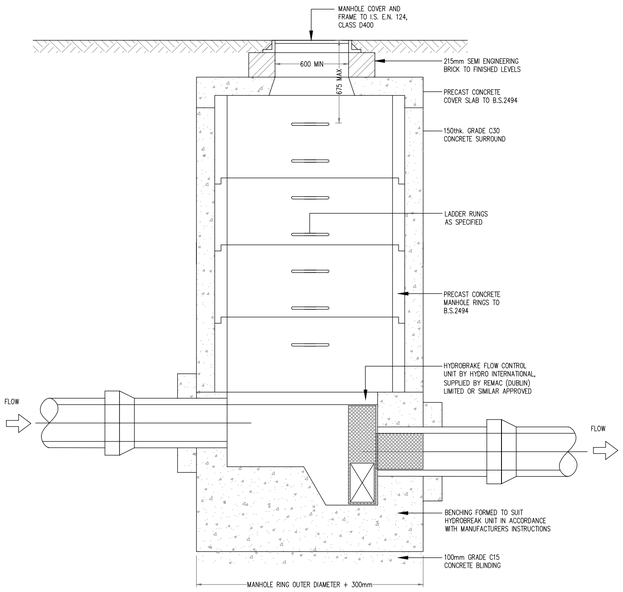
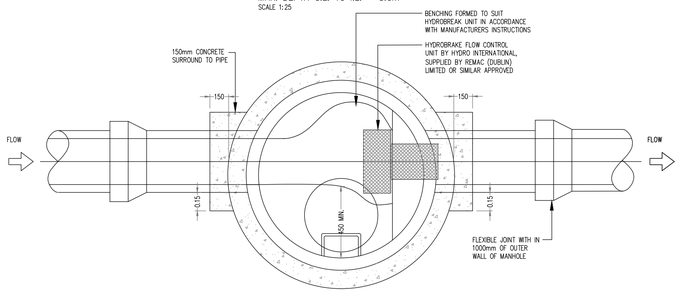


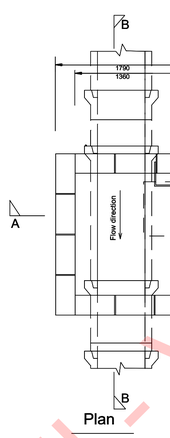
HYDROBRAKE CHAMBER
MAX. DEPTH G.L. TO I.L. – 3.0m
SCALE 1:25

NOTES :

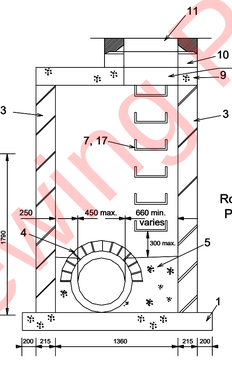
1. DO NOT SCALE FROM THIS DRAWING USE STATED DIMENSIONS ONLY. IF IN DOUBT CONSULT THE ENGINEER.
2. LEVELS REFER TO O.S. DATUM MALIN HEAD.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE ALL OF THE CONTRACT DOCUMENTS IN PARTICULAR THE ARCHITECT'S, LANDSCAPE ARCHITECT'S AND SERVICE ENGINEER'S SITE LAYOUT DRAWINGS.
4. ALL CIVIL WORKS SHALL BE COMPLETED IN ACCORDANCE WITH SPECIFICATIONS.
5. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR LOCATING, PROTECTING AND MAINTAINING ALL EXISTING SERVICES WITHIN THE SITE BOUNDARY. THE ENGINEER HAS SHOWN KNOW SERVICES ON THE DRAWINGS BUT GIVES NO GUARANTEE THAT THESE ARE THE ONLY SERVICES WITHIN THE SITE BOUNDARY. THE CONTRACTOR SHALL CONTACT THE RELEVENT STATUTORY AND PRIVATE UTILITY COMPNIES AND CONFIRM THE LOCATION OF THEIR PLANT FOR HIMSELF.
6. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING OF THE NAME AND LOCATION OF ALL TIPS USED FOR THE DISPOSAL OF MATERIAL OFF SITE.
7. THE CONTRACTOR SHALL ENSURE THAT ADEQUATE PROVISIONS ARE IN PLACE TO PREVENT THE SPREAD OF DIRT, MUD AND SITE MATERIAL ON THE PUBLIC ROAD. THE CONTRACTOR SHALL ENSURE THAT THE PUBLIC ROADS AROUND THE SITE ARE CLEANED ON A REGULAR BASIS, OR AS DIRECTED BY THE ENGINEER, WITH A MECHANICAL SUCTION SWEEPER.
8. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO ENSURE THAT NOISE AND DUST ARE MINIMISED.
9. BLINDING CONCRETE SHALL BE GRADE 15N20. BLINDING SHALL BE A MINIMUM OF 100MM THICK. ALL STRUCTURAL CONCRETE SHALL BE GRADE 30N20 UNLESS SPECIFIED OTHERWISE ELSEWHERE.
10. ALL EXPOSED CONCRETE FINISHES SHOULD BE FAIR FACED FINISHES UNLESS SPECIFIED OTHERWISE ELSEWHERE.
11. HANDRAILS SHALL BE GRADE 316 STAINLESS STEEL. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO MANUFACTURE.



