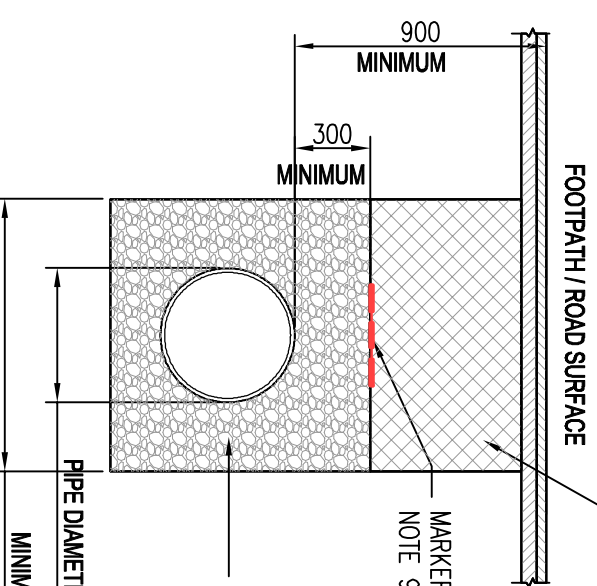
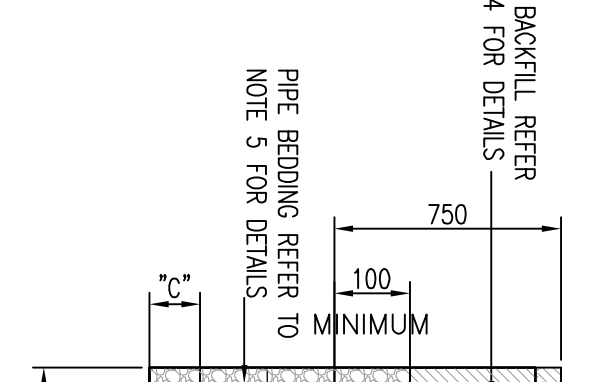


BACKFILL REFER TO NOTE 3 FOR DETAILS



SELECTED BACKFILL REFER TO NOTE 4 FOR DETAILS  
 MARKER TAPE REFER TO NOTE 9 FOR DETAILS  
 PIPE BEDDING REFER TO NOTE 5 FOR DETAILS



DEPTH OF REINFORCED TOPSOIL TO MATCH EXISTING  
 MARKER TAPE REFER TO NOTE 9 FOR DETAILS  
 PIPE BEDDING REFER TO NOTE 5 FOR DETAILS

**CROSS SECTION IN ROADWAY**

**CROSS SECTION IN GRASSY AREA**

NOTE:  
 ALL ROAD JOINTS TO BE SAW CUT AND SEALED WITH BITUMEN

PIPE DIAMETER 'A' (mm)	TRENCH WIDTH 'B' (mm)
< 80	SEE NOTE 10
100	500
150	600
200	600
250	750
300	750
350	750
400	900
450	900

