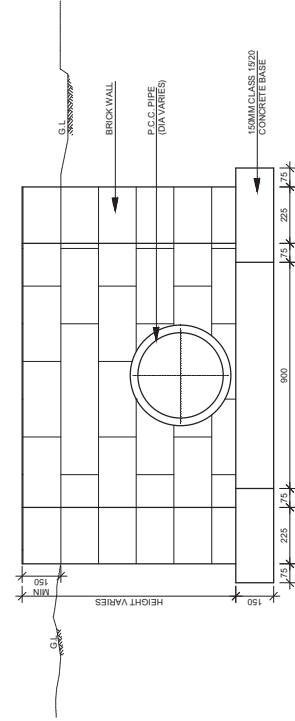


THIHA WATER AND SEWERAGE COMPANY
PROJECT:

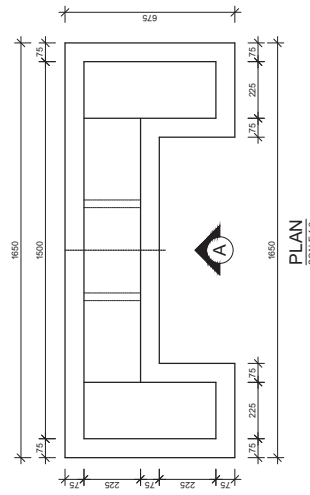
DRAWING TITLE GENERAL DRAWINGS ACCESS ROAD (GRAVEL)			
DESIGNED BY	S.N	DRAWN BY	R.N
CHECKED BY	M.K	DATE	MAR 2018
SCALE	AS SHOWN	SHEET No.	2 OF 2
DRW No.	THI/WASCO/SD/12.0	REV.	



