Manchester City Council 5th March 2020

Regeneration & Planning Department

Town Hall

M60 2LA

Planning Ref: 111921/FO/2016/N1

Ref: Proposed erection of a part 7 storey part 9 storey building to create a 221 bedroom hotel (Class C1) with associated reception area, fitness centre, restaurant / bar, basement car parking and taxi drop off area.

Condition 5 - Drainage Verification Report
Prior to the first occupation of the development a verification report shall be submitted, including relevant photographic evidence, that the scheme has been implemented in accordance with the previously approved details.

We attach the 'as-built' proposed drainage layout by Tier Consult; T/SY/16/642: 800/001G.

Also attached are the proposed drainage details, namely, T/SY/16/642: 800/003B, 004B, 005B, 006B & 007B for your reference.

We can confirm the foul and surface water drainage system has been installed in accordance with the proposed layouts and details.

Photographic evidence can be seen under Condition 6 below.

Condition 6 - Sustainable Drainage Plan
Prior to the first occupation of the development hereby approved, details of the implementation, maintenance and management of a sustainable drainage scheme shall be submitted to the City Council.

We attach the 'as-built' proposed drainage layout by Tier Consult; T/SY/16/642: 800/001G.

Also attached are the proposed drainage details, namely, T/SY/16/642: 800/003B, 004B, 005B, 006B & 007B for your reference.

This drawing indicates the location and proposed method of attenuation along with the location of the flow control device.

We can confirm these elements have been installed as per the drawing noted above by specialist sub-contractors in line with manufacturers guidelines. Images of the installation can be seen below.

create construction
15 Thompson Road, Whitehills Business Park
Blackpool, FY4 5PN
t. 01253 608999
www.createconstruction.co.uk

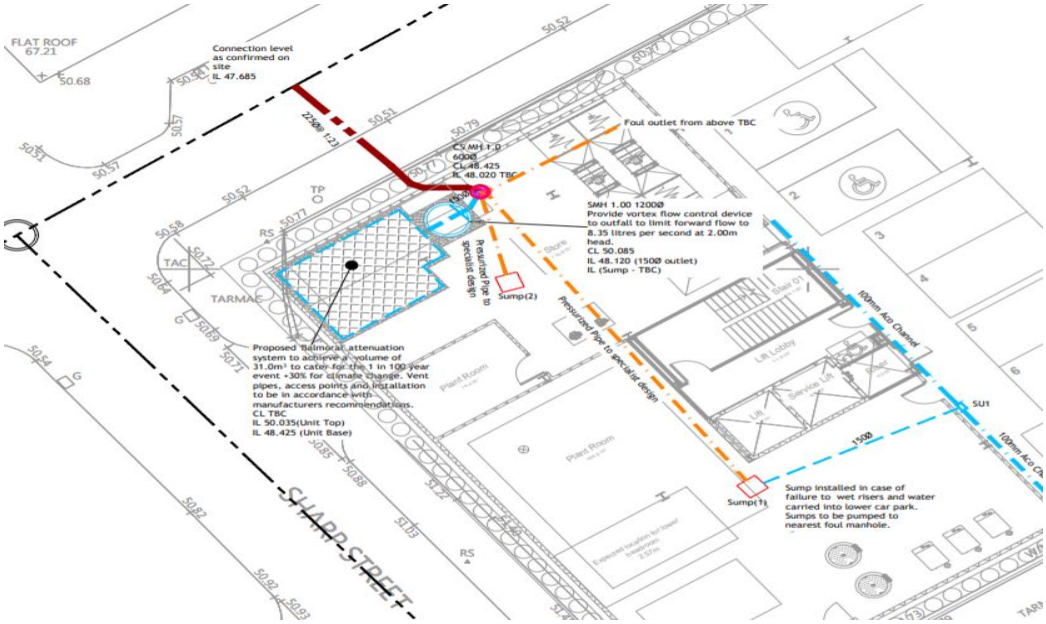


Fig. 1: Extract from proposed drainage layout by Tier Consult; T/SY/16/642: 800/001G.



Fig. 2: Image of attenuation tank alongside hydro-brake manhole access chamber

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Fig. 3: Image of concrete manhole chamber providing access to Hydro-brake / Flow-control



Fig. 4: General view of attenuation tank and hydro-brake manhole chamber

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Maintenance of the attenuation tank;

The tank itself requires little or no maintenance other than good housekeeping. Once installed there is virtually no requirement to attend the structure to carry out any specific maintenance.

The attenuation tank and installation are covered under a 12 month manufacturers warranty from date of installation. The tank itself should be visually inspected every month as part of the hotel maintenance personnel actions.

The tank will also have an annual inspection to ascertain:

- The effectiveness of the operation of ball valve.
- Cleanliness of the tank – silt removed if present and re-chlorinated if required.
- External visual inspection (done monthly also) to check for leaking tank connectors, condensation and site damage.

The Operation and Maintenance of sectional tanks information sheet is also appended to this document for clarity.

We hope the above is acceptable for the discharge of the associated planning conditions.

Kind regards,

Ryan Prince

On behalf of Create Construction

create construction®
15 Thompson Road, Whitehills Business Park
Blackpool, FY4 5PN
t. 01253 608999
www.createconstruction.co.uk

BALMORAL SECTIONAL TANKS LTD

OPERATION AND MAINTENANCE OF SECTIONAL TANKS

BALMORAL
www.balmoral-group.com

BALMORAL SECTIONAL TANKS LTD

OPERATION AND MAINTENANCE OF SECTIONAL TANKS

Balmoral tank products are manufactured from non-corrosive materials and as a consequence require little or no specific maintenance other than good housekeeping.

The basic tank construction comprises of Hot Press Moulded GRP Panels bolted together to form the tank size required. The inner surface of these panels in contact with the contents has a high gloss, smooth finish which does not readily attract or retain dirt.

Any internal support or fastener in contact with the water is stainless steel A4/316 Grade.

Externally (unless otherwise requested) the fasteners are galvanised steel. External bracing is also galvanised mild steel to BS729 Part 1.

Once a Balmoral GRP Sectional Tank has been successfully commissioned and approved by the client, there is virtually no requirement to attend to its structure. With the Balmoral method of panel jointing, once an effective joint is made and is used, it will remain water tight unless disturbed.

It is recommended that tanks left empty for longer than periodic cleaning should be re-tightened by a Balmoral approved installer.

Annual inspection

It is recommended that Water Storage Tanks should have an annual inspection to:

1 Inspect and ascertain the effectiveness and operation of the Ball Valve.

2 Inspect and ascertain the cleanliness of the tank. If the supply is not filtered, sediment will be drawn in via the inlet main and will collect within the tank. This should be removed by using the washout facility, or in the case of heavy deposition, thorough washing down. If the latter course requires to be adopted then the tank must be rechlorinated prior to recommissioning.

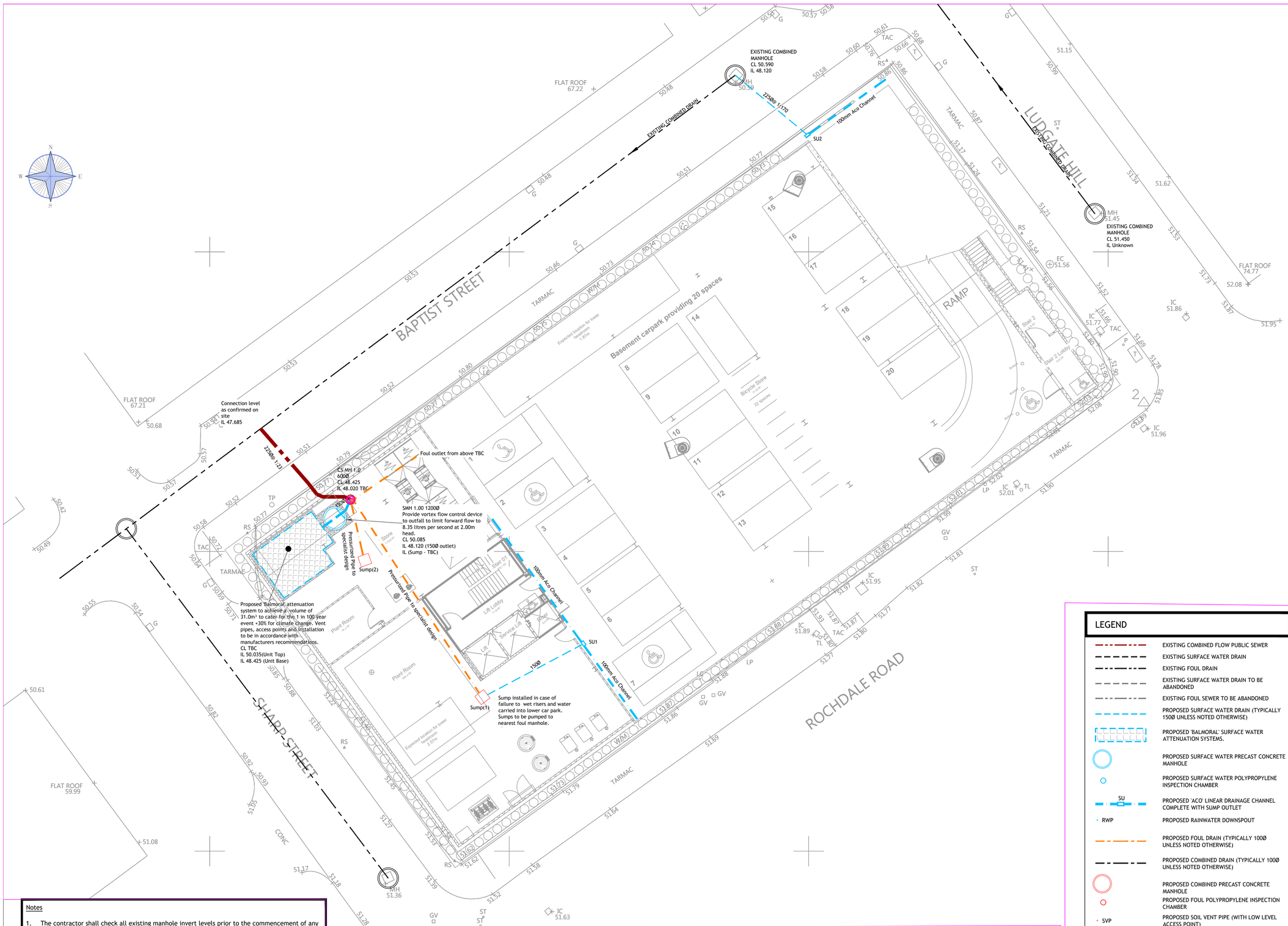
3 Inspect the tank externally for any sign of dampness around its base which may be the result of:

- a Leaking tank connections
- b Condensation
- c Site damage

Particularly with regard to 'c' above, if the operation of the tank is lively, ie there are large and frequent variations in water level within the tank, it would be prudent to check on bolt tightness as a precautionary measure even though no leakage is evident at time of inspection.

