

Technical design note

Project name	Symmetry Park, Bicester Phase 3		
Design note title	Drainage Technical Note		
Document reference	22281-HYD-XX-XX-TN-C-0003		
Author	AB		
Revision	02		
Date	29 January 2025	Approved	✓

Technical note is to address objection received from Oxfordshire County Council Lead Local Flood Authority (OCC LLFA) dated 02.01.2025 in relation to application no. 24/03259/F for Land Adjacent to Symmetry Park, Morrell Way, Bicester, OX26 6GF.

Comments and responses as follows;

1. Provide surface water catchment plan.

Hydrock Response: Please refer to the Catchment plan, drawing number 22281-HYD-XX-XX-DR-C-0530 in Appendix C of the Drainage Strategy Report submitted as part of the original submission. This drawing shows the full extent of impermeable catchment areas, the area of each is labelled (in ha) and the catchment naming corresponds to the pipe where each catchment is draining to. This also matches what has been modelled in Microdrainage (refer to Appendix D of the Drainage Strategy Report).

2. Provide contact details of private management company.

Hydrock Response: Private Management Company for this phase of works is an extension of the existing adjoining phases of development. Private Management Company is Savills, contact Lucy Breakspear, Property Manager at Savills, Wytham Court, 11 West Way, Oxford, OX2 0QL, email address below.

lucy.breakspear@savills.com

3. All proposed SuDS to be maintained by private management company.

Hydrock Response: As above, Private Management Company for this phase of works is an extension of the existing adjoining phases of development. Private Management Company is Savills. All proposed SuDS and below ground drainage infrastructure will be maintained by Savills as required by the LLFA. Whilst responsibility is with Savills, tenants are also required to be responsible in the use of the site and ensure they are not contributing or adversely impacting the drainage network. Tenants are therefore also listed as responsible under some maintenance components, for example to ensure the site is kept clean and tidy of litter and debris that can enter the drainage system.

4. Provide detailed calculations for all proposed SuDS and drainage infrastructure.

Hydrock Response: Please refer to the Drainage Calculations in Appendix B of the Drainage Strategy Report submitted as part of the original submission. The catchments modelled in microdrainage match the catchments shown on the catchment plan, drawing number 22281-HYD-XX-XX-DR-C-0530 in Appendix C. Microdrainage data and results within Appendix B lists all model inputs, pipe numbers, proposed attenuation and calculations for all storm events up to and including the 1 in 100yr + 40% climate change event.

5. Provide surface water flood exceedance plan.

Hydrock Response: Please refer to the Flood Exceedance Plan, drawing 22281-HYD-XX-XX-DR-C-0540 in Appendix C within the Drainage Strategy Report submitted as part of the original submission. This plan shows the surface water flood extents in the 100yr +40% CC event, the location, extents and depth as per the modelled results from Microdrainage. These flood waters are safely contained onsite until they can re-enter the system once the storm subsides. The Flood exceedance plan also shows overland flow routes, illustrating how surface water will be draining across the site.

6. Provide consent from relevant party to discharge surface water

Hydrock Response: The Ditch is in the Client's ownership.

Application no: 24/03259/F

Location: Land Adjacent to Symmetry Park, Morrell Way, Bicester, OX26 6GF

Lead Local Flood Authority

Recommendation:

Objection

Key issues:

- Provide surface water catchment plan.
- Provide contact details of private management company.
- All proposed SuDS to be maintained by private management company.
- Provide detailed calculations for all proposed SuDS and drainage infrastructure.
- Provide surface water flood exceedance plan.
- Provide consent from relevant party to discharge surface water.

Detailed comments:

Provide surface water catchment plan, clearly showing the extent of the impermeable area and stating the area. Each catchment should show where it will be draining.

Provide details of the private management company.

SuDS can't be maintained by tenants and should be conducted by a professional management company. Update the maintenance regime accordingly.

Proposed Calculations to read in line with the catchment plan produced, clearly referencing pipe numbers and SuDS. Calculations to be provided for all storm events up to and including the 1:100 year plus 40% climate change.

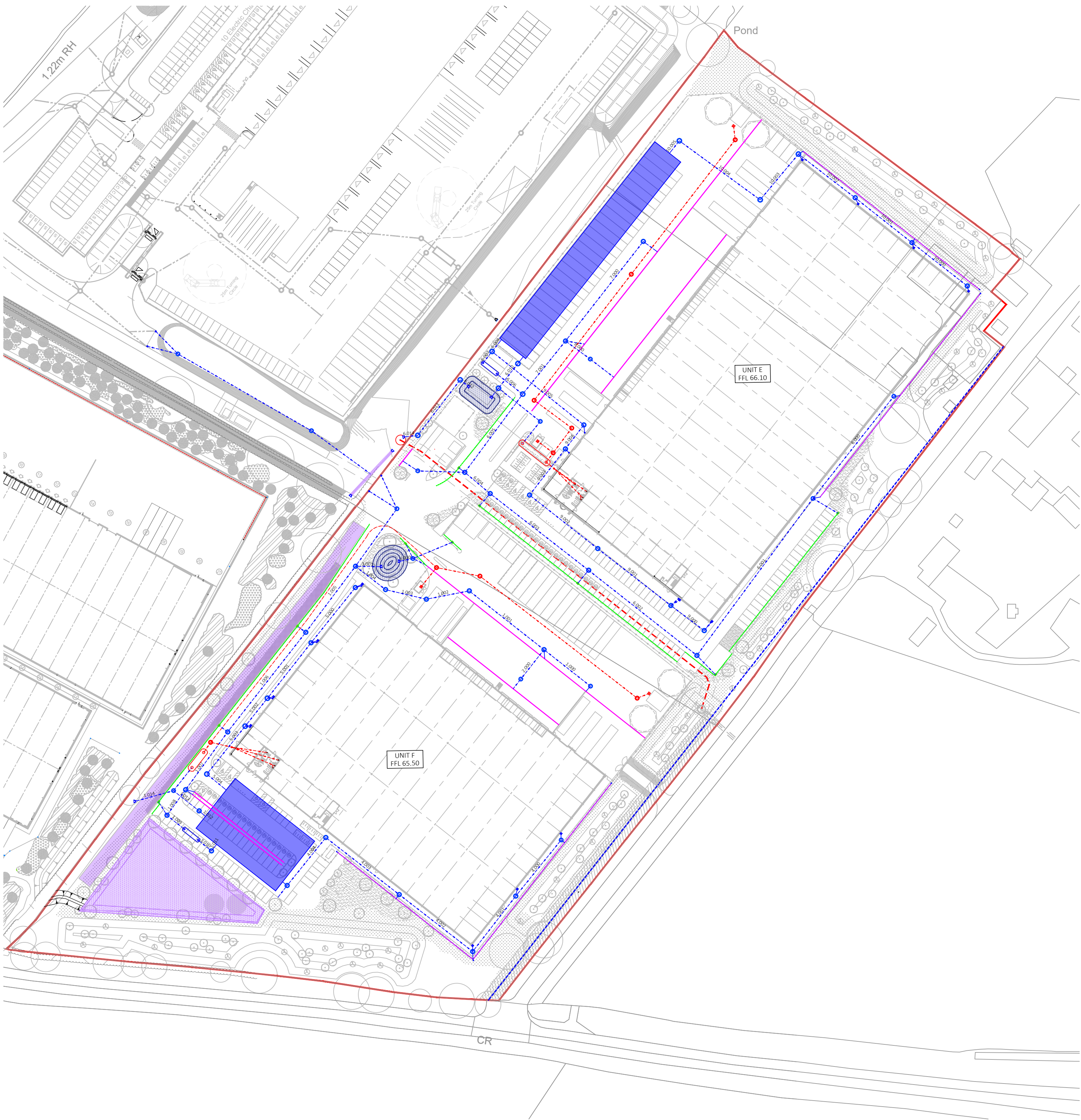
Provide flood exceedance plan, showing how surface water will be draining with the use of flood arrows.

The LLFA do not own drainage assets. Provide consent from relevant party to discharge surface water.

Officer's Name: Kabier Salam

Officer's Title: LLFA Engineer

Date: 02/01/2025



- LEGEND**
- FOUL WATER SEWER
 - FOUL WATER MANHOLE
 - FOUL WATER INSPECTION CHAMBER
 - FOUL WATER CONNECTION
 - SURFACE WATER SEWER
 - SURFACE WATER MANHOLE
 - SURFACE WATER INSPECTION CHAMBER
 - SURFACE WATER SEWER (>600mm)
 - SURFACE WATER RISING MAIN
 - FOUL WATER RISING MAIN
 - SURFACE WATER CHANNEL TO MANUFACTURER SPECIFICATION UNO
 - G GULLY
 - RG ROAD GULLY
 - RE SURFACE WATER RODDING EYE
 - RWP SURFACE WATER CONNECTION
 - ATTENUATION BASIN/TANK
 - BD BACK DROP
 - FG PROPOSED FOUL WATER FLOOR GULLY
 - LAND DRAIN (100mm DIAMETER PERFORATED PIPE)
 - HEADWALL
 - EXISTING SEWER/DRAINAGE FROM PREVIOUS PHASE
 - KERB INLET DRAIN
 - CLASS 1 FULL RETENTION SEPARATOR WITH ALARM
 - FOUL TREATMENT WORKS
 - SMALL ATTENUATION POND/BIO-RETENTION AREA
 - SWALE
 - x IL XX.XX PIPE INVERT LEVEL
 - FLOOD COMPENSATION BASIN

NOTES

- THIS DRAWING IS NOT TO BE SCALED.
- TO BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS.
- ALL DIMENSIONS ARE TO BE CHECKED ON SITE BEFORE THE COMMENCEMENT OF WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT AND ENGINEER FOR VERIFICATION. FIGURED DIMENSIONS ONLY ARE TO BE TAKEN FROM THIS DRAWING.
- 'MARKED UP' DRAWINGS ARE TO BE PROVIDED TO THE ENGINEER UPON COMPLETION TO ENABLE PRODUCTION OF 'AS BUILT' DRAWING IN ACCORDANCE WITH CONSTRUCTION (DESIGN & MANAGEMENT): 2015 REGULATIONS 22(j).
- ALL LEVELS ARE TO TOPOGRAPHICAL SURVEY.
- COVER LEVELS SHOWN ARE APPROXIMATE.
COVER LEVELS FOR MANHOLES WITHIN LANDSCAPED AREAS SHOULD BE CHECKED WITH THE LANDSCAPE ARCHITECTS.
COVERS SHOULD BE ADJUSTED TO MATCH SURROUNDING FINISH LEVELS.

- DESIGN OF THE DRAINAGE CHANNELS, FOUL AND SURFACE CONNECTIONS IS INDICATIVE ONLY AND IS SUBJECT TO DETAILED DESIGN.
- FOR DETAILS OF MANHOLE TYPES AND PIPE BEDDING ETC, SEE STANDARD DETAIL DRAWING(S).
- CELLULAR STORAGE IS BASED UPON A PROPRIETARY PRODUCT AND IS SUBJECT TO DETAILED DESIGN.
- SITE LAYOUT BASED ON LATEST ARCHITECT DRAWING "PROPOSED SITE PLAN" DRAWING REF. 4036-X3-001 Phase 3 Site Layout - 18-09-24 BY pHp Architects DATED 18.09.2024.

