PROPOSED FOUL DRAINAGE			
PLOT	USE	PEAK FLOW RATE (l/s)	REMARKS
UNIT A1	HOIME BARGAINS	0.573	TO UTILISE EXISTING FOUL NETWORK WITHIN PLOT
UNIT A2	M&S	0.802	TO UTILISE EXISTING FOUL NETWORK WITHIN PLOT
UNIT A3	GREGGS	0.100	TO UTILISE EXISTING FOUL NETWORK WITHIN PLOT
UNIT A4	RETAILK	0.310	TO UTILISE EXISTING FOUL NETWORK WITHIN PLOT
UNIT A5	LIDL	0.687	TO UTILISE EXISTING FOUL NETWORK WITHIN PLOT
UNIT A6	TK MAX	0.338	AS PROPOSED
UNIT A7	RETAIL	0.341	AS PROPOSED
UNIT A8	RETAIL	0.167	AS PROPOSED
UNIT A9	GYM	0.167	TO UTILISE EXISTING FOUL NETWORK WITHIN PLOT

ROUTE OF EXISTING SURFACE WATER IS UNDERSTOOD TO RUN WEST TO EAST BASED ON INTERNAL CHAMBER LEVELS

LOCATION OF SURFACE WATER OUTFALL DRAINING THE WEST HALF OF THE DEVELOPMENT, ASSUMED TO DISCHARGE TO EXISTING POND LOCATED NORTH EAST OF THE SITE.

LOCATION OF SURFACE WATER OUTFALL DRAINING THE EAST HALF OF THE DEVELOPMENT, ASSUMED TO DISCHARGE TO EXISTING POND LOCATED NORTH EAST OF THE SITE.

PROPOSED SURFACE WATER GULLIES TO UTILISE EXISTING CONNECTIONS IDENTIFIED BY UTILIMAP GPR SURVEY.

LOCATION OF FOUL WATER PUMPING STATION, PUMPING FOUL WATER OFF SITE.

EXISTING SURFACE WATER MANHOLE TO BE REPOSITIONED OUTSIDE OF PROPOSED MANHOLE AND DOWNSTREAM PIPE ADJUSTED.

PROPOSED CONNECTION INTO EXISTING SURFACE WATER MANHOLE. MANHOLE TO BE REPLACED IF REQUIRED AS PART OF PROPOSED WORKS.

UNIT A1 18,500 sqft
UNIT A2 25,900 sqft
UNIT A4 10,000 sqft
UNIT A5 22,200 sqft
UNIT A6 10,900 sqft
UNIT A7 11,000 sqft
UNIT A8 5,400 sqft
UNIT A9 5,400 sqft
ENTRANCE
CATCHMENT 1
CATCHMENT 2

DESIGN NOTE

PLEASE NOTE THAT THE CCTV SURVEY AND GPR SURVEY PRESENT CONTRADICTING INFORMATION, OUTFALLS IDENTIFIED BY INVERTS OF CHAMBERS.

DESIGN NOTE

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE PINNACLE CCTV SURVEY REVIEW REPORT: C240600684-PIN-XX-XX-RP-C-02001, AND LASER SURVEY CCTV REPORT: N2593-Watersmead - Drainage Report_R0, DATED MARCH 2025.

DESIGN NOTE

THE PROPOSED INTERNAL BUILDING FOUL POP-UPS ARE TBC SUBJECT TO DETAILED DESIGN. IT IS ASSUMED THAT THE EXISTING FOUL DRAINAGE NETWORK BENEATH THE BUILDING FOOTPRINT IS IN A SERVICEABLE CONDITION AND CAN BE UTILISED FOR ANY NEW CONNECTIONS.

IN AREAS WHERE NO EXISTING FOUL NETWORK IS PRESENT, INDICATIVE RUNS HAVE BEEN PROPOSED. THESE WILL BE SUBJECT TO CONFIRMATION AND REFINEMENT AT A LATER DESIGN STAGE.

DESIGN NOTE

EXISTING DRAINAGE TO BE REMOVED AND REPLACED WHERE REQUIRED TO SUIT NEW CAR PARK LAYOUT, INCLUDING THE REPOSITIONING OF GULLIES TO MINIMISE PONDING.

GENERAL NOTES

1. DO NOT SCALE THIS DRAWING. WORK ONLY TO FIGURED DIMENSIONS.
2. FOR ALL RELEVANT NOTES, REFER TO STRUCTURAL AND CIVIL ENGINEERING PERFORMANCE SPECIFICATION.
3. ANY DISCREPANCIES ARE TO BE REPORTED TO PINNACLE CONSULTING ENGINEERS IMMEDIATELY.
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERS, ARCHITECTS AND SUB-CONTRACTORS DRAWINGS AND DETAILS.
5. THIS DRAWING IS TO BE PRINTED IN COLOUR.
6. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION PURPOSES UNLESS EXPRESSLY STATED
7. THIS DRAWING USES THE GREAT BRITAIN COORDINATE SYSTEM "OSGB1936.NationalGrid".
8. THIS DRAWING HAS BEEN PREPARED USING THE PROPOSED SITE LAYOUT FROM RGP ARCHITECTS, DRAWING NO. 11631-PL108_REV E, DATED 16.04.2025.
9. THIS DRAWING HAS BEEN PREPARED USING TOPOGRAPHICAL SURVEY INFORMATION REFERENCED FROM RGP DRAWING 'MEASURED SURVEY EXISTING TOPO', CMS - 205, 07, DATED JUNE 2024.
10. THIS DRAWING HAS BEEN PREPARED USING THE CCTV DRAINAGE SURVEY FROM LASER SURVEYS, DRAWING NO. N 2563/1, DATED MARCH 2025.
11. THIS DRAWING HAS BEEN PREPARED USING GPR SURVEY INFORMATION FROM UTILIMAP DRAWINGS: ACAD-WATERSMEAD-BUS-PARK SHEETS 1-4, R2. DATED 28.03.25
12. PROPOSED FOUL CONNECTION INTO EXISTING NETWORK IS SUBJECT TO EXISTING PUMPING STATION CAPACITY AND LOCAL AUTHORITY APPROVAL.
13. PROPOSED SURFACE WATER PIPES SHOWN ON DRAWING ARE TO BE 150Ø UNLESS OTHERWISE NOTED.
14. PROPOSED FOUL WATER PIPES SHOWN ON DRAWING ARE TO BE 100Ø UNLESS OTHERWISE NOTED.

LEGEND

- SITE BOUNDARY
- OUTLINE OF EXISTING 'BUILDING 7' TO BE DEMOLISH AS PART OF WORKS
- CATCHMENT 1 & 2 SPLIT
- EXISTING SURFACE WATER SEWER IDENTIFIED BY UTILIMAP GPR SURVEY
- EXISTING FOUL WATER SEWER IDENTIFIED BY UTILIMAP GPR SURVEY
- EXISTING DRAINAGE ASSET TO BE REMOVED/CAPPED AS APPROPRIATE
- PROPOSED SURFACE WATER SEWER
- G PROPOSED SURFACE WATER GULLY
- PROPOSED PERMEABLE PAVING
- PROPOSED FOUL WATER SEWER
- PU PROPOSED PERMEABLE PAVING OUTLET

SCALE 1:500
0 5 10 15 20 25m
DIMENSIONS IN METRES

REV	DESCRIPTION	BY	CHK / APP	DATE
P02	UPDATED FOR NEW SITE PLAN	DAL	AC	25.04.25
P01	ISSUED FOR INFORMATION	DAL	AC	07.04.25

CLIENT
HALLWAY PROPERTIES LIMITED

PROJECT
LAND AT NORWAY LANE
LITTLEHAMPTON

DRAWING TITLE
PROPOSED DRAINAGE LAYOUT

PINNACLE CONSULTING ENGINEERS
PINNACLE HOUSE,
MAPLE WAY,
BROADLAND GATE,
NORWICH,
NR13 5HB.
TELEPHONE: 01603 327 170
WELWYN GARDEN CITY ■ LONDON ■ DUBLIN ■ THE HAGUE ■ FRANKFURT

DRAWING STATUS				
INFORMATION				
SCALE @ A1	DATE	DRAWN BY	CHECKED	APPROVED
1:500	MAR'25	DAL	IL	AC
DRG NO.				REV.
C240600684-PIN-XX-XX-DR-C-02300				P02

PIN REF: C240600684

Appendix J –Drainage Construction Details

SURFACE WATER MANHOLE SCHEDULE

MANHOLE REF.	APPROX. COVER LEVEL	INVERT LVL. OF CHAMBER	APPROX. DEPTH (m)	INCOMING PIPE SIZE (mmØ)	INVERT LVL. OF INCOMING PIPE(S)	OUTGOING PIPE SIZE (mmØ)	INVERT LVL. OF OUTLET PIPE	MANHOLE SIZE (mm)	COVER TYPE	EASTING	NORTHING	REMARKS
S1.0	5.000	3.568	1.432	150 225 150	3.590 3.568 3.769	525	3.568	1500	D400	503795.6490	103477.1373	
S1.1	4.809	3.328	1.481	525 225 150	3.598 3.377 3.328	525	3.328	1500	D400	503810.8098	103475.3067	
S1.2	4.702	3.303	1.399	525 150 150	3.560 3.344 3.303	525	3.303	1500	D400	503824.8848	103473.6072	
S1.3	4.917	3.176	1.741	525 150 150	3.371 5.011 5.011	525	3.176	1500	D400	503836.3473	103454.4828	
S1.4	4.976	2.940	2.036	525	2.940	525	2.940	1500	D400	503844.0809	103441.5712	EXISTING MANHOLE UPSIZED TO ACCOMMODATE PROPOSED PIPE SIZE
S1.5	5.033	2.810	2.223	525	2.810	525	2.810	1500	D400	503851.1851	103431.1480	EXISTING MANHOLE UPSIZED TO ACCOMMODATE PROPOSED PIPE SIZE
S1.6	4.655	2.500	2.155	525	2.575	525	2.500	1500	D400	503873.4071	103440.5661	EXISTING MANHOLE UPSIZED TO ACCOMMODATE PROPOSED PIPE SIZE
S1.7	4.525	2.420	2.105	525	2.420	525	2.420	1500	D400	503878.3059	103443.4545	EXISTING MANHOLE UPSIZED TO ACCOMMODATE PROPOSED PIPE SIZE
S1.8	3.532	1.710	1.822	525	1.936	675	1.710	1500	D400	503909.1536	103475.6619	EXISTING MANHOLE UPSIZED TO ACCOMMODATE PROPOSED PIPE SIZE
S1.9	2.470	1.575	0.895	675	1.575		1.575	1500	B125	503928.8224	103486.6897	EXISTING MANHOLE UPSIZED TO ACCOMMODATE PROPOSED PIPE SIZE
S2.0	6.233	4.270	1.963			300	4.270	1200	D400	503720.9362	103426.7737	EXISTING MANHOLE UPSIZED TO ACCOMMODATE PROPOSED PIPE SIZE
S2.1	5.726	3.860	1.866	300	3.860	450	3.860	1500	D400	503699.1578	103476.7254	EXISTING MANHOLE UPSIZED TO ACCOMMODATE PROPOSED PIPE SIZE
S2.2	5.490	2.775	2.715	450 450	3.750 3.750	525	2.775	1500	D400	503693.0771	103500.2567	EXISTING MANHOLE UPSIZED TO ACCOMMODATE PROPOSED PIPE SIZE
S2.3	5.423	2.725	2.698	525 450	2.725 2.850	525	2.725	1500	D400	503693.8214	103505.3326	EXISTING MANHOLE UPSIZED TO ACCOMMODATE PROPOSED PIPE SIZE
S2.4	3.278	2.438	0.840	525	2.538	525	2.438	1500	B125	503689.0063	103507.7015	EXISTING MANHOLE UPSIZED TO ACCOMMODATE PROPOSED PIPE SIZE
S2.5	2.978	2.238	0.740	525	2.238	525	2.238	1500	D400	503702.9767	103561.5225	EXISTING MANHOLE UPSIZED TO ACCOMMODATE PROPOSED PIPE SIZE
S3.0	5.070	3.850	1.220			300	3.850	1200	D400	503779.3293	103494.3283	
S3.1	5.089	3.745	1.344	300	3.745	450	3.745	1500	D400	503761.8745	103496.6865	
S3.2	5.116	3.650	1.466	450	3.666	450	3.650	1500	D400	503748.0446	103498.3365	
S3.3	5.130	3.550	1.580	450	3.561	450	3.550	1500	D400	503733.2280	103500.0031	
S3.4	5.146	2.990	2.156	450	2.990	450	2.990	1500	D400	503726.0252	103501.3616	
S3.5	5.177	2.900	2.277	450	2.900	450	2.900	1500	D400	503718.0690	103501.8980	
S4.0	5.960	4.370	1.590			300	4.370	1200	B125	503740.4172	103426.1340	
S4.1	5.184	3.870	1.314	300	3.870	450	3.870	1500	D400	503748.5896	103493.3672	
S5.0	5.309	3.980	1.329			300	3.980	1200	D400	503768.2690	103470.0041	
S5.1	5.679	3.625	2.054	300	3.625		3.625	1200	D400	503762.7793	103423.6174	

PIPES TO BE UPSIZED

UPSTREAM MANHOLE	DOWNSTREAM MANHOLE	PROPOSED PIPE ø (mm)	PIPE LENGTH (m)
S1.4	S1.5	525	12.614
S1.5	S1.6	525	24.135
S1.6	S1.7	525	5.687
S1.7	S1.8	525	44.597
S1.8	S1.9	675	22.549
S2.0	S2.1	300	54.493
S2.1	S2.2	450	24.304
S2.2	S2.3	525	5.131
S2.3	S2.4	525	5.366
S2.4	S2.5	525	55.605

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DESIGN NOTE

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DESIGN NOTE

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE PINNACLE CCTV SURVEY REVIEW REPORT: C240600684-PIN-XX-XX-RP-C-02001, AND LASER SURVEY CCTV REPORT: N2593-Watersmead - Drainage Report_R0, DATED MARCH 2025.