4 Inspect the tank fitting to ensure that:

- a Air vent, overflow and warning pipe filter screens are clean and unobstructed
- b Man access and inspection hatches are secure and sealed
- c All access ladders are securely fixed



Notes

1. The contractor shall check all existing manhole invert levels prior to the commencement of any drainage works and report his findings back to the engineer in writing.
2. Where proposed drainage pipework runs are in close proximity to the new foundations, the contractor shall allow for extending the depth of new foundations in lean mix concrete down to the proposed pipe bedding level.
3. All foul outlet locations are indicative and as such will be subject to review upon receipt of setting out locations from the architect.
4. All rainwater downspout locations are indicative and as such will be subject to review upon receipt of setting out locations from the architect.

Drainage Schedule

MH Ref.	MANHOLE DETAILS								COVER DETAILS		PIPE DETAILS			COMMENTS	CO-ORDINATES	
	Internal Size	Brick	Type Conc	PPC	Levels Cover (tbc)	Levels Invert	Depth (m)	Manhole Type	BS EN124 Cover Ref.	Cover Size Clear Opening	Type of Pipe	Size In	Size Out			
SMH 1.00	1200mm		x		50.085	48.120	1.965	2	A15	450Ø	plastic	100	225	Hydrobrake chamber	X = 384588350	Y = 399042211
CMH 1.00	600mm			x	48.425	48.020	400	3	A15	450	plastic	225	225	Combined outfall chamber	X = 384589401	Y = 399043454
Sump (1)	Specialist								A15		plastic	-	-		X = 384598227	Y = 399030282
Sump (2)	Specialist								A15		plastic	-	-		X = 384590358	Y = 399039423
SU1	Specialist								C250		plastic	-	100/150		X = 384604972	Y = 399033854
SU2	Specialist								C250		plastic	-	100/150		X = 384619923	Y = 399067778

LEGEND

- EXISTING COMBINED FLOW PUBLIC SEWER
- EXISTING SURFACE WATER DRAIN
- EXISTING FOUL DRAIN
- EXISTING SURFACE WATER DRAIN TO BE ABANDONED
- EXISTING FOUL SEWER TO BE ABANDONED
- PROPOSED SURFACE WATER DRAIN (TYPICALLY 150Ø UNLESS NOTED OTHERWISE)
- PROPOSED 'BALMORAL' SURFACE WATER ATTENUATION SYSTEMS.
- PROPOSED SURFACE WATER PRECAST CONCRETE MANHOLE
- PROPOSED SURFACE WATER POLYPROPYLENE INSPECTION CHAMBER
- SU — PROPOSED 'ACO' LINEAR DRAINAGE CHANNEL COMPLETE WITH SUMP OUTLET
- RWP — PROPOSED RAINWATER DOWNSPOUT
- PROPOSED FOUL DRAIN (TYPICALLY 100Ø UNLESS NOTED OTHERWISE)
- PROPOSED COMBINED DRAIN (TYPICALLY 100Ø UNLESS NOTED OTHERWISE)
- PROPOSED COMBINED PRECAST CONCRETE MANHOLE
- PROPOSED FOUL POLYPROPYLENE INSPECTION CHAMBER
- SVP — PROPOSED SOIL VENT PIPE (WITH LOW LEVEL ACCESS POINT)
- SS — PROPOSED STUB STACK (WITH LOW LEVEL ACCESS POINT)
- GU — PROPOSED TRAPPED GULLY UNIT (DETAILS TO BE CONFIRMED BY ARCHITECT).

DO NOT SCALE

NOTES

This drawing to be read in conjunction with all other relevant engineer's and specialist's drawings together with the appropriate specification.

It is the contractor's responsibility to check all dimensions on site.

Dimensions must not be scaled from this drawing. any discrepancies to be brought to the immediate attention of the architect in writing.

All dimensions are in millimetres, unless noted otherwise.

All levels are in metres, unless noted otherwise.

The works shall be in accordance with the national building specification.

The location line & level of all known existing drainage pipework indicated on the drawings are approximate and for guidance purposes only.

It is the contractors responsibility to determine their exact line and level, by way of hand excavated trial pits, prior to the commencement of any excavation works on site. The contractor shall take all necessary precautions and maintain the structural integrity of all above and below ground service installations.

The contractor shall implement and maintain throughout the duration of the contract a full traffic management system to ensure safe passage of vehicles/pedestrians in the vicinity of the works. All traffic signs, signals, barriers etc. shall be in accordance with chapter 8 of the traffic signs manual.

The contractor shall make adequate provision for dealing with and disposing of ground/surface water encountered during excavations

All soft / hard paved areas affected by the works shall be fully reinstated following the installation of all drainage works. All surface markings affected by the works shall be fully reinstated.

All surplus excavated material shall be disposed off site.

Upon completion of the works the contractor shall provide as built setting out co-ordinate and level information.

Pipework with less than 750mm of cover to be concrete encased. (bedding class z).

Pipework with more than 750mm of cover to have granular bed and surround. (bedding class s).

Polypropylene inspection chambers of 500Ø > 1.2m deep to be fitted with a reduced access fitting.

all soil and vent pipes to have a low level access plates.

For 3 to 4 story buildings - foul rest bend to be a minimum of -450mm deep.

For 5 story buildings and above - foul rest bend to be a minimum of -750mm deep.

For 6 storey buildings and above - ground floor appliances to discharge to their own stacks.

REV	DATE	BY	DESCRIPTION	CHK	APD
G	27.02.19	DAB	Attenuation tank amended due to outfall pipe	CJ	JC
F	25.10.18	DAB	Outfall level confirmed	CJ	JC
E	19.10.18	DAB	specifications and coordinates added	CJ	JC
D	23.07.18	DAB	Updated to latest layout. Status updated	CJ	JC
C	16.07.18	DAB	Updated to latest layout	JC	WB
B	22.02.18	JH	Concrete Surround shown and levels revised	JC	WB
A	11.08.16	JH	Clients comments incorporated	JC	WB

DRAWING STATUS: CONSTRUCTION

Tier Consult Ltd.
Richmond House,
Sandpiper Court,
Chester Business Park,
Chester,
CH4 9QZ

Telephone:
01244 684900
Fax:
01244 684901
Email:
info@tieruk.com

CLIENT: CREATE

PROJECT:

ARCHITECT: TIM GROOM ARCHITECTS

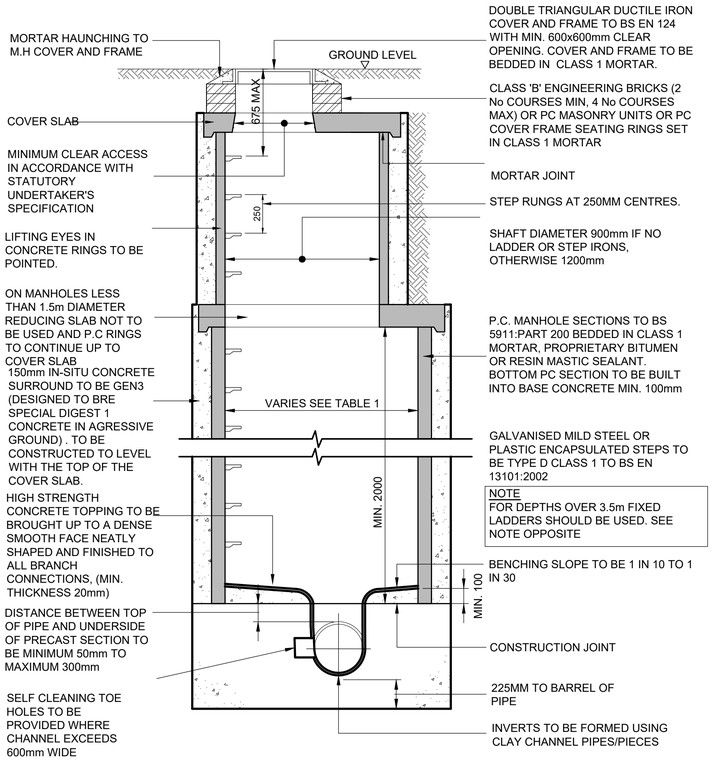
TITLE: SHARP STREET, MANCHESTER

PROPOSED DRAINAGE LAYOUT

CAD FILE:

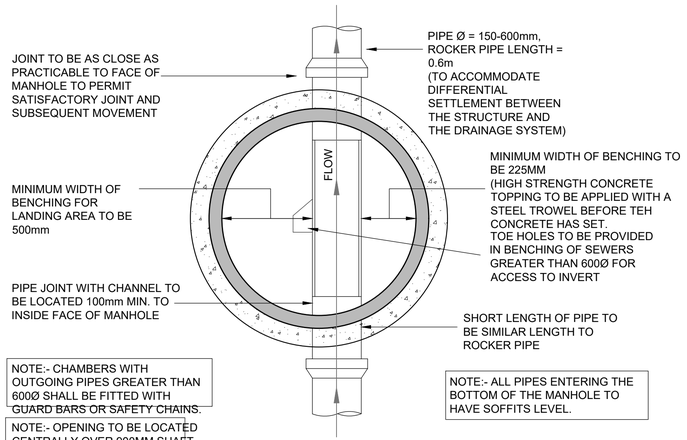
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1:125 @ A1	JC	WB
-	DESIGN/DRAWN: JH	DATE: July 2016

