

**CROSS SECTION
IN ROADWAY**

**CROSS SECTION
IN GRASS AREA**

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

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

GRASSED AREAS
DEPTH OF REINSTATED
TOPSOIL TO MATCH EXISTING

MARKER TAPE REFER TO NOTE 9 FOR DETAILS

PIPE BEDDING REFER TO NOTE 5 FOR DETAILS

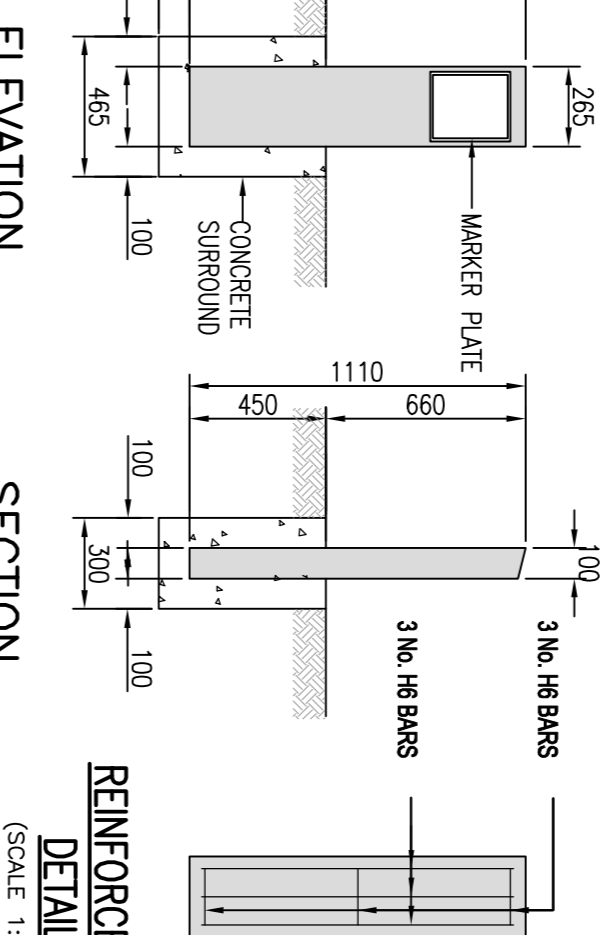
| PIPE DIAMETER A (mm) | TRENCH WIDTH B (mm) |
|-------------------------|------------------------|
| < 80 | SEE NOTE 10 |
| 100 | 500 |
| 150 | 600 |
| 200 | 600 |
| 250 | 750 |
| 300 | 750 |
| 350 | 750 |
| 400 | 900 |
| 450 | 900 |

| 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 WATERMAN NOT BRANCH.
- SLUCE 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.