REV	DESCRIPTION	BY	CHK / APP	DATE
P01	ISSUED FOR INFORMATION	WM	AC	25.04.25

CLIENT
HALLWAY PROPERTIES LIMITED

PROJECT
LAND AT NORWAY LANE
LITTLEHAMPTON

DRAWING TITLE
PROPOSED DRAINAGE
MANHOLE SCHEDULE

PINNACLE CONSULTING ENGINEERS
PINNACLE HOUSE,
MAPLE WAY,
BROADLAND GATE,
NORWICH,
NR13 9HB.
TELEPHONE: 01603 327 170
WELWYN GARDEN CITY ■ LONDON ■ DUBLIN ■ THE HAGUE ■ FRANKFURT

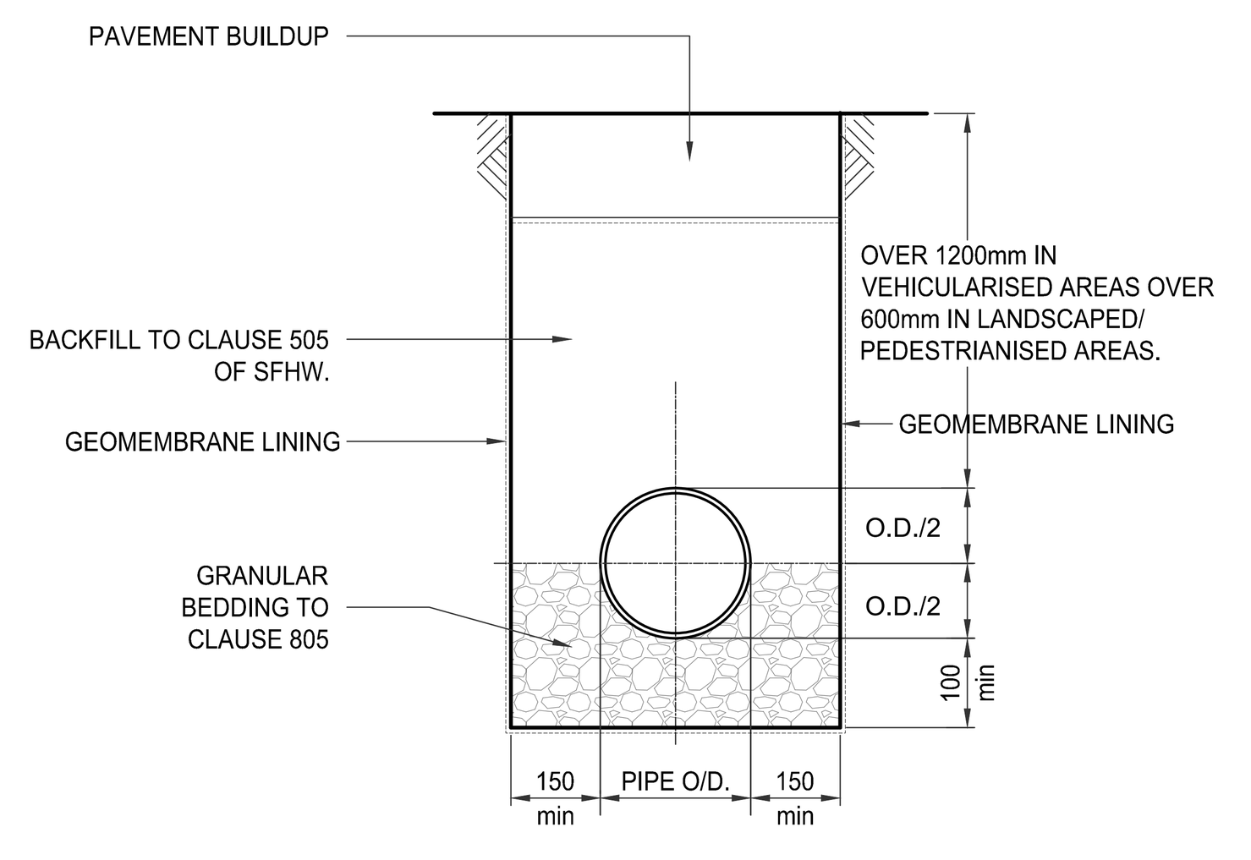
DRAWING STATUS
INFORMATION

SCALE @ A1	DATE	DRAWN BY	CHECKED	APPROVED
N/A	APR'25	WM	IL	AC

DRG NO. C240600684-PIN-XX-XX-DR-C-02310
REV. P01

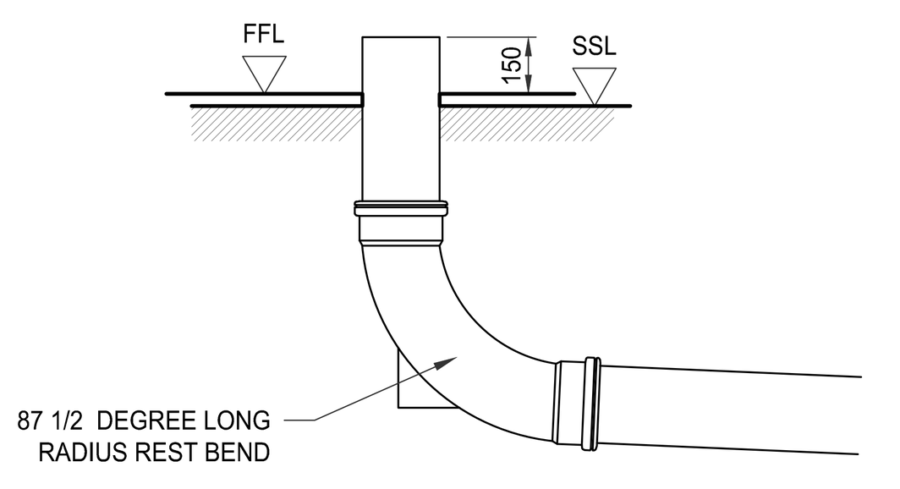
PIN REF: C240600684

File Location: C:\USERS\WILLMETSELAAR\DOCUMENTS\DOCS\PINNACLE PROJECTS\C240600684 - LITTLEHAMPTON LOGISTICS PARK\PROJECT FILES\2.0 PINNACLE DRAWINGS\2.2 PINNACLE CIVILS\C240600684-PIN-XX-XX-DR-C-02310-PROPOSED DRAINAGE MANHOLE SCHEDULE.DWG

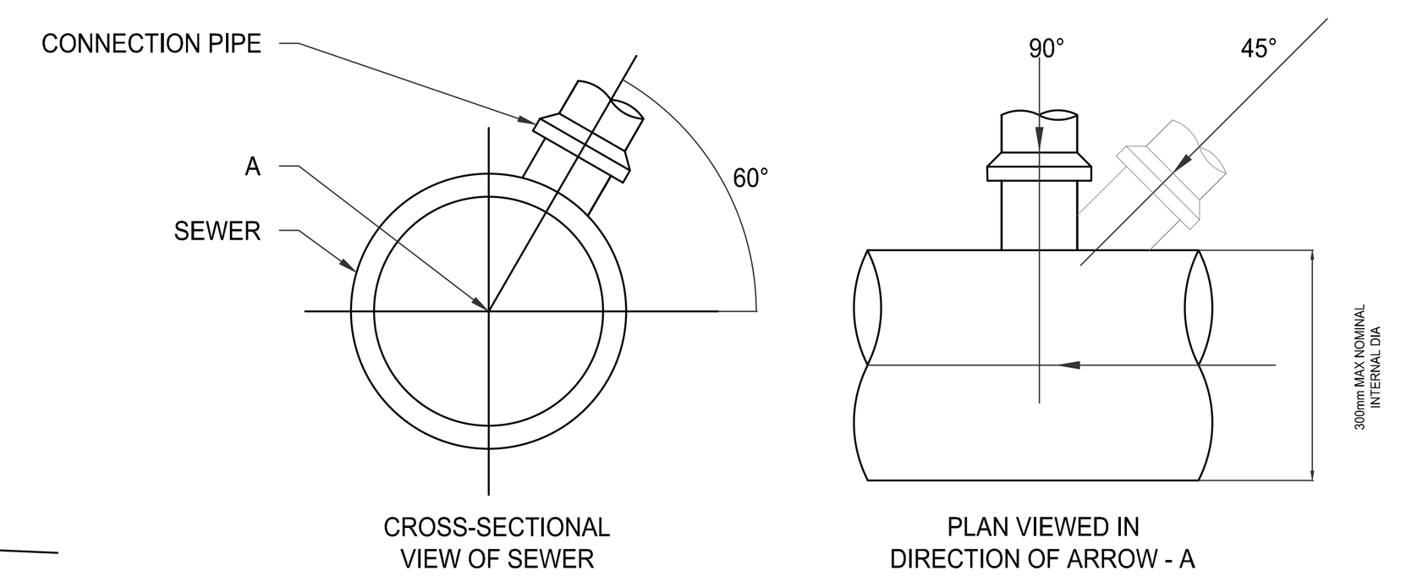


BEDDING BENEATH AND AT THE SIDES OF THE PIPE TO BE WELL COMPACTED THE FIRST 300mm OF FILL ABOVE THE CROWN OF THE PIPE IS TO BE LIGHTLY TAMPED BY HAND. MECHANICAL COMPACTION MAY BE USED ONLY ABOVE THIS LEVEL. GEOTEXTILES MAY BE USED WHERE DIRECTED OR APPROVED BY THE ENGINEER TO CONTAIN BEDDING MATERIAL IN CERTAIN SOILS E.G. RUNNING SAND IN VERY WET CONDITIONS, WHERE DIRECTED OR APPROVED BY THE ENGINEER A TEMPORARY LAND DRAIN MAY BE LAID WITHIN THE GRANULAR BED.

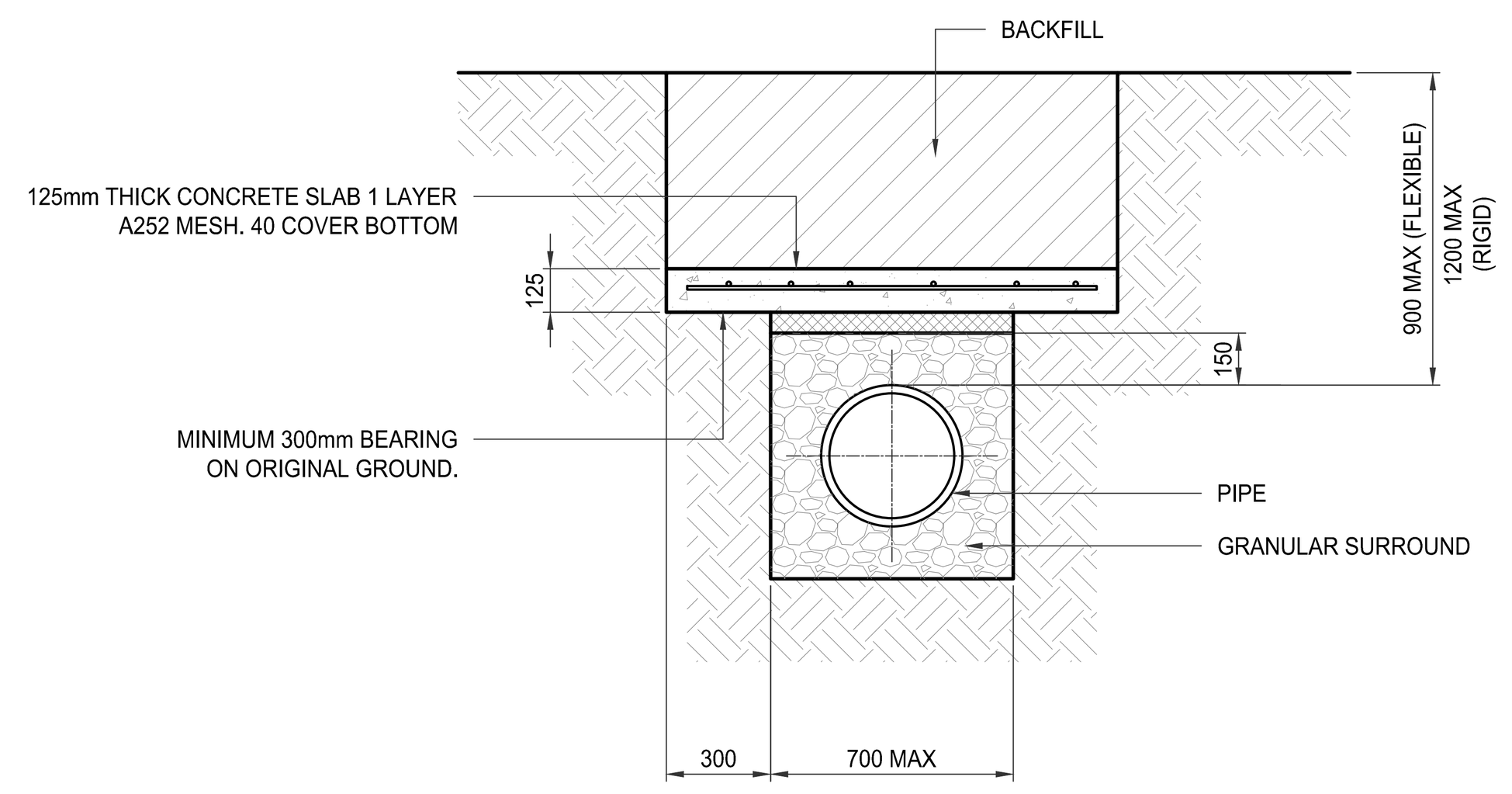
GRANULAR PIPE BEDDING DETAILS FOR RIGID PIPES - CLASS B



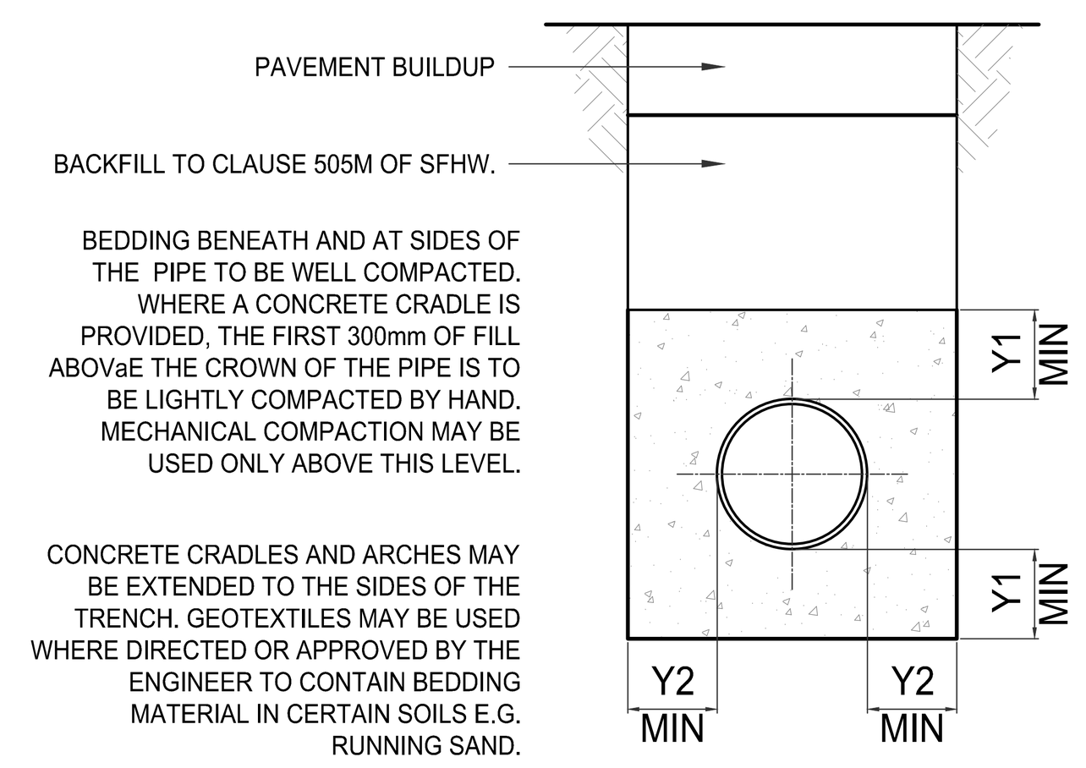
TYPICAL POP-UP CONNECTION



TYPICAL SADDLE CONNECTION DETAIL



PROTECTION FOR PIPES LAID AT SHALLOW DEPTHS



IN VERY WET CONDITIONS, WHERE DIRECTED OR APPROVED BY THE ENGINEER A TEMPORARY LAND DRAIN MAY BE LAID WITHIN THE GRANULAR BED.

WHERE PIPES WITH FLEXIBLE JOINTS ARE USED, THE CONCRETE PROTECTION IS TO BE INTERRUPTED OVER ITS FULL CROSS-SECTION AT INTERVALS NOT EXCEEDING 5 METRES (OR AS DIRECTED BY THE ENGINEER) BY A SHAPED FORMER OF BITUMEN IMPREGNATED COMPRESSIBLE FILLER. THESE INTERRUPTIONS SHALL COINCIDE WITH PIPE JOINTS. SEE DIMENSIONS FOR PIPE BEDDING TABLE FOR THICKNESS OF COMPRESSIBLE FILLER.