PROJECT No:	DRAWING No:	REV:
T/SY/16/642	800/001	G



TYPE A MANHOLE - DEPTH TO SOFFIT 3.00 TO 6.00m

SCALE 1:25

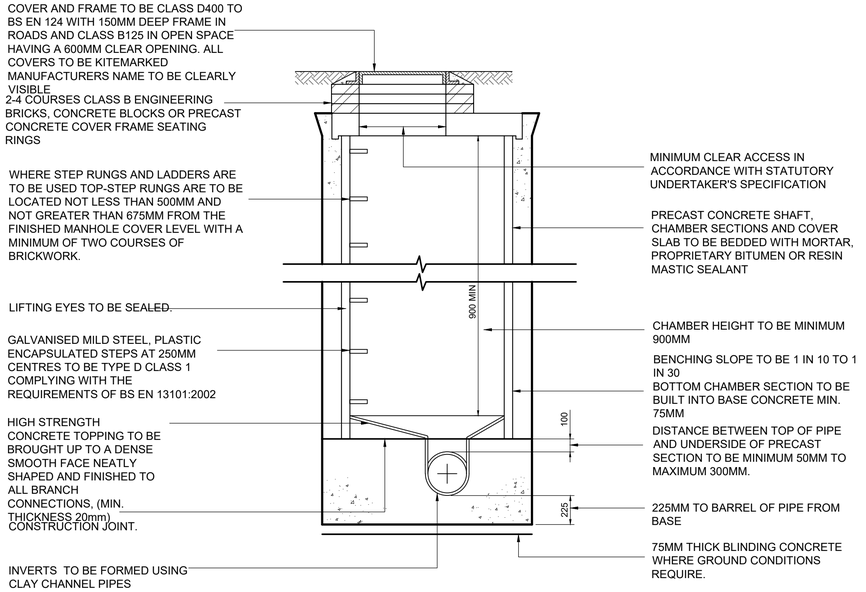


PLAN SECTION

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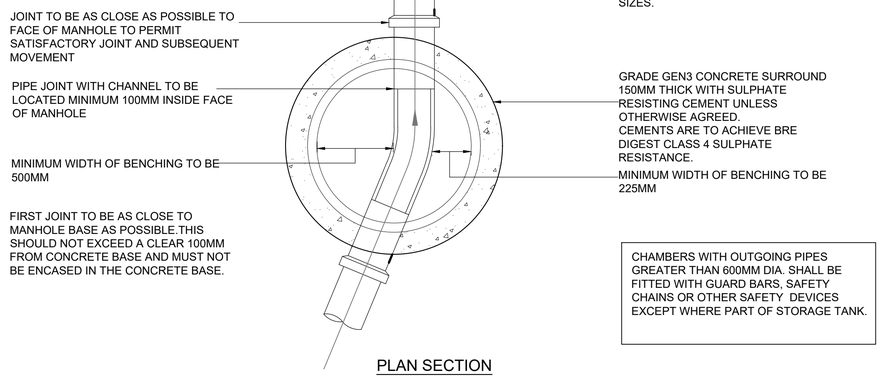
MANHOLE COVERS (In accordance with BS EN124)

CLASS	TEST LOAD (Tonnes)	TYPICAL USES
A15	1.5	Pedestrian areas only
B125	12.5	Car parks,domestic driveways,areas with occasional vehicle access.
C250	25	Carriageways if <500mm from kerb face, car parks,service stations.Must be non-rocking/silent type.
D400	40	Carriageways and hard shoulders.Must be non-rocking/silent type.
E400	60	Loading areas,docks,commercial/industrial areas.
F900	90	Exceptionally heavy loads,prts,airports.



TYPE B MANHOLE - DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 3.0M

SCALE 1:25



PLAN SECTION

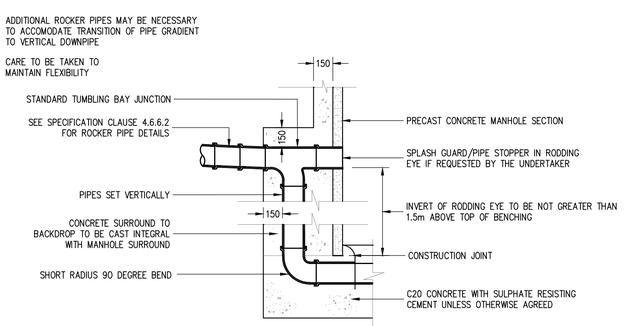
SCALE 1:25

TABLE 1 (FROM SEWERS FOR ADOPTION 6TH EDITION)

NOTE :(THIS TABLE REFERS TO ADOPTABLE MANHOLES ONLY)

DIAMETER OF LARGEST PIPE IN MANHOLE (mm)	INTERNAL DIAMETER OF MANHOLE (mm)
less than 375	1200
375 - 700	1500
750 - 900	1800
>900	Consult Undertaker.

WHERE TWO OR MORE PIPES ENTER THE MANHOLE, THE INTERNAL DIAMETER MAY HAVE TO BE INCREASED TO ACCOMMODATE THE WIDTH OF BENCHING.



TYPICAL VERTICAL BACKDROP DETAIL

SCALE 1:25

ROCKER PIPE LENGTH	
NOML. DIA. OF PIPE (mm)	EFFECTIVE LENGTH (m)
150 TO 300	0.6
OVER 300 TO 450	0.75
OVER 450	1.0

TYPICAL MANHOLE DETAIL- TYPE B

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS
2. FOR DETAILS OF DEPTHS, NUMBER OF BRANCHES , AND PIPE SIZES REFER TO DRAINAGE PLANS OR SCHEDULE.
3. FOR TYPES OF COVER AND FRAMES SUITABLE FOR THESE MANHOLES SEE DRAINAGE PLANS OR SCHEDULES.
4. DIAMETER OF CONCRETE MANHOLE. RINGS SHALL BE AS SHOWN ON THE DRAWINGS AND/OR MANHOLE SCHEDULE
5. WHEN DEPTH OF COVER LEVEL TO TOP OF BENCHING EXCEEDS 900mm STEP IRONS TO BS EN 1301 TO BE PROVIDED.
6. INSITU MASS CONCRETE TO BE GEN3 STRENGTH CLASS C16/20.
7. COVER SLABS & ALL REINFORCED CONCRETE TO BE RC25 STRENGTH CLASS C20/25.
8. THE COVER FRAME SHALL BE BEDDED ON 1 TO 3 COURSES AS NECESSARY OF CLASS B ENGINEERING BRICKS & HAUNCHED IN CEMENT MORTAR 1:3
9. BENCHING SHALL BE FORMED IN CONCRETE TOWELED SMOOTH TO A GRADIENT OF BEYWEEN 1:10 AND 1:30.
10. ALL PRECAST CONCRETE COMPONENTS SHALL BE IN ACCORDANCE WITH BS5911 PART 100.
11. RINGS SHALL BE JOINTED BY BUTTERING WITH WATERPROOF MASTIC JOINT (TOCSTRIP) MANUFACTURED BY WINN & COLES Co. LTD JOINTS SHALL BE NEATLY FINISHED BOTH INTERNALLY & EXTERNALLY.
12. CONCRETE BASES TO MANHOLES SHALL BE 150mm MIN FOR MANHOLES UP TO 1.8m DEEP.225mm MIN FOR MANHOLES. BETWEEN 1.8m & 6.0m & 450mm FOR MANHOLES EXCEEDING 6.0m DEEP. BASES TO HAVE LAYER OF A193 MESH MANHOLES GREATER THAN 1400x900 (INT) OR 1800 (INT) TO HAVE REINFORCEMENT BARS TO DETAILS PROVIDED BY STRUCTURAL ENGINEER.
13. ALL PRECAST CONCRETE MANHOLES (SHALLOW TO MEDIUM DEPTH) TO BE SURROUNDED WITH A MIN OF 150mm OF CONCRETE (SEE ALSO NOTE 15)
14. SINGLE SEAL MANHOLE COVER & FRAMES TO BE PROVIDED ON ALL FOUL & SURFACE WATER DRAINAGE (EXTERNALLY ONLY). DOUBLE SEAL MANHOLE COVER & FRAMES TO BE PROVIDED ON FOUL & SURFACE WATER DRAINAGE (INTERNALLY ONLY). ALL MANHOLE COVERS ARE TO BE CAST IRON TO BS 497 AND SHALL BE RECTANGULAR OR SQUARE & BE HEAVY DUTY WHERE LOCATED IN ROAD WAYS & MEDIUM DUTY ELSEWHERE UNLESS OTHERWISE INDICATED ON SCHEDULE.
15. WHERE SHALLOW (MAX OF .7m DEEP) PRE-CAST CONCRETE MANHOLES ARE POSITIONED UNDER MAIN ROADS OR ARE POSITIONED SUBJECT TO VEHICULAR TRAFFIC THE MANHOLE IS TO BE SURROUNDED WITH A MIN OF 225mm CONCRETE.
16. BRICKS FOR MANHOLE CONSTRUCTION TO BE CLASS B ENGINEERING BRICKS TO BS 3921 IN ENGLISH BOND SET IN CEMENT MORTAR 1:3.
17. FLEXIBLE JOINTS ON PIPE WORK TO BE MADE WITHIN 150MM & ROCKER PIPE LENGTH FROM INSPECTION CHAMBER/MANHOLE CHAMBER/FOOTING/GROUND BEAM OR WALL.
18. 150mm DEEP TOE HOLES TO BE PROVIDED IN BENCHING OF SEWERS GREATER THAN 600Ø FOR ACCESS TO INVERT. HOLES SHOULD BE STAGGERED HORIZONTALLY BY 150mm EITHER SIDE OF THE CL AND SPACED VERTICALLY SO THAT THE MAX. STEP WILL BE 300mm
19. COVER AND FRAME TO BE CLASS D400 TO BS EN 124 WITH A 150mm DEEP FRAME IN ROADS AND CLASS B125 IN OPEN SPACE WITH A 600mm CLEAR OPENING. ALL COVERS TO BE KITEMARKED WITH MANUFACTURERS NAME CLEARLY VISIBLE.
20. MANHOLE STEPS SHOULD BE BUILT INTO THE WALL AT REGULAR HEIGHT INTERVALS OF BETWEEN 230mm AND 300mm. UNLESS DOUBLE STEPS (RUNG IRONS) THEY SHOULD BE STAGGERED IN TWO VERTICAL RUNS AT APPROX. 300mm C/C HORIZONTALLY. THE TOP STEP SHOULD BE NOT MORE THAN 675mm BELOW THE SURFACE AND THE LOWEST NOT MORE THAN 300mm ABOVE THE BENCHING.
21. FIXED, CORROSION RESISTANT LADDERS SHOULD BE USED FOR DEPTHS OVER 3.5M. LADDERS SHOULD NOT RISE MORE THAN 6M WITHOUT PROVISION OF AN INTERMEDIATE PLATFORM, WHICH SHOULD BREAK THE LINE OF THE LADDER. NOT LESS THAN 200MM FOOT ROOM SHOULD BE PROVIDED BEHIND LADDERS AND NOT LESS THAN 900MM ON THE USER'S SIDE. STRINGERS SHOULD BE ADEQUATELY SUPPORTED FROM THE MANHOLE WALL AT INTERVALS OF NOT MORE THAN 3M. STRINGER SUPPORTS SHOULD NOT BE BUILT INTO THE WALL BUT BOLTED TO BUILT-IN CLEATS TO FACILITATE RENEWAL.
22. ALL DRAINAGE WORKS TO BE IN STRICT ACCORDANCE WITH BUILDING REGULATIONS PART M, AND THE LATEST EDITIONS OF BSEN 752-(1-4) AND BSEN 12056-2:2000
23. ALL ACCESS GULLY GRATINGS AND COVERS ARE TO BE SCREWED TO PREVENT THEIR REMOVAL BY PUPILS.
24. WHERE DRAINAGE IS REQUIRED TO PASS BENEATH SUB-STRUCTURAL PERIMETER BEAMS, THE PIPE WORK SHALL HAVE A MINIMUM OF A 50MM SPACE ABOVE THE PIPE WHICH SHALL BE FILLED WITH POLYSTYRENE. ALTERNATIVELY THE SPACE SHALL BE SIZED TO SUIT THE STRUCTURAL ENGINEERING ASSESSMENT OF THE EXPECTED BUILDING SETTLEMENT. A SHORT LENGTH OF ROCKER PIPE IS ALSO TO BE PROVIDED TO THE OUTLET TO ALLOW FOR DIFFERENTIAL SETTLEMENT TO TAKE PLACE WITHOUT DAMAGING THE PIPE.
25. MANHOLE COVERS SHALL BE INSTALLED ON THE UPSTREAM END OF MANHOLES, OVER THE STEP IRONS OF THE ACCESS LADDER AND SHALL BE FLUSH WITH THE INTERNAL FACE OF THE MANHOLE WALL. THERE SHALL BE NO OVERHANG OF THE MANHOLE COVER, WHICH OBSCURES ACCESS ONTO THE STEP IRONS OR THE LADDER.
26. BENDS AT THE BASE OF SOIL STACKS SHALL BE LONG RADIUS.DRAINAGE FROM INTERNAL STACKS OR FITTINGS SHOULD BE ROUTED DIRECT TO AN EXTERNAL MANHOLE AND IN STRAIGHT LINES WITHOUT BENDS OR DEVIATIONS IN THE LINE.ALL INTERNAL FOULDRAINAGE TO BE LAID NO SLACKER THAN 1:40.
27. RODDING ACCESS SHOULD BE PROVIDED ON ALL SOIL STACKSAND RAINWATER PIPES FOR MAINTENANCE, TESTING AND REMOVAL OF DEBRIS.
28. THE POSITION OF UNDERGROUND SERVICES SHOULD BE ESTABLISHED BY CHECKING RECORDS AND THE USE OF 'LOCATORS' MECHANICAL EXCAVATORS SHOULD NOT BE USED IN THE VICINITY OF UNDERGROUND UTILITIES.
29. ALL DRAINAGE SHALL BE INSTALLED BEYOND THE BUILDING FOUNDATION PRESSURE ZONE.WHERE THIS UNAVOIDABLE APPROPRIATE STEPS SHALL BE TAKEN TO PROTECT THE PIPEWORK.
30. WHERE POSSIBLE ALL BACKDROPS TO MANHOLE SHALL BE FORMED EXTERNALLY TO THE MANHOLE WITH A HORIZONTAL RODDING EYE TAKEN THROUGH THE WALL.