PIPE DIAMETER 'A' (mm)	DEPTH OF BEDDING 'C' (mm)
< 200	150
> 250	200

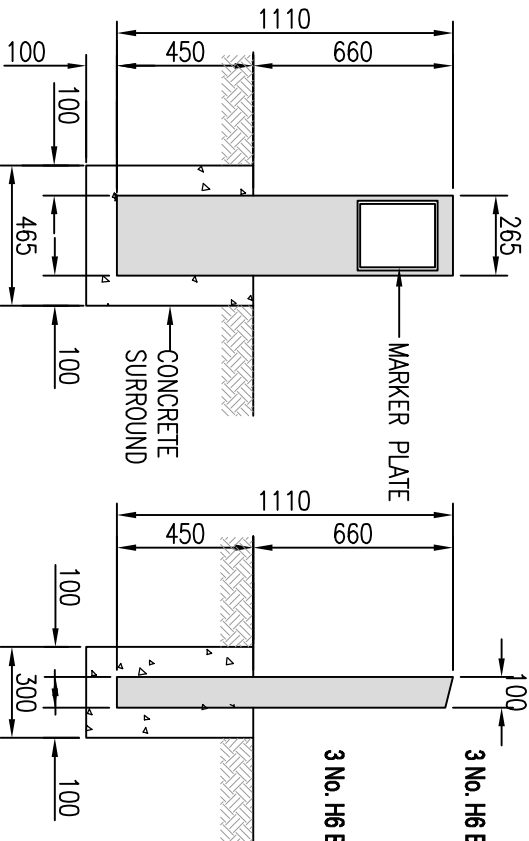
**MARKER PLATES NOTES**

- WHERE PRACTICAL MARKER PLATES SHALL BE FIXED TO ADJACENT WALLS OR ALTERNATIVELY ATTACHED TO MARKER POSTS.
- PLATES TO BE FIXED IN POSITION USING WALL PLUGS AND STAINLESS STEEL SCREWS.
- MARKER PLATES TO BE MANUFACTURED IN ACCORDANCE WITH BS 3251.
- FOR HOBART PLATE ALL CHARACTERS SHOULD BE BLACK AND THE REMAINDER OF THE FRONT FACE SHOULD CONFORM TO COLOUR REFERENCE No. 309 (CANARY YELLOW) OF BS 381C.
- PIPE DIAMETER ON HOBART PLATE TO REFER TO WATERMAIN NOT BRANCH.
- SLUICE VALVE, AIR VALVE, SCOUR VALVE AND METER PLATES SHOULD BE CAST IRON.
- ALL CHARACTERS SHOULD BE BLACK ON WHITE PAINT BACKGROUND.
- CONCRETE SURROUND TO MARKER POST TO BE GRADE C25 / 30 AND IN ACCORDANCE WITH IS EN 206/2013.
- PLASTIC MARKER POSTS ARE NOT ACCEPTABLE.
- ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206.

**REINFORCEMENT DETAILS**

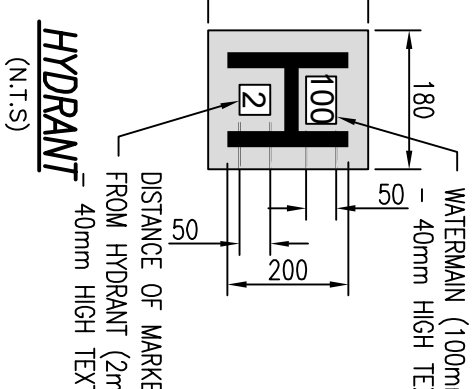
**ELEVATION**

(SCALE 1:25)



**SECTION**

(SCALE 1:25)