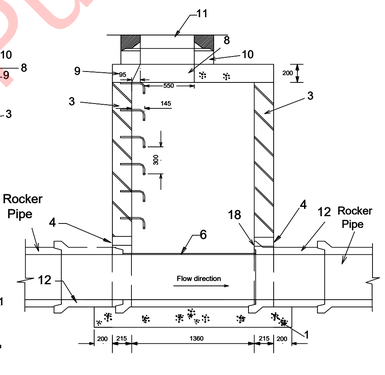
PLAN ON HYDROBRAKE CHAMBER
MAX. DEPTH G.L. TO I.L. –3.0m
SCALE 1:25



Plan



Section A-A



Section B-B

Manhole Details For Pipe Diam's. 225, 300, 375, 450.
Depth to Invert 1m to 3m.

TYPE B MANHOLE.
NTS

Drawing Notes:

1. 225mm thick Cl. 20N/20mm Mass Concrete Foundations.
2. Preformed half circle channel pipes. The pipeline may, where practicable, be laid through the manhole and the crown cut out to half diameter, provided flexible joints are situated on each side no further than 600mm from the inner face of manhole wall.
3. Manhole construction.

   For Surface Water Manholes high-density blocks to Cl.S10 of IS.20 Part 1:1987 or Cl. 30N/20mm insitu concrete.
   Block work shall be bedded and jointed using mortar to IS406. Beds and vertical joints shall be completely filled with mortar as the blocks are laid.
   Joints shall be flush pointed as the work proceeds.
   All Foul Manholes must be faced in solid Engineering Brick (min. class A or B), or insitu concrete for 1 metre above Benching Level. Brick to be bonded to block work using English Garden Wall Bond.
4. Relieving arch formed by 215x103x65 solid engineering brick Class A or B as per drawing.
   Relieving arches used in brick or block work manholes extend over full thickness of wall.
   A Double Arch is to be formed for pipe diameters greater than 600mm.
5. Benching and pipe channel pipe surround Cl. 20/20 concrete.
6. Benching finished in 2:1 sand-cement mortar with a smooth trowel finish, at 1 in 30 slope towards channel.
7. Standard rungs at 300c/c vertically and galvanized to the latest version ofB.S. 729 or equivalent. Note: Steps Irons are not acceptable.
8. 600mm square ope in roof slab.
9. Precast R.C. Roof Slab shall be 200mm thick in Class 30N/20mm, with 40mm cover to steel.
10. 1 to 2 courses of solid engineering bricks Cl.B to I.S.91:1983 set in 1:3 (cement and mortar).
11. Class D400 or E600 manhole cover and frame to IS/EN 124. 150mm deep frame for roads and 100mm deep for footpaths and green areas. Non-rock design, closed keyways, manufactured from spheroidal graphite cast iron (ductile cast iron), 600 x 600 (600diam.) clear opening, cover and frame coated in bitumen or other approved material, cover to have a minimum mass of 140kg/m2, frame bearing area shall be 80,000mm2 min, frames shall be designed to prevent covers falling into manhole. Frames shall be bedded on approved mortar to manufactures instructions.
12. Short length pipe and pipe joint external to manhole shall not exceed 600mm from the inner face of manhole wall.
13. Toe holes of 230mm minimum depth and galvanized steel safety railings to be provided in benching of sewers greater than 525mm diameter and depth to invert >3m for access to invert.
14. A safety chain is to be provided on pipes that exceed 450mm in diameter. Mild safety chain shall be 10mm nominal size grade M(H) non-calibrated chain, type 1, complying with B.S.4942 Part 2 or equivalent.