DO NOT SCALE

REV	DATE	BY	DESCRIPTION	CHK	APD
B	24.07.18	JH	Drawing status updated to construction	JC	WB
A	15.05.18	JH	Drawing renumbered	JC	WB

DRAWING STATUS: CONSTRUCTION

Tier Consult (SY) Ltd.
10 Broomhall Street
Unit 18 West One
Sheffield
S3 7SZ
Telephone: 0114 241 9360
Fax: 0844 854 8690
Email: infoSY@tieruk.com

CLIENT: CREATE

ARCHITECT: TIM GROOM ARCHITECTS

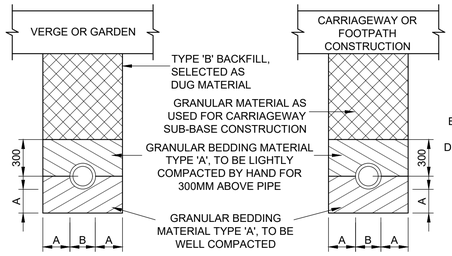
PROJECT: SHARP STREET, MANCHESTER

TITLE: Drainage Details Sheet 1

SCALE @ SIZE:	CHECKED:	APPROVED:
1:150 @ A1	JC	WB
CAD FILE:	DESIGN/DRAWN:	DATE:
	JH	June 2017

PROJECT No:	DRAWING No:	REV:
T/SY/16/642	800-003	B

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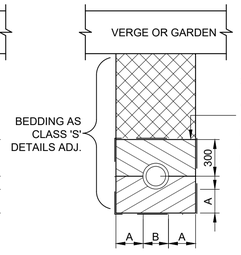


UNDER VERGE OR GARDEN

SCALE 1:25

(BEDDING CLASS 'S')

WHEN COVER TO CROWN OF PIPE IS GREATER THAN 600MM.



UNDER CARRIAGEWAY OR FOOTWAY

SCALE 1:25

(BEDDING CLASS 'S')

WHEN COVER TO CROWN OF PIPE IS GREATER THAN 1200MM.

UNDER VERGE OR GARDEN (ADJ. TO TREES)

(BEDDING CLASS 'S'*)

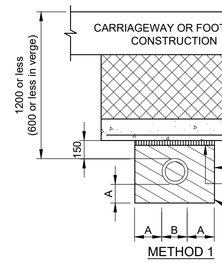
ALL DEPTHS OF COVER TO CROWN.

NOTE:
A= $\frac{D}{4}$ BUT WITH A MIN. OF 200MM AROUND THE BARRELS AND A MIN. OF 150MM AROUND THE SOCKETS

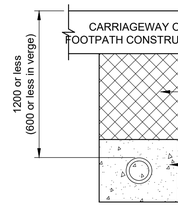
PIPE BEDDING DETAILS

RECOMMENDED TRENCH WIDTHS	
NOMINAL DIAMETER OF PIPE (mm)	RECOMMENDED OVERALL TRENCH WIDTH (m)
100	0.45
150	0.60
225	0.70
300	0.80
400	1.10
450	1.15
500	1.20
600	1.40

NOTE:-
THE TRENCH WIDTH SHOULD NOT BE LESS THAN THE PIPE DIAMETER PLUS 300MM.



METHOD 1



METHOD 2

UNDER CARRIAGEWAY OR FOOTWAY WHEN COVER TO CROWN OF PIPE IS 1200MM OR LESS - UNDER VERGE WHEN COVER TO CROWN OF PIPE IS 600MM OR LESS

SCALE 1:25

NOTE A:
AT EACH FLEXIBLE PIPE JOINT A JOINT FILLER (E.G. FIBREBOARD OR POLYSTYRENE) SHALL BE USED (SEE TABLE BELOW), AND SHALL EXTEND THROUGH THE FULL THICKNESS OF ANY CONCRETE IN CONTACT WITH THE PIPE. THE CONCRETE BED SHALL BE CUT AWAY AT EACH JOINT TO GIVE A CLEARANCE OF AT LEAST 50MM, SO THAT THE JOINT DOES NOT BEAR ON THE BED.

COMPRESSIBLE FILLER AND PACKING FOR PIPELINES	
NOMINAL DIAMETER OF PIPE (MM)	THICKNESS OF COMPRESSIBLE FILLER
LESS THAN 450	18
450 - 1200	36
EXCEEDING 1200	54

PIPE BEDDING MATERIAL DETAILS

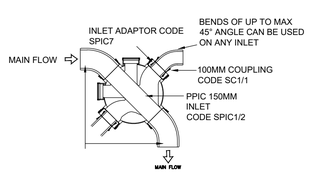
1. MATERIAL DESIGNATED TYPE 'A' SHALL CONSIST OF ANGULAR GRAVEL OR CRUSHED ROCK GRADED IN ACCORDANCE WITH BS 882, OR AIR COOLED BLAST FURNACE SLAG TO BS 1047, OR SINTERED PULVERIZED FUEL ASH TO BS 3797, SELECTED ACCORDING TO PIPE SIZE AS FOLLOWS:-

NOMINAL SIZE OF PIPES (MM)	MAXIMUM PARTICLE SIZE (MM)	IMPORTED GRANULAR MATERIALS
100	10	10MM NOMINAL SINGLE-SIZE
OVER 100 TO 150	15	10 OR 14MM NOMINAL SINGLE-SIZE OR 14MM TO 5MM GRADED
OVER 150 TO 300	20	10, 14 OR 20MM NOMINAL SINGLE-SIZE OR 14MM TO 5MM GRADED OR 20MM TO 5MM GRADED
OVER 300 TO 600	20	14 OR 20MM NOMINAL SINGLE-SIZE OR 14MM TO 5MM GRADED OR 20MM TO 5MM GRADED
OVER 600	40	14, 20 OR 40MM SINGLE-SIZE OR 14MM TO 5MM GRADED OR 20MM TO 5MM GRADED OR 40MM TO 5MM GRADED

2. MATERIAL DESIGNATED TYPE 'B' USED UNDER GARDENS AND VERGES SHALL CONSIST OF UNIFORM READILY COMPACTABLE MATERIAL, FREE FROM TREE ROOTS, VEGETABLE MATTER, BUILDING RUBBISH AND FROZEN SOIL, AND EXCLUDING CLAY LUMPS RETAINED ON A 75MM SIEVE AND STONES LARGER THAN 37MM. BEDDING TO BE COMPACTED IN 225MM LAYERS.
3. MATERIAL DESIGNATED TYPE 'B' USED UNDER ROADS AND FOOTPATHS SHALL CONSIST OF GRANULAR MATERIAL AS USED FOR CARRIAGEWAY SUB-BASE CONSTRUCTION.