TYPICAL ACCESS ROAD CROSS SECTION DETAILS
SCALE 1:2



ELEVATION A
SCALE 1:2

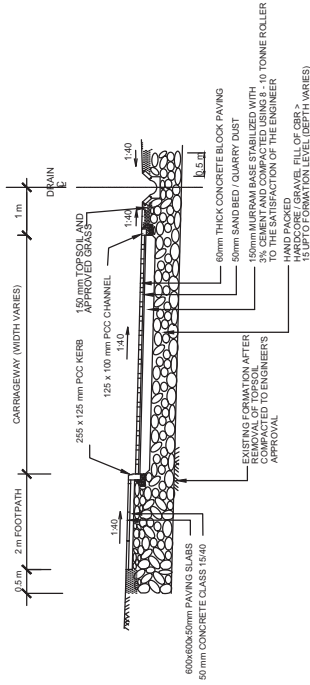


PLAN
SCALE 1:2

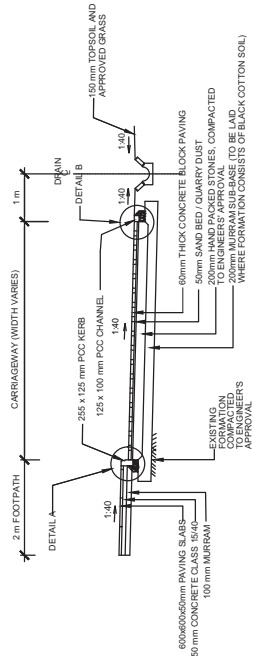
DETAILS OF HEADWALL

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS STATED OTHERWISE

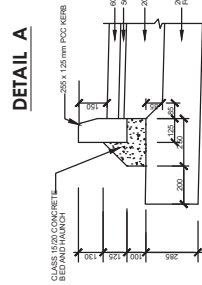
LEGEND:
P.C.C. PRE-CAST CONCRETE



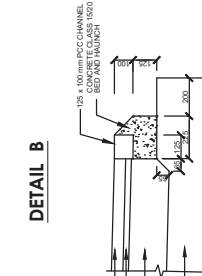
TYPICAL CROSS SECTION FOR CARRIAGEWAY IN FILL
SCALE 1:100



TYPICAL CROSS SECTION FOR CARRIAGEWAY IN CUT
SCALE 1:100



DETAIL OF KERB
SCALE 1:25



DETAIL OF CHANNEL
SCALE 1:25

TYPICAL CONCRETE BLOCK SURFACE ROAD DETAILS

REV	DESCRIPTION	DATE

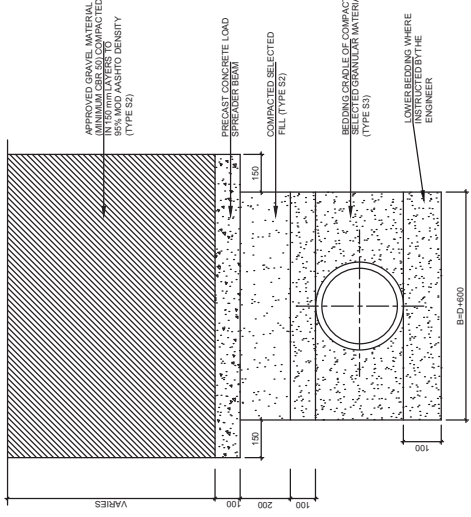


THIWA SCO
WATER AND SEWERAGE COMPANY

PROJECT: THIWA WATER AND SEWERAGE COMPANY			
DRAWING TITLE: GENERAL DRAWINGS ACCESS ROAD (PAVED)			
DESIGNED BY: S.N.	DRAWN BY: R.N.		
CHECKED BY: M.K.	DATE: MAR 2018		
SCALE: AS SHOWN	SHEET No. 1 OF 1		
DWG No. THIWASCO/SD/13.0	REV		

NOTES:

- MINIMUM TRENCH WIDTH TO BE NORMAL PIPE DIA + 600 mm. THE BEDDING AND THE BACKFILL IN LAYERS WHOSE SHALL BE COMPACTED IN LAYERS WHOSE THE MINIMUM PIPE DIA IS 300 mm OR MORE SHALL BE 80% MOD ASHTO OR THE LESSER.
- THE REQUIRED COMPACTION WILL BE AS CERTIFIED AS FOLLOWS:
 - IDENTIFY CLASSIFY AND ASSESS THE SOIL TYPE OF EMBEDMENT MATERIAL AVAILABLE WITH THOSE ON THE MATERIAL.
 - THE SOIL TYPE WILL BE COMPARED WITH THOSE ON THE MATERIAL.
 - THE COMPACTION METHOD REQUIRED IS THEN SELECTED FROM THE COMPACTION AND CLASS OF EMBEDEM (SEE TABLE 2).
- NOT ALL SOILS ARE GIVEN IN TABLE 1. IF FINED GRAINED SOILS WITH HIGH PLASTICITY MAY NOT BE USED AS BACKFILL. PLASTICITY MAY NOT BE CONSIDERED FOR USE AS BACKFILL IF THE CONTRACTOR HAS COMPACTION AT THE REQUIRED COMPACTION. AT THE END OF THE ROAD CROSSING, THE BEDDING SHALL HAVE A MINIMUM THICKNESS OF 150mm. LAYERS SHALL BE A WELL GRADED SOIL FROM FINES UP TO 20 mm GRAVEL OR AS APPROVED BY THE ENGINEER. WHERE SOME DIRT EXISTS AS TO THE COMPACTIBILITY OF THE SOIL AS DEFINED BY THE PROCTOR DENSITY TEST, THE SITE MODIFIED PROCTOR DENSITY TEST, THE SITE AND LABORATORY TESTS SHALL BE CARRIED OUT. TESTS 4/9 AND 7/2 RESPECTIVELY TO IF STONES OR ROCK ARE PRESENT. 150 mm THICK SHALL BE REQUIRED AS APPROVED BY THE ENGINEERS.
- WHERE THE BEDDING IS TO BE CONSIDERED AS BACKFILL, THE BEDDING SHALL HAVE A MINIMUM THICKNESS OF 150mm. LAYERS SHALL BE A WELL GRADED SOIL FROM FINES UP TO 20 mm GRAVEL OR AS APPROVED BY THE ENGINEER. WHERE SOME DIRT EXISTS AS TO THE COMPACTIBILITY OF THE SOIL AS DEFINED BY THE PROCTOR DENSITY TEST, THE SITE MODIFIED PROCTOR DENSITY TEST, THE SITE AND LABORATORY TESTS SHALL BE CARRIED OUT. TESTS 4/9 AND 7/2 RESPECTIVELY TO IF STONES OR ROCK ARE PRESENT. 150 mm THICK SHALL BE REQUIRED AS APPROVED BY THE ENGINEERS.
- MINIMUM THICKNESS OF 150mm. LAYERS SHALL BE A WELL GRADED SOIL FROM FINES UP TO 20 mm GRAVEL OR AS APPROVED BY THE ENGINEER. WHERE SOME DIRT EXISTS AS TO THE COMPACTIBILITY OF THE SOIL AS DEFINED BY THE PROCTOR DENSITY TEST, THE SITE MODIFIED PROCTOR DENSITY TEST, THE SITE AND LABORATORY TESTS SHALL BE CARRIED OUT. TESTS 4/9 AND 7/2 RESPECTIVELY TO IF STONES OR ROCK ARE PRESENT. 150 mm THICK SHALL BE REQUIRED AS APPROVED BY THE ENGINEERS.
- ONLY WHEN THERE IS 300 mm COVER OVER THE PIPE MAY HEAVIER COMPACTING BE USED. THE BACKFILL SHALL BE SUITABLY COMPACTED IN KEEPING WITH THE REQUIREMENTS OF THE SPECIFICATION AND SHALL BE CARRIED OUT. THIS SHALL BE AGREED UPON WITH THE ENGINEERS REPRESENTATIVE.



