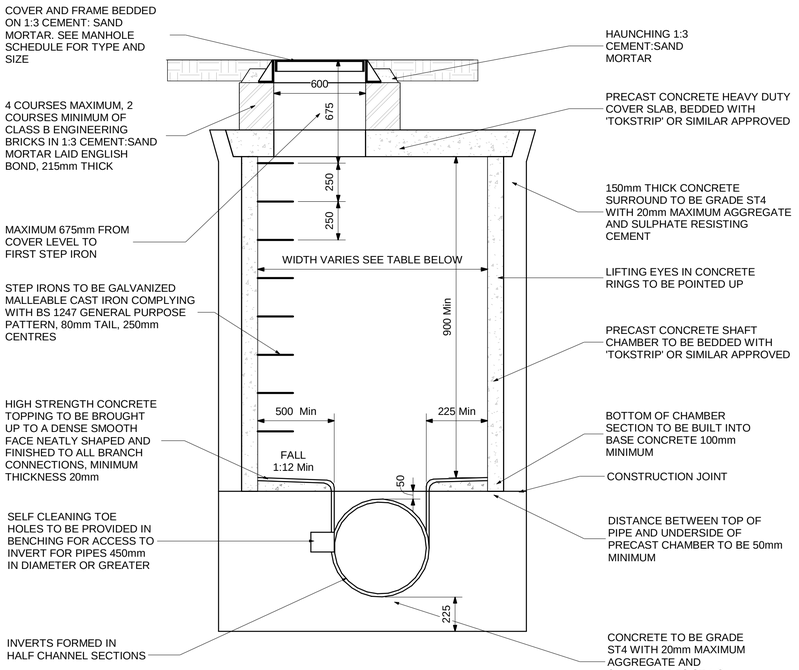
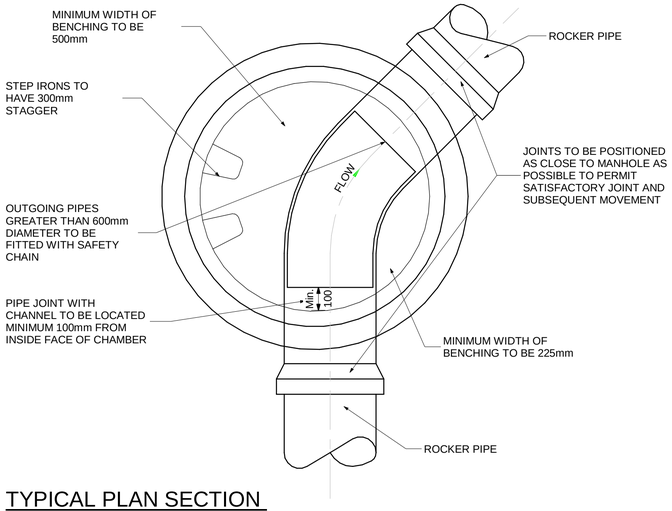


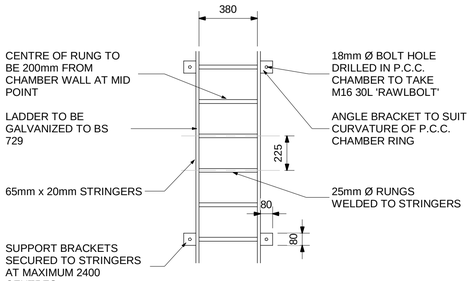
TYPICAL SECTION THROUGH MANHOLE - TYPE 1B FOR DEPTHS OF SOFFIT OF 0.9 METRES TO 3.0 METRES

SCALE 1:20



TYPICAL PLAN SECTION THROUGH PRE-CAST MANHOLES

SCALE 1:20



TYPICAL LADDER DETAIL

SCALE 1:20

NOTE:-TABLE APPLIES TO TYPE Y AND Z MANHOLES

DIAMETER OF LARGEST PIPE IN MANHOLE (mm)	INTERNAL DIAMETER OF MANHOLE (mm)
LESS THAN 375	1200
375-450	1350
500-700	1500
750-900	1800
975-1200	2100