REVISIONS					
P02	REVISED PLANNING	20/11/24	AB	AB	CK
P01	PLANNING	19/09/24	MC	AB	CK
Rev.	Revision Notes	Date	Drawn By	Checked	Approved

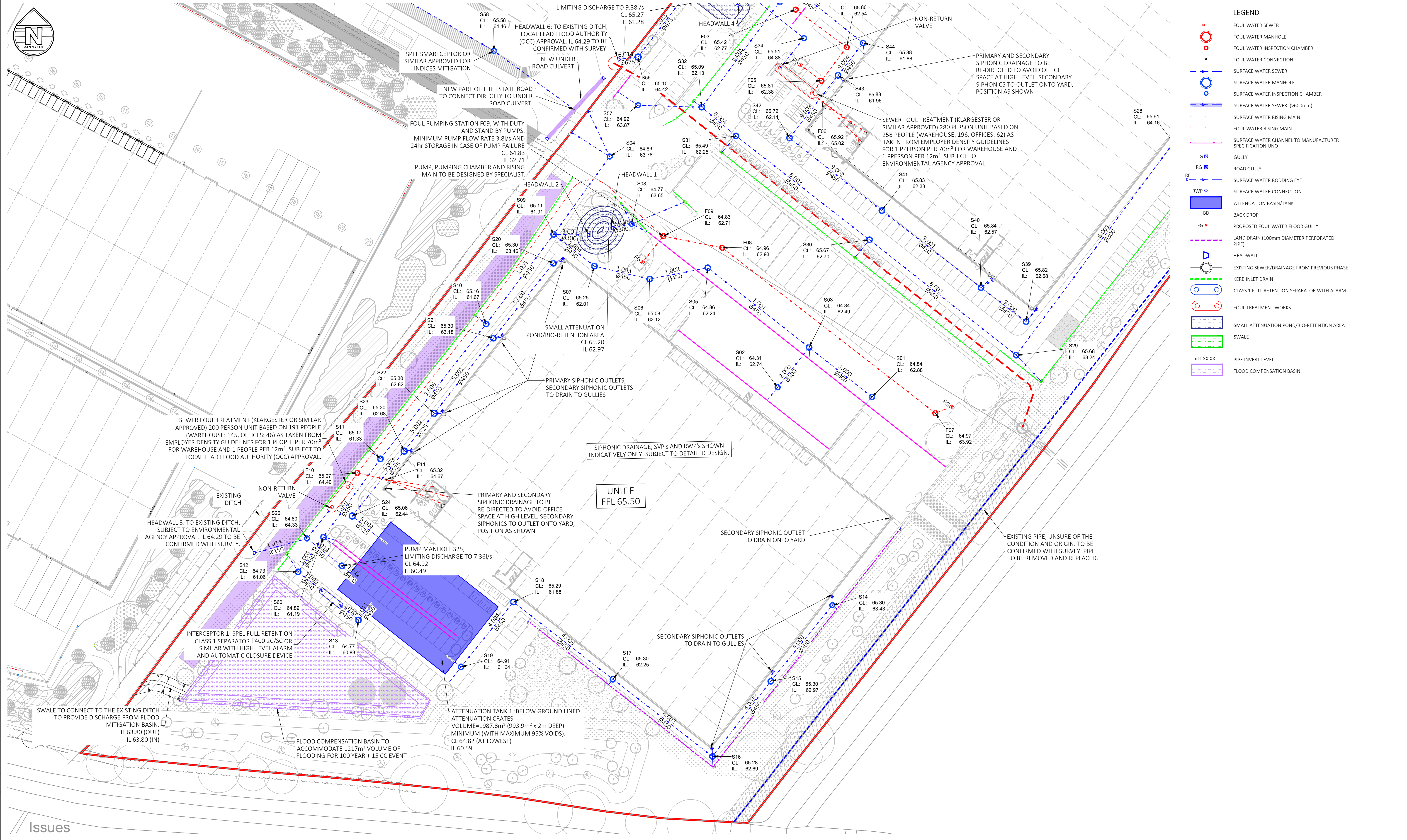
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CLIENT

PROJECT
PHASE 3, BICESTER
SYMMETRY PARK

TITLE DRAINAGE OVERVIEW FOUL SEWER TREATMENT		
HYDROCK PROJECT NO. 22281	SCALE @ A1 1:1000	
STATUS DESCRIPTION SUITABLE FOR REVIEW & COMMENT		STATUS S3
DRAWING NO. 22281-HYD-XX-XX-DR-C-0500		REVISION P02

Filename: Z:\00 - Projects\Contract\22281-S818 Symmetry Park Bicester, Phase 3\01 - WPD\DR - Drawing\CV2281-HYD-XX-DR-C-0501 - Drainage - Layout.dwg



NOTES

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REVISIONS					
PO2	REVISED PLANNING	20/11/24	AB	AB CK	
PO1	PLANNING	19/09/24	MC	AB CK	
Rev.	Revision Notes	Date	Drawn By	Checked	Approved

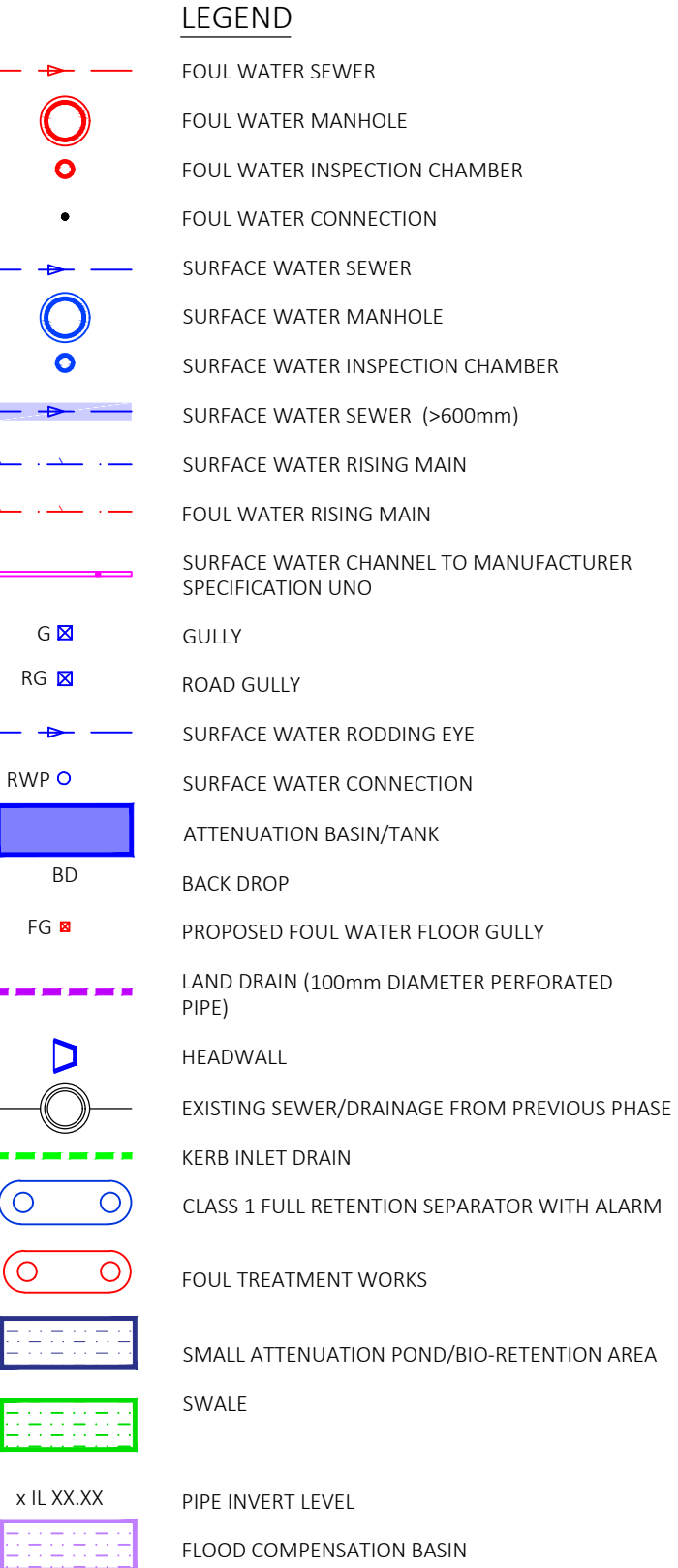
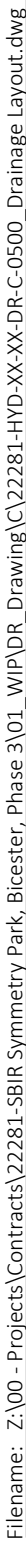



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CLIENT


PROJECT
PHASE 3, BICESTER
SYMMETRY PARK

TITLE DRAINAGE FOUL SEWER TREATMENT SHEET 1			
HYDROCK PROJECT NO. 22281		SCALE @ A1 1:500	
STATUS DESCRIPTION SUITABLE FOR REVIEW & COMMENT			STATUS S3
DRAWING NO. 22281-HYD-XX-XX-DR-C-0501			REVISION P02



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9. CELLULAR STORAGE IS BASED UPON A PROPRIETARY PRODUCT AND IS SUBJECT TO DETAILED DESIGN.
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PROJECT

PHASE 3, BICESTER
SYMMETRY PARK

REVISION
P02

Surface Water Manhole Schedule								
Manhole Reference	Type	Diameter (mm)	Cover Level (m)	Invert Level (m)	Depth (m)	Cover	Easting	Northing
S01	B	1200	64.84	62.88	1.96	E600	460702.841	220578.057
S02	B	1200	64.31	62.74	1.57	E600	460675.286	220580.861
S03	B	1350	64.84	62.49	2.35	E600	460684.469	220592.502
S04	B	1200	64.83	63.78	1.05	E600	460626.295	220648.223
S05	B	1350	64.86	62.24	2.62	E600	460654.894	220615.757
S06	B	1350	65.08	62.12	2.96	E600	460637.954	220612.450
S07	B	1350	65.25	62.01	3.24	B125	460621.830	220616.240
S08	C	1200	64.77	63.65	1.12	B125	460632.659	220628.529
S09	B	1350	65.11	61.91	3.20	C250 (R)	460609.943	220625.491
S10	A	1350	65.16	61.67	3.49	C250 (R)	460590.254	220599.345
S11	A	1350	65.17	61.33	3.84	C250	460559.389	220559.964
S12	CP	1350	64.73	61.06	3.67	C250	460535.394	220526.999
S13	A	1350	64.77	60.83	3.94	C250	460552.991	220512.916
S14	B	1200	65.30	63.43	1.87	B125	460691.254	220517.248
S15	B	1350	65.30	62.97	2.33	B125	460673.295	220495.055
S16	B	1350	65.28	62.69	2.59	B125	460656.270	220473.124
S17	B	1350	65.30	62.25	3.05	B125	460627.235	220495.656
S18	B	1350	65.29	61.88	3.41	B125 (R)	460598.201	220518.188
S19	CP	1350	64.91	61.64	3.27	C250 (R)	460582.921	220499.238
S20	C	1350	65.30	63.46	1.84	B125 (R)	460609.857	220617.062
S21	B	1350	65.30	63.18	2.12	B125 (R)	460592.357	220595.202
S22	B	1500	65.30	62.82	2.48	B125 (R)	460575.108	220573.273
S23	B	1500	65.30	62.68	2.62	B125 (R)	460566.316	220562.238
S24	CP	1500	65.06	62.44	2.62	C250 (R)	460551.161	220543.295
S25	PS	1350	64.92	60.49	4.43	C250	460548.106	220528.748
S26	C	1200	64.80	64.33	0.47	C250 (R)	460537.970	220536.739
S27	C	1200	65.91	64.67	1.24	B125	460822.749	220692.671
S28	C	1200	65.91	64.16	1.75	B125	460790.816	220652.304
S29	B	1350	65.68	63.24	2.44	C250 (R)	460744.905	220590.237
S30	B	1350	65.67	62.70	2.97	C250 (R)	460702.098	220623.909
S31	B	1350	65.49	62.25	3.24	C250 (R)	460663.158	220654.232
S32	B	1350	65.09	62.13	2.96	E600	460653.155	220662.627
S33	B	1350	65.25	62.37	2.88	E600	460723.721	220753.922
S34	B	1200	65.51	64.88	0.63	C250	460682.970	220682.754
S35	B	1200	65.12	62.26	2.86	E600	460702.749	220707.421
S36	B	1350	65.24	62.04	3.20	E600	460692.967	220714.579
S37	CP	1500	65.25	61.71	3.54	E600	460676.025	220693.545
S38	CP	1500	65.50	61.57	3.93	E600	460663.924	220710.397
S39	B	1350	65.82	62.68	3.14	B125 (R)	460747.792	220600.050
S40	B	1350	65.84	62.57	3.27	C250	460734.630	220609.963
S41	A	1350	65.83	62.33	3.50	C250	460705.710	220632.457
S42	A	1350	65.72	62.11	3.61	C250	460678.753	220653.654
S43	A	1350	65.88	61.96	3.92	E600	460692.913	220671.905
S44	A	1350	65.88	61.88	4.00	C250	460700.220	220681.369
S45	C	1350	65.91	64.32	1.59	B125	460851.808	220736.335
S46	C	1350	65.91	64.05	1.86	B125	460829.912	220753.479
S47	B	1350	65.91	63.76	2.15	B125	460807.492	220771.199
S48	B	1500	65.85	63.40	2.45	E600	460785.070	220788.480
S49	B	1500	65.87	63.17	2.70	E600	460769.918	220770.397
S50	CP	1500	65.34	62.77	2.57	E600	460737.967	220793.746
S51	A	1500	65.35	61.51	3.84	E600	460674.126	220705.611
S52	PS	1500	65.27	61.28	3.99	B125	460666.463	220695.906
S55	C	1500	65.27	64.60	0.67	B125	460651.306	220699.190
S56	B	1500	65.10	64.42	0.68	B125	460634.550	220677.251
S57	B	1200	64.92	63.87	1.05	C250	460634.563	220663.193
S58	B	1200	65.58	64.46	1.12	D400	460592.520	220679.077
S59	C	1200	65.85	64.73	1.12	D400	460539.728	220709.456
S60	B	1350	64.89	61.19	3.70	D400	460542.777	220537.142

Manhole Reference	Type	Diameter (mm)	Cover Level (m)	Invert Level (m)	Depth (m)	Cover	Easting	Northing
F01	C	1200	65.44	64.39	1.05	E600	460760.066	220794.150
F02	B	1200	65.43	63.55	1.88	E600	460718.976	220740.981
F03	B	1200	65.42	62.77	2.65	E600	460680.571	220691.118
F04	A	1200	65.80	62.54	3.26	E600	460695.446	220680.141
F05	A	1200	65.81	62.38	3.43	E600	460688.085	220670.342
F06	D2	450	65.92	65.02	0.90	B125 (R)	460688.457	220664.125
F07	C	1200	64.97	63.92	1.05	E600	460721.311	220573.338
F08	B	1200	64.96	62.93	2.03	E600	460659.143	220621.588
F09	PS	1200	64.83	62.71	2.12	E600	460641.965	220624.971
F10	C	1200	65.07	64.40	0.67	C250 (R)	460552.664	220555.871
F11	D2	450	65.32	64.67	0.65	B125 (R)	460561.061	220553.939