PIPE PROTECTION AT UNSURFACED ROAD CROSSING
SCALE: N T 5

LEGEND:

- D PIPE OUTSIDE DIAMETER
- B TRENCH WIDTH (SEE TABLE)
- ① LOWER BEDDING COMPRISING OF APPROVED GRANULAR BEDDING MATERIAL (SAND) COMPACTED TO 95% MFD IN 50mm LAYERS TO A THICKNESS OF 100mm (min.) OR AS DIRECTED BY THE ENGINEERS REPRESENTATIVE.
- ② APPROVED GRANULAR BEDDING MATERIAL TYPE S3 COMPACTED IN LAYERS AS PER NOTE 2. CAREFUL TAMPING ON EITHER SIDE OF THE PIPE SHOULD BE MAINTAINED TO ENSURE EQUAL PRESSURE ON BOTH SIDES OF THE PIPE.
- ③ APPROVED GRANULAR BEDDING MATERIAL TYPE S3 COMPACTED IN SHALLOW LAYERS TO A MAXIMUM OF 150mm THICK.
- ④ AS IN ③ ABOVE, BUT EXCESSIVE TAMPING TO BE AVOIDED.
- ⑤ NORMAL BACKFILL MATERIAL PROPERLY RAMMED IN LAYERS, NOT EXCEEDING 150mm THICK.
- ⑥ APPROVED GRANULAR BACKFILL MATERIAL COMPACTED TO 90% MFD IN LAYERS AS PER NOTE 2.