CONCRETE TO BE CLASS 2; SULPHATE RESISTING ST4 CONCRETE

WHERE FLEXIBLE PIPES ARE USED. CARE MUST BE TAKEN TO PREVENT THE PIPES FROM FLOATING.

CLASS A CONCRETE BEDDING DETAILS

GENERAL NOTES

1. DO NOT SCALE THIS DRAWING. WORK ONLY TO FIGURED DIMENSIONS.
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3. ANY DISCREPANCIES ARE TO BE REPORTED TO PINNACLE CONSULTING ENGINEERS IMMEDIATELY.
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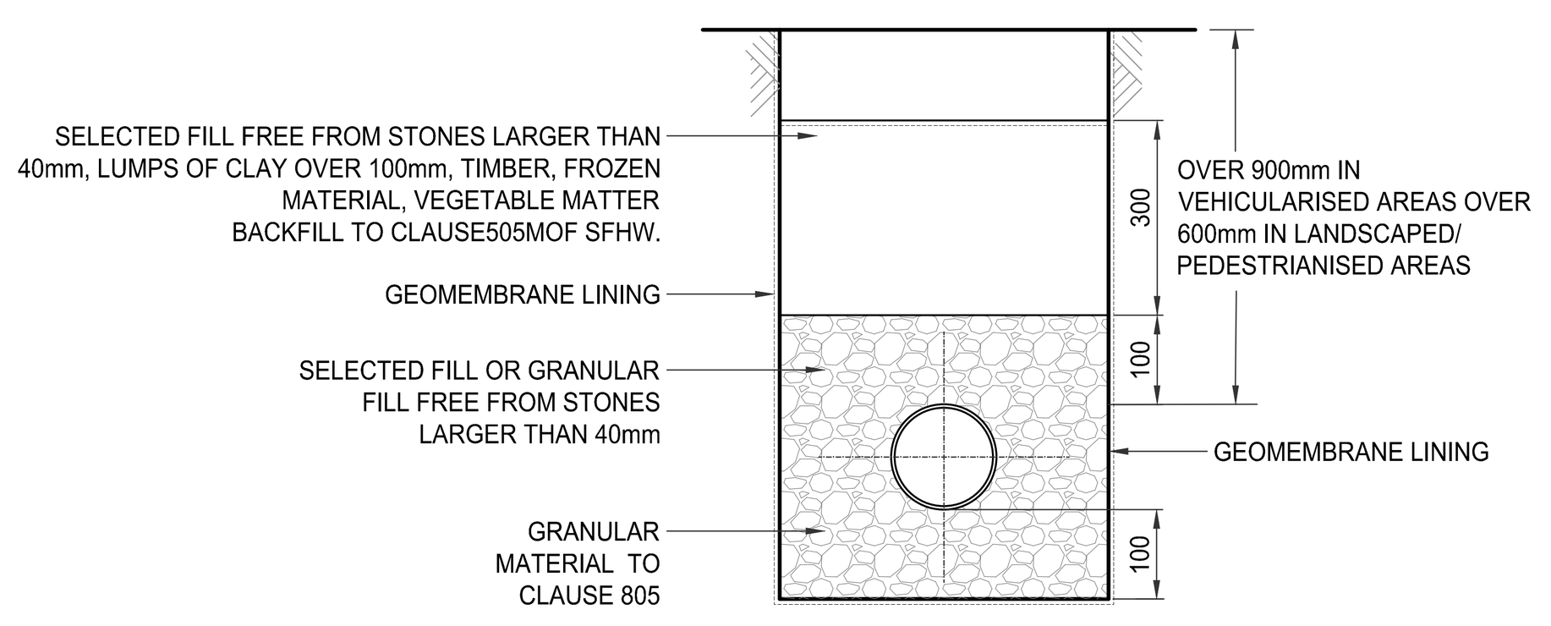
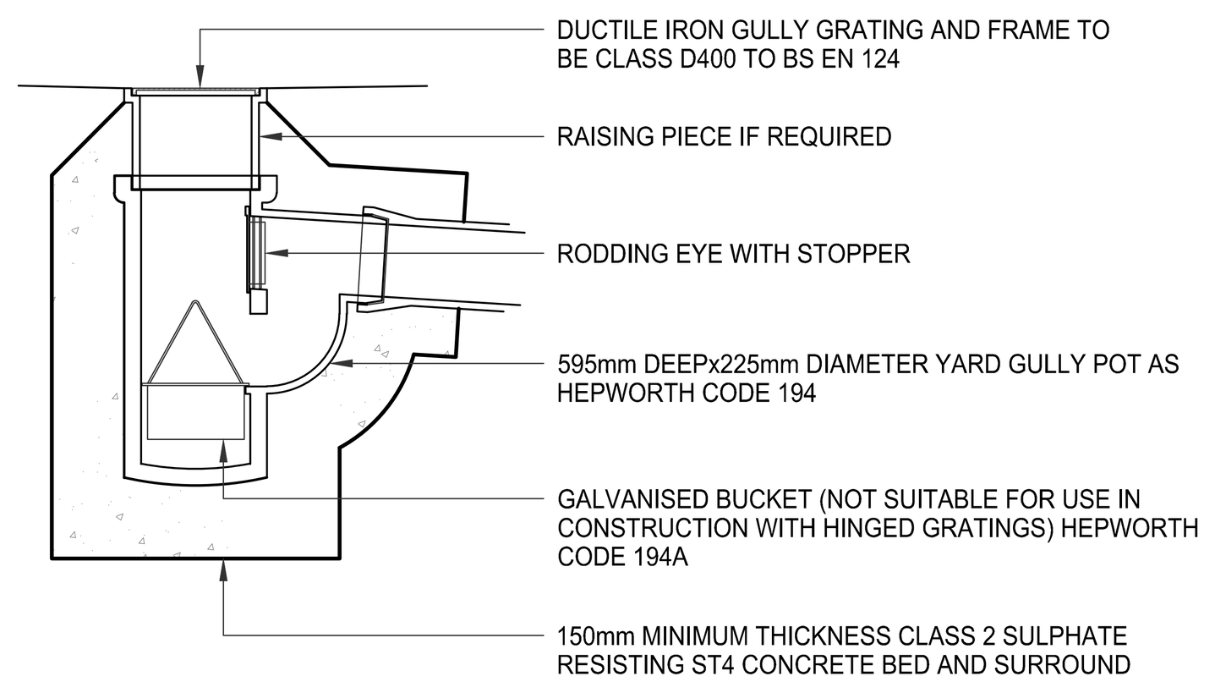


GRANULAR PIPE BEDDING DETAILS FOR FLEXIBLE PIPES - TYPE S

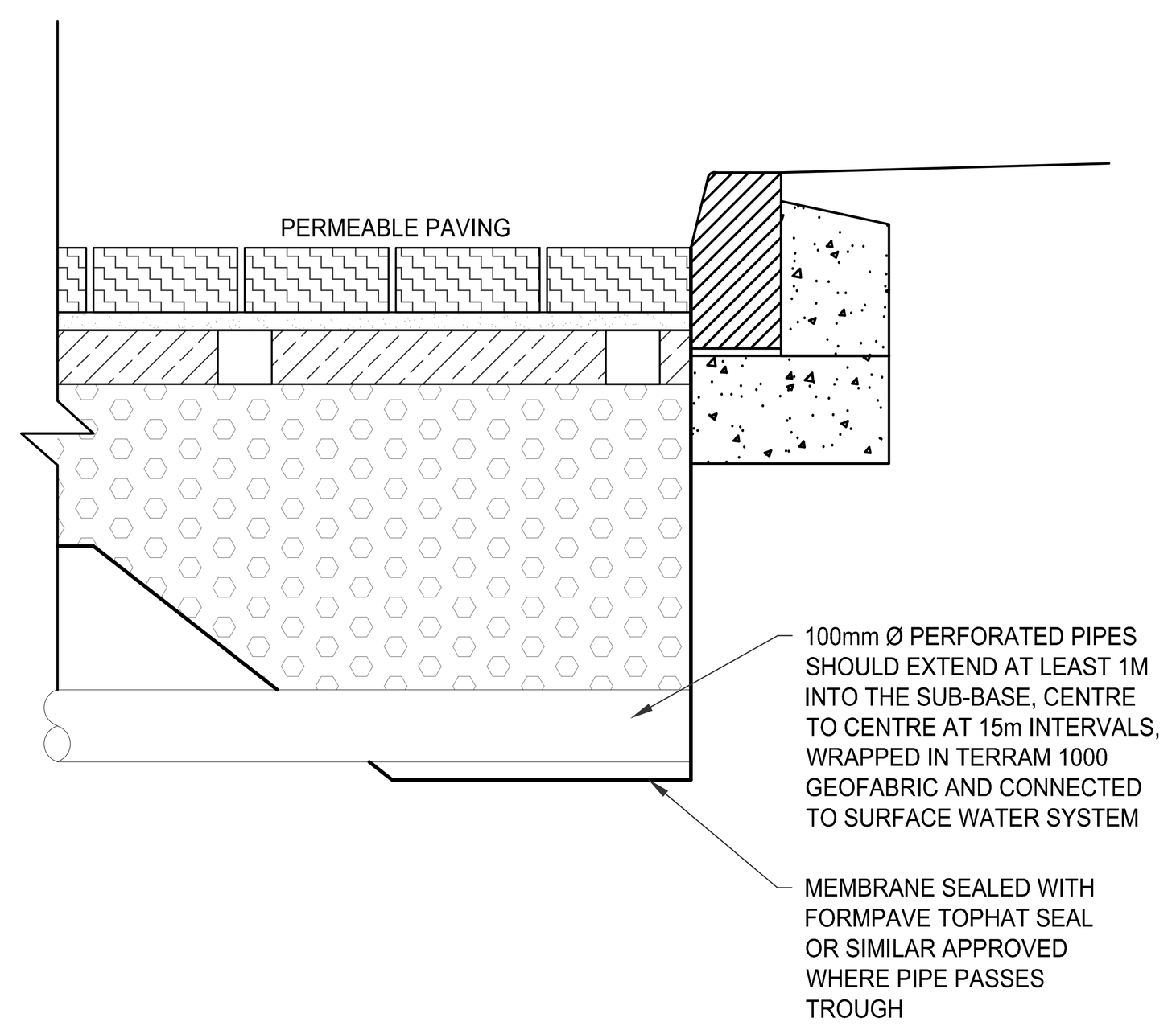
GRANULAR BEDDING & SIDE FILL MATERIALS FOR RIGID & FLEXIBLE PIPES		
PIPE DIAMETER (mm)	BEDDING CLASS	IMPORTED GRANULAR MATERIAL (NOTE 1)
100	S / B	10mm NOMINAL SIZE
> 100 TO 150	S / B	10 OR 14mm NOM. SINGLE SIZE OR 14 TO 5mm GRADED
> 150 TO 300	S / B	10,14,20mm NOM. SINGLE SIZE OR 14 TO 5mm GRADED OR 20 TO 5mm GRADED
> 300 TO 550	S / B	10,14,20mm NOM. SINGLE SIZE OR 14 TO 5mm GRADED OR 20 TO 5mm GRADED
> 550 (NOTE 2)	S / B	10,14,20mm NOM. SINGLE SIZE CRUSHED ROCK OR 14 TO 5mm GRADED OR 20 TO 5mm GRADED OR 40 TO 5mm GRADED

NOTES:

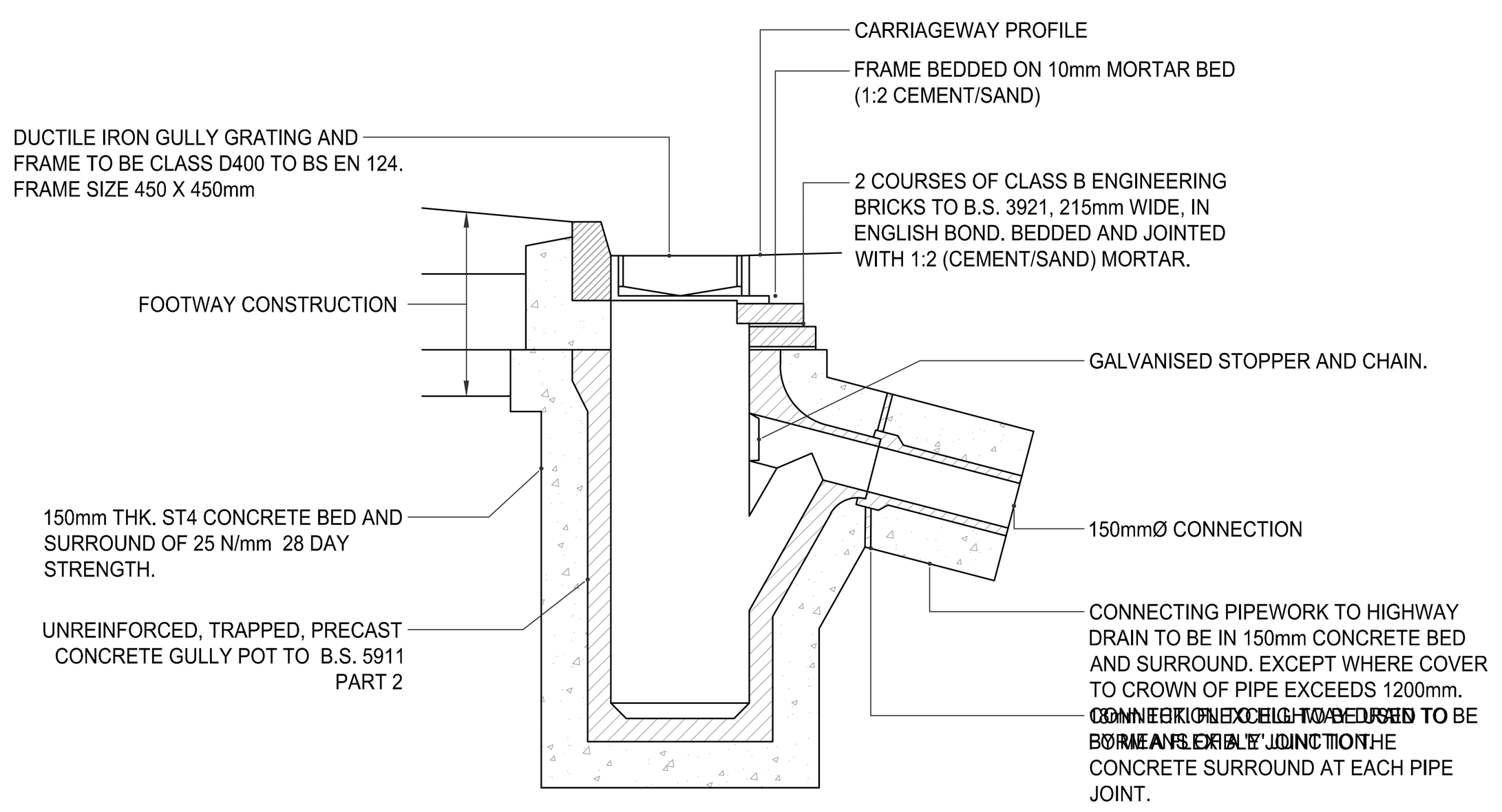
1. IMPORTED GRANULAR MATERAILS TO INCLUDE AGGREGATES TO BS 12620:2002, AIR-COOLED BLAST FURNACE SLAG TO BS 1047 & SINTERED PULVERIZED FUEL ASH TO BS EN 13055-1:2002
2. ANGULAR MATERIALS SHOULD BE CHOSEN TO ENSURE SUFFICIENT SUPPORT IS PROVIDED TO HEAVIER PIPES. CLASS S BEDDING SHALL BE USED WITH FLEXIBLE PIPES