CP - DENOTES CATCH PIT
R - DENOTES COVER TO BE RECESSED TO ACCOMMODATE BLOCK PAVING
PS - DENOTES PUMPING STATION

NOTES:

1. THIS DRAWING IS NOT TO BE SCALED.
 2. THE CONTRACTOR SHALL CHECK ALL DIMENSIONS AND LEVELS ON SITE.
 3. 'MARKED UP' DRAWINGS ARE TO BE PROVIDED TO THE ENGINEER UPON COMPLETION TO ENABLE PRODUCTION OF 'AS BUILT' DRAWING IN ACCORDANCE WITH CONSTRUCTION (DESIGN & MANAGEMENT): 2015 REGULATIONS 22(j).
 4. THE CONTRACTOR SHALL ALLOW FOR THE PROTECTION, TEMPORARY AND PERMANENT SUPPORT AND DIVERSION WORKS AS NECESSARY, TO ALL EXISTING SERVICES TO THE SATISFACTION OF THE PUBLIC UTILITIES.
 5. THE CONTRACTOR SHALL ALLOW FOR DEALING WITH SURFACE WATER RUN-OFF INTO EXCAVATION AND FROM GROUNDWATER BY MEANS OF SUMPS, PUMPING AND DE-WATERING AS APPROPRIATE, IN ORDER TO KEEP THE EXCAVATION AS REASONABLY DRY AS POSSIBLE DURING THE CONSTRUCTION OF THE WORKS,
 6. ALL EXTERNAL DRAINAGE WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH 'CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY' 7th EDITION FOR ADOPTABLE DRAINAGE, AND TO THE RELEVANT PROJECT SPECIFICATION AS DIRECTED BY THE ENGINEER FOR PRIVATE DRAINAGE.
 7. PIPE MATERIAL SHALL BE AS FOLLOWS:
100Ø TO 225Ø - CLAYWARE TO BS EN 295
300Ø AND ABOVE - CONCRETE TO BS EN 1916.

CONCRETE PIPES TO BE USED WITHIN ESTATE ROAD


N.B PVCu PIPES TO BE EN 1401-1:2009 MAY BE USED SUBJECT TO THE APPROVAL OF THE ENGINEER. PIPES OF LESS THAN 400MM DIAMETER TO HAVE A JETTING RESISTANCE OF 4000 PSI.
 8. ALL FOUL PIPES ARE TO BE 100Ø UNLESS STATED OTHERWISE OR TO SUIT ABOVE GROUND PIPEWORK. SURFACE WATER PIPE DIAMETERS ARE AS INDICATED

PIPE GRADIENTS UNLESS SHOWN ARE:

FOUL:
MINIMUM GRADIENT WITHOUT W.C. TO BE 1:40,
MINIMUM GRADIENT WITH W.C. TO BE 1:80,

SURFACE WATER:
MINIMUM GRADIENT 1:80.
 9. CLAY AND CONCRETE PIPES SHALL BE BEDDED ON CLASS S BEDDING UNLESS COVER IS LESS THAN 1.2m IN TRAFFICKED AREAS, THEN CLASS Z BEDDING.
 10. UPVC PIPES SHALL BE BEDDED ON CLASS P BEDDING UNLESS COVER IS LESS THAN 1.2m IN TRAFFICKED AREAS, THEN CLASS Q OR Z BEDDING.
 11. INTERNAL DRAINAGE BELOW BUILDING AREA TO HAVE CONCRETE BED AND SURROUND.
 12. BACKFILL TO TRENCHES TO BE SUITABLE EXCAVATED MATERIAL WELL COMPACTED IN 300mm LAYERS.
 13. ROAD GULLY CONNECTIONS SHALL BE 150mm DIAMETER AND WITH CLASS Z BEDDING.
 14. ROAD GULLIES SHALL BE TRAPPED 450mm DIAMETER x 900mm DEEP WITH CLASS D400 FRAME AND GRATING TO BS EN 124.
 15. DESIGN OF THE DRAINAGE CHANNELS IS INDICATIVE ONLY. DETAILED DESIGN SHALL BE UNDERTAKEN BY THE CONTRACTOR'S PREFERRED CHANNEL MANUFACTURER/ SUPPLIER. INSTALLATION TO MANUFACTURES REQUIREMENTS.
 16. ALL MANHOLE AND DRAINAGE CHANNEL COVERS SHALL COMPLY WITH BS EN 124. FOR DETAILS OF COVER TYPE & LOCATION, PLEASE REFER TO THE MANHOLE SCHEDULE. MANHOLE COVERS WITHIN BLOCK PAVED AREAS & BUILDINGS SHALL BE RECESSED, DOUBLE SEALED WITHIN BUILDING.
 17. ALL LIGHT LIQUID SEPARATORS SHALL BE VENTILATED BY VENTILATION PIPEWORK TO MANUFACTURER'S RECOMMENDATIONS AND FITTED WITH AN ALARM TO PPG3 REQUIREMENTS.
 18. VENTILATION SHALL BE PROVIDED AT THE HEAD OF FOUL DRAINAGE RUNS.
FOR SETTING OUT OF SOIL AND RAINWATER PIPES, SEE ARCHITECT'S LAYOUT.
 19. ACCESS FOR RODDING/ JETTING SHALL BE PROVIDED TO ALL SOIL AND RAINWATER DOWNPIPES ABOVE FINISHED FLOOR LEVEL.
 20. FOR DETAILS OF MANHOLE TYPES AND PIPE BEDDING ETC, SEE STANDARD DETAIL DRAWING(S).
 21. COVER LEVELS SHOWN ARE APPROXIMATE.
COVER LEVELS FOR MANHOLES WITHIN LANDSCAPED AREAS SHOULD BE CHECKED WITH THE LANDSCAPE ARCHITECTS.
COVERS SHOULD BE ADJUSTED TO MATCH SURROUNDING FINISH LEVELS.
 22. THE CONTRACTOR IS TO PROTECT EXISTING BURIED PIPES (PARTICULARLY SHALLOW PIPES) AND TREE ROOTS FROM DAMAGE CAUSED BY LOADS IMPOSED BY CONSTRUCTION.
 23. WHERE FOUL OR SURFACE WATER PIPES CROSS WITHIN 300mm OF EACH OTHER THE JUNCTION IS TO BE CONCRETE ENCASED AS PER THE TYPICAL CROSS OVER DETAIL.
 24. MANHOLES WITHIN BLOCK PAVING TO BE RECESSED WITH MATCHING BLOCK PAVING INSERTS.
 25. UPON COMPLETION OF THE DRAINAGE AND AFTER CLEANING, A CCTV SURVEY SHALL BE CARRIED OUT ON ALL BELOW GROUND DRAINAGE. A COPY OF DVD TO BE INCLUDED WITH H+S FILE.
 26. SIPHONIC GULLIES TO BE SURROUNDED BY PRECAST CONCRETE UPSTAND OR SIMILAR APPROVED
 - 27.

REVIEWS					<div><div><div><div>Hydrock</div><div>now</div><div></div></div><div><div>2nd Floor</div><div>172 Edmund Street</div><div>Birmingham</div><div>B3 2HB</div><div>t: +44(0)1217 525197</div><div>e: birmingham@hydrock.com</div></div></div></div>		TITLE MANHOLE SCHEDULE & NOTES			
<div><div>CLIENT</div><div></div><div>PROJECT</div><div>PHASE 3, BICESTER SYMMETRY PARK</div></div>					HYDROCK PROJECT NO. 22281		SCALE @ A1 N/A			
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P01	PLANNING	19/09/24	MC	AB CK						
Rev.	Revision Notes	Date	Drawn By	Checked Approved						

<div data-bbox="2163 1785 2267 1799">  </div> <div data-bbox="2338 1785 2460 1845"> <p>2nd Floor 172 Edmund Street Birmingham B3 2HB t: +44(0)1217 525197 e: birmingham@hydrock.com</p> </div> <div data-bbox="2163 1833 2267 1852">  </div>	<div data-bbox="2522 1778 2718 1833"> <p>TITLE</p> <h1>MANHOLE SCHEDULE & NOTES</h1> </div>				
<div data-bbox="2110 1875 2139 1881">CLIENT</div> <div data-bbox="2157 1894 2356 1953">  </div>	<div data-bbox="2522 1919 2920 1965"> <table border="1"> <tr> <td data-bbox="2522 1919 2721 1965"> HYDROCK PROJECT NO. 22281 </td> <td data-bbox="2721 1919 2920 1965"> SCALE @ A1 N/A </td> </tr> </table> </div>	HYDROCK PROJECT NO. 22281	SCALE @ A1 N/A		
HYDROCK PROJECT NO. 22281	SCALE @ A1 N/A				
<div data-bbox="2110 1976 2139 1980">PROJECT</div> <div data-bbox="2110 1997 2282 2043"> <h2>PHASE 3, BICESTER SYMMETRY PARK</h2> </div>	<div data-bbox="2522 1976 2920 2055"> <table border="1"> <tr> <td data-bbox="2522 1976 2858 2005"> STATUS DESCRIPTION SUITABLE FOR REVIEW & COMMENT </td> <td data-bbox="2858 1976 2920 2005"> STATUS S3 </td> </tr> <tr> <td data-bbox="2522 2005 2858 2055"> DRAWING NO. 22281-HYD-XX-XX-DR-C-0520 </td> <td data-bbox="2858 2005 2920 2055"> REVISION P02 </td> </tr> </table> </div>	STATUS DESCRIPTION SUITABLE FOR REVIEW & COMMENT	STATUS S3	DRAWING NO. 22281-HYD-XX-XX-DR-C-0520	REVISION P02
STATUS DESCRIPTION SUITABLE FOR REVIEW & COMMENT	STATUS S3				
DRAWING NO. 22281-HYD-XX-XX-DR-C-0520	REVISION P02				

Filename: Z:\00 - Projects\Contrats\22281-5818 Symmetry Park Bicester, Phase 3\01 - WIP\01 Drawing\22281-HYD-XX-XX-DR-C-0530 - Drainage Layout.dwg



9.000
xxxxha

PIPE NUMBER& CATCHMENT AREA
APPLIED TO THAT PIPE (ha)

- LEGEND**
- FOUL WATER SEWER
 - FOUL WATER MANHOLE
 - FOUL WATER INSPECTION CHAMBER
 - FOUL WATER CONNECTION
 - SURFACE WATER SEWER
 - SURFACE WATER MANHOLE
 - SURFACE WATER INSPECTION CHAMBER
 - SURFACE WATER SEWER (>600mm)
 - SURFACE WATER RISING MAIN
 - FOUL WATER RISING MAIN
 - SURFACE WATER CHANNEL TO MANUFACTURER SPECIFICATION UNO
 - G GULLY
 - RG ROAD GULLY
 - RE SURFACE WATER RODDING EYE
 - RWP SURFACE WATER CONNECTION
 - BD ATTENUATION BASIN/TANK
 - BD BACK DROP
 - FG PROPOSED FOUL WATER FLOOR GULLY
 - LAND DRAIN (100mm DIAMETER PERFORATED PIPE)
 - HEADWALL
 - EXISTING SEWER/DRAINAGE FROM PREVIOUS PHASE
 - KERB INLET DRAIN
 - CLASS 1 FULL RETENTION SEPARATOR WITH ALARM
 - FOUL TREATMENT WORKS
 - SMALL ATTENUATION POND/BIO-RETENTION AREA
 - SWALE
 - x IL XXXX PIPE INVERT LEVEL
 - FLOOD COMPENSATION BASIN