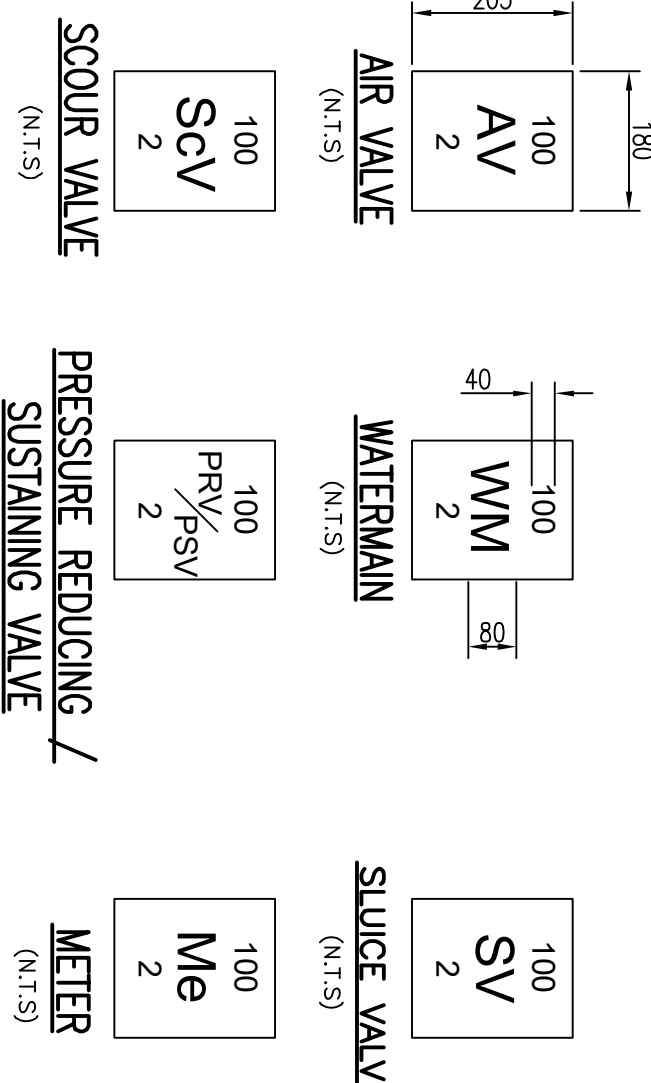
**PLAN**

(SCALE 1:25)

**HYDRANT**

(N.T.S)