NOTE:-TABLE APPLIES TO TYPE Y AND Z MANHOLES

PIPE DIAMETER (mm)	ROCKER PIPE LENGTH (m)
150-450	0.5-0.75
450-750	0.75-1.0

GENERAL

1. DIMENSIONS ARE NOT TO BE SCALED FROM THE DRAWINGS. ONLY FIGURED DIMENSIONS ARE TO BE USED.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERING, ARCHITECTURAL AND SPECIALIST SUPPLIER DRAWINGS, SPECIFICATION OF WORKS, DESIGN RISK ASSESSMENTS AND METHOD STATEMENTS.
3. ALL SETTING OUT, GRIDLINES, BUILDING LINES, ETC. ARE TO BE SET OUT IN ACCORDANCE WITH THE RELEVANT ARCHITECTS DRAWINGS. THE PRINCIPAL DIMENSIONS AND LEVELS FOR SETTING OUT ARE INDICATED. THE CONTRACTOR IS TO TAKE ACCURATE SITE MEASUREMENTS TO VERIFY PRINCIPAL SETTING OUT DIMENSIONS AND LEVELS PRIOR TO THE EXECUTION OF ANY WORK. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE. ALL LEVELS IN METRES ABOVE OS DATUM UNLESS NOTED OTHERWISE.
4. ALL WORK IS TO BE CARRIED OUT TO THE APPROVAL OF THE CLIENT, ENGINEER AND BUILDING CONTROL/NETWORK RAIL AND TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE BUILDING REGULATIONS APPROVED DOCUMENTS AND PLANNING PERMISSION WHERE APPROPRIATE. ALL WORKMANSHIP AND MATERIALS TO BE IN ACCORDANCE WITH THE LATEST EDITION OF THE RELEVANT BRITISH STANDARDS, CODES OF PRACTICE OR EUROCODES AND THE AGREED PROJECT SPECIFICATION.
5. THE CONTRACTOR IS TO ENSURE COMPATIBILITY AND GOOD FIT BETWEEN NEW AND EXISTING CONSTRUCTION THROUGHOUT, TAKING SITE DIMENSIONS AS NECESSARY PRIOR TO COMMENCEMENT OF ANY WORK. THE CONTRACTOR IS TO MAINTAIN STABILITY OF ALL WALLS, FLOORS, COLUMNS, TRUSSES AND OTHER STRUCTURAL AND NON-STRUCTURAL ELEMENTS AND TO DESIGN, DETAIL, SUPPLY AND FIX ALL TEMPORARY SUPPORTS TO MAINTAIN VERTICAL AND HORIZONTAL STABILITY OF THE STRUCTURE AND ADJACENT STRUCTURES FOR THE DURATION OF THE WORKS.
6. ALL PROPRIETARY PRODUCT DETAILS ARE INDICATIVE. FOR CONSTRUCTION DETAILS SEE SPECIALIST SUPPLIERS INFORMATION. ALTERNATIVE PROPRIETARY PRODUCTS MAY BE PROPOSED BUT SHOULD BE IN ALL RESPECTS EQUAL TO THE PRODUCT DETAILED AND WILL BE SUBJECT TO THE APPROVAL OF THE ENGINEER AND BUILDING CONTROL/NETWORK RAIL. ALL PROPRIETARY PRODUCTS ARE TO BE INSTALLED STRICTLY IN ACCORDANCE WITH THE MANUFACTURERS WRITTEN INSTRUCTIONS.
7. ANY DISCREPANCIES BETWEEN THE INFORMATION GIVEN BY THE ENGINEER AND THAT PROVIDED BY OTHERS MUST BE REFEREED TO THE ARCHITECT AND ENGINEER BEFORE WORK PROCEEDS.
8. ABBREVIATIONS USED:-
   UNO: UNLESS NOTED OTHERWISE
   NTS: NOT TO SCALE
   CL: CENTERLINE
   GL: EXISTING GROUND LEVEL
   PGL: PROPOSED GROUND LEVEL