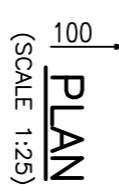
**REINFORCEMENT
DETAILS**



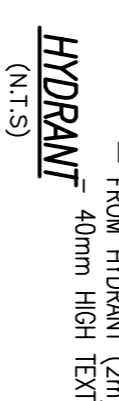
**ELEVATION
(SCALE 1:25)**

**SECTION
(SCALE 1:25)**

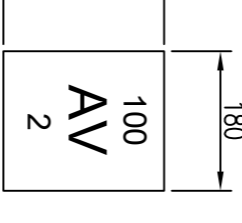
**SECTION
(SCALE 1:25)**



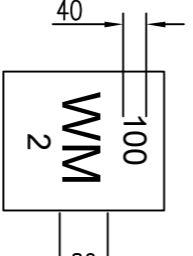
**PLAN
(SCALE 1:25)**



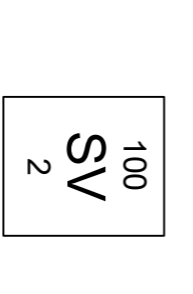
**HYDRANT
(N.T.S)**



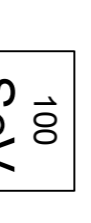
**AIR VALVE
(N.T.S)**



**WATERMAN
(N.T.S)**



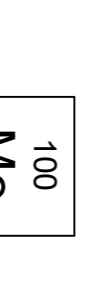
**SLUCE VALVE
(N.T.S)**



**SCOUR VALVE
(N.T.S)**



**PRESSURE REDUCING /
SUSTAINING VALVE
(N.T.S)**

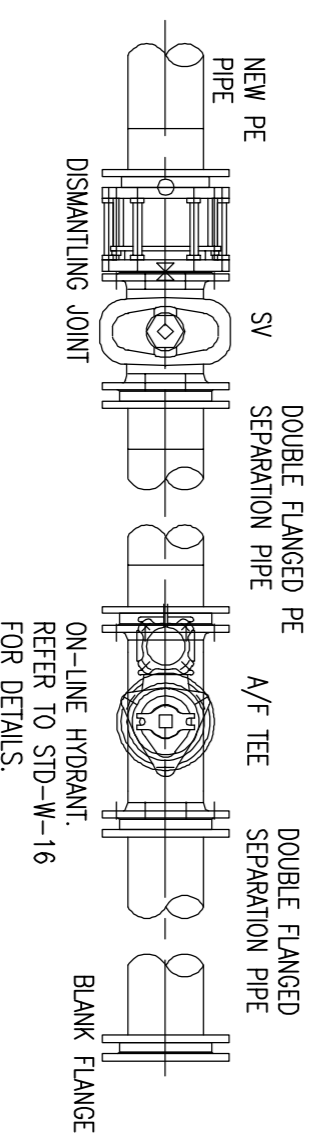


**METER
(N.T.S)**



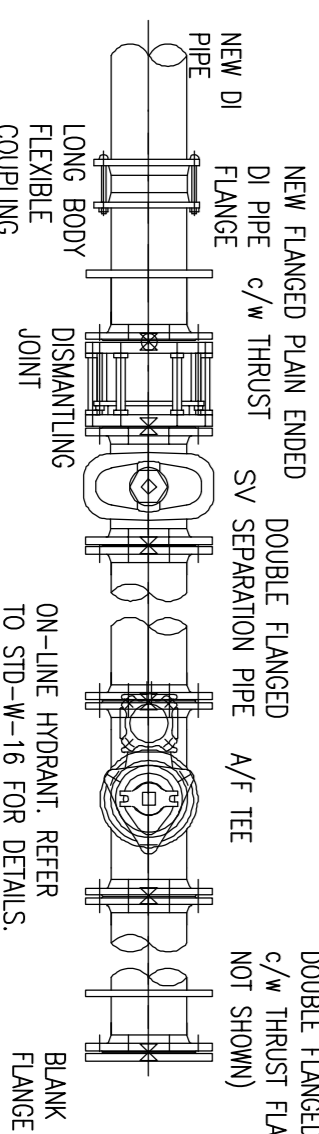
**WASHOUT HYDRANT
(N.T.S)**

MARKER POST/PLATE DETAILS



DOUBLE FLANGED PE SEPARATION PIPE
NEW PE PIPE
DISMANTLING JOINT
ON-LINE HOBART REFER TO STD-W-16 FOR DETAILS.
BLANK FLANGE

POLYETHYLENE (PE)



NEW FLANGED PLAIN ENDED DOUBLE FLANGED PE PIPE
DISMANTLING JOINT
ON-LINE HOBART REFER TO STD-W-16 FOR DETAILS.
BLANK FLANGE

DUCKTILE IRON (DI)

TEMPORARY "DEAD-END (DE)" DETAIL (FOR FUTURE EXTENSION)