DISTANCE OF MARKER FROM HOBART (200) - 40mm HIGH TEXT



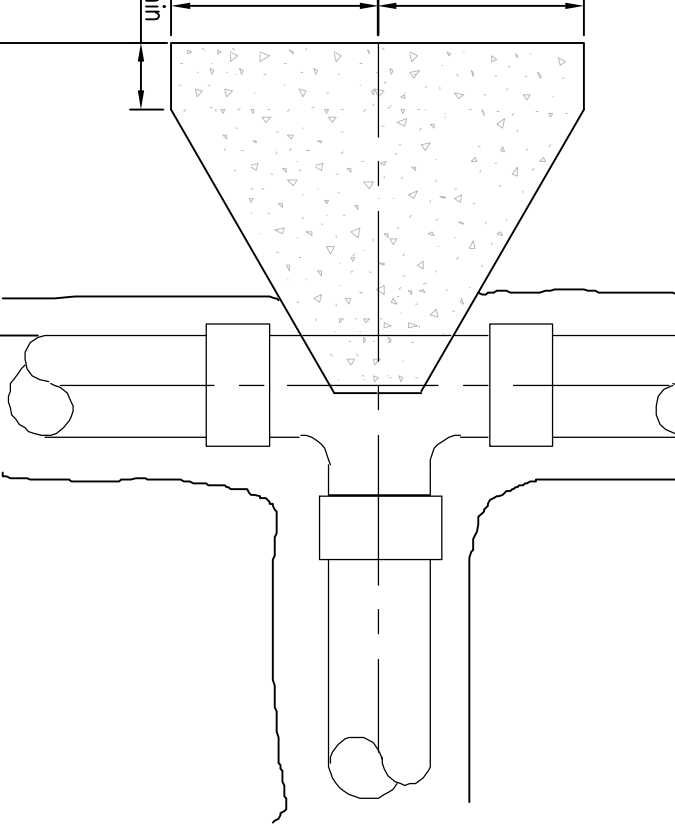
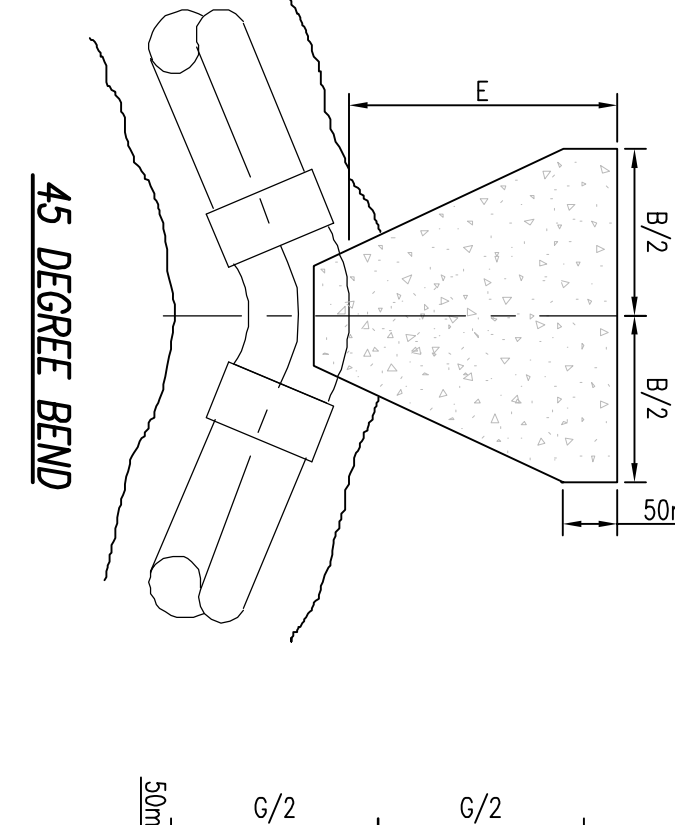
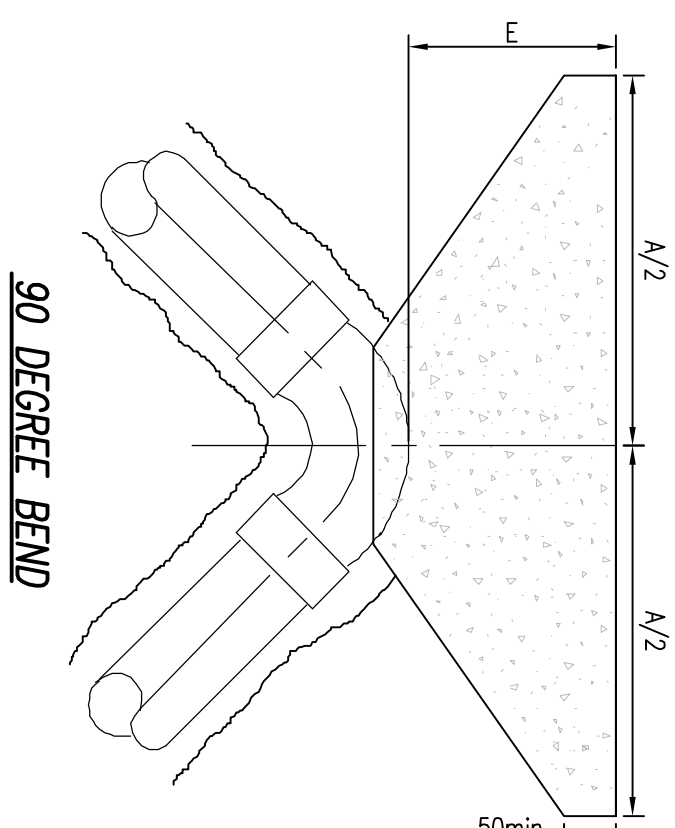
**MARKER POST/PLATE DETAILS**