   BGL: BELOW GROUND LEVEL
   FL: FINISHED FLOR LEVEL
   SL: STRUCTURAL SLAB LEVEL
   TOS: TOP OF STEEL LEVEL
   TOC: TOP OF CONC
   SOP: SETTING OUT POINT
   U/S: UPSTAND
   D/S: DOWNSTAND
   C/C: CONCRETE CASED
   WP: WIND POST
   RC: REINFORCED CONCRETE
9. GENERALLY, THE FOLLOWING INFORMATION WILL NOT BE SHOWN ON DRAWINGS: NON-STRUCTURAL INCLUSIONS OR CAST-IN FIXINGS, E.G. COLUMN GUARDS, LOCATION AND DETAILS OF FIXINGS FOR BRICKWORK, BLOCKWORK, CLADDING, DOORS, WINDOWS ETC. (FIXINGS MAY BE SHOWN IN SITUATIONS OF ABOVE NORMAL COMPLEXITY AND WHERE THEY ARE ESSENTIAL TO THE STRUCTURAL STABILITY), CHAMFERS, ARISES., CHASES AND REBATES FOR DRIPS, ASPHALT TUCK-INS, ARCHITECTURAL DETAILS, ETC. CAST-IN SOCKETS, BOLTS OR STUDS FOR FIXING PAPERWORK, DUCTWORK ETC. CONCRETE KERBS, SLOPES, FLOOR DRAINS. DETAILS FOR DAMP-PROFING AND WATERPROOFING MEMBRANES, SEALANTS, DETAILS OF FIRE PROTECTION SYSTEMS ETC. OTHER THAN THOSE SHOWN ON STRUCTURAL DRAWINGS. THIS INFORMATION MAY BE FOUND ON BUILDERSWORK DRAWINGS PREPARED BY THE ARCHITECT, BUILDING SERVICES ENGINEERS OR SPECIALIST SUPPLIER OR SUBCONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN AND CO-ORDINATE THIS INFORMATION AND TO ENSURE THAT ALL NECESSARY PROVISIONS ARE ACCOMMODATED.
10. NO HOLES, CHASES, CUT-OUTS OR THE LIKE MAY BE FORMED IN ANY BEAM, COLUMN, OR LOADBEARING WALL UNLESS WRITTEN PERMISSION IS OBTAINED FROM THE ENGINEER. REFER TO THE ARCHITECT FOR DETAILS OF NON-LADDERING WALLS AND THEIR INTERFACE WITH THE STRUCTURAL FRAME.
11. ALL STRUCTURAL ELEMENTS ARE TO BE DESIGNED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS AND RECOMMENDATIONS OF THE RELEVANT CODES AND STANDARDS. THE REQUIREMENTS AND RECOMMENDATIONS OF THE CODES AND STANDARDS ARE REGARDED AS MINIMUM CRITERIA AND THE DESIGN WILL UTILISE THE VALUES SPECIFIED WITHIN THE ENGINEERS DRAWINGS, SPECIFICATIONS OR DOCUMENTS WHERE THESE PROVE MORE ONEROUS. THE CURRENT SCHEME DESIGN HAS BEEN UNDERTAKEN IN ACCORDANCE WITH THE LATEST ADDITIONS AND AMENDMENTS OF THE CODES AND STANDARDS NOTED BELOW:-
    BS EN 1990 BASIS OF STRUCTURAL DESIGN
    BS EN 1991 ACTIONS OF STRUCTURES
    BS EN 1992 DESIGN OF CONCRETE STRUCTURES
    BS EN 1993 DESIGN OF STEEL STRUCTURES
    BS EN 1994 DESIGN OF COMPOSITE STEEL AND CONCRETE STRUCTURES
    BS EN 1996 DESIGN OF MASONRY STRUCTURES
    BE EN 1997 GEOTECHNICAL DESIGN
    BS EN 6472 EVALUATION OF HUMAN EXPOSURE TO VIBRATION IN BUILDINGS.
    BS 8102 PROTECTION OF STRUCTURES AGAINST WATER FROM GROUND