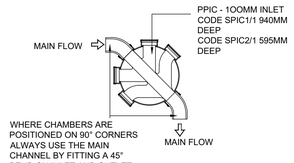
NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS
2. FOR DETAILS OF DEPTHS, NUMBER OF BRANCHES , AND PIPE SIZES REFER TO DRAINAGE PLANS OR SCHEDULE.
3. FOR TYPES OF COVER AND FRAMES SUITABLE FOR THESE MANHOLES SEE DRAINAGE PLANS OR SCHEDULES.
4. DIAMETER OF CONCRETE MANHOLE. RINGS SHALL BE AS SHOWN ON THE DRAWINGS AND/OR MANHOLE SCHEDULE
5. WHEN DEPTH OF COVER LEVEL TO TOP OF BENCHING EXCEEDS 900mm STEP IRONS TO BS EN 1301 TO BE PROVIDED.
6. INSITU MASS CONCRETE TO BE GEN3 STRENGTH CLASS C16/20.
7. COVER SLABS & ALL REINFORCED CONCRETE TO BE RC25 STRENGTH CLASS C20/25.
8. THE COVER FRAME SHALL BE BEDDED ON 1 TO 3 COURSES AS NECESSARY OF CLASS B ENGINEERING BRICKS & HAUNCHED IN CEMENT MORTAR 1:3
9. BENCHING SHALL BE FORMED IN CONCRETE TOWELED SMOOTH TO A GRADIENT OF 1:10.
10. ALL PRECAST CONCRETE COMPONENTS SHALL BE IN ACCORDANCE WITH BS5911 PART 100.
11. RINGS SHALL BE JOINTED BY BUTTERING WITH WATERPROOF MASTIC JOINT (TOCSTRIP) MANUFACTURED BY WINN & COLES Co. LTD JOINTS SHALL BE NEATLY FINISHED BOTH INTERNALLY & EXTERNALLY.
12. CONCRETE BASES TO MANHOLES SHALL BE 150mm MIN FOR MANHOLES UP TO 1.8m DEEP 225mm MIN FOR MANHOLES. BETWEEN 1.8m & 6.0m & 450mm FOR MANHOLES EXCEEDING 6.0m DEEP. BASES TO HAVE LAYER OF A193 MESH MANHOLES GREATER THAN 1400x900 (INT) OR 1800 (INT) TO HAVE REINFORCEMENT BARS TO DETAILS PROVIDED BY STRUCTURAL ENGINEER.
13. ALL PRECAST CONCRETE MANHOLES (SHALLOW TO MEDIUM DEPTH) TO BE SURROUNDED WITH A MIN OF 150mm OF CONCRETE (SEE ALSO NOTE 15)
14. SINGLE SEAL MANHOLE COVER & FRAMES TO BE PROVIDED ON ALL FOUL & SURFACE WATER DRAINAGE (EXTERNALLY ONLY). DOUBLE SEAL MANHOLE COVER & FRAMES TO BE PROVIDED ON FOUL & SURFACE WATER DRAINAGE (INTERNALLY ONLY). ALL MANHOLE COVERS ARE TO BE CAST IRON TO BS 497 AND SHALL BE RECTANGULAR OR SQUARE & BE HEAVY DUTY WHERE LOCATED IN ROAD WAYS & MEDIUM DUTY ELSEWHERE UNLESS OTHERWISE INDICATED ON SCHEDULE.
15. WHERE SHALLOW (MAX OF .7m DEEP) PRE-CAST CONCRETE MANHOLES ARE POSITIONED UNDER MAIN ROADS OR ARE POSITIONED SUBJECT TO VEHICULAR TRAFFIC THE MANHOLE IS TO BE SURROUNDED WITH A MIN OF 225mm CONCRETE.
16. BRICKS FOR MANHOLE CONSTRUCTION TO BE CLASS B ENGINEERING BRICKS TO BS 3921 IN ENGLISH BOND SET IN CEMENT MORTAR 1:3.
17. FLEXIBLE JOINTS ON PIPE WORK TO BE MADE WITHIN 150MM & ROCKER PIPE LENGTH FROM INPSECTION CHAMBER/MANHOLE CHAMBER/FOOTING/GROUND BEAM OR WALL.
18. 150mm DEEP TOE HOLES TO BE PROVIDED IN BENCHING OF SEWERS GREATER THAN 600ØD FOR ACCESS TO INVERT. HOLES SHOULD BE STAGGERED HORIZONTALLY BY 150mm EITHER SIDE OF THE CL AND SPACED VERTICALLY SO THAT THE MAX. STEP WILL BE 300mm
19. COVER AND FRAME TO BE CLASS D400 TO BS EN 124 WITH A 150mm DEEP FRAME IN ROADS AND CLASS B125 IN OPEN SPACE WITH A 600mm CLEAR OPENING. ALL COVERS TO BE KITEMARKED WITH MANUFACTURERS NAME CLEARLY VISIBLE.
20. MANHOLE STEPS SHOULD BE BUILT INTO THE WALL AT REGULAR HEIGHT INTERVALS OF BETWEEN 230mm AND 300mm. UNLESS DOUBLE STEPS (RUNG IRONS) THEY SHOULD BE STAGGERED IN TWO VERTICAL RUNS AT APPROX. 300mm C/C HORIZONTALLY. THE TOP STEP SHOULD BE NOT MORE THAN 675mm BELOW THE SURFACE AND THE LOWEST NOT MORE THAN 300mm ABOVE THE BENCHING.
21. FIXED, CORROSION RESISTANT LADDERS SHOULD BE USED FOR DEPTHS OVER 3.5M. LADDERS SHOULD NOT RISE MORE THAN 6M WITHOUT PROVISION OF AN INTERMEDIATE PLATFORM, WHICH SHOULD BREAK THE LINE OF THE LADDER. NOT LESS THAN 200MM FOOT ROOM SHOULD BE PROVIDED BEHIND LADDERS AND NOT LESS THAN 900MM ON THE USER'S SIDE. STRINGERS SHOULD BE ADEQUATELY SUPPORTED FROM THE MANHOLE WALL AT INTERVALS OF NOT MORE THAN 3M. STRINGER SUPPORTS SHOULD NOT BE BUILT INTO THE WALL BUT BOLTED TO BUILT-IN CLEATS TO FACILITATE RENEWAL.
22. ALL DRAINAGE WORKS TO BE IN STRICT ACCORDANCE WITH BUILDING REGULATIONS PART M, AND THE LATEST EDITIONS OF BSEN 752-(1-4) AND BSEN 12056-2:2000
23. ALL ACCESS GULLY GRATINGS AND COVERS ARE TO BE SCREWED TO PREVENT THEIR REMOVAL BY PUPILS.
24. WHERE DRAINAGE IS REQUIRED TO PASS BENEATH SUB-STRUCTURAL PERIMETER BEAMS, THE PIPE WORK SHALL HAVE A MINIMUM OF A 50MM SPACE ABOVE THE PIPE WHICH SHALL BE FILLED WITH POLYSTYRENE. ALTERNATIVELY THE SPACE SHALL BE SIZED TO SUIT THE STRUCTURAL ENGINEERING ASSESSMENT OF THE EXPECTED BUILDING SETTLEMENT. A SHORT LENGTH OF ROCKER PIPE IS ALSO TO BE PROVIDED TO THE OUTLET TO ALLOW FOR DIFFERENTIAL SETTLEMENT TO TAKE PLACE WITHOUT DAMAGING THE PIPE.
25. MANHOLE COVERS SHALL BE INSTALLED ON THE UPSTREAM END OF MANHOLES, OVER THE STEP IRONS OF THE ACCESS LADDER AND SHALL BE FLUSH WITH THE INTERNAL FACE OF THE MANHOLE WALL, THERE SHALL BE NO OVERHANG OF THE MANHOLE COVER, WHICH OBSCURES ACCESS ONTO THE STEP IRONS OR THE LADDER.
26. BENDS AT THE BASE OF SOIL STACKS SHALL BE LONG RADIUS.
27. RODDING ACCESS SHOULD BE PROVIDED ON ALL SOIL STACKSAND RAINWATER PIPES FOR MAINTENANCE, TESTING AND REMOVAL OF DEBRIS.
28. THE POSITION OF UNDERGROUND SERVICES SHOULD BE ESTABLISHED BY CHECKING RECORDS AND THE USE OF 'LOCATORS' MECHANICAL EXCAVATORS SHOULD NOT BE USED IN THE VICINITY OF UNDERGROUND UTILITIES.



PPIC-150MM INLET

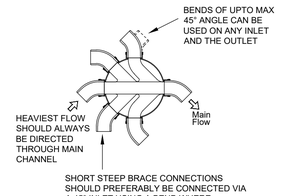
SCALE 1:25



PPIC-100MM INLET

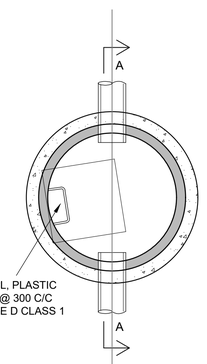
SCALE 1:25

NOTE:-
TO AVOID A BUILD UP OF SOLIDS THE MAIN CHANNEL ENTRY CONNECTION SHOULD BE USED IN ALL CASES. WHERE TWO BENDS MEET A BASE FROM DIFFERENT DIRECTIONS, THE INSPECTION CHAMBER SHOULD BE TURNED AND SWEPT BENDS USED TO CONNECT ONE DRAIN TO THE MAIN CHANNEL. THE OTHER DRAIN CAN BE CONNECTED TO A SIDE ENTRY AS NECESSARY.