**PIPE BEDDING NOTES:**

- ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
- THE MINIMUM DEPTH OF COVER FROM THE FINISHED GROUND LEVEL TO THE EXTERNAL CROWN OF THE PIPE SHALL BE 750mm FOR SERVICE CONNECTIONS, 900mm FOR WATER MAINS, GREATER DEPTHS OF COVER AND/OR PIPE STRENGTH AND/OR A HIGHER CLASS OF BEDDING MATERIAL MAY BE REQUIRED WHERE HIGH TRAFFIC LOADING IS ANTICIPATED. THE MAXIMUM COVER SHOULD NOT EXCEED 1,200mm WHERE PRACTICABLE.
- GRADE 808 MATERIAL IN ACCORDANCE WITH THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS IS TO BE USED AS BACKFILL MATERIAL WHERE THE WATER MAIN IS LOCATED IN ROADS, FOOTPATHS OR WHEN THE NEAREST PART OF THE TRENCH IS WITHIN 1m OF THE PAVED EDGE OF THE ROADWAY. CLAUSE 808 IS TO BE COMPACTED AS PER CLAUSES 802 OF THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS.
- SELECTED KINDS OF BEST WATER GRADED SAND OR BEST WATER GRADED SAND WITH 10% GRANULAR MATERIAL SHALL BE USED IN GREEN-FIELD AREAS ABOVE GRANULAR PIPE SURROUND MATERIAL SUBJECT TO THE FOLLOWING CONDITIONS:
  - Graded aggregate or 10mm single sized aggregate to IS EN 12422.
  - IN SOFT GROUND CONDITIONS (CBR < 5) THE MATERIAL SHOULD BE EXCAVATED OUT AND DISPOSED OF IN ACCORDANCE WITH THE WASTE MANAGEMENT ACT AND CLAUSE 808 MATERIAL IN ACCORDANCE WITH THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS SHALL REPLACE THE EXCAVATED MATERIAL, WRAPPED IN GEO-TEXTILE REINFORCING ALTERNATIVELY, SPECIAL PIPE SUPPORT ARRANGEMENTS, INCLUDING PILING ETC. MAY BE REQUIRED WHERE THE DEPTH OF SOFT MATERIAL IS EXCESSIVE. SUCH ARRANGEMENTS SHALL BE SUBJECT TO ASSESSMENT BY IRISH WATER BEFORE ADVANCING WITH THE WORK.
  - PIPES SHALL NOT BE SUPPORTED ON STONES OR ROCKS, OR ANY HARD OBJECT AT ANY POINT ALONG THE TRENCH. ROCK SHALL BE EXCAVATED TO A DEPTH OF 150mm BELOW THE ACTUAL DEPTH OF THE TRENCH WITH THE VOID FILLED WITH GRAUZE 808 MATERIAL IN ACCORDANCE WITH THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS. THE GRANULAR MATERIAL SHALL BE LAID ABOVE THIS VOID BACKFILL MATERIAL.
  - SHOULD MINIMUM COVER NOT BE ACHIEVABLE, CONCRETE GRADE C8/10 SHALL BE USED AS BACKFILL MATERIAL.
  - SHOULD MINIMUM COVER NOT BE ACHIEVABLE, POLYETHYLENE MATERIAL IN ACCORDANCE WITH EN 12163, PLASTIC PIPES SHALL HAVE MARKER TAPE TO BE 400mm WIDE BLUE POLYETHYLENE MATERIAL IN ACCORDANCE WITH EN 12163, PLASTIC PIPES SHALL HAVE MARKER TAPE INCORPORATED A REINFORCED BAND BRACING WIRE. SERVICE PIPES SHALL HAVE 200mm WIDE WESH-TAPE.
  - PIPE BEDDING SHALL COMPLY WITH MS 4-08-02 AND IS EN 4-08-01 GRANULAR MATERIAL SHALL BE 14mm TO 5mm.
  - Graded aggregate or 10mm single sized aggregate to IS EN 12422.
  - IN SOFT GROUND CONDITIONS (CBR < 5) THE MATERIAL SHOULD BE EXCAVATED OUT AND DISPOSED OF IN ACCORDANCE WITH THE WASTE MANAGEMENT ACT AND CLAUSE 808 MATERIAL IN ACCORDANCE WITH THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS SHALL REPLACE THE EXCAVATED MATERIAL, WRAPPED IN GEO-TEXTILE REINFORCING ALTERNATIVELY, SPECIAL PIPE SUPPORT ARRANGEMENTS, INCLUDING PILING ETC. MAY BE REQUIRED WHERE THE DEPTH OF SOFT MATERIAL IS EXCESSIVE. SUCH ARRANGEMENTS SHALL BE SUBJECT TO ASSESSMENT BY IRISH WATER BEFORE ADVANCING WITH THE WORK.
  - PIPES SHALL NOT BE SUPPORTED ON STONES OR ROCKS, OR ANY HARD OBJECT AT ANY POINT ALONG THE TRENCH. ROCK SHALL BE EXCAVATED TO A DEPTH OF 150mm BELOW THE ACTUAL DEPTH OF THE TRENCH WITH THE VOID FILLED WITH GRAUZE 808 MATERIAL IN ACCORDANCE WITH THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS. THE GRANULAR MATERIAL SHALL BE LAID ABOVE THIS VOID BACKFILL MATERIAL.
  - SHOULD MINIMUM COVER NOT BE ACHIEVABLE, CONCRETE GRADE C8/10 SHALL BE USED AS BACKFILL MATERIAL.
  - SHOULD MINIMUM COVER NOT BE ACHIEVABLE, POLYETHYLENE MATERIAL IN ACCORDANCE WITH EN 12163, PLASTIC PIPES SHALL HAVE MARKER TAPE TO BE 400mm WIDE BLUE POLYETHYLENE MATERIAL IN ACCORDANCE WITH EN 12163, PLASTIC PIPES SHALL HAVE MARKER TAPE INCORPORATED A REINFORCED BAND BRACING WIRE. SERVICE PIPES SHALL HAVE 200mm WIDE WESH-TAPE.
  - PIPE BEDDING SHALL COMPLY WITH MS 4-08-02 AND IS EN 4-08-01 GRANULAR MATERIAL SHALL BE 14mm TO 5mm.
  - Graded aggregate or 10mm single sized aggregate to IS EN 12422.
  - IN SOFT GROUND CONDITIONS (CBR < 5) THE MATERIAL SHOULD BE EXCAVATED OUT AND DISPOSED OF IN ACCORDANCE WITH THE WASTE MANAGEMENT ACT AND CLAUSE 808 MATERIAL IN ACCORDANCE WITH THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS SHALL REPLACE THE EXCAVATED MATERIAL, WRAPPED IN GEO-TEXTILE REINFORCING ALTERNATIVELY, SPECIAL PIPE SUPPORT ARRANGEMENTS, INCLUDING PILING ETC. MAY BE REQUIRED WHERE THE DEPTH OF SOFT MATERIAL IS EXCESSIVE. SUCH ARRANGEMENTS SHALL BE SUBJECT TO ASSESSMENT BY IRISH WATER BEFORE ADVANCING WITH THE WORK.