DRAINAGE

1. ALL WORK TO BE IN ACCORDANCE WITH BS EN 752, BUILDING REGULATION - APPROVED DOCUMENT H AND SEWERS FOR ADOPTION 7TH EDITION PART E – CIVIL ENGINEERING SPECIFICATION.
2. MANHOLE COVERS AND GULLEY TOPS TO BE CAST IRON TO BS EN 124 AND BS 7903 WITH 600mm CLEAR OPENING. TYPE D400 COVERS TO VEHICLE AREAS AND B125 COVERS TO PEDESTRIAN AND LANDSCAPED AREAS.
3. SURAFCE AND FOUL WATER DRAINS TO BE EITHER:
   RIGID PIPES: CLASS 120 VITRIFIED CLAY TO BS EN 294-1 OR CLASS H CONCRETE TO BS 5911.
   FLEXIBLE PIPE: THREMOPLATIC UPVC TO BS EN 1401 OR POLYPROPELENE TO BS EN 1852 WITH NOMINAL RING STIFFNES OF SN4 WITH.
4. FILTER AND FIELD DRAINS TO BE EITHER:
   CLASS 120 VITRIFIED CLAY PIPES UNPERFORATED, NOT EXCEEDING 2.0 m IN LENGTH WITH SPIGOT AND SOCKET OPEN JOINTS OR PERFORATED WITH FLEXIBLE MECHANICAL JOINTS.
   CLASS M CONCRETE PIPES UNPERFORATED NOT EXCEEDING 2 M IN LENGTH WITH OPEN JOINTS OR CASTELLATED REBATED JOINTS WITH THE TOTAL SLOT AREA BETWEEN CASTELLATIONS BEING AT LEAST 1000 MM² PER METRE LENGTH OF PIPE OR PERFORATED WITH CIRCULAR HOLES NOT GREATER THAN 10 MM NOR LESS THAN 3 mm IN DIAMETER.
   THREMOPLATIC PIPES UPVC TO BS EN 1401 OR POLYPROPELENE TO BS EN 1852 PERFORATED WITH NOT LESS THAN 1000 mm2 OF HOLES PER METRE LENGTH OF PIPE. THE PERFORATIONS SHALL NOT REDUCE THE PIPE RING STIFFNESS BY MORE THAN 5%. CIRCULAR PERFORATIONS NOT GREATER THAN 10 mm NOR LESS THAN 3 mm IN DIAMETER OR RECTANGULAR SLOTS NOT GREATER THAN 4 mm NOR LESS THAN 0.6 mm IN WIDTH.
5. ALL DRAINS TO HAVE FLEXIBLE MECHANICAL AND BE LAID TO SELF-CLEANSING FALLS TO TABLE 6 OF APPROVED DOCUMENT H WITH MIN 100MM DIA TO FOUL AND 150MM DIA TO SURFACE WATER UNO.
6. ALL DRAINS BENEATH OR WITHIN 1M OF STRUCTURES AND WITH LESS THAN 0.6 M COVER IN NON-TRAFFICKED AREAS OR 1.2 mm ELSEWHERE TO BE LAID IN TYPE 2 BEDDING WITH 20 mm THICK FOSROC EXPANDITE FLEXCELL IMPREGNATED FIBREBOARD FILLER TO JOINTS. RIGID PIPES TO BE LAID IN BEDDING TYPES B, S OR F, DEPENDANT ON GROUND CONDITIONS AND LOCATIONS. FLEXIBLE PIPES TO BE LAID IN BEDDING TYPE S.
7. NEW DRAINS SHOULD NOT BE LOCATED CLOSER TO ANY BUILDING/STRUCTURE THAN THE MINIMUM OF THE DEPTH OF THE SEWER BELOW THE FOUNDATION OR 1.2 M UNLESS PROTECTED AS DETAILED.
8. ALL DRAINS PASSING THROUGH WALLS TO HAVE CONCRETE LINTELS OVER WITH 50 mm CLEARANCE AND 600 mm ROCKER PIPES EITHER SIDE. WHERE PIPES RUN BENEATH BUILDINGS, PROVIDE 100 mm OF GRANULAR OR FLEXIBLE FILING AROUND THE PIPE; WHERE THE CROWN OF THE PIPE IS WITHIN 300 mm UNDERSIDE OF THE FLOOR SLAB THE PIPE TO BE LAID IN BEDDING TYPE S.
9. ALL BRANCH CONNECTIONS SHOULD BE SET WITH SOFFIT LEVELS NO LOWER THAN THAT OF THE MAIN PIPE AND THE INVERT LEVEL OF THE CONNECTING PIPE AT LEAST 50 MM ABOVE THAT OF THE MAIN PIPE. WHERE THE DIFFERENCE BETWEEN THE DIAMETER OF THE CONNECTING PIPE AND THE MAIN PIPE IS GREATER THAN 50 MM, THE CONNECTION SHOULD BE SET WITH THE SAME SOFFIT LEVEL AS THE MAIN PIPE. BACK-DROPS SHOULD BE NO LESS THAN 300 mm.
10. LIMITS OF COVER TO THE CROWN OF PIPES WITHOUT PROTECTION SHOULD BE AS FOLLOWS:

NORMAL SIZE	NON-TRAFFICKED AREAS AGRICULTURAL LAND, PUBLIC OPEN SPACES, AND GARDENS WITH NO ACCESS FOR VEHICLES	LIGHT ROADS, DOMESTIC DRIVEWAYS, PARKING AREAS AND NARROW STREET WITHOUT FOOTWAYS	MAIN ROADS, PARKING AREAS WITH UNRESTRICTED ACCESS FOR HGVS
CLASS 120 CLAYWARE PIPES			
100 mm	0.6m - 8m+	1.2m - 8m+	1.2m - 8m+
225 mm	0.6m - 5m	1.2m - 5m	1.2m - 4.5m
400 mm	0.6m - 4.5m	1.2m - 4.5m	1.2m - 4m
600 mm	0.6m - 4.5m	1.2m - 4.5m	1.2m - 4m
CLASS M CONCRETE			
UP TO 300 mm	0.6m - 3m	1.2m - 3m	1.2m - 2.5m
450 mm	0.6m - 3.5m	1.2m - 3.5m	1.2m - 2.5m
600 mm	0.6m - 3.5m	1.2m - 3.5m	1.2m - 3m
THERMOPLASTIC UPVC OR PP WITH NORMAL RING STIFFNESS OF SN4			
100 - 300 mm	0.6m - 7m	0.9m - 7m	0.9m - 7m