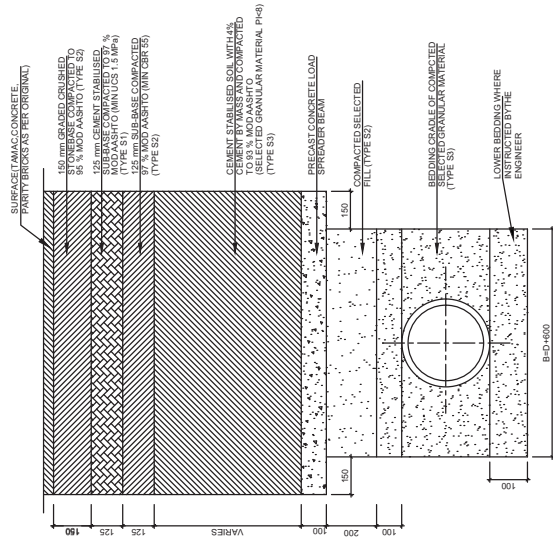
PRECAST CONCRETE LOAD SPREADER BEAM

TABLE 1 - MATERIAL DESCRIPTION CHART

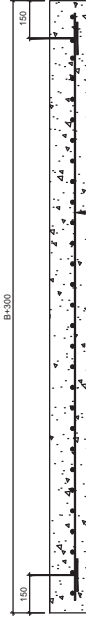
SOIL TYPE	DESCRIPTION	GROUP SYMBOL
S1	GRAVEL - SINGLE SIZE	GW
S2	GRAVEL - GRADED	GP
S3	SAND AND COARSE GRAINED SOILS WITH LESS THAN 15% FINES	GF

TABLE 2 : COMPACTION CHART GUIDE

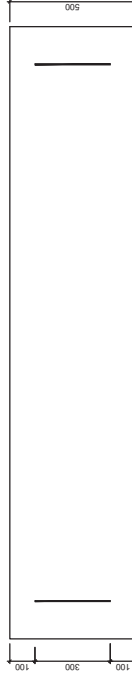
% MFD	SOIL TYPE	COMPACTION METHOD	THICKNESS OF LAYER (mm)	No. OF PASSES
90	S1	150	1	2
	S2	150	1	2
	S3	50	50	2



PIPE PROTECTION AT SURFACED ROAD CROSSING
SCALE: N T 5



SECTION THROUGH SPREADER BEAM
SCALE: N T 5



PLAN-LOAD SPREADER BEAM (PCC)
SCALE: N T 5

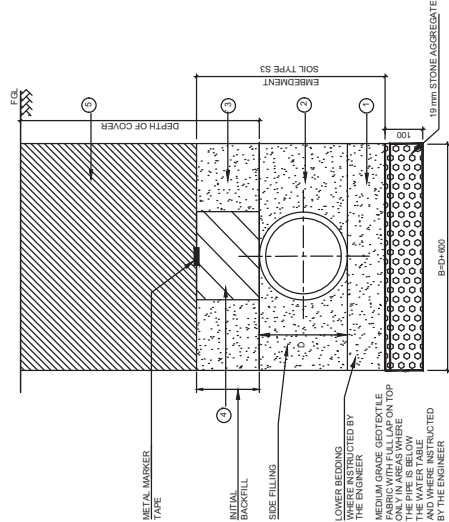
NOTE

INSTEAD OF A CONCRETE SPREADER BEAM, A CONCRETE OR STEEL PIPE WITH SUFFICIENT INTERNAL BORE TO FACILITATE INSERTION OF PIPES SHOULD BE USED IF INSTRUCTED BY THE ENGINEER.

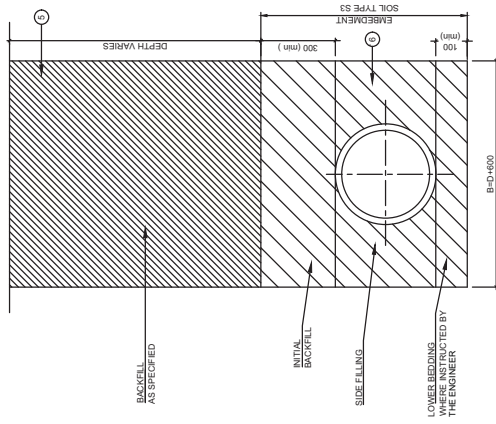
TYPICAL TRENCH WIDTHS FOR PIPES

NOMINAL DIAMETER D (mm)	80	100	160	200	250	300	500
WIDTH OF TRENCH B (m)	0.70	0.70	0.76	0.80	0.85	0.90	1.10

B = D + 166 mm (LIMITED TO A MINIMUM OF 660 mm)