**TABLE OF DIMENSIONS FOR STEEPLY INCLINED PIPELINES**

GRADIENT	SPACING
1 IN 28 STEEPER	5.8m
BELOW 1 IN 21 TO 1 IN 4	11.0m
1 IN 4 TO 1 IN 5	16.8m
1 IN 5 TO 1 IN 6	22.0m



**< 12 BAR TEST PRESSURE**

NOM. DIA. (mm)	DIMENSIONS				
	A	B	E	G	G
100	600	330	200	390	390
150	950	510	225	680	680
200	1150	600	300	790	790
250	1350	750	300	970	970
300	1580	850	320	1110	1110
350	2100	1150	450	1450	1450
400	2550	1400	500	1800	1800
450	3000	1630	680	2130	2130
500	3590	1950	800	2540	2540
600	4100	2200	850	2880	2880

**12 BAR TO 15 BAR TEST PRESSURE**

NOM. DIA. (mm)	DIMENSIONS				
	A	B	E	G	G
100	700	380	200	510	510
150	1135	620	225	780	780
200	1400	750	300	980	980
250	1730	940	320	1210	1210
300	2090	1130	380	1480	1480
350	2600	1410	500	1840	1840
400	2980	1610	750	2110	2110
450	3400	1840	900	2330	2330
500	4080	2210	1000	2880	2880
600	5010*	2710*	1000	3650*	3650*