11. WHERE PIPES HAVE LESS COVER PROVIDE REINFORCED CONCRETE COVER SLAB WITH FLEXIBLE FILLER AND MIN 75MM OF GRANULAR MATERIAL THE PIPE CROWN AND THE FILLER, AS DETAILED, OR CLASS Z BEDDING WITH 20mm THICK FOSROC EXPANDITE FLEXCELL IMPREGNATED FIBREBOARD FILLER TO JOINTS.

NOTES

GENERAL:

1. DO NOT SCALE.
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3. THE PRINCIPAL DIMENSIONS AND LEVELS FOR SETTING OUT ARE INDICATED. THE CONTRACTOR IS TO TAKE ACCURATE SITE MEASUREMENTS TO VERIFY PRINCIPAL SETTING OUT DIMENSIONS AND LEVELS PRIOR TO THE EXECUTION OF ANY WORK. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE. ALL LEVELS IN METRES ABOVE OS DATUM UNLESS NOTED OTHERWISE.
4. ALL WORK IS TO BE CARRIED OUT TO THE APPROVAL OF THE ENGINEER AND **BUILDING CONTROL** AND TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE PLANNING PERMISSION WHERE APPROPRIATE. ALL WORKMANSHIP AND MATERIALS TO BE IN ACCORDANCE WITH THE LATEST EDITION OF THE RELEVANT BRITISH STANDARD CODES, CODES OF PRACTICE OR EUROCODES AND THE AGREED PROJECT SPECIFICATION.
5. THE CONTRACTOR IS TO ENSURE COMPATIBILITY AND GOOD FIT BETWEEN NEW AND EXISTING CONSTRUCTION THROUGHOUT, TAKING SITE DIMENSIONS AS NECESSARY PRIOR TO COMMENCEMENT OF ANY WORK. THE CONTRACTOR IS TO MAINTAIN STABILITY OF ALL WALLS, FLOORS, COLUMNS, TRUSSES AND OTHER STRUCTURAL AND NON-STRUCTURAL ELEMENTS AND TO DESIGN, DETAIL, SUPPLY AND FIX ALL TEMPORARY SUPPORTS TO MAINTAIN VERTICAL AND HORIZONTAL STABILITY OF THE STRUCTURE AND ADJACENT STRUCTURES FOR THE DURATION OF THE WORKS.
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SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

THE FOLLOWING NOTES HIGHLIGHT SIGNIFICANT RESIDUAL HAZARDS INDENTIFIED BY THE DESIGNER. TYPICAL HAZARDS THAT SHOULD BE IDENTIFIED BY A COMPETENT CONTRACTOR ARE NOT INCLUDED. THE CONTRACTOR SHALL CARRY OUT THE WORKS USING AN APPROVED SAFE SYSTEM OF WORK

FURTHER INFORMATION ON HAZARDS CAN BE FOUND IN THE DRA AND / OR CSM HAZARD LOG.

REF.	HAZARD	STAGE	MITIGATING MEASURE
A	CONTAMINATES	CONSTRUCTION	SEE XX-XXX-DRA-001
B	BURIED SERVICES	CONSTRUCTION	SEE XX-XXX-DRA-001

Rev	Description	Drn / Chk / App	Date
P01	FIRST ISSUE	SG / LJH / AJH	11/02/2022

ORIGINAL DRAWING IN COLOUR

MATRIX CONSULTING ENGINEERS
Telephone +44 (0)3330 142 926
Email: info@matrixce.co.uk
www.matrixce.co.uk
Barnsley Business and Innovation Centre
Barnsley, S75 1JL

Client: MR E DILLINGHAM

Project: CENTURY WORKS

Drawing Title: DRAINAGE DETAILS SHEET 2

Scale:	Role:
As indicated @ A1	CIVIL
Matrix Job Number:	Suitability:
21-032	S4 - SUITABLE FOR STAGE APPROVAL

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Revision: P01

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