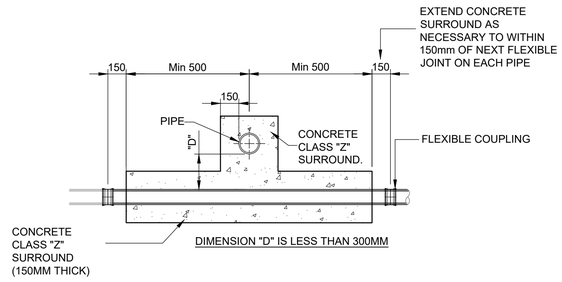
PPIC-GENERAL ARRANGEMENT

SCALE 1:25



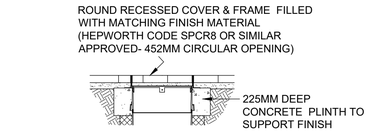
TYPICAL CATCHPIT DETAIL

SCALE 1:25



TYPICAL PROTECTION TO PIPES CROSSING WHERE DISTANCE APART IS LESS THAN 300MM.

SCALE 1:25



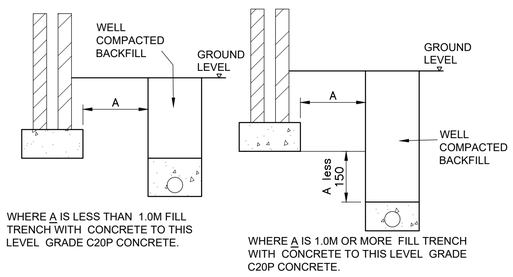
SITED IN DRIVEWAYS / HARD LANDSCAPED AREAS WITH STANDARD ROUND COVER

SCALE 1:25



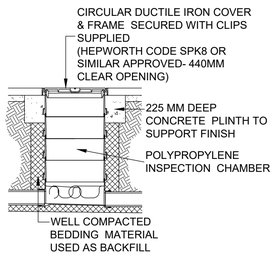
SITED IN SOFT LANDSCAPED AREAS WITH STANDARD ROUND COVER

SCALE 1:25



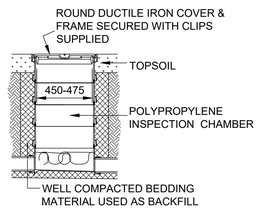
PIPE TRENCHES ADJACENT TO FOUNDATIONS

SCALE 1:25



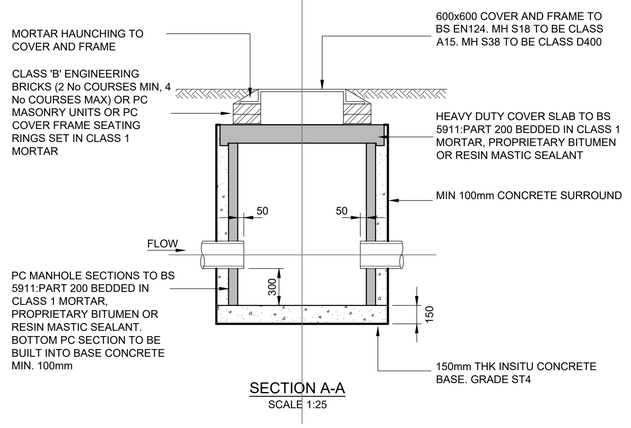
REDUCED ACCESS TELESCOPIC PPIC UP TO 1200 DEEP

SCALE 1:25



REDUCED ACCESS TELESCOPIC PPIC UP TO 1200 DEEP

SCALE 1:25



SECTION A-A

SCALE 1:25

REV	DATE	BY	DESCRIPTION	CHK	APD
B	24.07.18	JH	Drawing status updated to construction	JC	WB
A	15.05.18	JH	Drawing renumbered	JC	WB

DRAWING STATUS: CONSTRUCTION

Tier Consult (SY) Ltd.
10 Broomhall Street
Unit 18 West One
Sheffield
S3 7SZ
Telephone: 0114 241 9360
Fax: 0844 854 8690
Email: infoSY@tieruk.com

CLIENT: CREATE

ARCHITECT: TIM GROOM ARCHITECTS

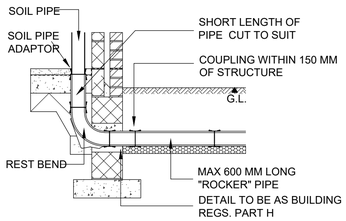
PROJECT: SHARP STREET, MANCHESTER

TITLE: Drainage Details Sheet 2

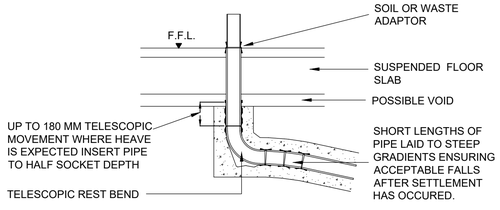
SCALE @ SIZE:	CHECKED:	APPROVED:
1:150 @ A1	JC	WB
CAD FILE:	DESIGN/DRAWN: JH	DATE: June 2017

PROJECT No:	DRAWING No:	REV:
T/SY/16/642	800-004	B

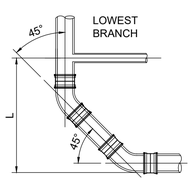
DO NOT SCALE



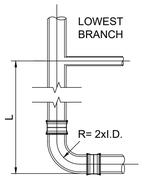
SOIL & VENT PIPE / STUB STACK / W.C. CONNECTION DETAIL
SCALE 1:25



TELESCOPIC REST BEND CONNECTION DETAIL
SCALE 1:25



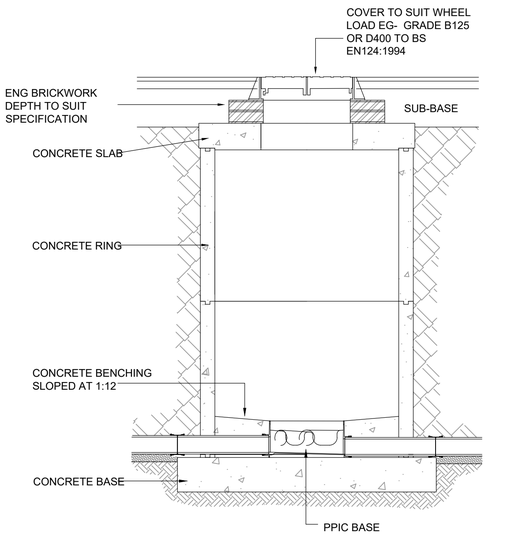
PREFERABLE ARRANGEMENT



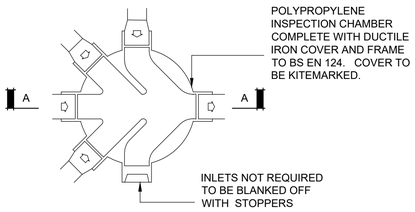
ALTERNATIVE ARRANGEMENT

APPLICATION	L (MIN)
SINGLE DWELLING UP TO 3 STOREY'S IN HEIGHT	450mm
BUILDINGS UP TO 5 STOREY'S IN HEIGHT	740mm
BUILDINGS UP TO 20 STOREY'S	1 STORY
BUILDINGS OVER 20 STOREY'S	1 STORY

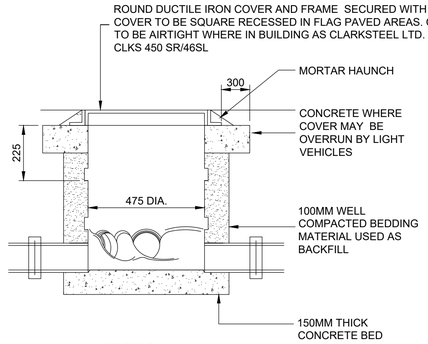
NOTE:- (THIS INFORMATION HAS BEEN TAKEN FROM BS EN 12056-2:2000)



CONCRETE RING MH WITH PPIC BASE INSTALLATION DETAIL
SCALE 1:20

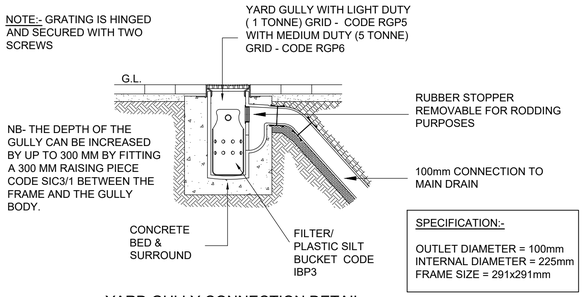


TYPICAL POLYPROPYLENE INSPECTION CHAMBER. DEPTH FROM GROUND LEVEL TO SOFFIT 0.6M TO 1.2M
SCALE 1:25



SECTION A-A

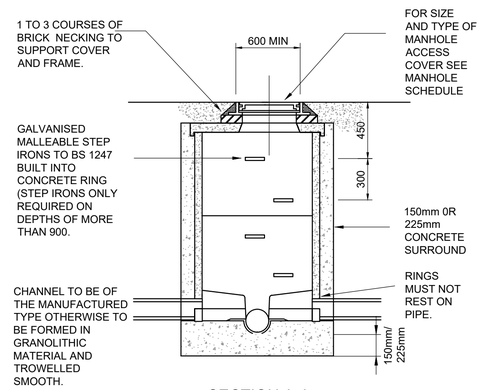
NOTE:- GRATING IS HINGED AND SECURED WITH TWO SCREWS



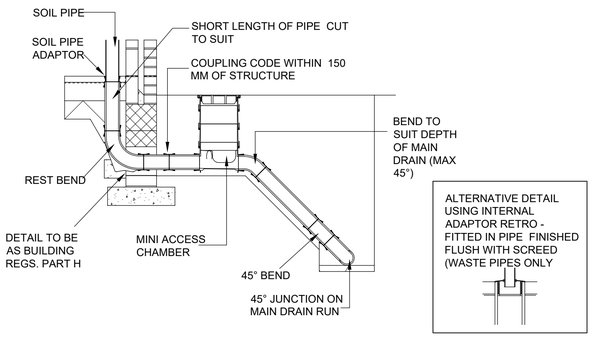
SPECIFICATION:-

OUTLET DIAMETER = 100mm
INTERNAL DIAMETER = 225mm
FRAME SIZE = 291x291mm

YARD GULLY CONNECTION DETAIL
SCALE 1.20

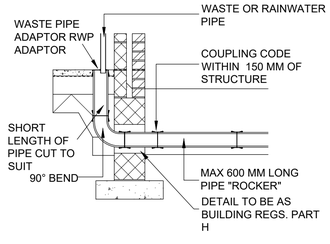


SECTION A-A

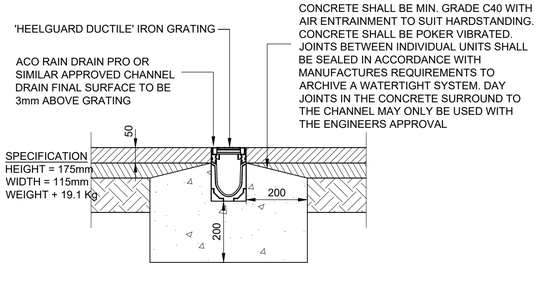


MINI ACCESS CHAMBER POSITIONED OFF MAIN DRAIN RUN APPLICATION DETAIL
SCALE 1:25

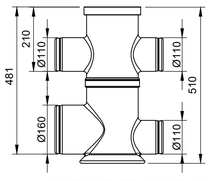
ALTERNATIVE DETAIL USING INTERNAL ADAPTOR RETRO - FITTED IN PIPE FINISHED FLUSH WITH SCREED (WASTE PIPES ONLY