**15 BAR TO 18 BAR TEST PRESSURE**

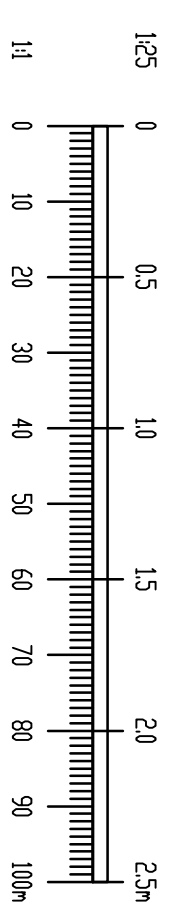
NOM. DIA. (mm)	DIMENSIONS				
	A	B	E	G	G
100	750	400	220	530	530
150	1250	700	250	880	880
200	1650	890	320	1170	1170
250	1980	1080	350	1370	1370
300	2300	1200	500	1630	1630
350	2930	1580	750	2070	2070
400	3510	1900	1000	2490	2490
450	3810	2270	1000	2870	2870
500	4340*	2380	1000	3700	3700
600	6370*	3450*	1000	4500*	4500*

**WATERMAIN TRUST AND SUPPORT BLOCKS**

- ALL DIMENSIONS IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
- CONCRETE THRUST BLOCKS (ANCHORED) SHALL BE POSITIONED SYMMETRICALLY WITH RESPECT TO THE CONNECTING PIPE & BENDS.
- CONCRETE DIMENSIONS: DRAWING NO. S-STD-W-13.
- THRUST BLOCKS SHALL BEAR ON UNDISTURBED SOIL. IF FOR ANY REASON THEY CANNOT THEN THE DEVELOPER SHALL NOTIFY IRISH WATER AND OBTAIN APPROVAL.
- THRUST BLOCK REINFORCEMENT REQUIRE SPECIFIC DESIGN.
- FOR TEST PRESSURES GREATER THAN 18 BAR, THRUST BLOCK DESIGN IS TO BE SUBMITTED TO IRISH WATER FOR APPROVAL.
- THRUST BLOCKS ARE DESIGNED FOR AN AVERAGE BEARING PRESSURE OF 100 kN/m<sup>2</sup> (TYPICAL FOR SOFT CLAY) FOR OTHER CONDITIONS. ACTUAL DIMENSIONS MAY BE ALTERED ON INSTRUCTIONS FROM IRISH WATER.
- CONCRETE IN THRUST BLOCKS SHALL BE GRADE C20/25.
- COMPRESSIBLE FILLER FOR CONCRETE PROTECTION TO BE IN ACCORDANCE WITH BS EN 622-1 AND BS EN 622-4. BITUMINOUS MATERIAL SHALL NOT BE IN CONTACT WITH PLASTIC PIPES. THE THICKNESS OF COMPRESSIBLE FILLER FOR MAINS < 450mm IN DIAMETER IS TO BE 18mm.
- CONCRETE THRUST BLOCKS FOR POLYETHYLENE PIPE TO COMPLY WITH THE MANUFACTURERS REQUIREMENTS.
- POLYETHYLENE PIPES SHALL BE WRAPPED IN PLASTIC SHEETING HAVING A COMPOSITION IN ACCORDANCE WITH BS 6076 BEFORE BEING CAST INTO CONCRETE.
- ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206.