NOTES

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REVISIONS					
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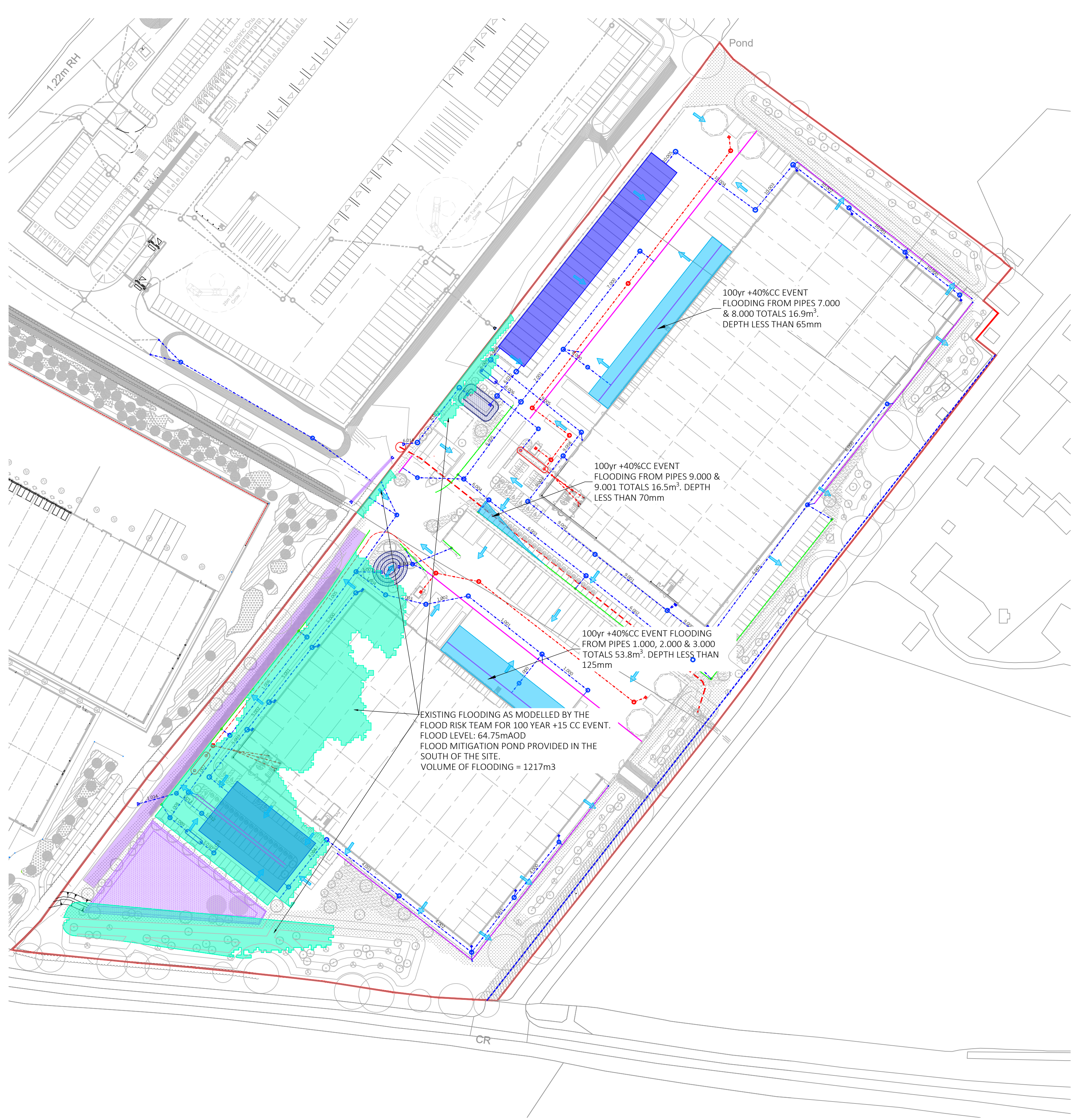
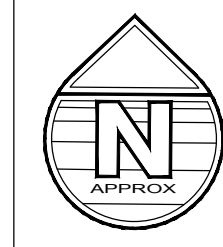


CLIENT

PROJECT

PHASE 3, BICESTER
SYMMETRY PARK

TITLE		
CATCHMENT PLAN		
HYDROCK PROJECT NO. 22281	SCALE @ A1 1:1000	
STATUS DESCRIPTION SUITABLE FOR REVIEW & COMMENT		STATUS S3
DRAWING NO. 22281-HYD-XX-XX-DR-C-0530		REVISION P02



LEGEND	
	FOUL WATER SEWER
	FOUL WATER MANHOLE
	FOUL WATER INSPECTION CHAMBER
	FOUL WATER CONNECTION
	SURFACE WATER SEWER
	SURFACE WATER MANHOLE
	SURFACE WATER INSPECTION CHAMBER
	SURFACE WATER SEWER (>600mm)
	SURFACE WATER RISING MAIN
	FOUL WATER RISING MAIN
	SURFACE WATER CHANNEL TO MANUFACTURER SPECIFICATION UNG
	GULLY
	ROAD GULLY
	SURFACE WATER RODDING EYE
	SURFACE WATER CONNECTION
	ATTENUATION BASIN/TANK
	PROPOSED FOUL WATER FLOOR GULLY
	LAND DRAIN (100mm DIAMETER PERFORATED PIPE)
	HEADWALL
	OVERLAND FLOW
	EXISTING SEWER/DRAINAGE FROM PREVIOUS PHASE
	KERB INLET DRAIN
	CLASS 1 FULL RETENTION SEPARATOR WITH ALARM
	FOUL TREATMENT WORKS
	SMALL ATTENUATION POND/BIO-RETENTION AREA
	SWALE
	PIPE INVERT LEVEL
	FLOOD COMPENSATION BASIN
	EXISTING LOCAL FLOODING (REFER TO FRA)
	SURFACE WATER FLOOD EXTENTS IN 100yr + 40% CC EVENT

NOTES

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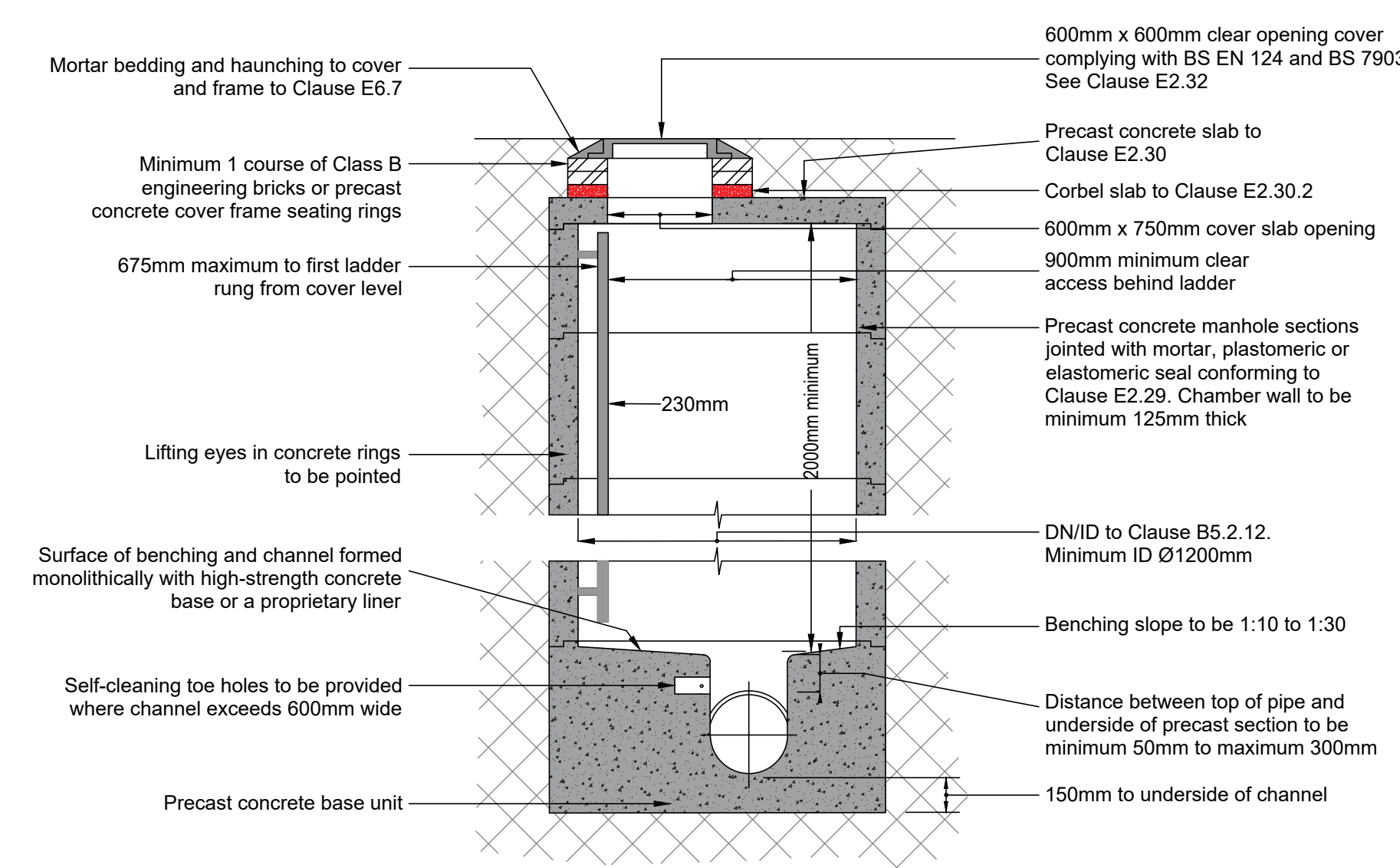
REVISIONS					
P02	REVISED PLANNING	20/11/24	AB	AB	CK
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PROJECT
PHASE 3, BICESTER
SYMMETRY PARK

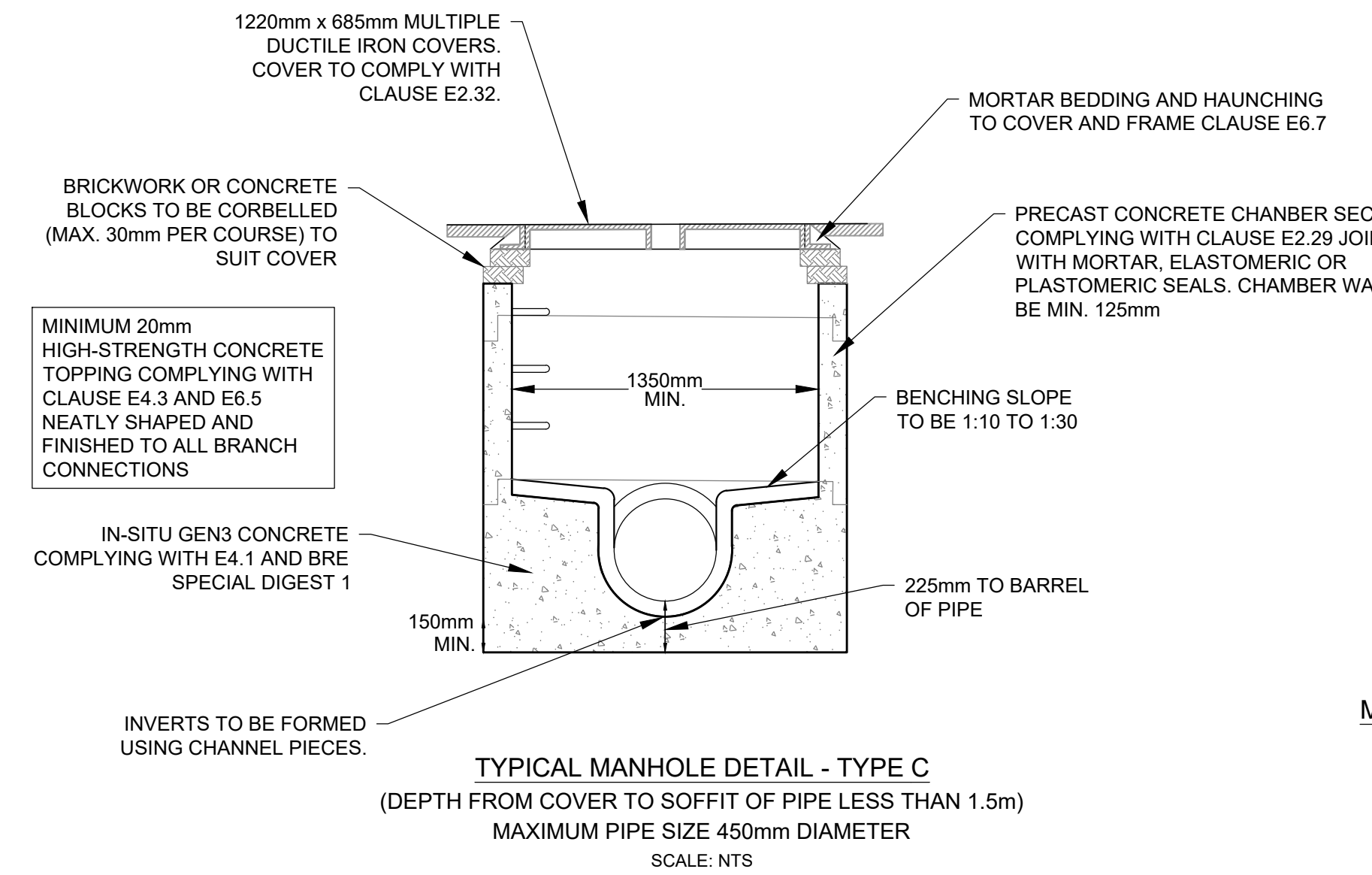
TITLE FLOOD EXCEEDANCE PLAN		
HYDROCK PROJECT NO. 22281	SCALE @ A1 1:1000	
STATUS DESCRIPTION SUITABLE FOR REVIEW & COMMENT		STATUS S3
DRAWING NO. 22281-HYD-XX-XX-DR-C-0540		REVISION P02

Filename: Z:\00 - Projects\Contract\22281-5818 Symmetry Park Bicester, Phase 3\03 - WIP\DR Drawing\22281-HYD-XX-DR-C-0550 - Drainage Std Details.dwg