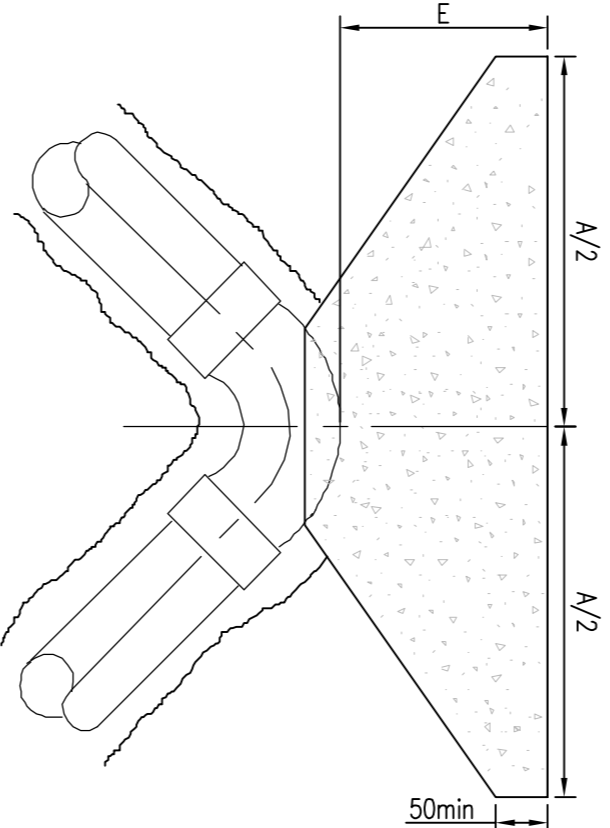
SCALE 1:10

PIPE BEDDING NOTES:

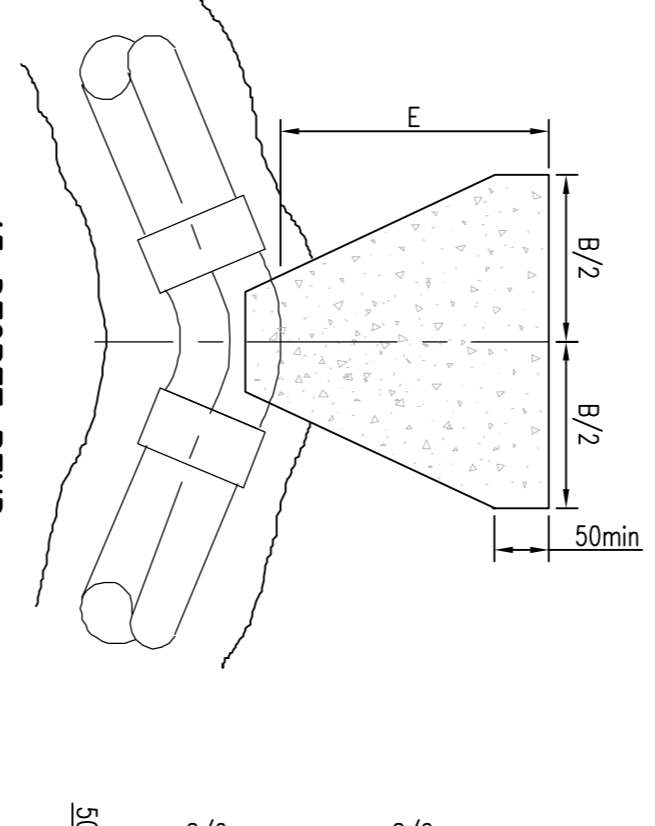
- ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
- THE MINIMUM DEPTH OF COVER FROM THE FINISHED GROUND LEVEL TO THE EXTERNAL CROWN OF THE PIPE SHALL BE 750mm FOR SERVICE CONNECTIONS, 900mm FOR WATER MAINS. GREATER DEPTHS OF COVER AND/OR PIPE STRENGTH AND/OR A HIGHER CLASS OF BEDDING MATERIAL MAY BE REQUIRED WHERE HIGH TRAFFIC LOADING IS ANTICIPATED. THE MAXIMUM COVER SHOULD NOT EXCEED 1,200mm WHERE PRACTICABLE.
- CLAUSE 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 CLAUSE 802 OF THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS.
- SELECTED TYPES OF BEST WATER MAY BE USED IN GREEN-FIELD AREAS ABOVE GRANULAR PIPE SURROUND MATERIAL SUBJECT TO THE APPROVAL OF THE WATER SUPPLY AUTHORITY.
- PIPE BEDDING SHALL COMPLY WITH WS 4-09-02 AND IS EN 12163.
- GRADED AGGREGATE OR 10mm SINGLE SIZED AGGREGATE TO IS EN 12163.
- 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 PLUGS 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 GRANULAR MATERIAL IN ACCORDANCE WITH THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS. THE GRANULAR MATERIAL SHALL BE LAD ABOVE THIS VOID BACKFILL MATERIAL.
- SHOULD MINIMUM COVER NOT BE ACHIEVABLE, CONCRETE GRADE C8/10 SHALL BE USED AS BACKFILL MATERIAL.
- 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. MARKER TAPE TO BE LAD AT A DISTANCE OF 350mm FROM SURFACE OF THE ROAD.
- TRENCH WIDTHS FOR PIPE SIZES 800mm WATER 300mm SUBJECT TO CONSIDERATION BEING GIVEN TO THE TRENCH DEPTH HEALTH & SAFETY, CONSTRUCTION AREA REQUIREMENTS.