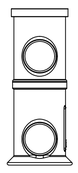
INTERNAL WASTE PIPE CONNECTION DETAIL
SCALE 1:25



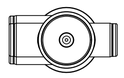
CHANNEL DRAIN
SCALE 1:10



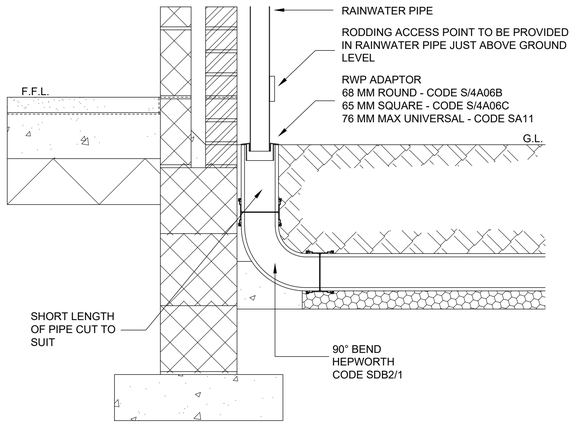
SUMP OUTLET AT END OF ACO DRAIN PRO
SCALE 1:10



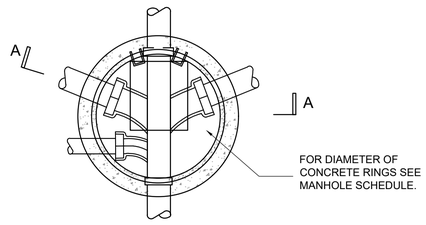
ELEVATION OF SUMP
SCALE 1:10



PLAN SECTION OF SUMP AT END OF CHANNEL DRAIN
SCALE 1:10



EXTERNAL RAINWATER PIPE CONNECTION DETAIL
SCALE 1:10



PLAN
SCALE 1:20

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15. WHERE SHALLOW (MAX OF .7m DEEP) PRE-CAST CONCRETE MANHOLES ARE POSITIONED UNDER MAIN ROADS OR ARE POSITIONED SUBJECT TO VEHICULAR TRAFFIC THE MANHOLE IS TO BE SURROUNDED WITH A MIN OF 225mm CONCRETE.
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18. 150mm DEEP TOE HOLES TO BE PROVIDED IN BENCHING OF SEWERS GREATER THAN 6000 FOR ACCESS TO INVERT. HOLES SHOULD BE STAGGERED HORIZONTALLY BY 150mm EITHER SIDE OF THE CL AND SPACED VERTICALLY SO THAT THE MAX. STEP WILL BE 300mm
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REV	DATE	BY	DESCRIPTION	CHK	APD
B	24.07.18	JH	Drawing status updated to construction	JC	WB
A	15.05.18	JH	Drawing renumbered	JC	WB

DRAWING STATUS: CONSTRUCTION

Tier Consult (SY) Ltd.
10 Broomhall Street
Unit 18 West One
Sheffield
S3 7SZ
Telephone: 0114 241 9360
Fax: 0844 854 8690
Email: InfoSY@tieruk.com

CLIENT: CREATE

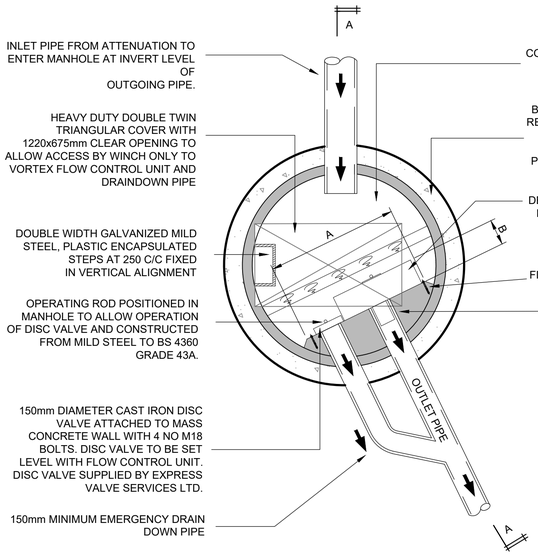
ARCHITECT: TIM GROOM ARCHITECTS

PROJECT: SHARP STREET, MANCHESTER

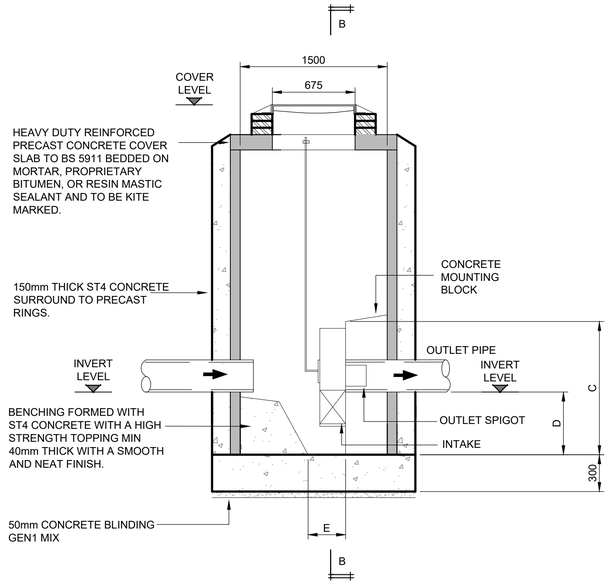
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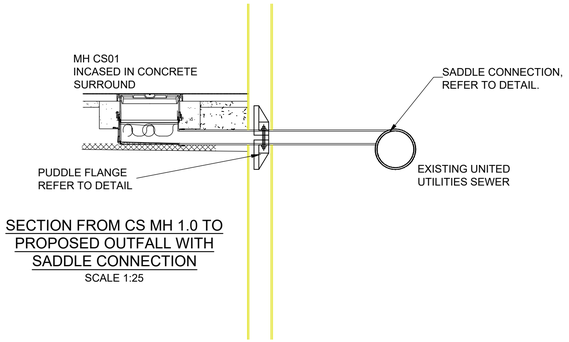
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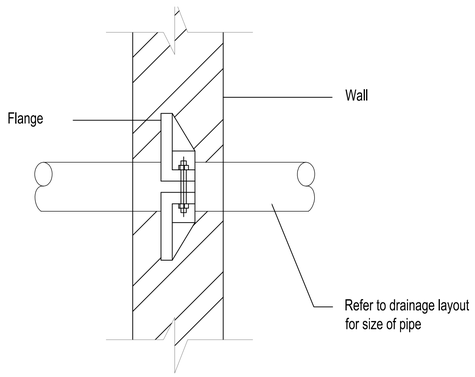
TYPICAL HYDROBRAKE CHAMBER
SCALE 1:25



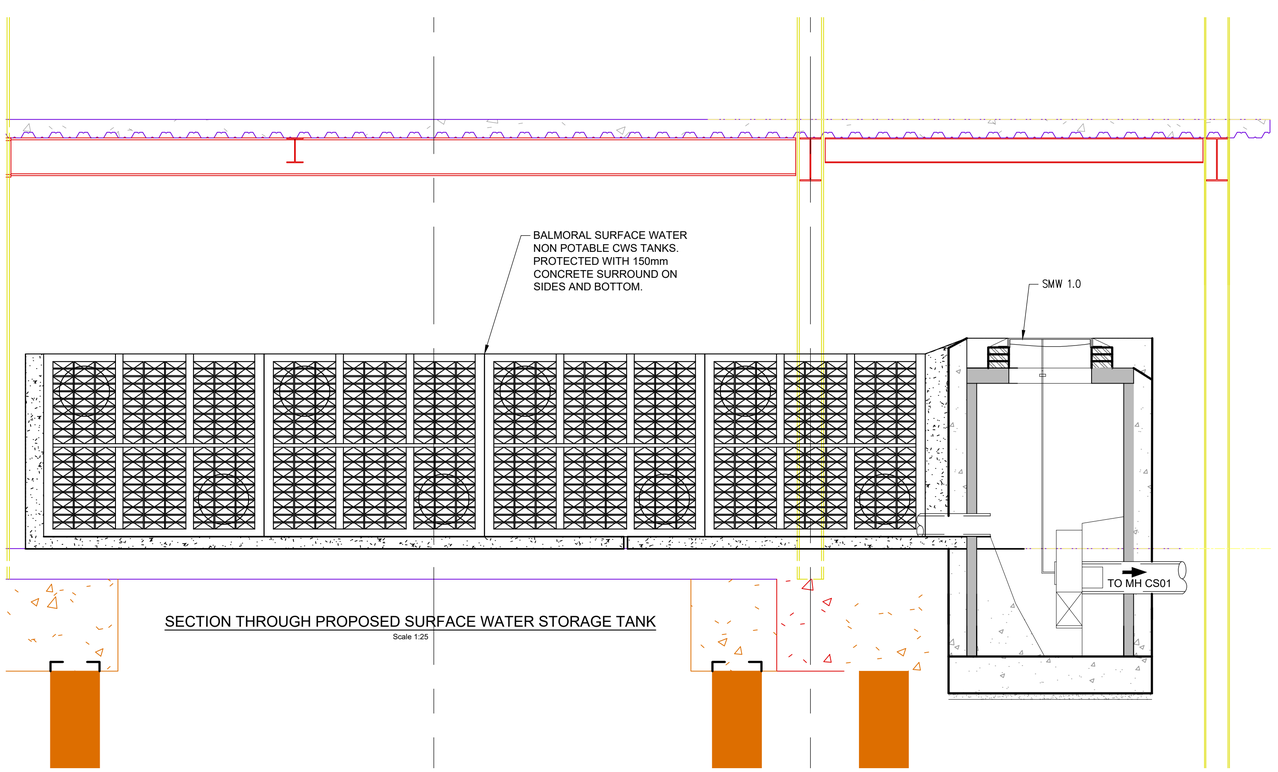
SECTION A-A
SCALE 1:25



SECTION FROM CS MH 1.0 TO PROPOSED OUTFALL WITH SADDLE CONNECTION
SCALE 1:25



Puddle Flange Detail



SECTION THROUGH PROPOSED SURFACE WATER STORAGE TANK
Scale 1:25

NOTES

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REV	DATE	BY	DESCRIPTION	CHK	APD
D	24.07.18	DAB	Drawing status updated to construction	JC	WB
C	15.05.18	JH	Drawing renumbered	JC	WB
B	10.05.18	JH	Outfall conenction details added	JC	WB
A	22.02.18	JH	Attenuation details updated	JC	WB