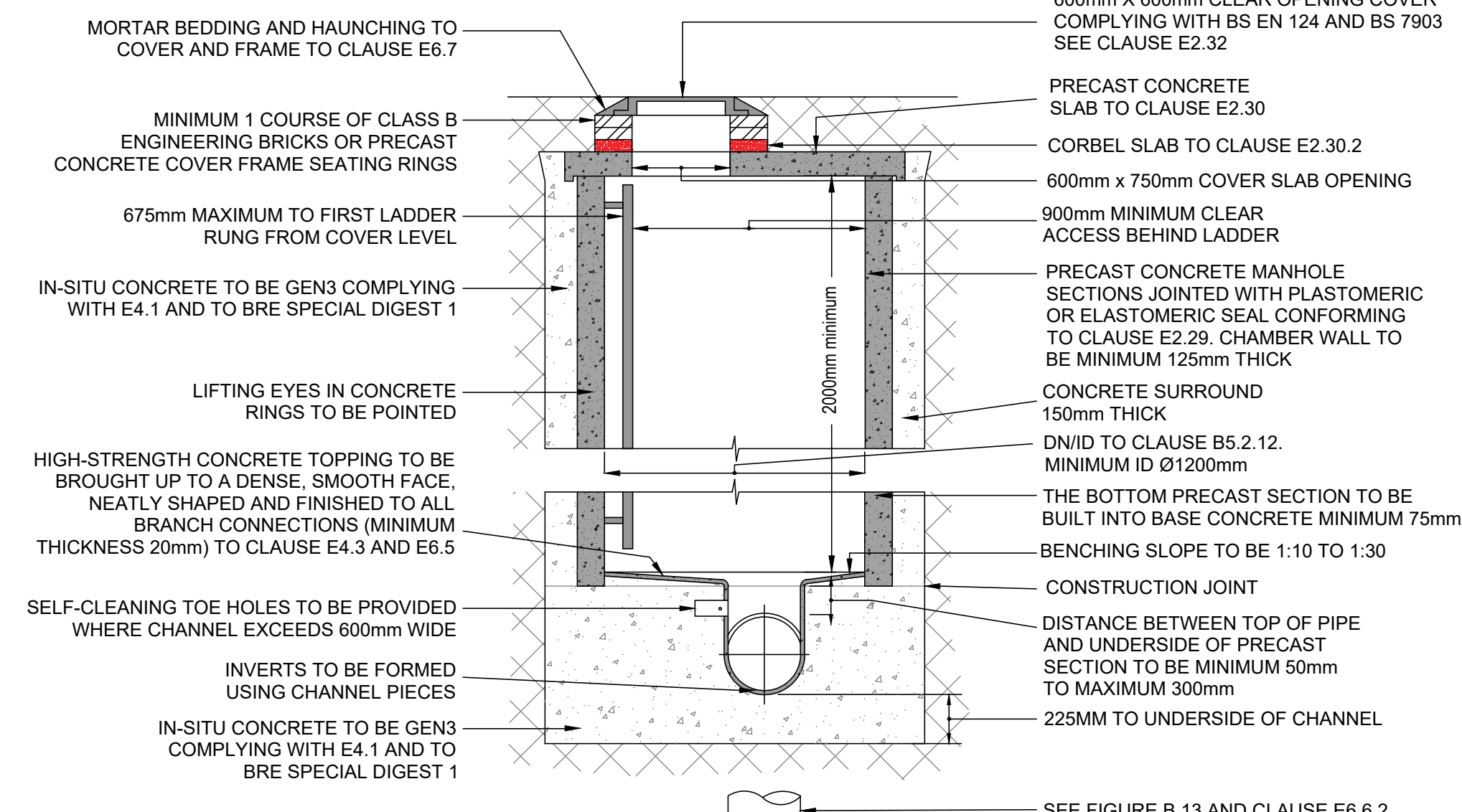
TYPICAL MANHOLE DETAIL - TYPE A2.1

(Depth from cover to soffit of pipe 3 m to 6 m with ladder)
Rigid material construction without concrete surround



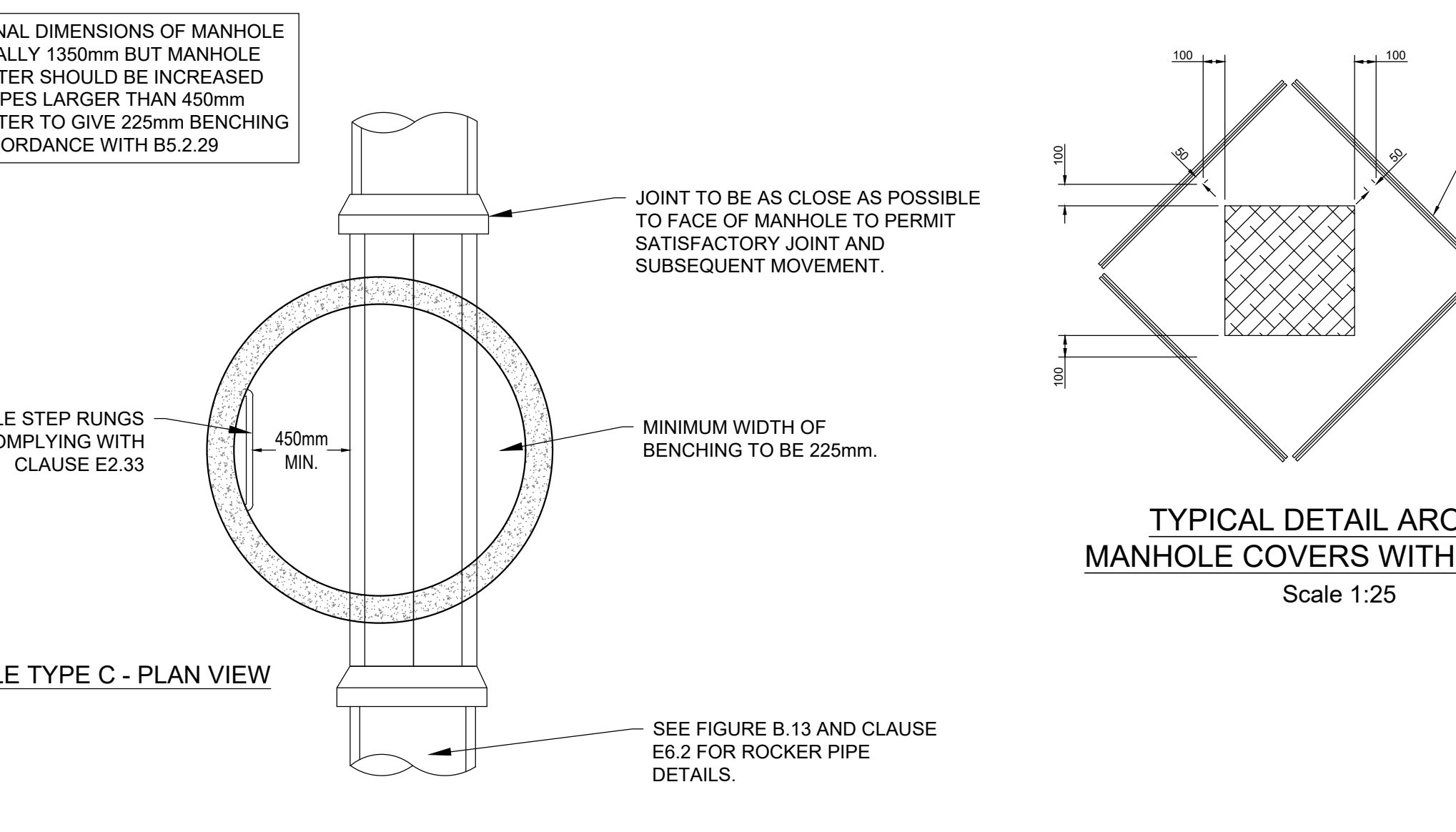
TYPICAL MANHOLE DETAIL - TYPE C

(Depth from cover to soffit of pipe less than 1.5m)
MAXIMUM PIPE SIZE 450mm DIAMETER
SCALE: NTS

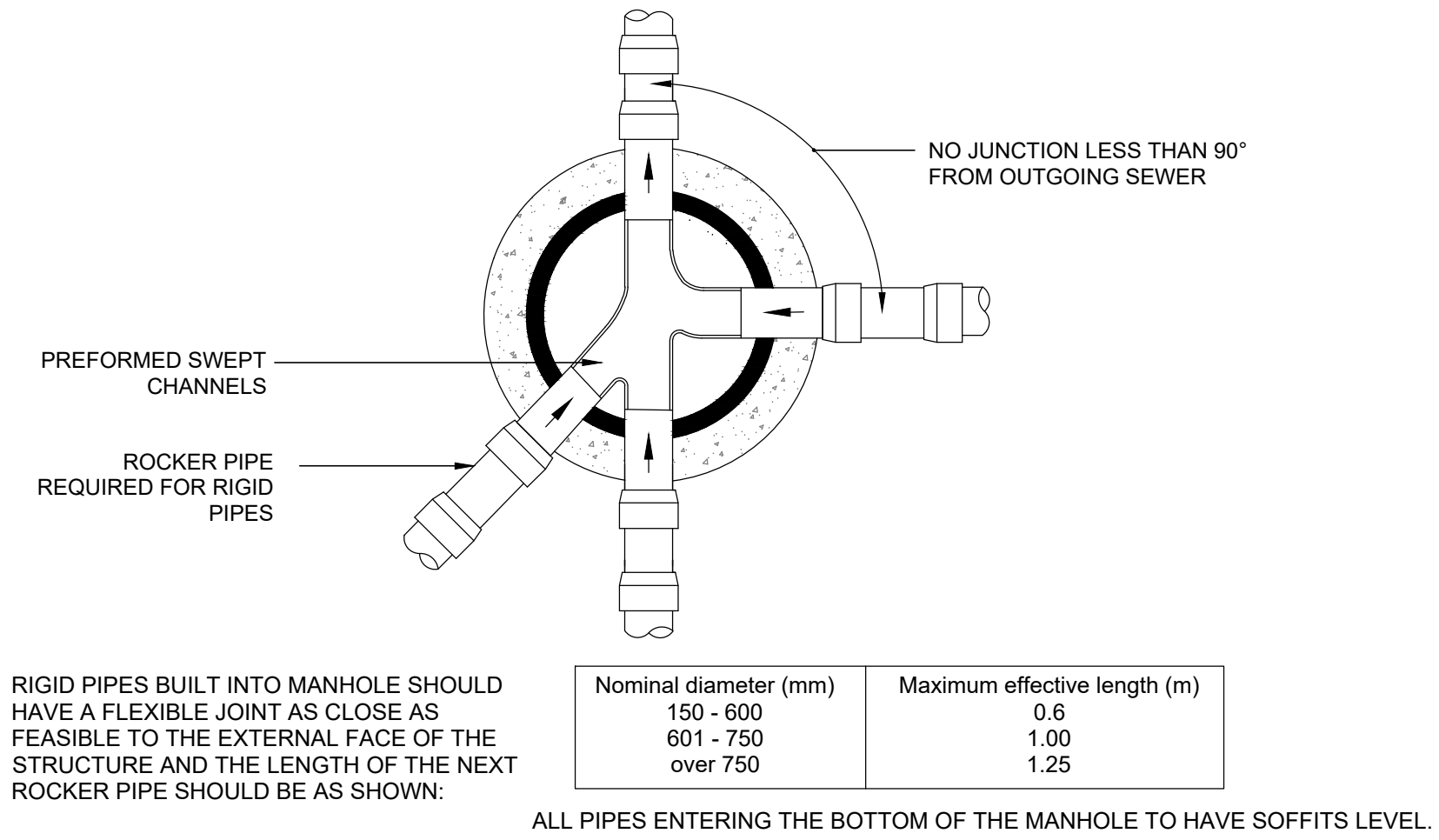


TYPICAL MANHOLE DETAIL - TYPE A2.2

(Depth from cover to soffit of pipe 3m to 6m with ladder)
ALTERNATIVE RIGID MATERIAL CONSTRUCTION WITH CONCRETE SURROUND