**TABLE OF DIMENSIONS FOR STEEPLY
INCLINED PIPELINES**

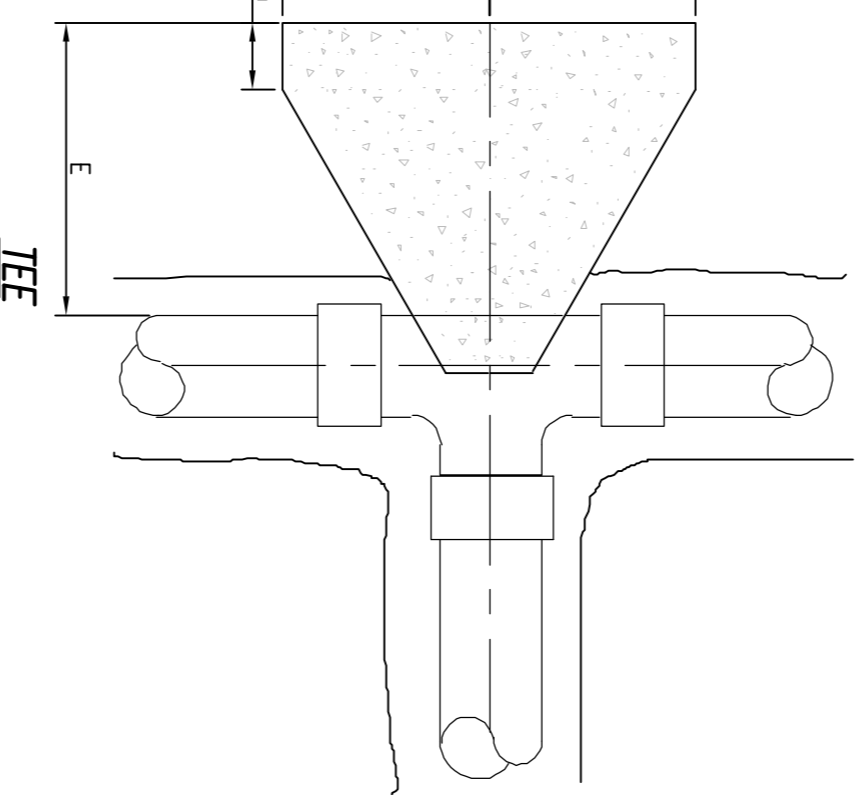
| GRADIENT | SPACING |
|--------------------------|---------|
| 1 IN 2.8 STEEPER | 5.5m |
| BELOW 1 IN 2.1 TO 1 IN 4 | 11.0m |
| 1 IN 4 TO 1 IN 5 | 16.8m |
| 1 IN 5 TO 1 IN 6 | 22.0m |