TYPICAL TRENCH EXCAVATION AND BACKFILLING FOR HDPE PIPES
SCALE: N T 5



TYPICAL TRENCH EXCAVATION AND BACKFILLING FOR FERROUS PIPES
SCALE: N T 5

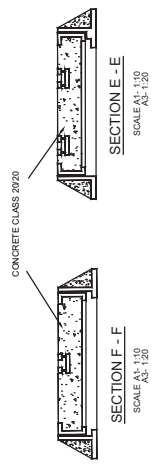
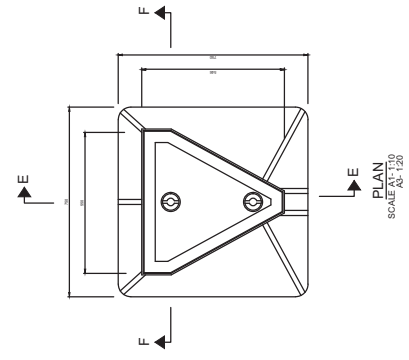


THIRUVASHI WATER AND SEWERAGE COMPANY
PROJECT

GENERAL DRAWINGS
PIPE BEDDING DETAILS

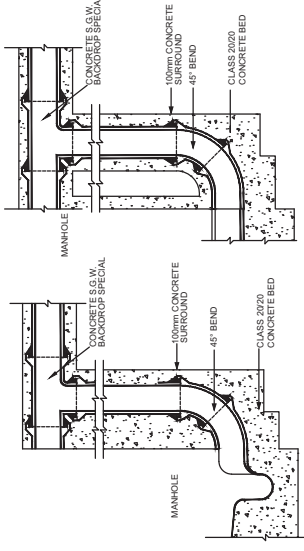
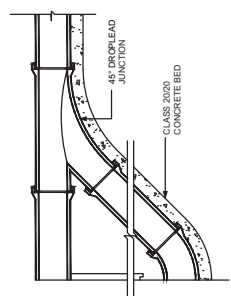
DESIGNED BY:	S.N	DATE:	R.N
CHECKED BY:	M.K	DATE:	MAR 2018
SCALE:	AS SHOWN	SHEET NO.	1 OF 1
DRAWING NO.	THWASCO/MS/0	REV	

NOTES:
 1. ALL CONCRETE TO BE CLASS 20/20
 2. ALL REINAST CONCRETE UNITS
 TO BS 884
 3. CONCRETE FILING CLASS 20/20
 WITH THE APPROPRIATE FINISH AND COORDINANCE
 CLAUSES.
 4. TOLERANCE ON OVERALL SIZE 30mm
 5. ALL HAUNCHES ARE CLASS 15/40
 CONCRETE AS INDICATED ON THE
 DRAWING. ALL REINFORCEMENT
 TO BE MADE GOOD IN CONCRETE
 CLASS 15/40.



**TRIANGULAR MANHOLE COVER
FOR FOUL SEWER**

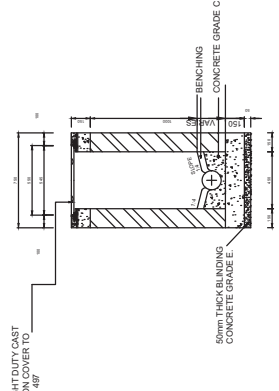
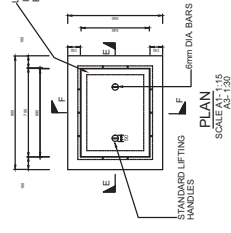
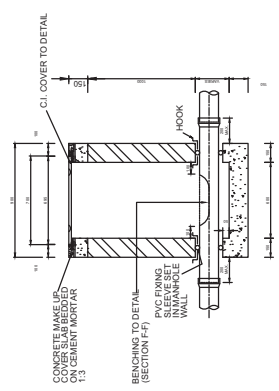
NOTE
COVER FABRICATED FROM 6mm
M.S. PLATE