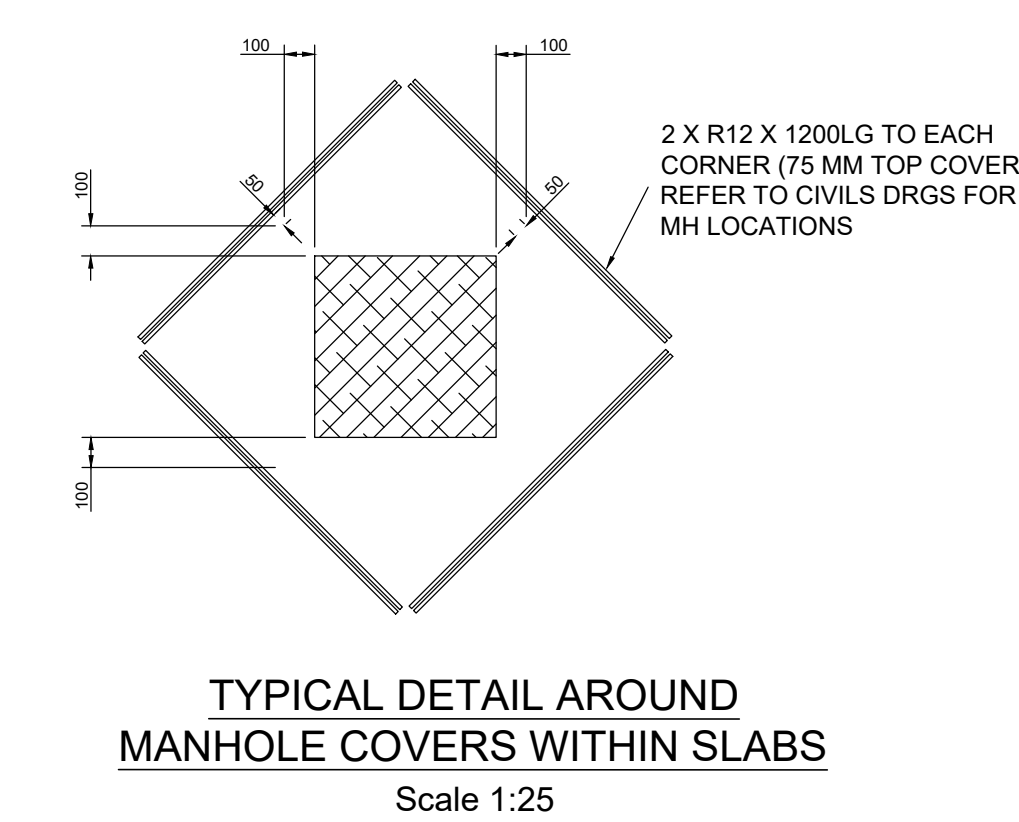


MANHOLE TYPE C - PLAN VIEW



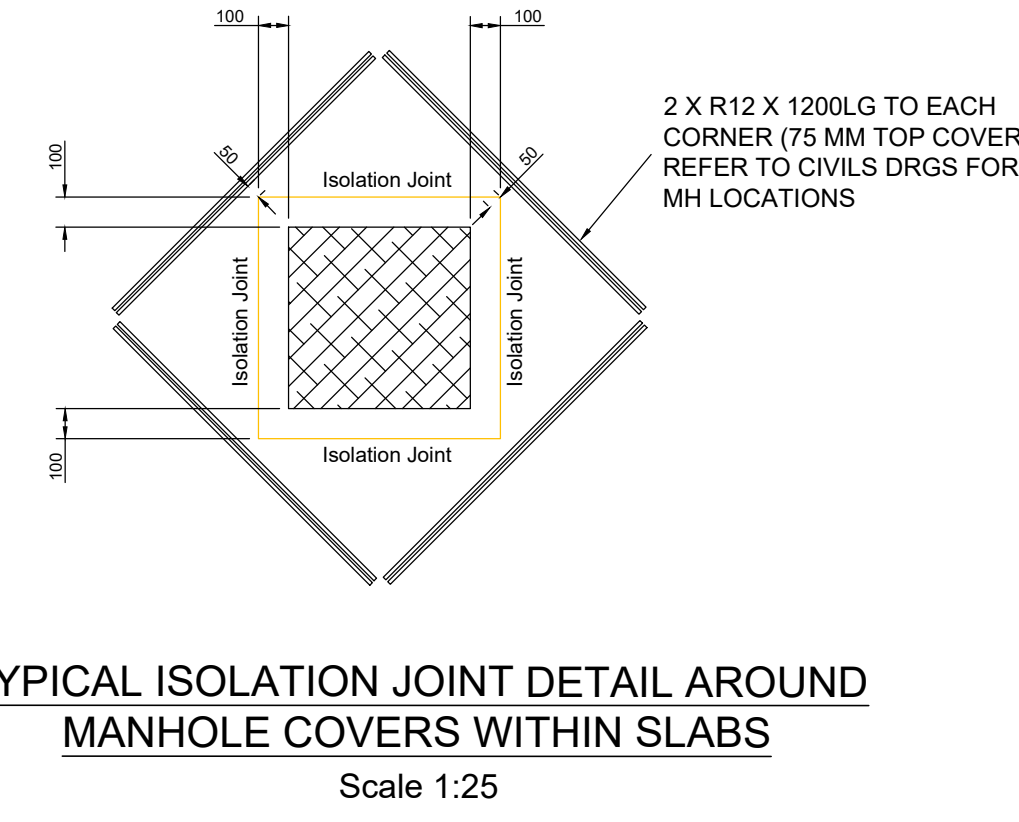
TYPICAL ARRANGEMENT OF PIPE JUNCTIONS WITHIN MANHOLES

(Figure B.13, DCG) N.T.S



TYPICAL DETAIL AROUND
MANHOLE COVERS WITHIN SLABS

Scale 1:25



TYPICAL ISOLATION JOINT DETAIL AROUND
MANHOLE COVERS WITHIN SLABS

Scale 1:25

NOTES

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REVISIONS

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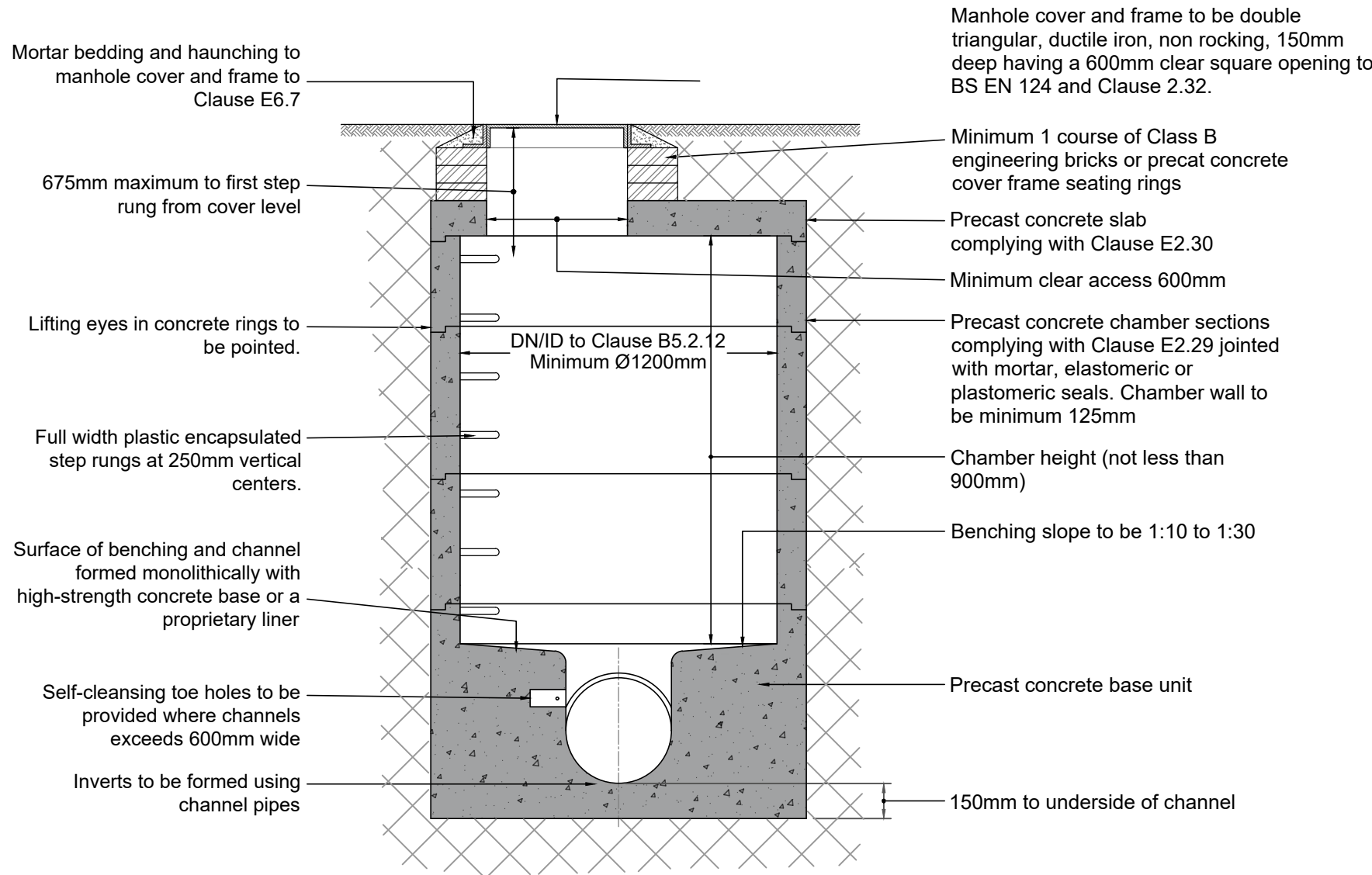
PROJECT
PHASE 3, BICESTER
SYMMETRY PARK

TITLE DRAINAGE STANDARD DETAILS SHEET 1	
HYDROCK PROJECT NO. 22281	SCALE @ A1 AS SHOWN
STATUS DESCRIPTION SUITABLE FOR REVIEW & COMMENT	STATUS S3
DRAWING NO. 22281-HYD-XX-XX-DR-C-0550	REVISION P02

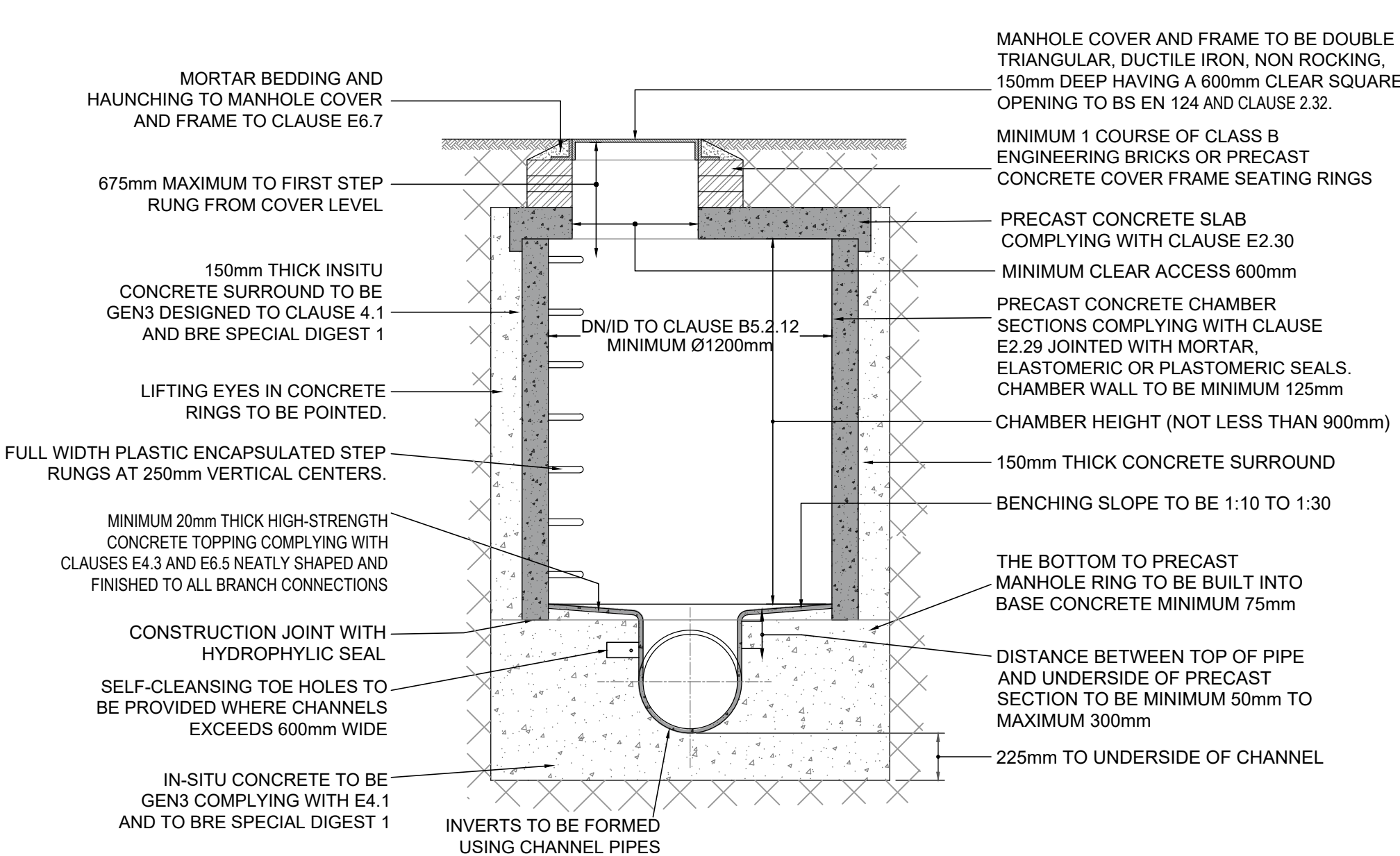
Filename: Z:\00 - Projects\Contract\22281-5818 Symmetry Park Bicester, Phase 3\01 - WIP\01 Drawing\22281-HYD-XX-DR-C-0551 Drainage Std Details.dwg