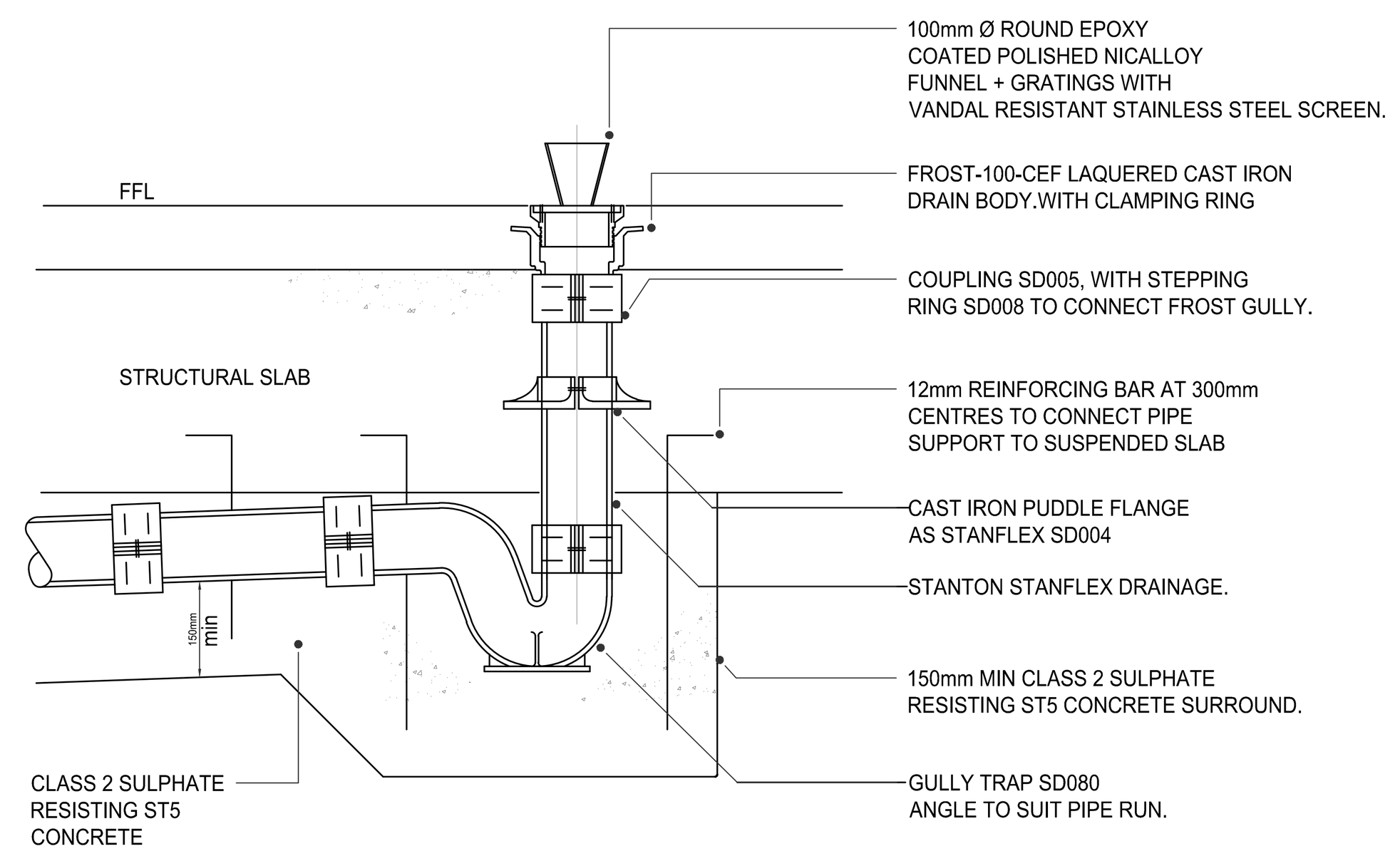
SCRUBBER DUMP AREA GULLY DETAIL
(1:20)



PERMEABLE PAVING COLLECTION PIPE DETAILS
(NOT TO SCALE)



SECTION THROUGH TYPICAL GULLY
450x900mm FOR ROAD GULLY, 375x750mm FOR CAR PARK GULLY
(SCALE 1:20)



TYPICAL CONDENSATE DRAINAGE GULLY DETAIL FOR SUSPENDED SLABS
(SCALE 1:10)

REV	DESCRIPTION	BY	CHK / APP	DATE
P02	UPDATED FOR NEW SITE PLAN	LR	AC	25.04.25
P01	ISSUED FOR INFORMATION	LR	AC	11.04.25

CLIENT
HALLWAY PROPERTIES LIMITED

PROJECT
LAND AT NORWAY LANE LITTLEHAMPTON

DRAWING TITLE
TYPICAL DRAINAGE DETAILS SHEET 1

PINNACLE CONSULTING ENGINEERS

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TELEPHONE: 01603 327 170
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DRAWING STATUS: INFORMATION				
SCALE @ A0	DATE	DRAWN BY	CHECKED	APPROVED
AS SHOWN	APR'25	LR	AC	AC
DRG NO. C240600684-PIN-XX-XX-DR-C-02402				REV. P02

PIN REF: C240600684

PRECAST MANHOLE CONSTRUCTION NOTES

1. OUTGOING PIPES GREATER THAN 600mm DIAMETER ARE TO BE FITTED WITH SAFETY CHAINS
2. WHERE SPECIFIED ON MANHOLE SCHEDULES, PROVIDE A 65mm DIAMETER PIPE 600mm LONG. BUILT INTO MANHOLE AT PIPE SOFFIT LEVEL TO DRAIN PIPE BED AND SURROUND.
3. SULPHATE RESISTING PORTLAND CEMENT SHALL BE USED FOR ALL CONCRETES AND MORTARS HAVING EQUIVALENT COMPRESSIVE STRENGTH OF 20N/mm² OR GREATER (INCLUDING PRECAST CONCRETE PRODUCTS).
4. REFER TO MANHOLE SCHEDULES FOR DETAILS OF COVERS, PIPE SIZES, INVERT LEVELS, MANHOLE DIAMETER ETC.
5. STEP IRONS ARE TO BE A MINIMUM OF 200mm FROM THE END OF THE WALL OF THE MANHOLE AND AT 250 OR 300 CTRS. STEP IRONS ARE TO BE TO BS 13101:2002 AND GALVANISED.
6. CHAMBER WIDTH MAY VARY. WIDTH SHALL BE INCREASED FOR PIPES LARGER THAN 225mm TO GIVE A MINIMUM BEARING WIDTH OF 225mm ON EACH SIDE, AND WHERE BRANCHES AND CHANGES IN DIRECTION OCCUR. BRICKWORK SHALL BE CORBELLED TO SUIT THE FRAME SIZE.
7. THE MANHOLE BASE IS TO BE SULPHATE RESISTING ST4 CONCRETE TO WHICH IS TO BE APPLIED A 25mm THICK HIGH STRENGTH CONCRETE TOPPING, BROUGHT UP TO A DENSE SMOOTH FACE AND NEATLY SHAPED TO ALL BRANCH CONNECTIONS. THE BENCHING SLOPE IS TO BE A MIN OF 1 IN 12.

PRECAST MANHOLE CONSTRUCTION NOTES

1. OUTGOING PIPES GREATER THAN 600mm DIAMETER ARE TO BE FITTED WITH SAFETY CHAINS
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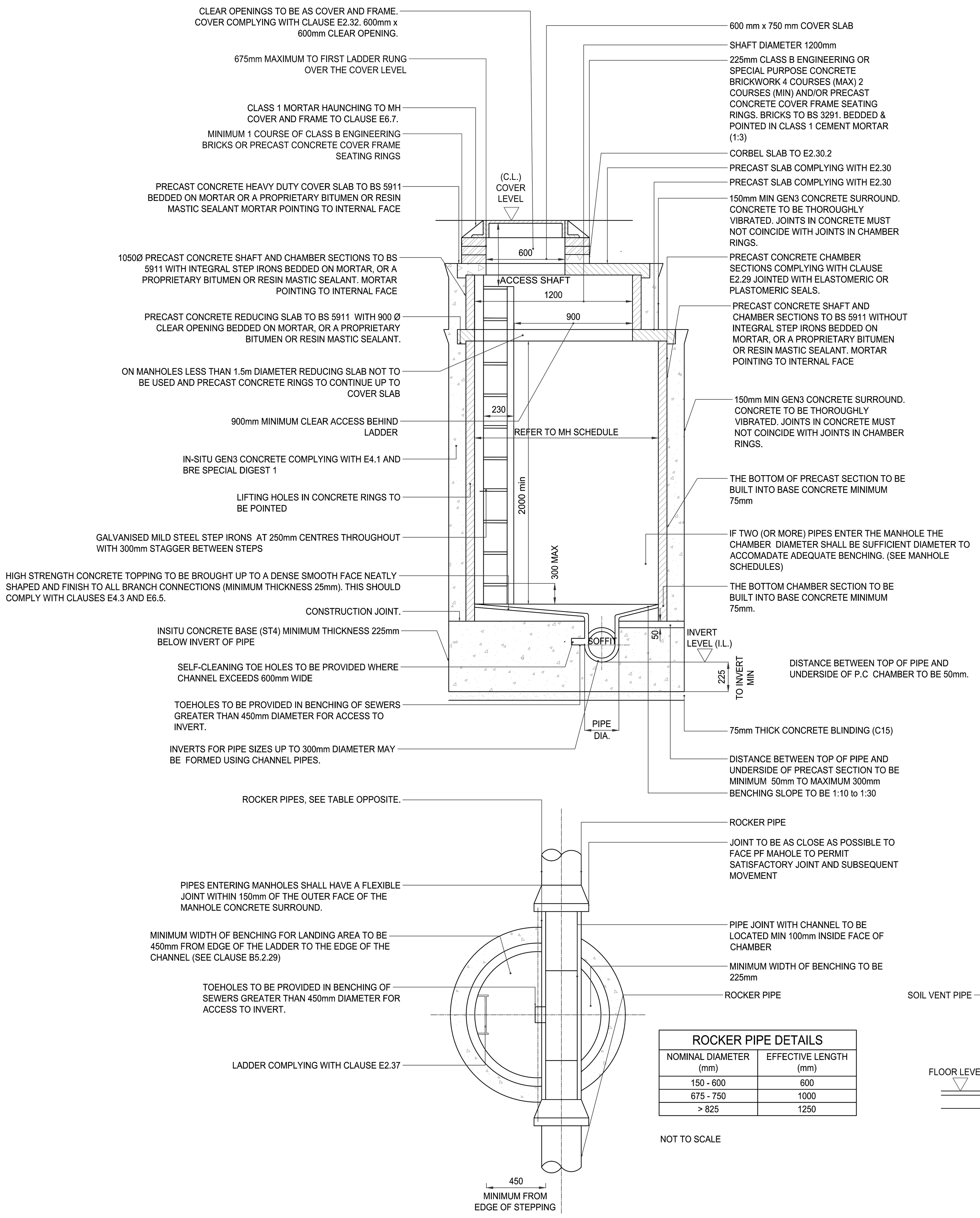
5. STEP IRONS ARE TO BE A MINIMUM OF 200mm FROM THE END OF THE WALL OF THE MANHOLE AND AT 250 OR 300 CTRS. STEP IRONS ARE TO BE TO BS 13101:2002 AND GALVANISED.
6. CHAMBER WIDTH MAY VARY. WIDTH SHALL BE INCREASED FOR PIPES LARGER THAN 225mm TO GIVE A MINIMUM BEARING WIDTH OF 225mm ON EACH SIDE, AND WHERE BRANCHES AND CHANGES IN DIRECTION OCCUR. BRICKWORK SHALL BE CORBELLED TO SUIT THE FRAME SIZE.
7. THE MANHOLE BASE IS TO BE SULPHATE RESISTING ST4 CONCRETE TO WHICH IS TO BE APPLIED A 25mm THICK HIGH STRENGTH CONCRETE TOPPING, BROUGHT UP TO A DENSE SMOOTH FACE AND NEATLY SHAPED TO ALL BRANCH CONNECTIONS. THE BENCHING SLOPE IS TO BE A MIN OF 1 IN 12.