**NOTES:**

- DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECTURAL AND ENGINEERING DRAWINGS.
- WATERMANS SHALL BE LAID IN ACCORDANCE WITH THE LOCAL AUTHORITY / IRISH WATER SPECIFICATION FOR THE LAYING OF NEW WATERMANS AND DRAWINGS WHICH OVER-RIDE THESE NOTES. THE CONSTRUCTION OF THE WATERMANS SHALL BE IN ACCORDANCE WITH THE BEST CURRENT PRACTICE AND THE LATEST EDITIONS OF THE RELEVANT STANDARDS AND CODES OF PRACTICE.
- WATERMANS SHALL NOT BE LAID UNDER WALLS OR AREAS DESIGNATED FOR TREES/SHRUBS/TOWERS.
- PIPES SHALL BE HOPE (BLUE PIPE) UNLESS NOTED OTHERWISE BY AGREEMENT WITH THE LOCAL AUTHORITY. DOUBLE IRON PIPES SHALL BE USED UNDER ROADS OF CLASSIFICATION 'DISTRICT DISTRIBUTOR' UPWARDS UNLESS NOTED OTHERWISE.
- PIPES SHALL CONFORM TO THE UK WATER INDUSTRY SPECIFICATION OR EQUIVALENT EU SPECIFICATION.
- DUCTILE IRON (DI) PIPES SHALL CONFORM TO IS EN 545 AND SHALL HAVE MINIMUM C40 PRESSURE RATING. DUCTILE IRON FINISHES SHALL HAVE 16 BAR FINISH AT LEAST. DI PIPEWORK SHALL BE COATED INTERNALLY WITH A BLAST FURNACE CEMENT LINING WHICH COMPRESSES WITH THE REQUIREMENTS OF BS 6920. EXTERNAL PROTECTION SHALL INCLUDE AN ALLOY OF ZINC AND ALUMINIUM WITH A MINIMUM 15% ALUMINIUM WITH OR WITHOUT OTHER MATERIALS HAVING A MASS OF 400g/m<sup>2</sup> COMPLETE WITH A FINISHING LAYER OF BLUE FUSION BONDED EPOXY IN ACCORDANCE WITH IS EN 14901.
- WATERMANS SHALL BE LAID UNDER FOOTPATHS PREFERABLY OR GRASS MARGINS WHERE APPROVED, NO PIPE, CONDUIT, CABLE OR OTHER SERVICE SHALL BE LAID LONGITUDINALLY OVER THE LINE OF A WATERMAIN. NO CHAMLET POLES, JUNCTION BOXES OR CHAMBERS SHALL BE CONSTRUCTED OVER A WATERMAIN.
- THE MINIMUM COVER TO A WATERMAIN SHALL BE 750mm, THE MAXIMUM COVER SHALL BE 900mm UNLESS NOTED OTHERWISE.
- CONNECTIONS TO THE MAINS WHICH ARE THE PROPERTY OF THE IRISH WATER CAN BE MADE BY THE IRISH WATER ONLY. NO OTHER PERSON MAY INTERFERE IN ANY WAY WITH THESE MAINS. SUCH CONNECTIONS WILL BE MADE BY IRISH WATER AT THE EXPENSE OF THE PERSONS REQUIRING THEM. THE ESTIMATED COST OF SUCH CONNECTIONS MUST BE LOADED WITH IRISH WATER BEFORE THE WORK IS UNDERTAKEN.
- IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE THAT ALL WORKS ARE CONSTRUCTED IN ACCORDANCE WITH THE IRISH WATER CODE OF PRACTICE AND STANDARD DETAILS. THE CODE OF PRACTICE AND STANDARD DETAILS ARE AVAILABLE TO DOWNLOAD FROM THE IRISH WATER WEB SITE AT [WWW.WATER.IE/CONNECTIONS/DEVELOPER-SERVICES/](http://WWW.WATER.IE/CONNECTIONS/DEVELOPER-SERVICES/) WHERE THE DETAILS CONTAINED ON THIS DRAWING DIFFER FROM THE IRISH WATER CODE OF PRACTICE OR STANDARD DETAILS THIS MUST BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY. IRISH WATER STANDARDS WILL TAKE PRECEDENCE.



REV.	DATE	AMENDMENT	DRN	APPD

**FOR PLANNING NOT FOR CONSTRUCTION**

**Waterman Moylan**  
 Engineering Consultants

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**CLIENT** GERARD GANNON

**ARCHITECT** WILSON ARCHITECTURE

**PROJECT** QUICKPARK CAR PARK AT TURKMAN GREAT SWORDS ROAD.

**TITLE** WATERMAIN CONSTRUCTION DETAILS SHEET 2 OF 2

DRAWN	DESIGNED	APPROVED	DATE
PJD	PJD	MD	SEPT 18
SCALE	JOB NO.	DRG NO.	REVISION
1:25 @ A1	13-194	R02	