DRAWING STATUS: CONSTRUCTION

Tier Consult (SY) Ltd.
10 Broomhall Street
Unit 18 West One
Sheffield
S3 7SZ
Telephone:
0114 241 9360
Fax:
0844 854 8690
Email:
InfoSY@tieruk.com

CLIENT: CREATE

ARCHITECT: TIM GROOM ARCHITECTS

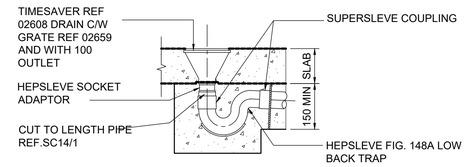
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TITLE: Drainage Details Sheet 5

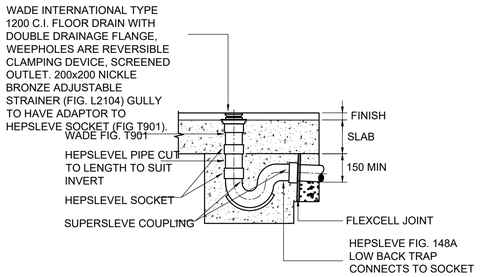
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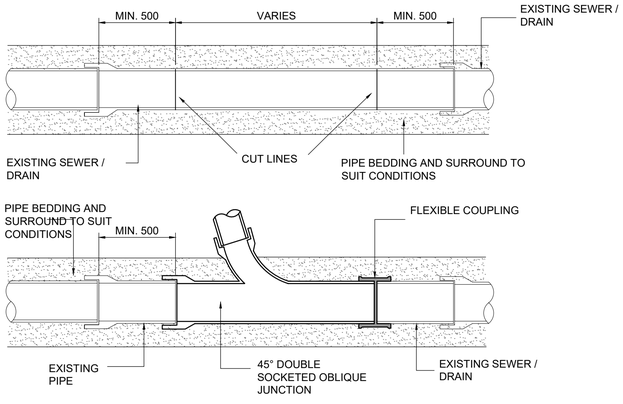


FLOOR GULLY DETAIL
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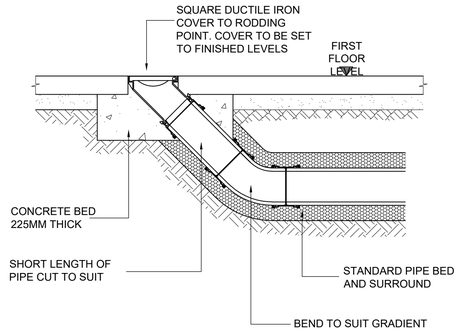


FLOOR GULLY DETAIL IN SHOWER AREAS
SCALE 1:20

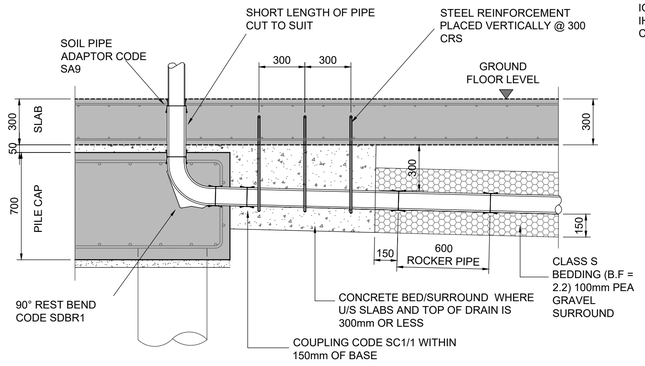
EXISTING PIPE TO BE CUT TO SUIT INSTALLATION OF NEW BRANCH PIECE. CUT ENDS TO BE PREPARED TO SUIT MANUFACTURER'S RECOMMENDATIONS. NO NEW JUNCTION WITHIN 500mm OF EXISTING JUNCTION OR COLLAR.



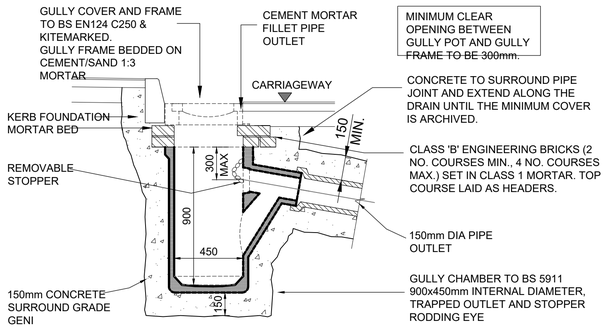
INSTALLATION OF NEW BRANCH PIECE INTO EXISTING SEWER / DRAIN
SCALE 1:20



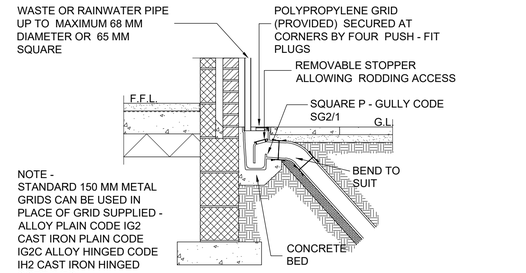
TYPICAL RODDING EYE DETAIL
SCALE 1:20



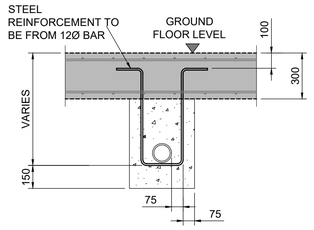
TYPICAL DETAIL SHOWING SVP THROUGH GROUND FLOOR SLAB



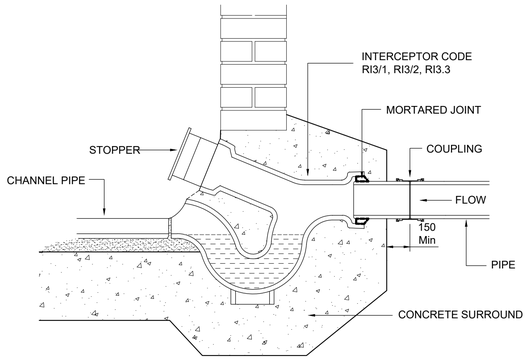
HIGHWAY GULLY DETAIL
SCALE 1:20



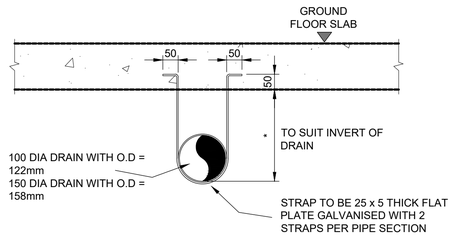
SQUARE P - GULLY CONNECTION DETAIL GC3
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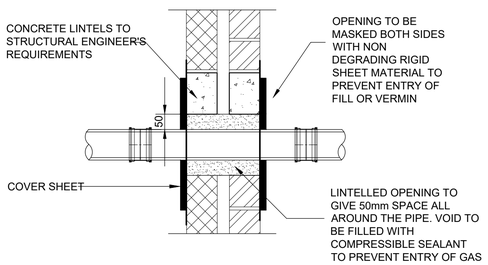
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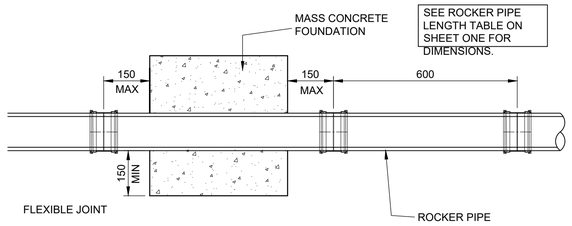
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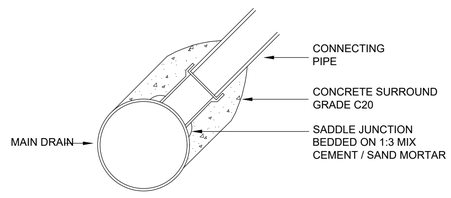
TYPICAL DETAIL OF PIPE SUPPORT BELOW SUSPENDED FLOOR SITUATIONS
SCALE 1:10



TYPICAL WALL PENETRATION DETAIL
SCALE 1:10



TYPICAL FOUNDATION PENETRATION DETAIL
SCALE 1:10



SADDLE CONNECTION
SCALE 1:10

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DRAWING STATUS: CONSTRUCTION

Tier Consult (SY) Ltd.
10 Broomhall Street
Unit 18 West One
Sheffield
S3 7SZ
Telephone:
0114 241 9360
Fax:
0844 854 8690
Email:
infoSY@tieruk.com

CLIENT: CREATE

ARCHITECT: TIM GROOM ARCHITECTS

PROJECT: SHARP STREET, MANCHESTER

TITLE: Drainage Details Sheet 3

SCALE @ SIZE:	CHECKED:	APPROVED:
1:150 @ A1	JC	WB
CAD FILE:	DESIGN/DRAWN:	DATE:
	JH	June 2017

PROJECT No:	DRAWING No:	REV:
T/SY/16/642	800 - 005	B