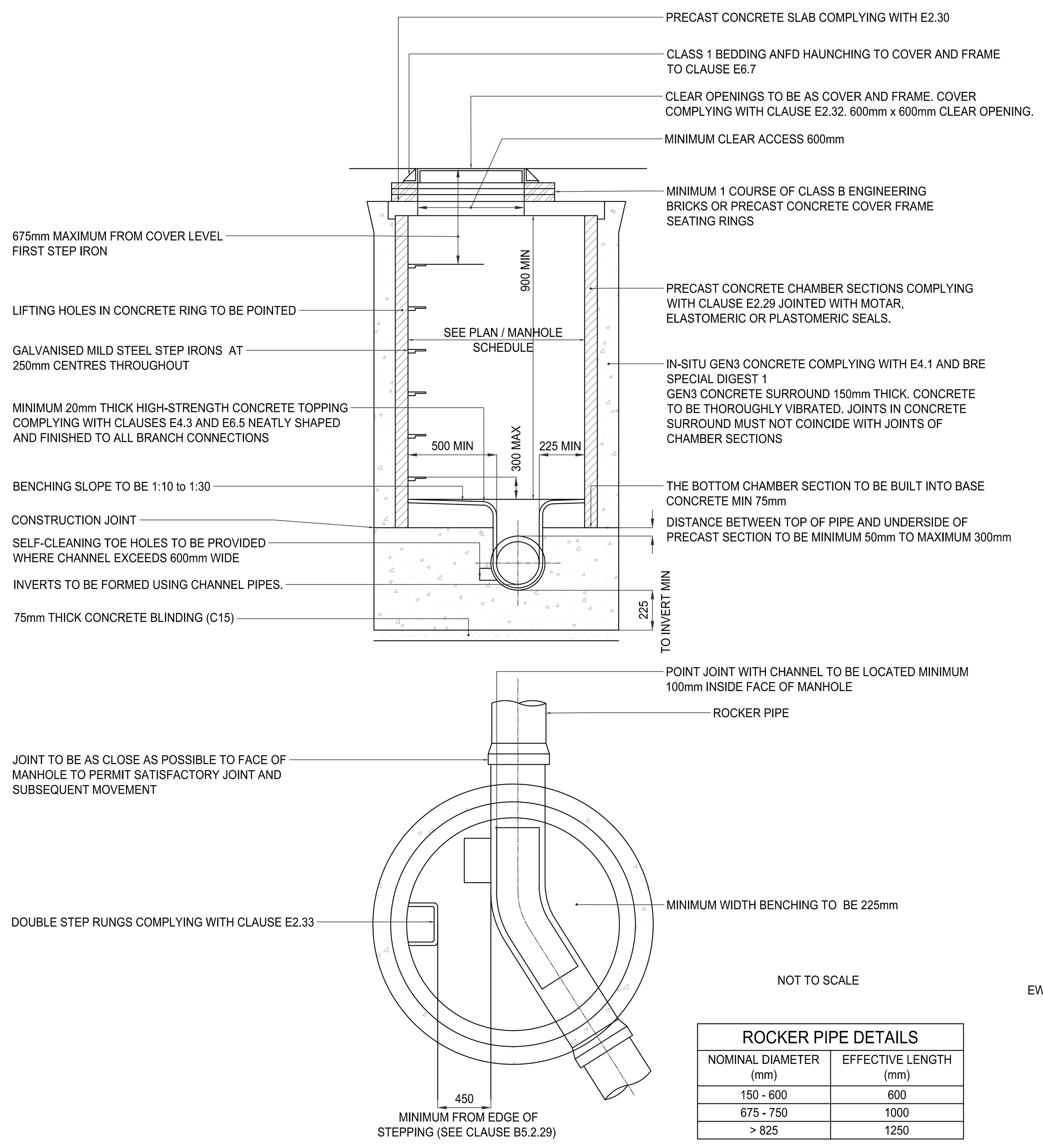
CLEAR OPENINGS TO BE AS COVER AND FRAME. COVER COMPLYING WITH CLAUSE E2.32. 600mm x 600mm CLEAR OPENING.
675mm MAXIMUM TO FIRST LADDER RUNG OVER THE COVER LEVEL
CLASS 1 MORTAR HAUNCHING TO MH COVER AND FRAME TO CLAUSE E6.7
MINIMUM 1 COURSE OF CLASS B ENGINEERING BRICKS OR PRECAST CONCRETE COVER FRAME SEATING RINGS
PRECAST CONCRETE HEAVY DUTY COVER SLAB TO BS 5911 BEDDED ON MORTAR OR A PROPRIETARY BITUMEN OR RESIN MASTIC SEALANT MORTAR POINTING TO INTERNAL FACE
1050Ø PRECAST CONCRETE SHAFT AND CHAMBER SECTIONS TO BS 5911 WITH INTEGRAL STEP IRONS BEDDED ON MORTAR, OR A PROPRIETARY BITUMEN OR RESIN MASTIC SEALANT. MORTAR POINTING TO INTERNAL FACE
PRECAST CONCRETE REDUCING SLAB TO BS 5911 WITH 900 Ø CLEAR OPENING BEDDED ON MORTAR, OR A PROPRIETARY BITUMEN OR RESIN MASTIC SEALANT.
ON MANHOLES LESS THAN 1.5m DIAMETER REDUCING SLAB NOT TO BE USED AND PRECAST CONCRETE RINGS TO CONTINUE UP TO COVER SLAB
900mm MINIMUM CLEAR ACCESS BEHIND LADDER
IN-SITU GEN3 CONCRETE COMPLYING WITH E4.1 AND BRE SPECIAL DIGEST 1
LIFTING HOLES IN CONCRETE RINGS TO BE POINTED
GALVANISED MILD STEEL STEP IRONS AT 250mm CENTRES THROUGHOUT WITH 300mm STAGGER BETWEEN STEPS
HIGH STRENGTH CONCRETE TOPPING TO BE BROUGHT UP TO A DENSE SMOOTH FACE NEATLY SHAPED AND FINISH TO ALL BRANCH CONNECTIONS (MINIMUM THICKNESS 25mm). THIS SHOULD COMPLY WITH CLAUSES E4.3 AND E6.5.
CONSTRUCTION JOINT.
INSITU CONCRETE BASE (ST4) MINIMUM THICKNESS 225mm BELOW INVERT OF PIPE
SELF-CLEANING TOE HOLES TO BE PROVIDED WHERE CHANNEL EXCEEDS 600mm WIDE
TOEHOLES TO BE PROVIDED IN BENCHING OF SEWERS GREATER THAN 450mm DIAMETER FOR ACCESS TO INVERT.
INVERTS FOR PIPE SIZES UP TO 300mm DIAMETER MAY BE FORMED USING CHANNEL PIPES.
(C.L.) COVER LEVEL
600
ACCESS SHAFT
1200
900
230
REFER TO MH SCHEDULE
2000 min
300 MAX
SOFFIT
INVERT LEVEL (I.L.)
225 TO INVERT MIN
PIPE DIA.
600 mm x 750 mm COVER SLAB
SHAFT DIAMETER 1200mm
225mm CLASS B ENGINEERING OR SPECIAL PURPOSE CONCRETE BRICKWORK 4 COURSES (MAX) 2 COURSES (MIN) AND/OR PRECAST CONCRETE COVER FRAME SEATING RINGS. BRICKS TO BS 3291. BEDDED & POINTED IN CLASS 1 CEMENT MORTAR (1:3)
CORBEL SLAB TO E2.30.2
PRECAST SLAB COMPLYING WITH E2.30
PRECAST SLAB COMPLYING WITH E2.30
150mm MIN GEN3 CONCRETE SURROUND. CONCRETE TO BE THOROUGHLY VIBRATED. JOINTS IN CONCRETE MUST NOT COINCIDE WITH JOINTS IN CHAMBER RINGS.
PRECAST CONCRETE CHAMBER SECTIONS COMPLYING WITH CLAUSE E2.29 JOINTED WITH ELASTOMERIC OR PLASTOMERIC SEALS.
PRECAST CONCRETE SHAFT AND CHAMBER SECTIONS TO BS 5911 WITHOUT INTEGRAL STEP IRONS BEDDED ON MORTAR, OR A PROPRIETARY BITUMEN OR RESIN MASTIC SEALANT. MORTAR POINTING TO INTERNAL FACE
150mm MIN GEN3 CONCRETE SURROUND. CONCRETE TO BE THOROUGHLY VIBRATED. JOINTS IN CONCRETE MUST NOT COINCIDE WITH JOINTS IN CHAMBER RINGS.
THE BOTTOM OF PRECAST SECTION TO BE BUILT INTO BASE CONCRETE MINIMUM 75mm
IF TWO (OR MORE) PIPES ENTER THE MANHOLE THE CHAMBER DIAMETER SHALL BE SUFFICIENT DIAMETER TO ACCOMADATE ADEQUATE BENCHING. (SEE MANHOLE SCHEDULES)
THE BOTTOM CHAMBER SECTION TO BE BUILT INTO BASE CONCRETE MINIMUM 75mm.
DISTANCE BETWEEN TOP OF PIPE AND UNDERSIDE OF P.C CHAMBER TO BE 50mm.
75mm THICK CONCRETE BLINDING (C15)
DISTANCE BETWEEN TOP OF PIPE AND UNDERSIDE OF PRECAST SECTION TO BE MINIMUM 50mm TO MAXIMUM 300mm
BENCHING SLOPE TO BE 1:10 to 1:30
ROCKER PIPES, SEE TABLE OPPOSITE.
ROCKER PIPE
JOINT TO BE AS CLOSE AS POSSIBLE TO FACE PF MANHOLE TO PERMIT SATISFACTORY JOINT AND SUBSEQUENT MOVEMENT
PIPES ENTERING MANHOLES SHALL HAVE A FLEXIBLE JOINT WITHIN 150mm OF THE OUTER FACE OF THE MANHOLE CONCRETE SURROUND.
MINIMUM WIDTH OF BENCHING FOR LANDING AREA TO BE 450mm FROM EDGE OF THE LADDER TO THE EDGE OF THE CHANNEL (SEE CLAUSE B5.2.29)
TOEHOLES TO BE PROVIDED IN BENCHING OF SEWERS GREATER THAN 450mm DIAMETER FOR ACCESS TO INVERT.
LADDER COMPLYING WITH CLAUSE E2.37
PIPE JOINT WITH CHANNEL TO BE LOCATED MIN 100mm INSIDE FACE OF CHAMBER
MINIMUM WIDTH OF BENCHING TO BE 225mm
ROCKER PIPE
450
MINIMUM FROM EDGE OF STEPPING

ROCKER PIPE DETAILS

NOMINAL DIAMETER (mm)	EFFECTIVE LENGTH (mm)
150 - 600	600
675 - 750	1000
> 825	1250

NOT TO SCALE

TYPICAL RING MANHOLE DETAIL
DEPTH TO SOFFIT 3.0 TO 6.0
(SCALE 1:20)

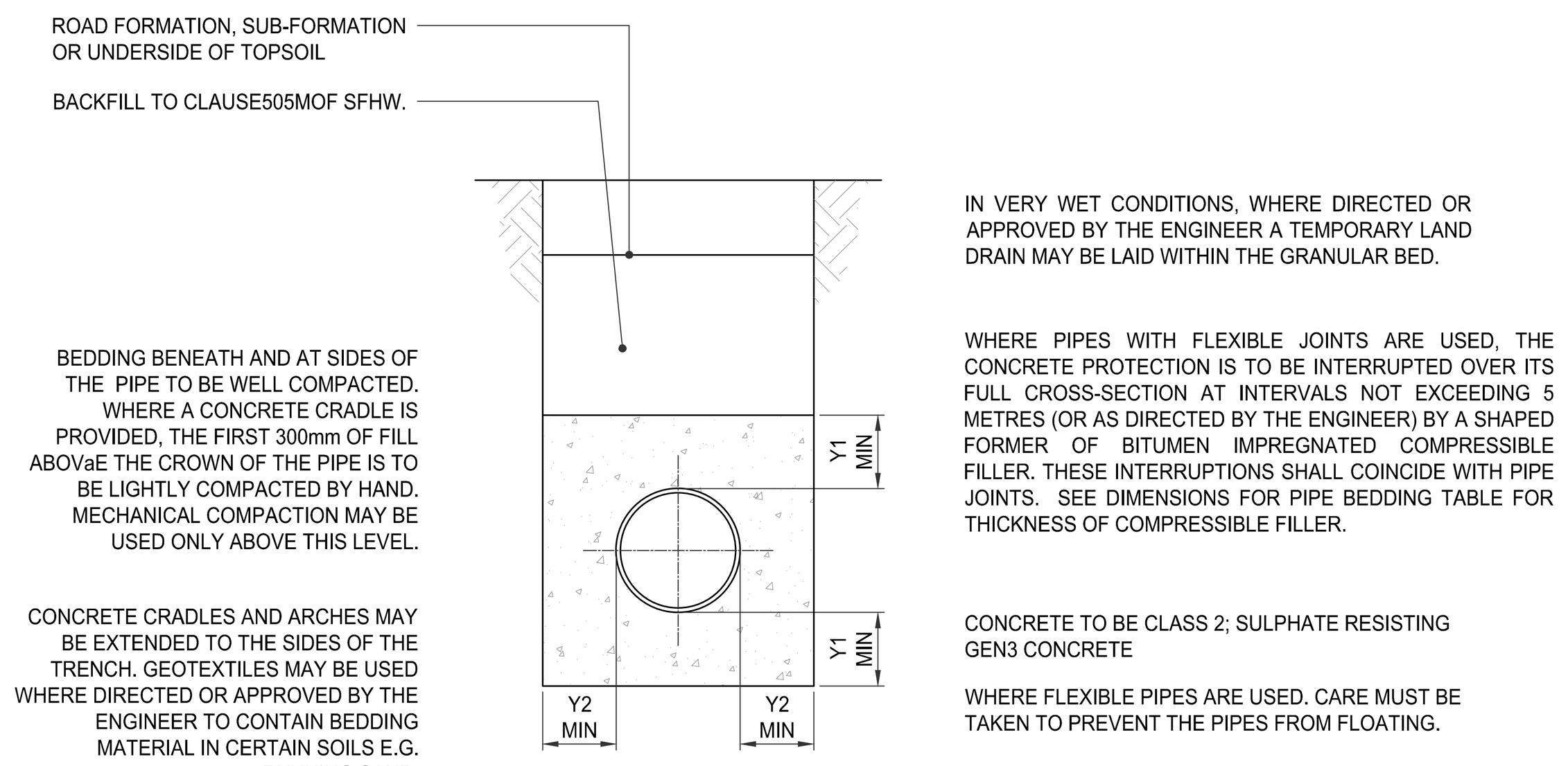


PRECAST CONCRETE SLAB COMPLYING WITH E2.30
CLASS 1 BEDDING ANFD HAUNCHING TO COVER AND FRAME TO CLAUSE E6.7
CLEAR OPENINGS TO BE AS COVER AND FRAME. COVER COMPLYING WITH CLAUSE E2.32. 600mm x 600mm CLEAR OPENING.
MINIMUM CLEAR ACCESS 600mm
MINIMUM 1 COURSE OF CLASS B ENGINEERING BRICKS OR PRECAST CONCRETE COVER FRAME SEATING RINGS
PRECAST CONCRETE CHAMBER SECTIONS COMPLYING WITH CLAUSE E2.29 JOINTED WITH MOTAR, ELASTOMERIC OR PLASTOMERIC SEALS.
IN-SITU GEN3 CONCRETE COMPLYING WITH E4.1 AND BRE SPECIAL DIGEST 1
GEN3 CONCRETE SURROUND 150mm THICK. CONCRETE TO BE THOROUGHLY VIBRATED. JOINTS IN CONCRETE SURROUND MUST NOT COINCIDE WITH JOINTS OF CHAMBER SECTIONS
THE BOTTOM CHAMBER SECTION TO BE BUILT INTO BASE CONCRETE MIN 75mm
DISTANCE BETWEEN TOP OF PIPE AND UNDERSIDE OF PRECAST SECTION TO BE MINIMUM 50mm TO MAXIMUM 300mm
675mm MAXIMUM FROM COVER LEVEL FIRST STEP IRON
LIFTING HOLES IN CONCRETE RING TO BE POINTED
GALVANISED MILD STEEL STEP IRONS AT 250mm CENTRES THROUGHOUT
MINIMUM 20mm THICK HIGH-STRENGTH CONCRETE TOPPING COMPLYING WITH CLAUSES E4.3 AND E6.5 NEATLY SHAPED AND FINISHED TO ALL BRANCH CONNECTIONS
BENCHING SLOPE TO BE 1:10 to 1:30
CONSTRUCTION JOINT
SELF-CLEANING TOE HOLES TO BE PROVIDED WHERE CHANNEL EXCEEDS 600mm WIDE
INVERTS TO BE FORMED USING CHANNEL PIPES.
75mm THICK CONCRETE BLINDING (C15)
900 MIN
SEE PLAN / MANHOLE SCHEDULE
500 MIN
300 MAX
225 MIN
225 TO INVERT MIN
POINT JOINT WITH CHANNEL TO BE LOCATED MINIMUM 100mm INSIDE FACE OF MANHOLE
ROCKER PIPE
JOINT TO BE AS CLOSE AS POSSIBLE TO FACE OF MANHOLE TO PERMIT SATISFACTORY JOINT AND SUBSEQUENT MOVEMENT
MINIMUM WIDTH BENCHING TO BE 225mm
DOUBLE STEP RUNGS COMPLYING WITH CLAUSE E2.33
NOT TO SCALE
450
MINIMUM FROM EDGE OF STEPPING (SEE CLAUSE B5.2.29)