90 DEGREE BEND



45 DEGREE BEND



TEE

< 12 BAR TEST PRESSURE

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

12 BAR TO 16 BAR TEST PRESSURE

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

15 BAR TO 18 BAR TEST PRESSURE

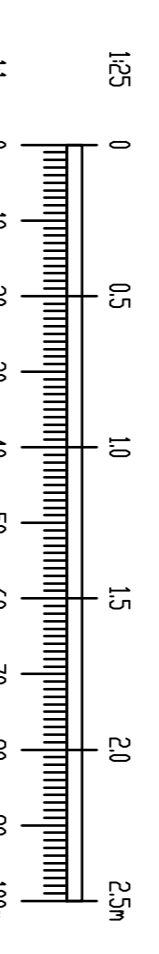
| NOM. DIA. (mm) | DIMENSIONS | | | | |
|----------------|------------|-------|------|-------|--|
| | A | B | E | G | |
| 100 | 750 | 400 | 220 | 530 | |
| 150 | 1250 | 700 | 250 | 880 | |
| 200 | 1650 | 890 | 320 | 1170 | |
| 250 | 1980 | 1080 | 350 | 1370 | |
| 300 | 2300 | 1200 | 500 | 1630 | |
| 350 | 2930 | 1580 | 750 | 2070 | |
| 400 | 3510 | 1900 | 1000 | 2490 | |
| 450 | 3810 | 2270 | 1000 | 2870 | |
| 500 | 4540* | 2380 | 1000 | 3700 | |
| 600 | 6370* | 3450* | 1000 | 4500* | |

WATERMAN 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.
- TRENCH 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.
- 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/m² (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 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 LAD IN ACCORDANCE WITH THE LOCAL AUTHORITY / IRISH WATER SPECIFICATION FOR THE LAYING OF NEW WATERMANS AND BREAMS 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 LAD UNDER WALLS OR AREAS DESIGNATED FOR TREES/SHRUBS/TOWERS.
- PIPES SHALL BE HIRE (BLUE PIPE) UNLESS NOTED OTHERWISE BY AGREEMENT WITH THE LOCAL AUTHORITY. DUCTILE IRON PIPES SHALL BE USED UNDER ROADS OR 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 FURANCE GENERAL LINING WHICH COMPLETES 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/m² COMPLETE WITH A FINISHING LAYER OF BLUE FUSION BONDED EPOXY IN ACCORDANCE WITH IS EN 14901.
- WATERMANS SHALL BE LAD UNDER FOOTPATHS PREFERABLY OR GRASS MARGINS WHERE APPROVED. NO PIPE, CONDUIT, CABLE OR OTHER SERVICE SHALL BE LAD LONGITUDINALLY OVER THE LINE OF A WATERMAN. NO CABINET POLES, JUNCTION BOXES OR CHAMBERS SHALL BE CONSTRUCTED OVER A WATERMAN.
- THE MINIMUM COVER TO A WATERMAN 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/ 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 | P/D | MD |
|------|---------|------------------------------|-----|----|
| A | 12/6/18 | REVISED FOR FINAL SUBMISSION | | |

**FOR PLANNING
NOT FOR CONSTRUCTION**

Waterman Moylan
Engineering Consultants
BLOCK 5, EASTPOINT BUSINESS PARK, ALFIE BRYNE ROAD,
DUBLIN D03 K7W7 IRELAND
TEL: (01) 664 8800 FAX: (01) 661 3818
EMAIL: info@watermanmoylan.ie WWW.WATERMANMOYLAN.IE

| CLIENT | GERARD GANNON PROPERTIES | | | | | | |
|-----------|---|----------|---------|----------|------|----------|---|
| ARCHITECT | CONROY CROWE KELLY | | | | | | |
| PROJECT | CLONGRIFIN SHD APPLICATION 1 | | | | | | |
| TITLE | WATERMAN CONSTRUCTION DETAILS SHEET 2 OF 2 | | | | | | |
| DRAWN | DESIGNED | APPROVED | DATE | | | | |
| PJD | MD | MD | NOV 18' | | | | |
| SCALE | 1:25 @ A1 | JOB NO | 18-059 | PRG. NO. | 1311 | REVISION | A |