MANHOLE DROPLEAD
SCALE A3:1:40

SIDE ENTRANCE BACKDROP
SCALE A3:1:20

END ENTRANCE BACKDROP
SCALE A3:1:20



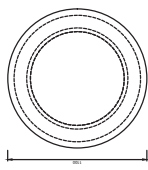
INSPECTION CHAMBER DETAILS

- NOTES:**
- INSPECTION CHAMBER SHOULD BE SIZE 600x450mm UP TO DEPTH OF 1000mm
 - FOR INSPECTION CHAMBER EXCEEDING DEPTH 1000mm SIZE SHOULD BE 850x1200mm
 - WALLS OF INSPECTION CHAMBER TO BE OF MASONRY

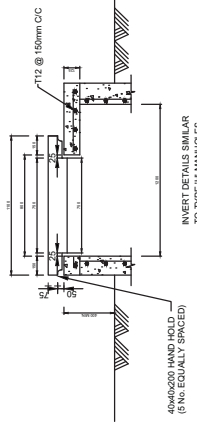
NO.	DESCRIPTION	DATE

DESIGNED BY:	S.N.	DRAWN BY:	R.N.
CHECKED BY:	M.K.	DATE:	MAR 2018
SCALE:	AS SHOWN	SHEET NO.:	1 OF 2
DRWN:	MAV/SD/12/0	REV.:	

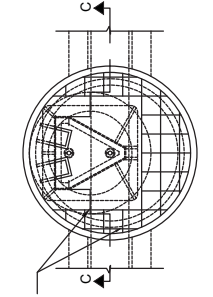
TITANIUM CO.	
THIKA WATER AND SEWERAGE COMPANY	
PROJECT:	
DRAWING TITLE:	
STANDARD DRAWINGS MANHOLE DETAILS	