ROCKER PIPE DETAILS

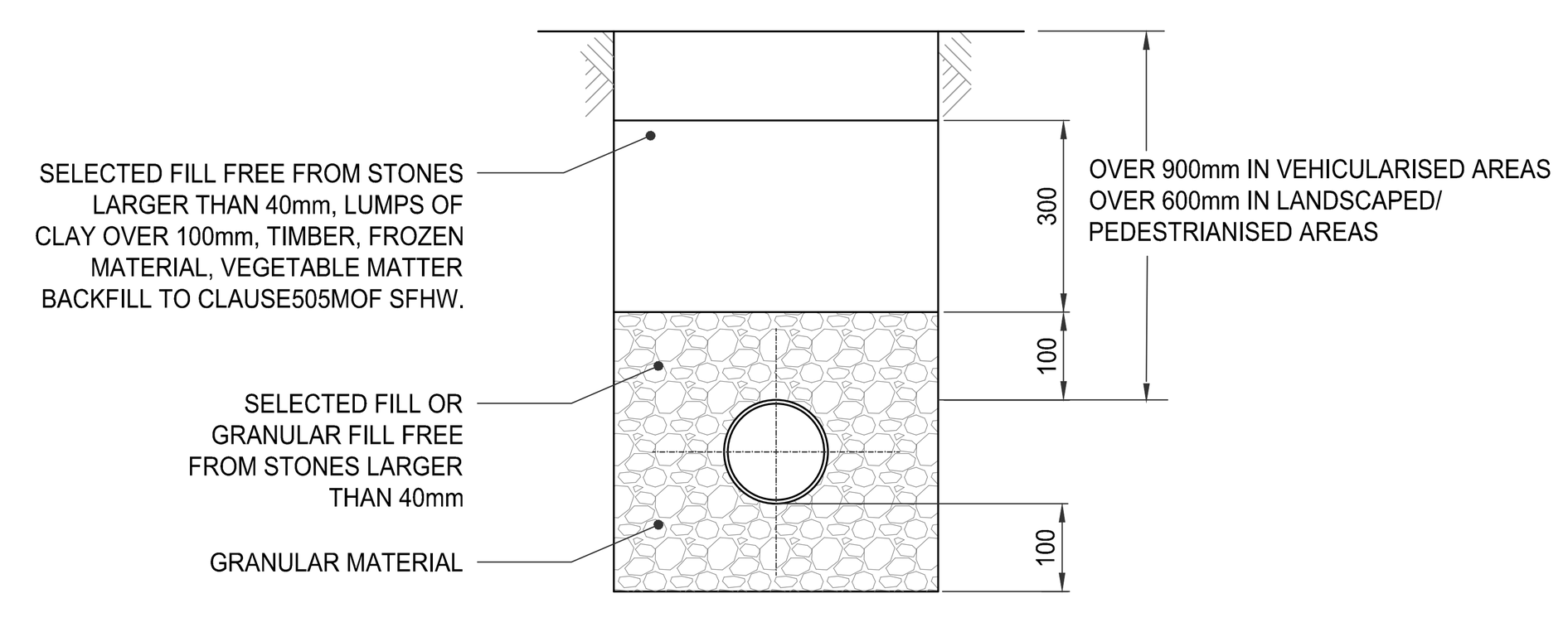
NOMINAL DIAMETER (mm)	EFFECTIVE LENGTH (mm)
150 - 600	600
675 - 750	1000
> 825	1250

TYPICAL PRECAST RING MANHOLE DETAIL
DEPTH TO SOFFIT 3.0m MAXIMUM
(SCALE 1:20)



ROAD FORMATION, SUB-FORMATION OR UNDERSIDE OF TOPSOIL
BACKFILL TO CLAUSE505MOF SFHW.
BEDDING BENEATH AND AT SIDES OF THE PIPE TO BE WELL COMPACTED. WHERE A CONCRETE CRADLE IS PROVIDED, THE FIRST 300mm OF FILL ABOVE THE CROWN OF THE PIPE IS TO BE LIGHTLY COMPACTED BY HAND. MECHANICAL COMPACTION MAY BE USED ONLY ABOVE THIS LEVEL.
CONCRETE CRADLES AND ARCHES MAY BE EXTENDED TO THE SIDES OF THE TRENCH. GEOTEXTILES MAY BE USED WHERE DIRECTED OR APPROVED BY THE ENGINEER TO CONTAIN BEDDING MATERIAL IN CERTAIN SOILS E.G. RUNNING SAND.
Y1 MIN
Y1 MIN
Y2 MIN
Y2 MIN
IN VERY WET CONDITIONS, WHERE DIRECTED OR APPROVED BY THE ENGINEER A TEMPORARY LAND DRAIN MAY BE LAID WITHIN THE GRANULAR BED.
WHERE PIPES WITH FLEXIBLE JOINTS ARE USED, THE CONCRETE PROTECTION IS TO BE INTERRUPTED OVER ITS FULL CROSS-SECTION AT INTERVALS NOT EXCEEDING 5 METRES (OR AS DIRECTED BY THE ENGINEER) BY A SHAPED FORMER OF BITUMEN IMPREGNATED COMPRESSIBLE FILLER. THESE INTERRUPTIONS SHALL COINCIDE WITH PIPE JOINTS. SEE DIMENSIONS FOR PIPE BEDDING TABLE FOR THICKNESS OF COMPRESSIBLE FILLER.
CONCRETE TO BE CLASS 2; SULPHATE RESISTING GEN3 CONCRETE
WHERE FLEXIBLE PIPES ARE USED, CARE MUST BE TAKEN TO PREVENT THE PIPES FROM FLOATING.

CLASS A CONCRETE BEDDING DETAILS
(SCALE 1:10)



SELECTED FILL FREE FROM STONES LARGER THAN 40mm, LUMPS OF CLAY OVER 100mm, TIMBER, FROZEN MATERIAL, VEGETABLE MATTER BACKFILL TO CLAUSE505MOF SFHW.
SELECTED FILL OR GRANULAR FILL FREE FROM STONES LARGER THAN 40mm
GRANULAR MATERIAL
300
100
100
OVER 900mm IN VEHICULARISED AREAS OVER 600mm IN LANDSCAPED/ PEDESTRIANISED AREAS

GRANULAR PIPE BEDDING DETAILS FOR FLEXIBLE PIPES - CLASS S
(SCALE 1:10)

GRANULAR BEDDING & SIDE FILL MATERIALS FOR RIGID & FLEXIBLE PIPES

PIPE DIAMETER (mm)	BEDDING CLASS	IMPORTED GRANULAR MATERIAL (NOTE 1)
100	S / B	10mm NOMINAL SIZE
> 100 TO 150	S / B	10 OR 14mm NOM. SINGLE SIZE OR 14 TO 5mm GRADED
> 150 TO 300	S / B	10,14,20mm NOM. SINGLE SIZE OR 14 TO 5mm GRADED OR 20 TO 5mm GRADED
> 300 TO 550	S / B	10,14,20mm NOM. SINGLE SIZE OR 14 TO 5mm GRADED OR 20 TO 5mm GRADED
> 550 (NOTE 2)	S / B	10,14,20mm NOM. SINGLE SIZE CRUSHED ROCK OR 14 TO 5mm GRADED OR 20 TO 5mm GRADED OR 40 TO 5mm GRADED

NOTES:

1. IMPORTED GRANULAR MATERAILS TO INCLUDE AGGREGATES TO BS 12620:2002, AIR-COOLED BLAST FURNACE SLAG TO BS 1047 & SINTERED PULVERIZED FUEL ASH TO BS EN 13055-1:2002
2. ANGULAR MATERIALS SHOULD BE CHOSEN TO ENSURE SUFFICIENT SUPPORT IS PROVIDED TO HEAVIER PIPES. CLASS S BEDDING SHALL BE USED WITH FLEXIBLE PIPES

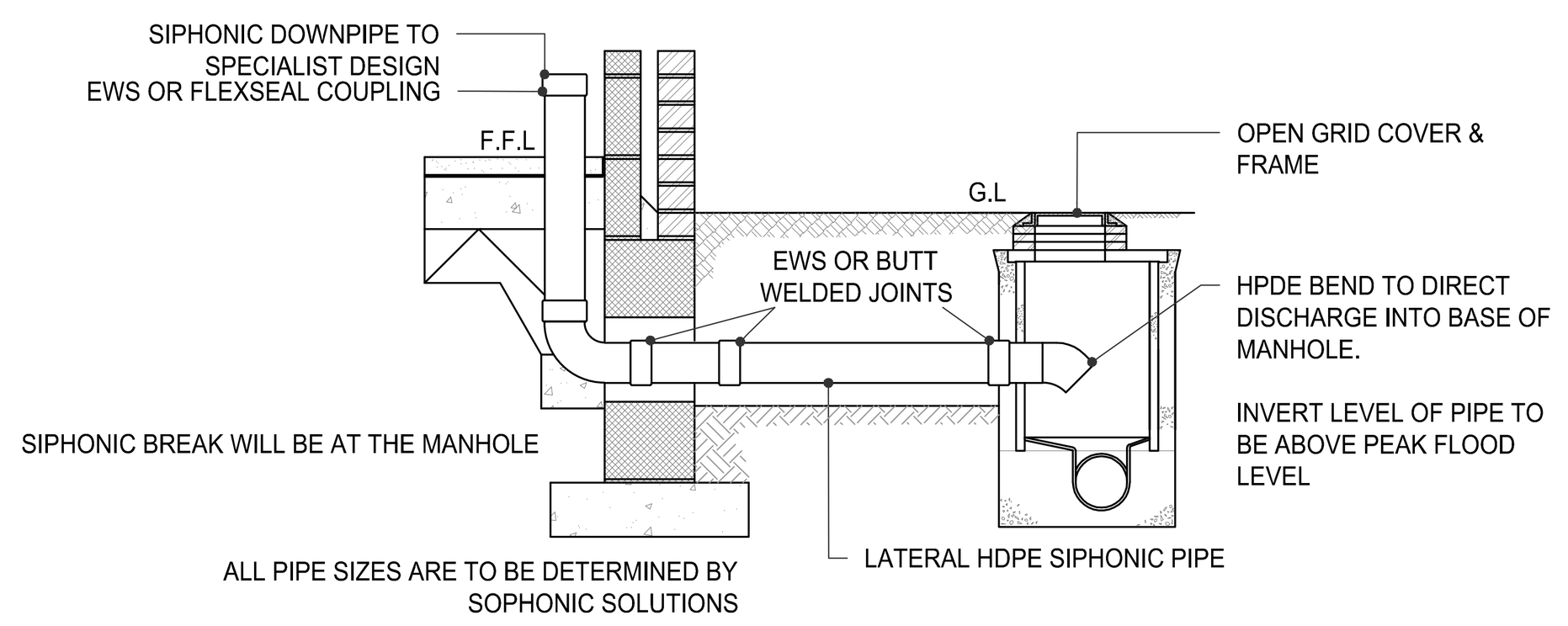
DIMENSIONS FOR CLASS A PIPE BEDDING

PIPE DIAMETER (mm)	Y1 MINIMUM (mm)	Y2 MINIMUM (mm)	MAXIMUM TRENCH WIDTH (mm)	L (mm)
100	100	200	700	181
150	100	200	750	18
200	100	200	800	18
225	100	200	825	18
250	100	200	850	18
300	100	200	925	18
350	100	200	1000	18
375	100	200	1090	18
400	150	200	1025	18
450	150	200	1175	36

FLEXIBLE JOINTS SHALL BE PROVIDED IN CONCRETE, BY INSERTING COMPRESSIBLE BOARD AT INTERVALS NOT EXCEEDING 5 METERS. PRECUT TO DIAMETER, HEIGHT AND WIDTH EQUAL TO THE CONCRETE CROSS SECTION. REFER TO DIMENSIONS FOR PIPE BEDDING TABLES FOR THICKNESS OF FILLER. FOR VALUES OF Y REFER TO DIMENSIONS FOR PIPE BEDDING TABLES

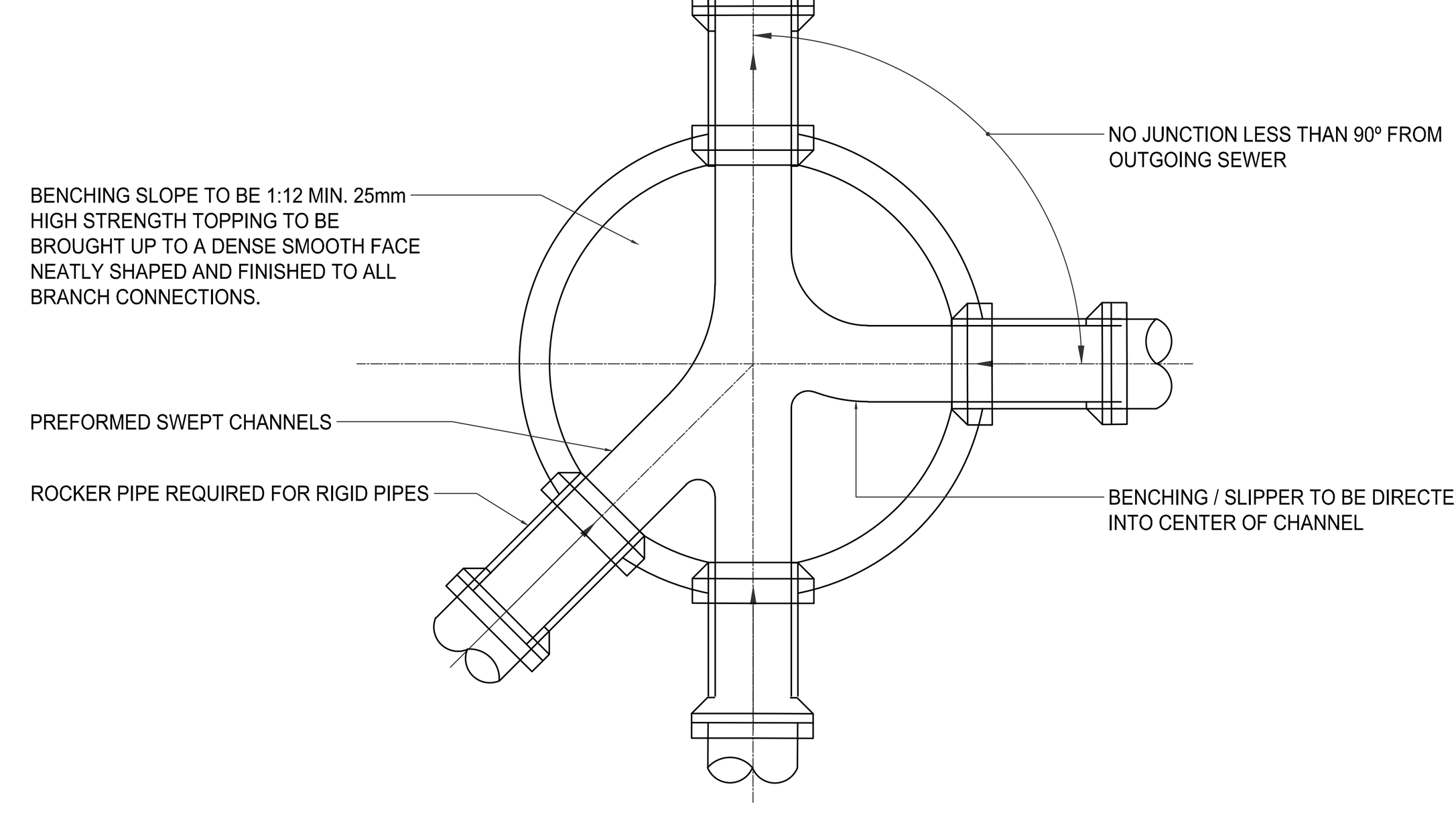
NOTES

1. THE CONFIGURATION OF THE SIPHONIC UNDERGROUND LINK IS PART OF THE SIPHONIC SYSTEM HYDRAULIC DESIGN. CHANGES MUST NOT BE MADE TO THE SUPPLIED/SPECIFIED PIPEWORK WITHOUT THE PRIOR AGREEMENT OF THE SIPHONIC DESIGNER.
2. PIPE MATERIAL SPECIFICATION IS HDPE (HIGH DENSITY POLYETHYLENE) UNLESS STATED OTHERWISE.
3. THE LATERAL PIPE IS LAID LEVEL UNLESS STATED OTHERWISE.