15. When depth of manholes to invert is greater than 3.0m ladders shall be used instead of rungs to B.S.4211 or equivalent except that stringers should be not less than 65 x 12mm in section and rungs 25mm in diameter.
    Fixed ladders should meet the dimensional requirements of B.S.4211 or equivalent.
16. Ladder stringers should be adequately supported from the manhole wall at intervals of not more than 2.0m stringers should be bolted to cleats to facilitate renewal.
17. All ladders, rungs, handrails, safety chains etc shall be hot dip galvanized to B.S.729 or equivalent.
18. Pipe should be cut flush with the inside surface of the manhole wall so that the channel extends the full length of the manhole (except for pre-cast manholes).
19. Position of 910 square ope in intermediate roof slab.

    All manholes shall be watertight to the satisfaction of the Engineer.
    Formwork to Reinforced Concrete and Mass Concrete shall comply with Class 2, Section 6.2.7, B.S.8110: Part 1: 1997.
    Finish to the top of slabs shall comply with Type A, Section 6.2.7,B.S.8110: Part 1:1997.
    Plan dimensions of manholes are based on block work having a co-ordinating size of 450 x 225 x 100.
    Manholes are designed to B.S.8005 and wall thickness to I.S.325 block work design code taking granular fill pressure and H.B. surcharge.
    Reinforcement to slabs to Engineers details.
20. For manholes >3m depth to invert use 30N/20mm insitu concrete. Reinforcing mesh ref. A393 @ 6.16kg/m to be fixed at mid point of wall. Additional reinforcement to be supplied over pipe crown.
21. Manhole Openings to be situated furthest from the nearest Carriageway. Manhole steps / access to be positioned to allow viewing of oncoming traffic.

General Notes:

i) All brick to be Solid Engineering Brick Class A or B.

ii) For pipe diameter >750mm use manhole with internal diameter size = pipe size + 1metre + 300mm.

iii) Distance from the top rung of the ladder to ground level must be a maximum of 500mm.

L118

DRAFT

PLANNING DRAWING.
NOT FOR CONSTRUCTION.
ALL LEVELS GIVEN ARE RELATIVE TO ORDNANCE DATUM.
THIS DRAWING HAS BEEN ISSUED FOR INFORMATION PURPOSES ONLY AND MUST NOT BE USED FOR CONSTRUCTION UNDER ANY CIRCUMSTANCES

NOTES
1. For setting out refer to Architect's drawings.
2. This drawing to be read in conjunction with all other Architectural and Engineering drawings and all other relevant drawings and Specifications.
3. DO NOT SCALE THIS DRAWING. Use figured dimensions only.
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Rev. No.	Date	REVISION NOTE	Dm. By	Chkd. By

Architect	Darmody Architecture
Project	Johnstown Estate
Title	STORM WATER DETAILS
Dwg. No.	L118-CSC-ZZ-XX-DR-C-0104

Date	Drn by	Chkd by	Aprvd by	Scale	Revision
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