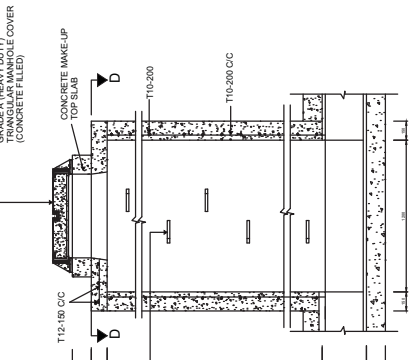
COVER - PLAN
SCALE 1:40



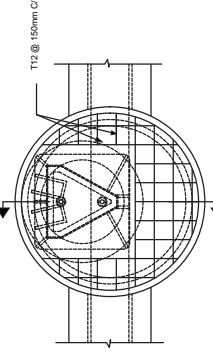
DETAILS OF PLASTIC FIBRE REINFORCED COVER FOR MANHOLES
SCALE 1:40



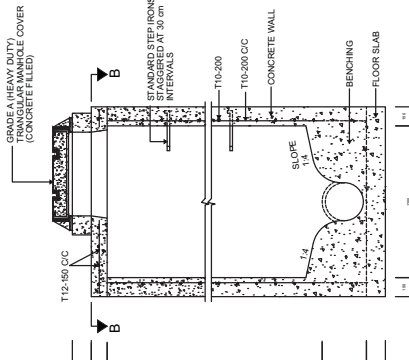
SECTION B - B
SCALE 1:20



SECTION C - C
SCALE 1:20

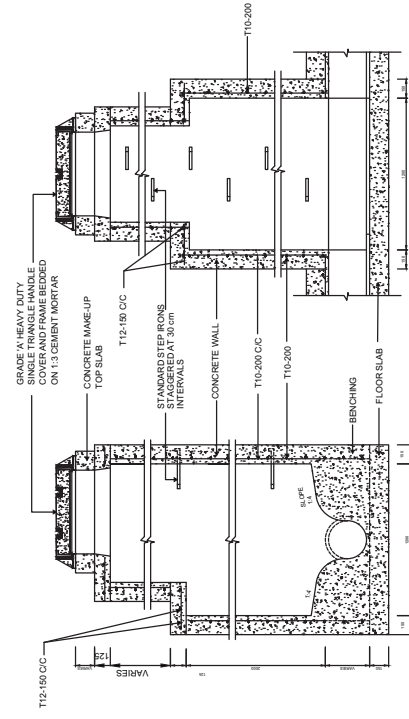


SECTION A - A
SCALE 1:20



SECTION D - D
SCALE 1:20

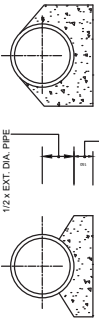
REINFORCED CONCRETE MANHOLE WITH COVER
SLAB DEPTH $n \geq 2.0m$.



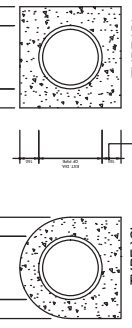
SECTION C - C
SCALE 1:20

SECTION A - A
SCALE 1:20

REINFORCED CONCRETE MANHOLE WITH COVER
SLAB DEPTH $> 2.0m$.



TYPE 'A'
SCALE 1:10



TYPE 'C'
SCALE 1:10

TYPE 'D'
SCALE 1:10

CONCRETE PIPE BEDS AND HAUNCHES
SCALE 1:10

PIPE DIAMETER (mm)	PIPE WALL THICKNESS (mm)	HAUNCH TYPE 'C'		HAUNCH TYPE 'D'	
		100mmED	150mmED	100mmED	150mmED
100	25.4	0.0791	0.1004	0.1431	0.1666
150	25.4	0.0642	0.0804	0.1107	0.1368
225	28.57	0.0723	0.1033	0.1352	0.1655
300	31.75	0.0929	0.1277	0.1687	0.2062
375	34.92	0.1080	0.1470	0.1984	0.2456
450	38.10	0.1253	0.1699	0.2258	0.2859
525	41.45	0.1433	0.1916	0.2584	0.3166
600	50.80	0.1810	0.2417	0.3283	0.3971
675	54.38	0.1924	0.2575	0.3370	0.4089
750	57.95	0.2040	0.2740	0.3460	0.4210
825	61.50	0.2157	0.2907	0.3543	0.4332
900	65.05	0.2275	0.3076	0.3629	0.4452
1000	68.60	0.2393	0.3246	0.3718	0.4572
1100	72.20	0.2511	0.3416	0.3809	0.4693
1200	75.80	0.2630	0.3587	0.3902	0.4813

CONCRETE QUANTITIES IN BED AND SURROUNDS FOR O.G. CONCRETE PIPES (CU.M PER LIN. METER)

BEDDING AND JOINTING OF FLEXIBLE JOINTED CONCRETE PIPES-TYPE 'B'
N/S

1. DIMENSION 'Y' IN ROCK OR MIXED SOILS CONTAINING ROCK BINDS BOULDER OR STONES OR OTHER IRREGULAR HARD SPOTS. Y= 1/3 OD UNDER BARRELS WITH MIN. 150mm CLEARANCE UNDER BARRELS AND SOCKETS IN MACHINE DUG UNIFORM SOILS. Y= OD UNDER BARRELS WITH MIN. 100mm UNDER BOTH BARRELS AND SOCKETS.
2. FOR GRANULAR BED AND SURROUND TO PIPES OR BROCKEN STONE TO BE USED, IT SHOULD PASS 12mm SIEVE OR SHALL BE RETAINED ON 5mm SIEVE.
3. TRENCHES MUST BE KEPT TO DESIGN WIDTH.

PIPE DIAMETER (mm)	PIPE DIAMETER (mm)					
	150	225	300	375	450	675
TYPE 'A' (CONCRETE BED) MAY BE SUBSTITUTED BY TYPE 'C'						
TYPE 'B'						
TYPE 'C' OR 'D' AS DIRECTED						

TYPE OF BED AND HAUNCH TO BE USED