SIPHONIC DOWNPIPE TO SPECIALIST DESIGN
EWS OR FLEXSEAL COUPLING
F.F.L
G.L
OPEN GRID COVER & FRAME
EWS OR BUTT WELDED JOINTS
HPDE BEND TO DIRECT DISCHARGE INTO BASE OF MANHOLE.
INVERT LEVEL OF PIPE TO BE ABOVE PEAK FLOOD LEVEL
SIPHONIC BREAK WILL BE AT THE MANHOLE
LATERAL HDPE SIPHONIC PIPE
ALL PIPE SIZES ARE TO BE DETERMINED BY SOPHONIC SOLUTIONS

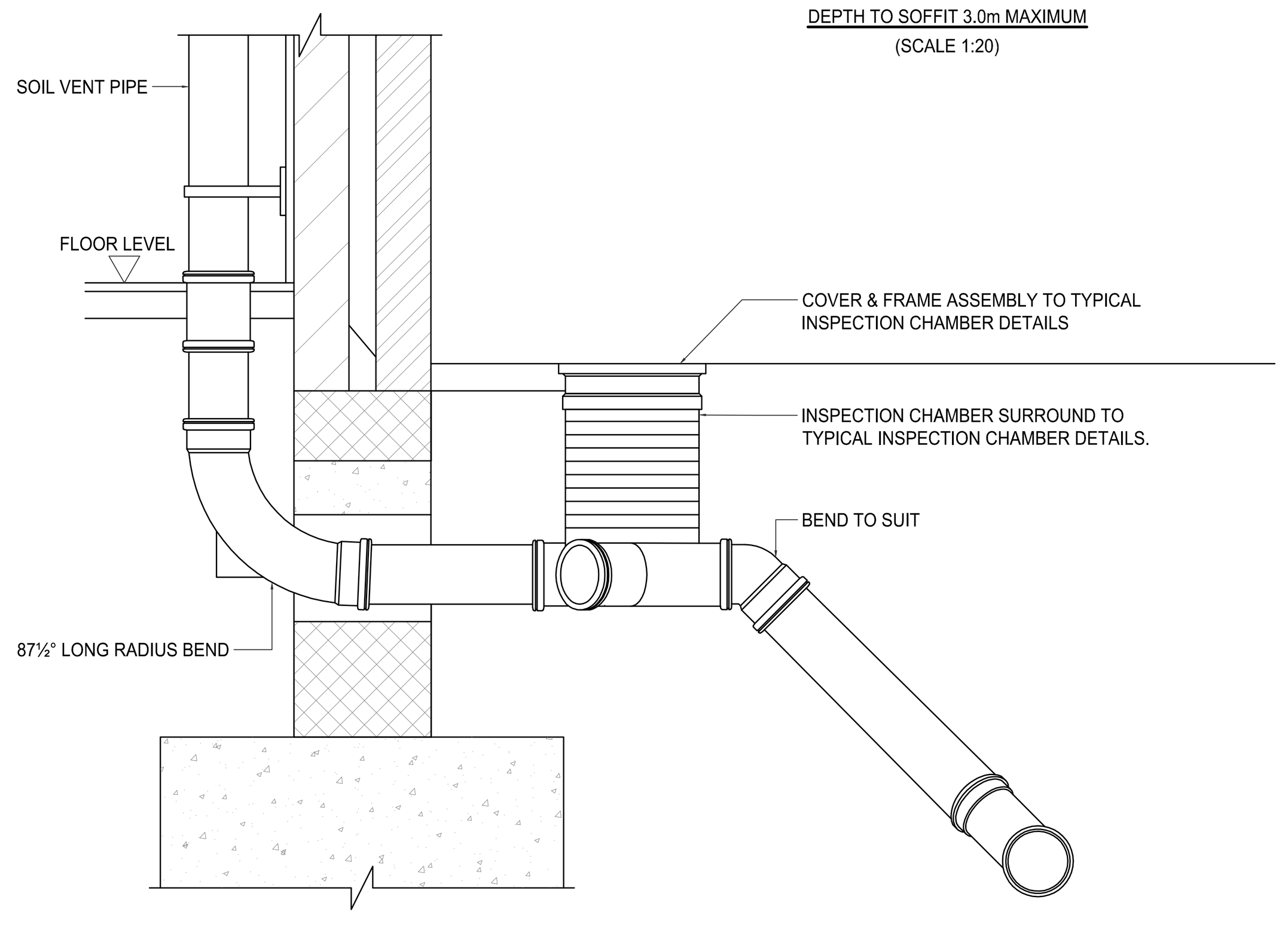
TYPICAL SIPHONIC UNDERGROUND CONNECTION
TERMINATE AT MANHOLE
(NOT TO SCALE)



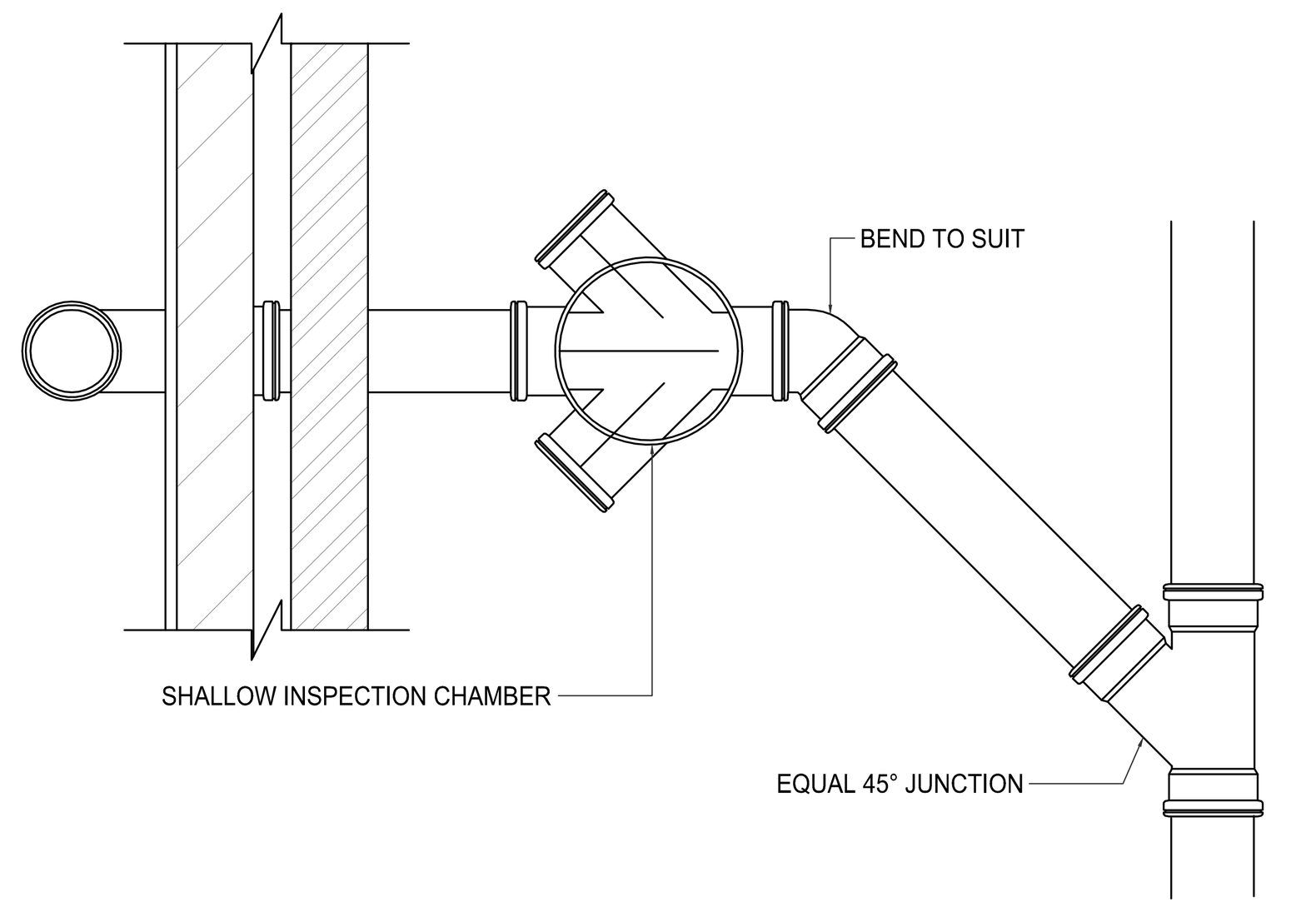
BENCHING SLOPE TO BE 1:12 MIN. 25mm HIGH STRENGTH TOPPING TO BE BROUGHT UP TO A DENSE SMOOTH FACE NEATLY SHAPED AND FINISHED TO ALL BRANCH CONNECTIONS.
PREFORMED SWEPT CHANNELS
ROCKER PIPE REQUIRED FOR RIGID PIPES
NO JUNCTION LESS THAN 90° FROM OUTGOING SEWER
BENCHING / SLIPPER TO BE DIRECTED INTO CENTER OF CHANNEL

NOMINAL DIAMETER (mm)	MAXIMUM EFFECTIVE LENGTH (m)
150 - 600	0.600
601 - 750	1.000
> 750	1.250

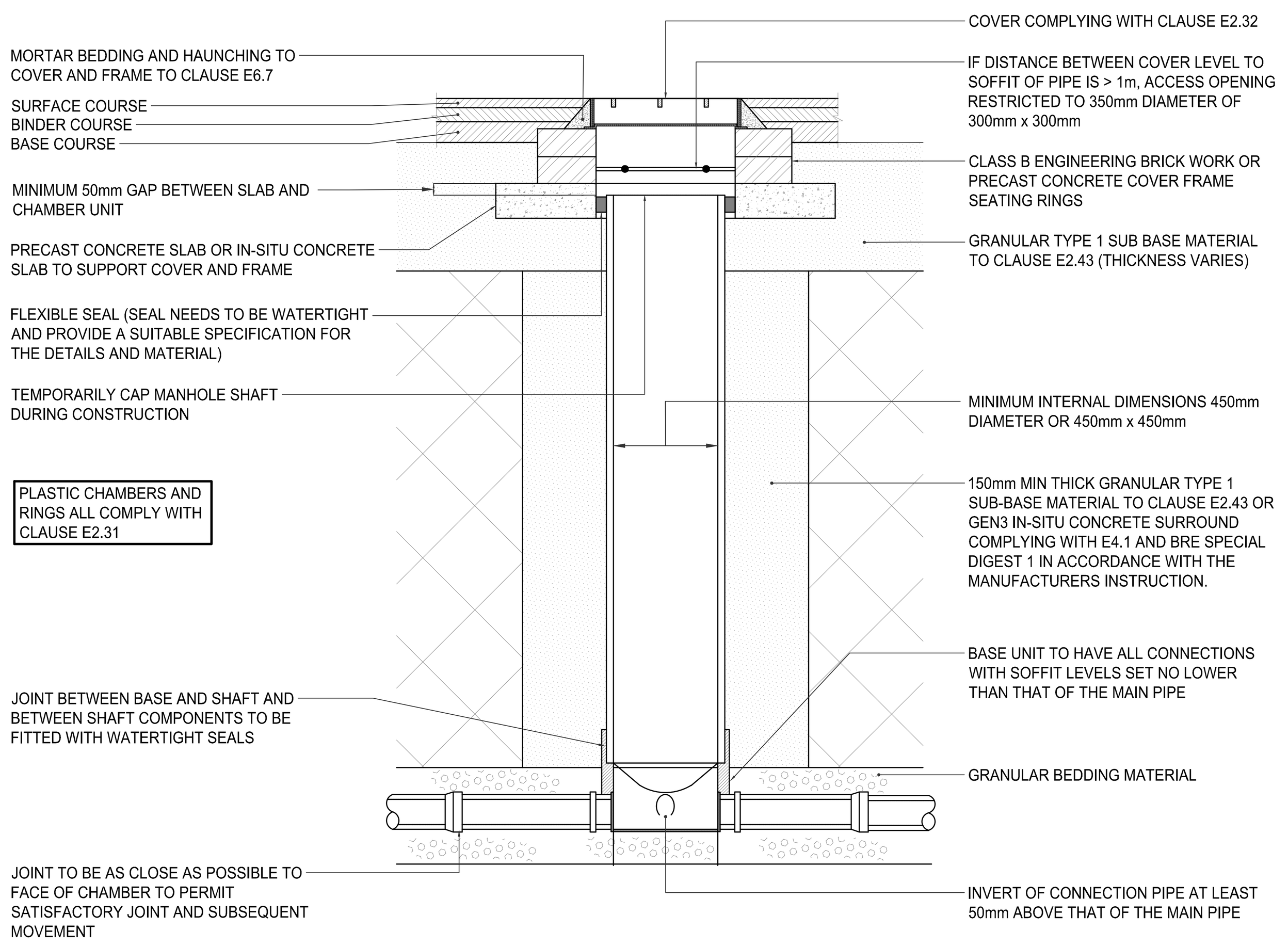
TYPICAL SECTIONAL PLAN ARRANGEMENT OF PIPE JUNCTIONS WITHIN MANHOLES
(SCALE 1:20)



TYPICAL SECTION VIEW OF SHALLOW INSPECTION CHAMBER

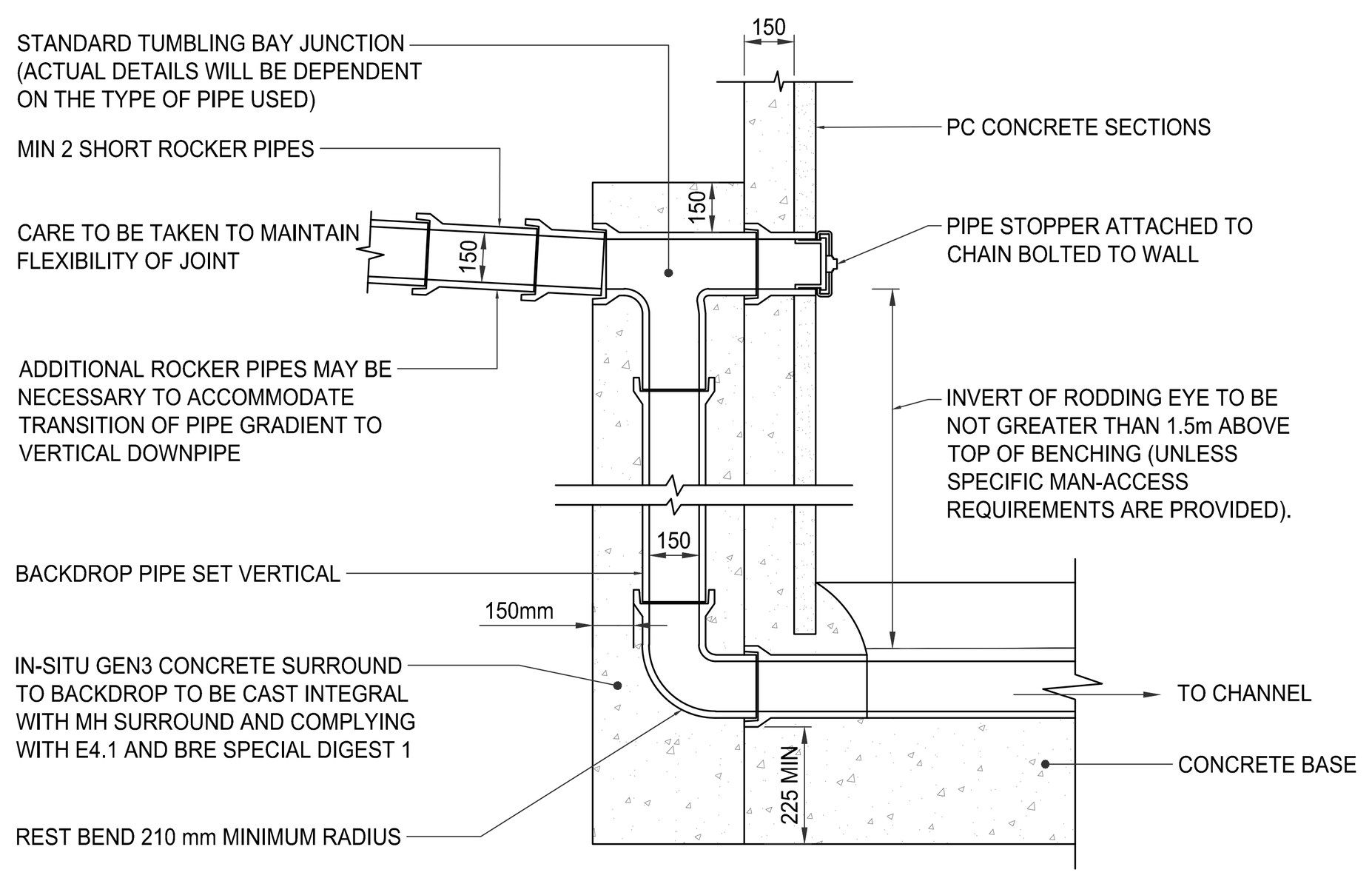


PLAN VIEW OF TYPICAL SHALLOW INSPECTION CHAMBER DETAILS



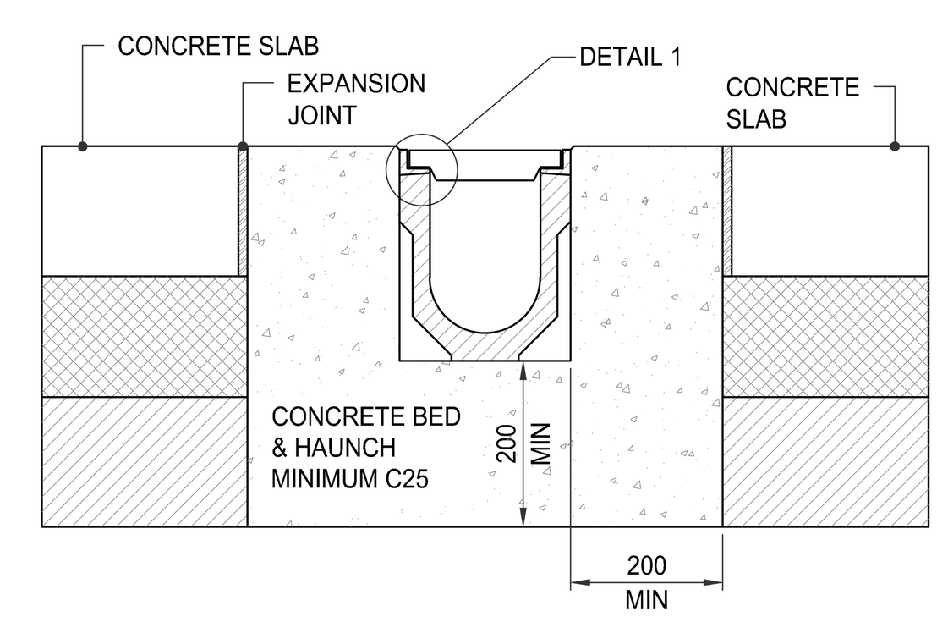
MORTAR BEDDING AND HAUNCHING TO COVER AND FRAME TO CLAUSE E6.7
SURFACE COURSE
BINDER COURSE
BASE COURSE
MINIMUM 50mm GAP BETWEEN SLAB AND CHAMBER UNIT
PRECAST CONCRETE SLAB OR IN-SITU CONCRETE SLAB TO SUPPORT COVER AND FRAME
FLEXIBLE SEAL (SEAL NEEDS TO BE WATERTIGHT AND PROVIDE A SUITABLE SPECIFICATION FOR THE DETAILS AND MATERIAL)
TEMPORARILY CAP MANHOLE SHAFT DURING CONSTRUCTION
PLASTIC CHAMBERS AND RINGS ALL COMPLY WITH CLAUSE E2.31
JOINT BETWEEN BASE AND SHAFT AND BETWEEN SHAFT COMPONENTS TO BE FITTED WITH WATERTIGHT SEALS
JOINT TO BE AS CLOSE AS POSSIBLE TO FACE OF CHAMBER TO PERMIT SATISFACTORY JOINT AND SUBSEQUENT MOVEMENT
COVER COMPLYING WITH CLAUSE E2.32
IF DISTANCE BETWEEN COVER LEVEL TO SOFFIT OF PIPE IS > 1m, ACCESS OPENING RESTRICTED TO 350mm DIAMETER OF 300mm x 300mm
CLASS B ENGINEERING BRICK WORK OR PRECAST CONCRETE COVER FRAME SEATING RINGS
GRANULAR TYPE 1 SUB BASE MATERIAL TO CLAUSE E2.43 (THICKNESS VARIES)
MINIMUM INTERNAL DIMENSIONS 450mm DIAMETER OR 450mm x 450mm
150mm MIN THICK GRANULAR TYPE 1 SUB-BASE MATERIAL TO CLAUSE E2.43 OR GEN3 IN-SITU CONCRETE SURROUND COMPLYING WITH E4.1 AND BRE SPECIAL DIGEST 1 IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTION.
BASE UNIT TO HAVE ALL CONNECTIONS WITH SOFFIT LEVELS SET NO LOWER THAN THAT OF THE MAIN PIPE
GRANULAR BEDDING MATERIAL
INVERT OF CONNECTION PIPE AT LEAST 50mm ABOVE THAT OF THE MAIN PIPE

TYPICAL INSPECTION CHAMBER DETAIL - TYPE D (FLEXIBLE MATERIAL DETAIL)
MAXIMUM DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE IN AREAS SUBJECT TO VEHICLE LOADING 3.0m, NON ENTRY
(SCALE 1:20)

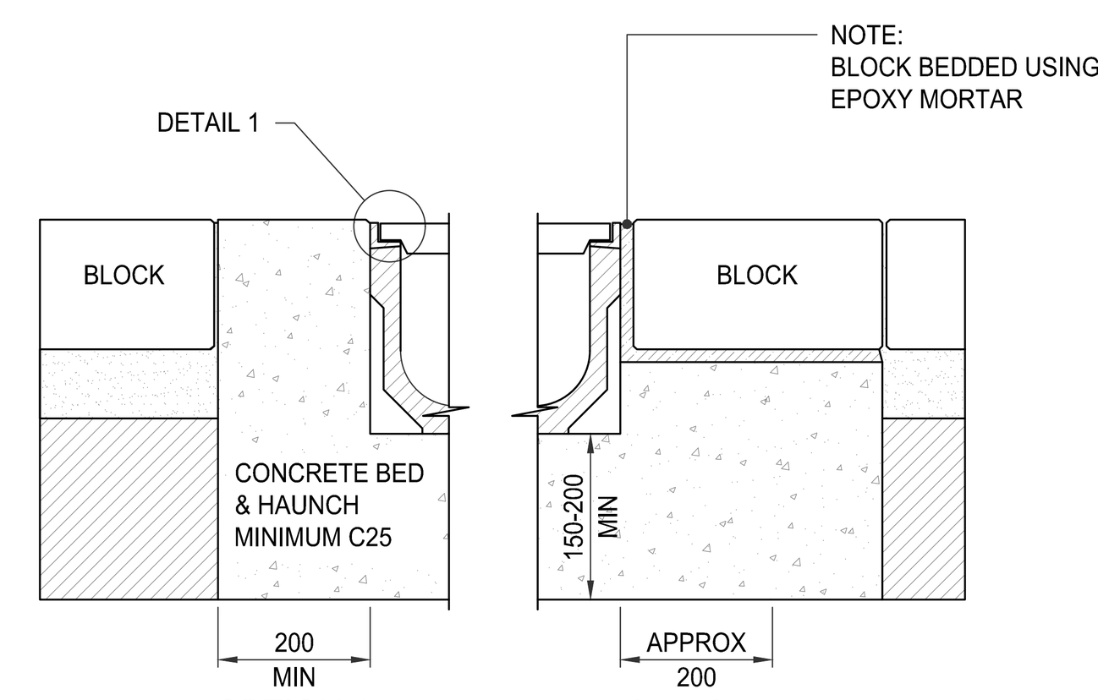


STANDARD TUMBLING BAY JUNCTION (ACTUAL DETAILS WILL BE DEPENDENT ON THE TYPE OF PIPE USED)
MIN 2 SHORT ROCKER PIPES
CARE TO BE TAKEN TO MAINTAIN FLEXIBILITY OF JOINT
ADDITIONAL ROCKER PIPES MAY BE NECESSARY TO ACCOMMODATE TRANSITION OF PIPE GRADIENT TO VERTICAL DOWNPIPE
BACKDROP PIPE SET VERTICAL
IN-SITU GEN3 CONCRETE SURROUND TO BACKDROP TO BE CAST INTEGRAL WITH MH SURROUND AND COMPLYING WITH E4.1 AND BRE SPECIAL DIGEST 1
REST BEND 210 mm MINIMUM RADIUS
150
150
150
150mm
225 MIN
PC CONCRETE SECTIONS
PIPE STOPPER ATTACHED TO CHAIN BOLTED TO WALL
INVERT OF RODDING EYE TO BE NOT GREATER THAN 1.5m ABOVE TOP OF BENCHING (UNLESS SPECIFIC MAN-ACCESS REQUIREMENTS ARE PROVIDED).
TO CHANNEL
CONCRETE BASE

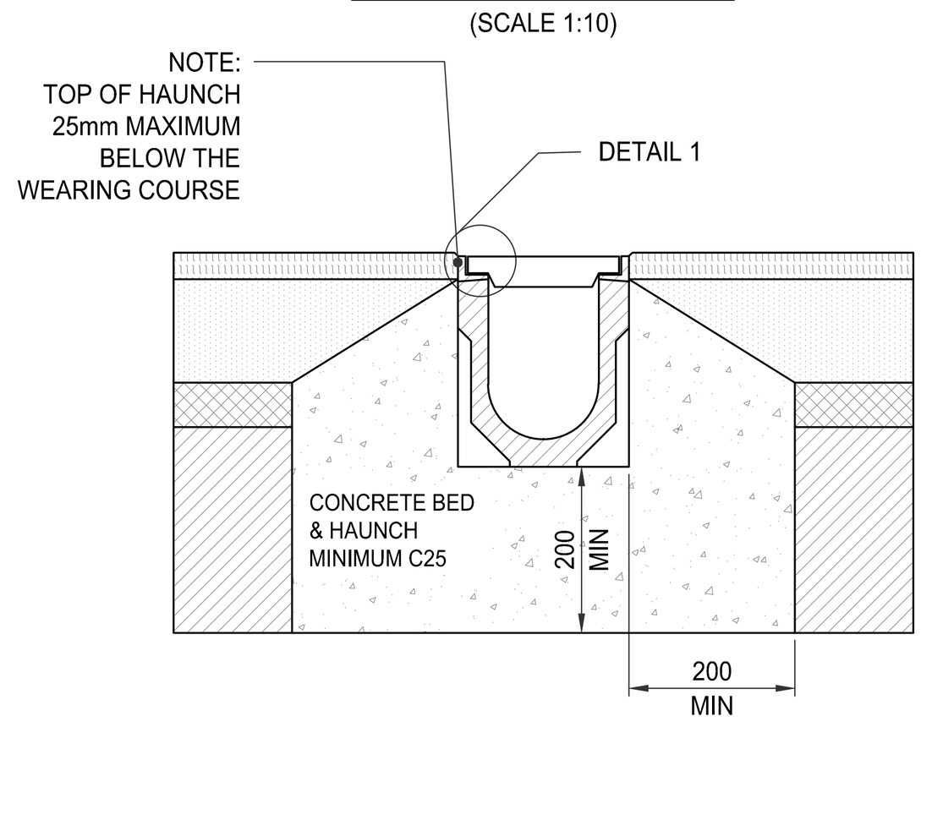
TYPICAL VERTICAL BACKDROP DETAIL (RIGID MATERIALS) FOR USE IN MANHOLES
(SCALE 1:20)



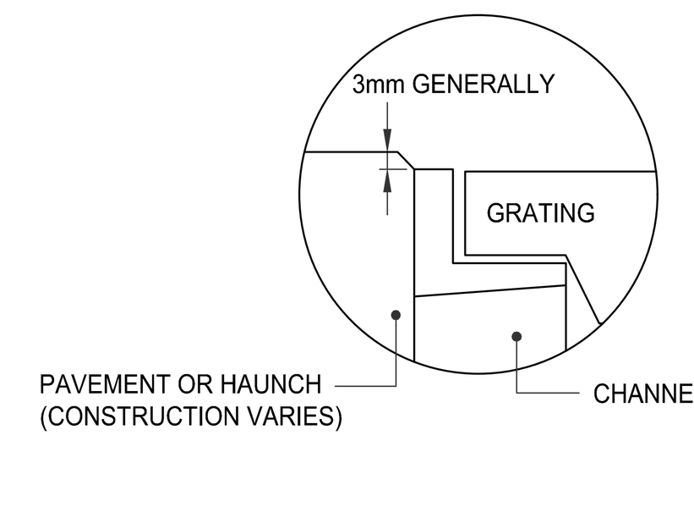
CONCRETE PAVEMENT
(SCALE 1:10)



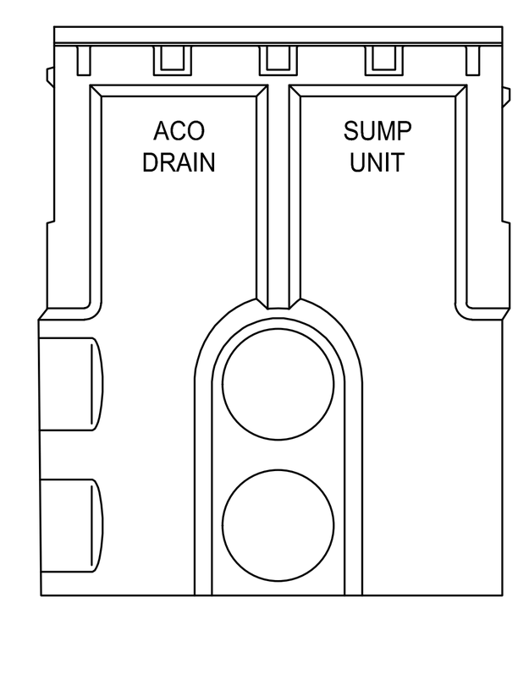
BLOCK PAVEMENT
(SCALE 1:10)



ASPHALT PAVEMENT
(SCALE 1:10)



DETAIL 1
(NOT TO SCALE)



ACO DRAIN SUMP UNIT

ACO DRAINAGE CHANNEL DETAILS

GENERAL NOTES

1. DO NOT SCALE THIS DRAWING. WORK ONLY TO FIGURED DIMENSIONS.
2. FOR ALL RELEVANT NOTES, REFER TO STRUCTURAL AND CIVIL ENGINEERING PERFORMANCE SPECIFICATION.
3. ANY DISCREPANCIES ARE TO BE REPORTED TO PINNACLE CONSULTING ENGINEERS IMMEDIATELY.
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERS, ARCHITECTS AND SUB-CONTRACTORS DRAWINGS AND DETAILS.
5. THIS DRAWING IS TO BE PRINTED IN COLOUR.
6. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION PURPOSES UNLESS EXPRESSLY STATED.

REV	DESCRIPTION	BY	CHK / APP	DATE
P02	UPDATED FOR NEW SITE PLAN	LR	AC	25.04.25
P01	ISSUED FOR INFORMATION	LR	AC	11.04.25

CLIENT
HALLWAY PROPERTIES LIMITED

PROJECT
LAND AT NORWAY LANE
LITTLEHAMPTON

DRAWING TITLE
TYPICAL DRAINAGE DETAILS
SHEET 2

PINNACLE
CONSULTING ENGINEERS

PINNACLE HOUSE,
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DRAWING STATUS				
INFORMATION				
SCALE @ A0	DATE	DRAWN BY	CHECKED	APPROVED
AS SHOWN	APR'25	LR	AC	AC
DRG NO. C240600684-PIN-XX-XX-DR-C-02402				REV. P02

PIN REF: C240600684

Appendix K – Proposed Site Finish Levels Plan