NOTES

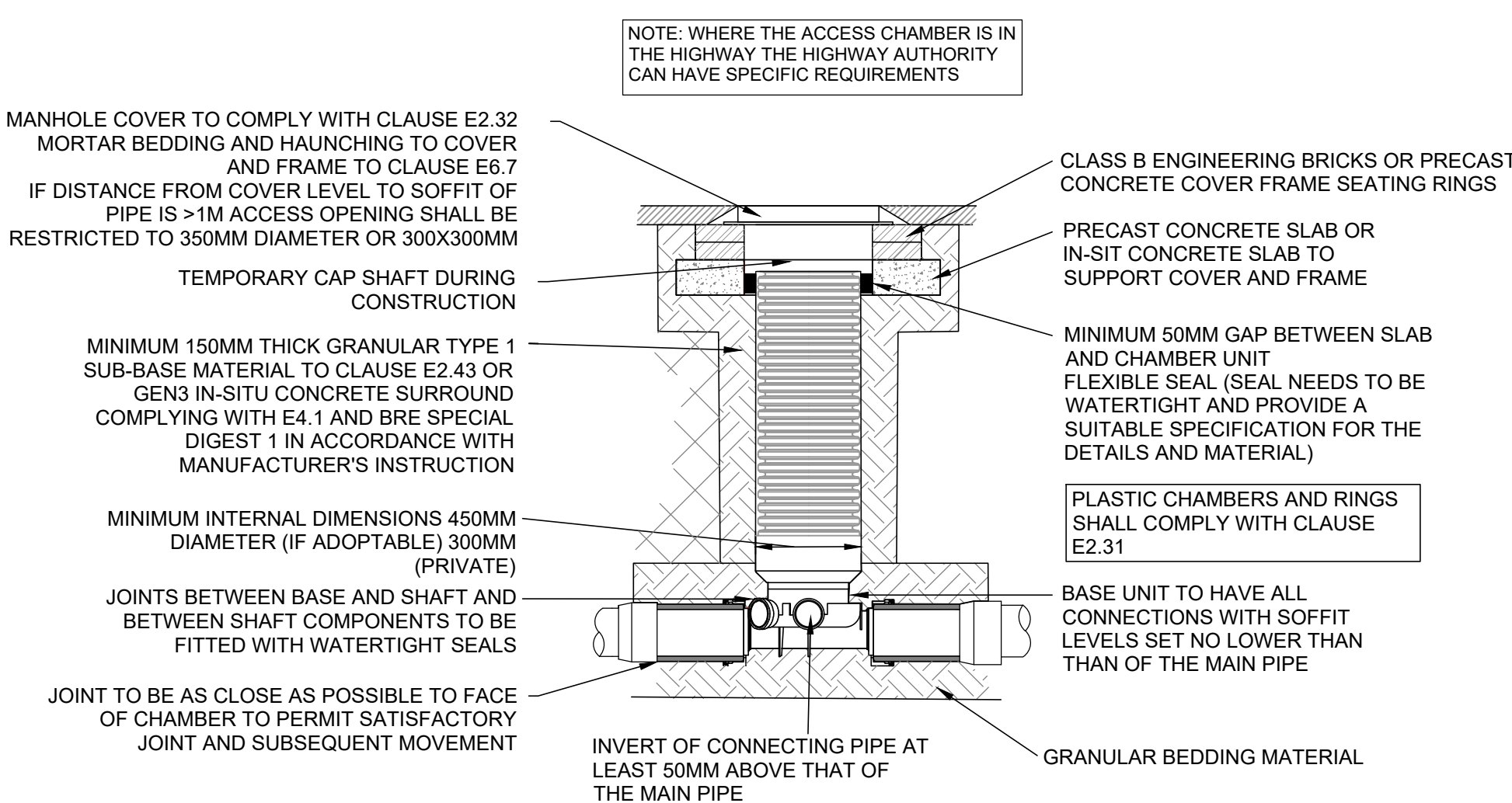
1. THIS DRAWING IS NOT TO BE SCALED.
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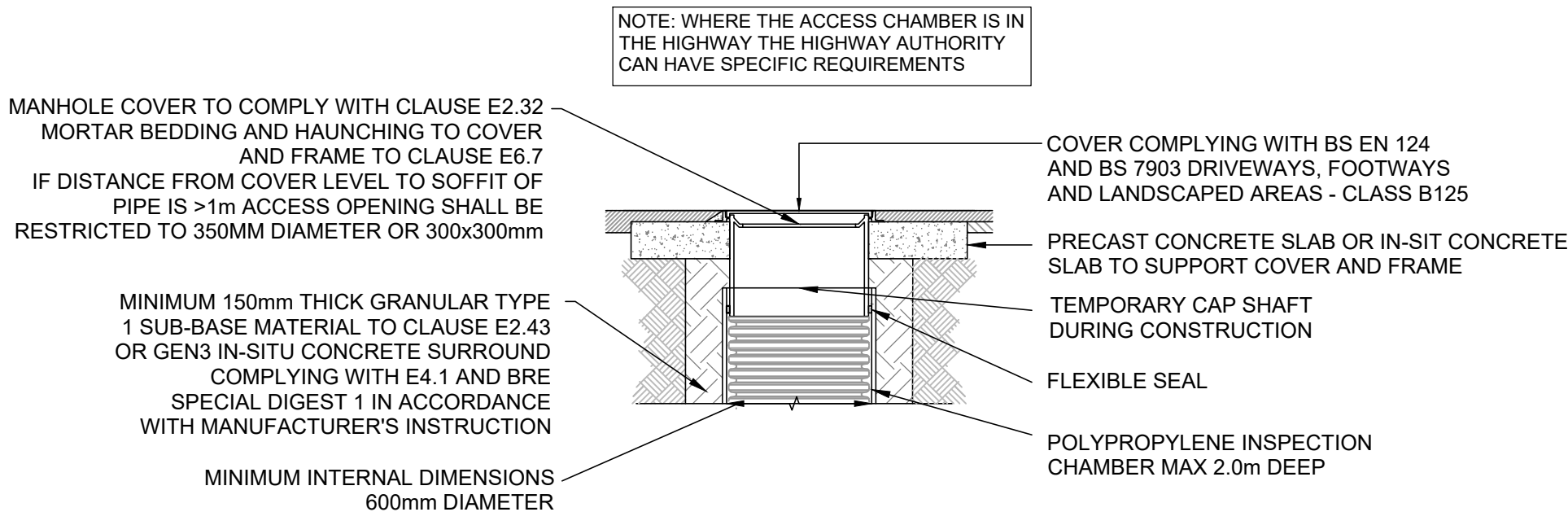
TYPICAL MANHOLE DETAIL - TYPE B1
(Depth from cover to soffit of pipe 1.5 m to 3.0 m)
Rigid material construction without concrete surround



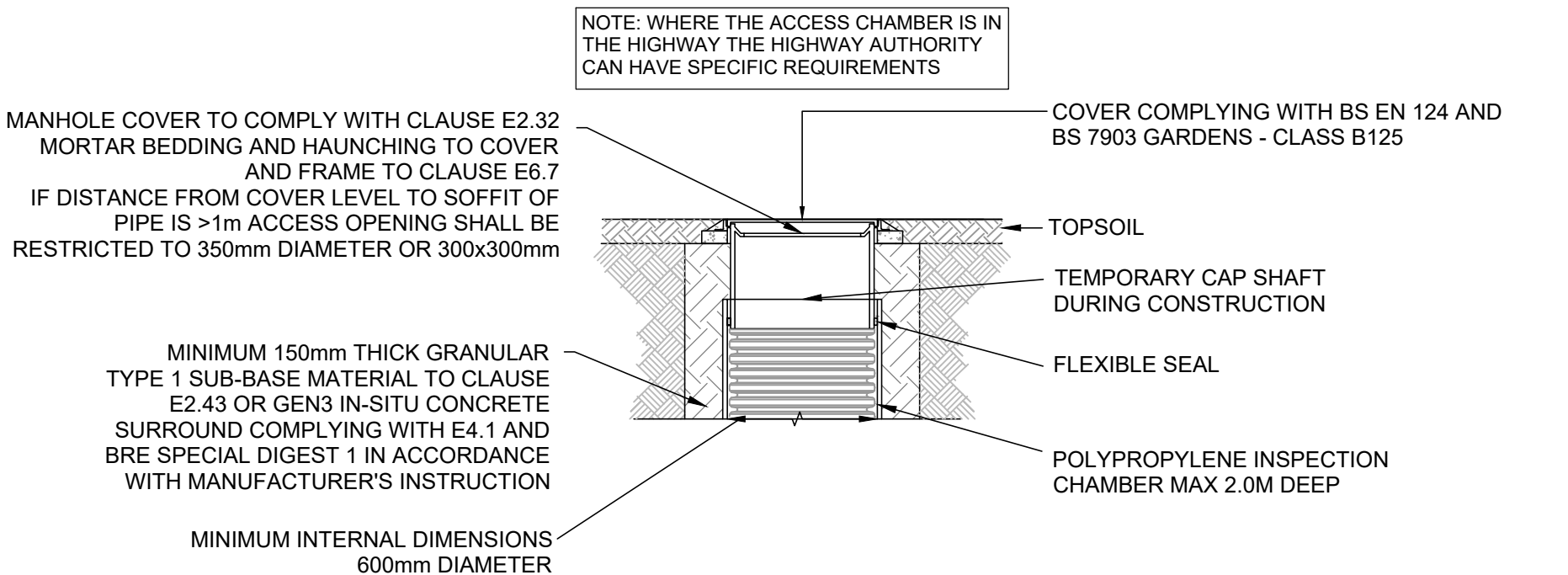
TYPICAL MANHOLE DETAIL - TYPE B2
(Depth from cover to soffit of pipe 1.5m to 3.0m)
ALTERNATIVE RIGID MATERIAL CONSTRUCTION WITH CONCRETE SURROUND



TYPICAL MANHOLE DETAIL - TYPE D1 (TRAFFICKED AREAS)
DEPTH FROM COVER TO SOFFIT OF PIPE UP TO 3 M



TYPICAL MANHOLE DETAIL - TYPE D2 (FOOTWAYS)
DEPTH FROM COVER TO SOFFIT OF PIPE UP TO 3m



TYPICAL MANHOLE DETAIL - TYPE D3 (LANDSCAPED AREAS)
DEPTH FROM COVER TO SOFFIT OF PIPE UP TO 3m

REVISIONS

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PROJECT
PHASE 3, BICESTER
SYMMETRY PARK

TITLE
DRAINAGE STANDARD DETAILS
SHEET 2

HYDROCK PROJECT NO.
22281

SCALE @ A1
AS SHOWN

STATUS DESCRIPTION SUITABLE FOR REVIEW & COMMENT	STATUS S3
DRAWING NO. 22281-HYD-XX-XX-DR-C-0551	REVISION P02

Filename: Z:\00 - Projects\Contrata\22281-5818 Symmetry Park Bicester, Phase 3\03 - WIP\04 Drawing\22281-HYD-XX-XX-DR-C-0550_Drainage Std Details.dwg

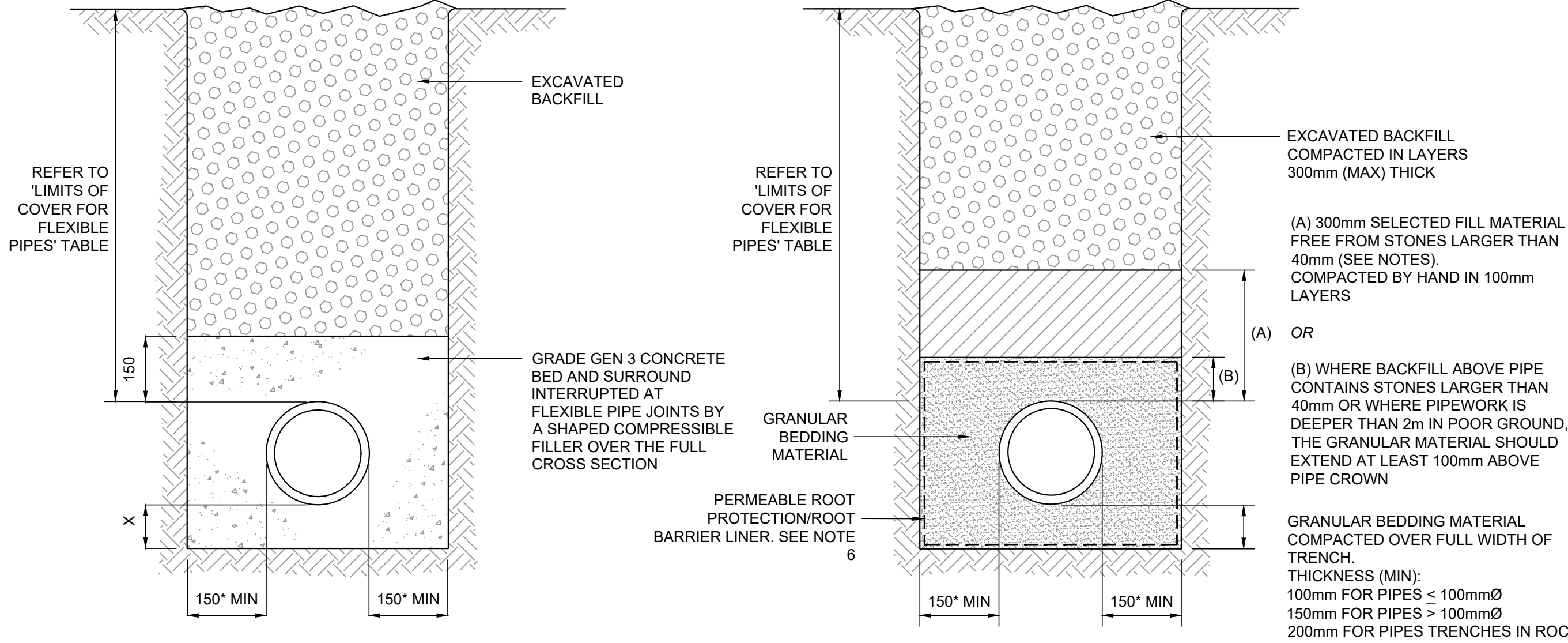
USE OF GRANULAR BEDDING MATERIAL:

NOMINAL BORE OF PIPE (min)	AGGREGATE SIZE (mm)	
	SINGLE SIZED	GRADED
100	10	-
150	10 OR 14	14 TO 5
225-300	10,14 OR 20	14 TO 5 OR 20 TO 5
375-525	14 OR 20	14 TO 5 OR 20 TO 5
EXCEEDING 525	14,20 OR 40	14 TO 5 OR 20 TO 5 40 TO 5

DIM X > 100mm FOR PIPES < 100mmØ
DIM X > 150mm FOR PIPES > 100mmØ
DIM X ≥ 200mm FOR PIPES TRENCHES IN ROCK

NOTES:

- BACKFILL MATERIAL TO BE SELECTED EXCAVATED MATERIAL WHERE THIS MATERIAL COMPLIES WITH CESWI. ADDITIONAL MATERIAL TO MAKE UP ANY DEFICIENCY TO BE GRANULAR SUB-BASE TYPE 1 UNLESS STATED OTHERWISE.
- IN WET, SOFT, OR SILTY SOILS, WHERE LATERAL SUPPORT IS NOT OBTAINED OR WHERE FINES MAY MIGRATE, THE GRANULAR BEDDING MATERIAL SHALL BE SURROUNDED BY GEOTEXTILE FABRIC WITH MIN 200 OVERLAP.
- TRENCH BACKFILL TO MEET HIGHWAY SPECIFICATION WHEN LAID IN ROAD OR FOOTPATH.
- WHERE PIPES ARE WITHIN ZONE OF INFLUENCE OF BUILDING THEY ARE TO BE CONCRETE ENCASED AS PER TYPE Z BEDDING.
- WHERE DRAINAGE PIPES RUNNING UNDER BUILDINGS ARE 500mm OR MORE BELOW UNDERSIDE OF RAFT THE PIPE IS TO BE CONCRETE ENCASED AS PER TYPE Z BEDDING INSTEAD OF THICKENING THE RAFT FOUNDATION.
- WHERE DRAINAGE PIPES RUN THROUGH OR ADJACENT TO LANDSCAPING WITH TREES, SHRUBS OR BUSHES THE DRAINAGE TRENCH IS TO BE LINED TO PROTECT THE DRAINAGE PIPES FROM POTENTIAL DAMAGE CAUSED BY ROOT DEVELOPMENT WITH TERRAM ROOT GAURD OR APPROVED SIMILAR.



CLASS Z BEDDING
CONCRETE SURROUND

CLASS P BEDDING

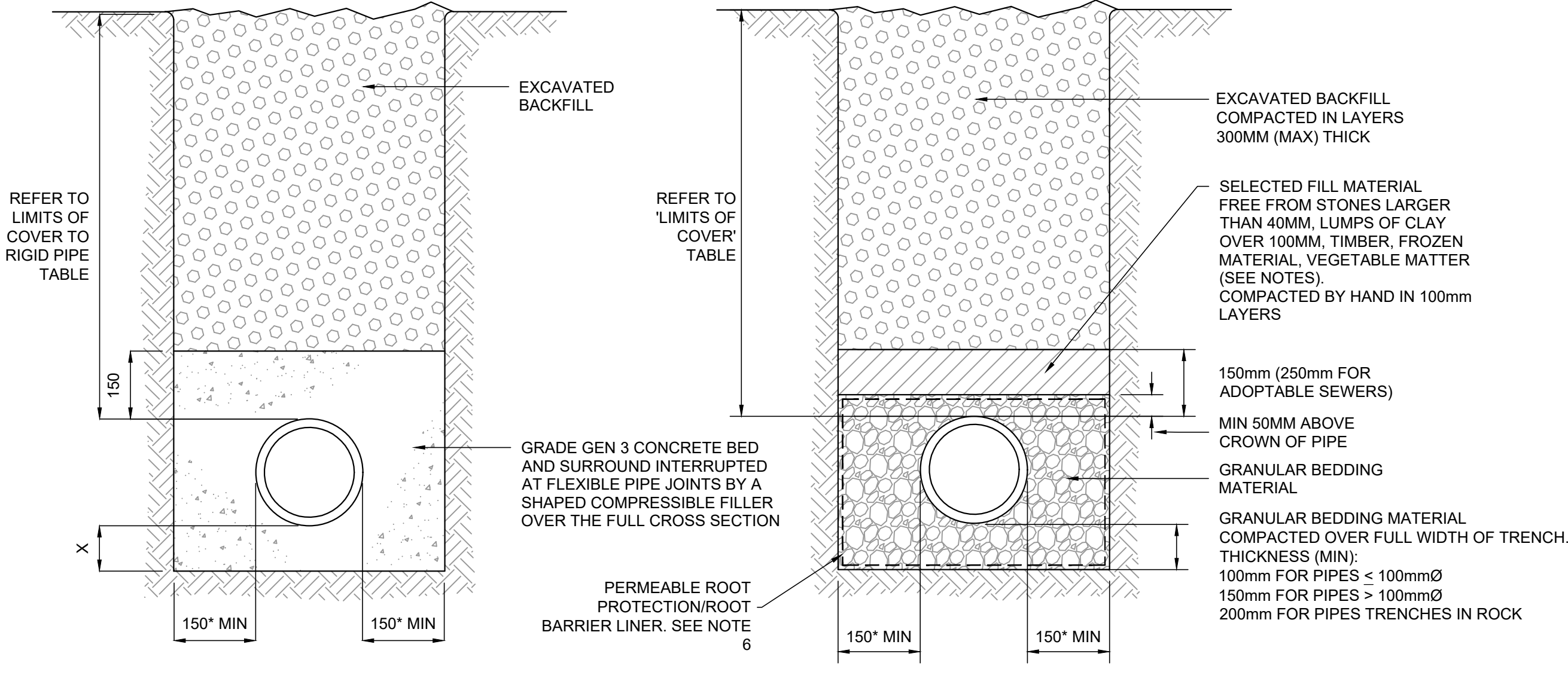
TYPICAL PIPE BEDDING FOR FLEXIBLE PIPES UP TO 800mm DIA

SCALE 1:10

SIZING OF GRANULAR BEDDING MATERIAL:

NOMINAL BORE OF PIPE (MIN)	AGGREGATE SIZE (MM)	
	SINGLE SIZED	GRADED
100	10	10
150 - 200	10 or 14	14 to 5
225 - 300	10,14 or 20	14 to 5 or 20 to 5
375 - 500	14 or 20	14 to 5 or 20 to 5
EXCEEDING 500	14,20 or 40	14 to 5, 20 to 5 or 40 to 5

ALL GRAULAR MATERIAL TO BE SINGLE SIZED OR GRADED IN ACCORDANCE WITH BS 882:1992, SINTERED PULVERISED-FUEL ASH TO BS 3797:1990 AND AIR-COOLED BLAST FURNACE SLAGS TO BS 1047:1983 ARE SUITABLE.

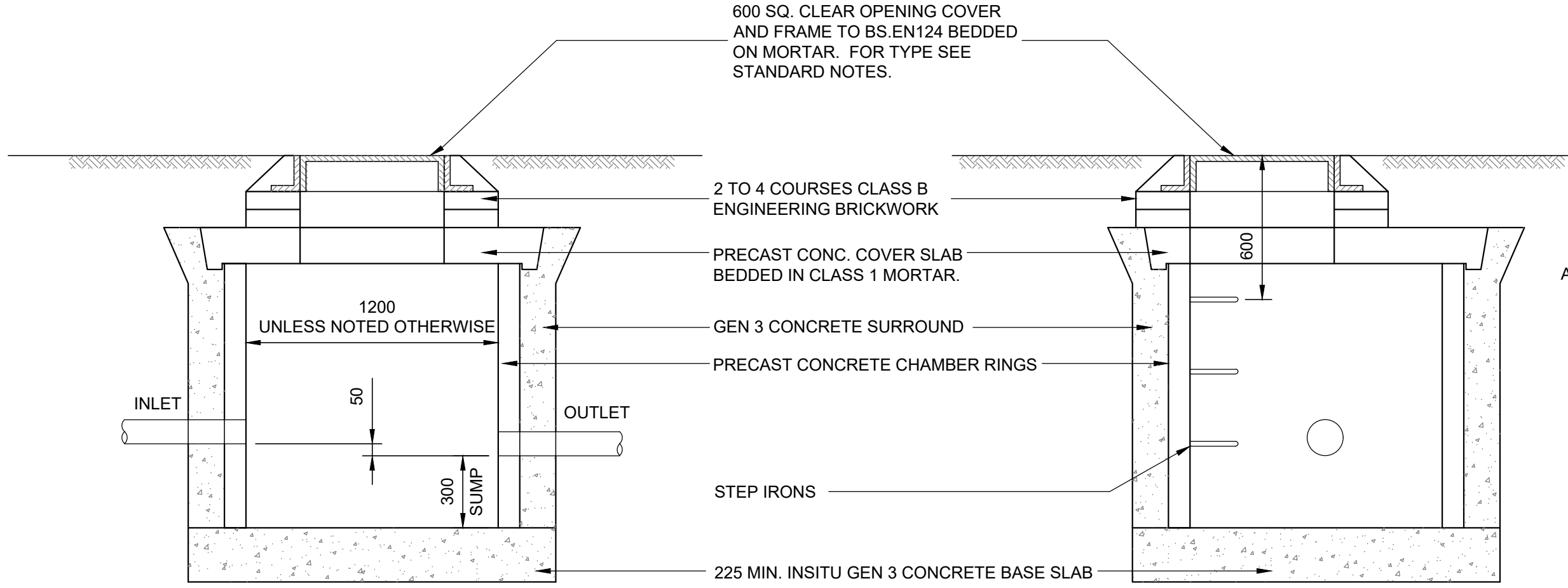


CLASS Z BEDDING
CONCRETE SURROUND

CLASS S BEDDING
GRANULAR SURROUND

TYPICAL PIPE BEDDING FOR RIGID PIPES UP TO 800mm DIA

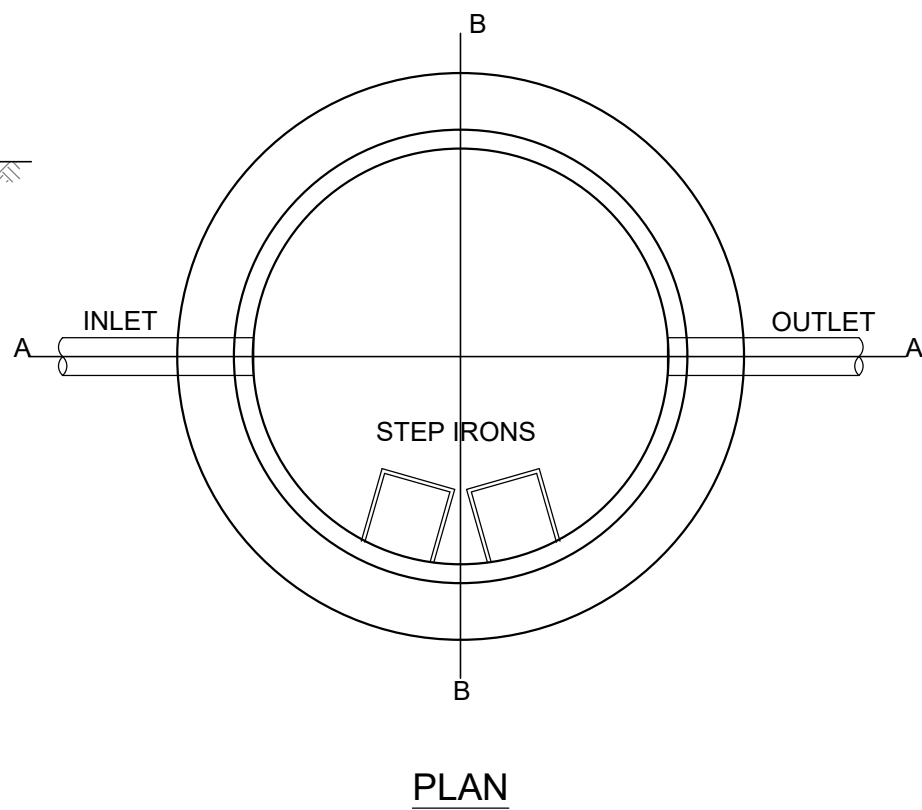
SCALE 1:10



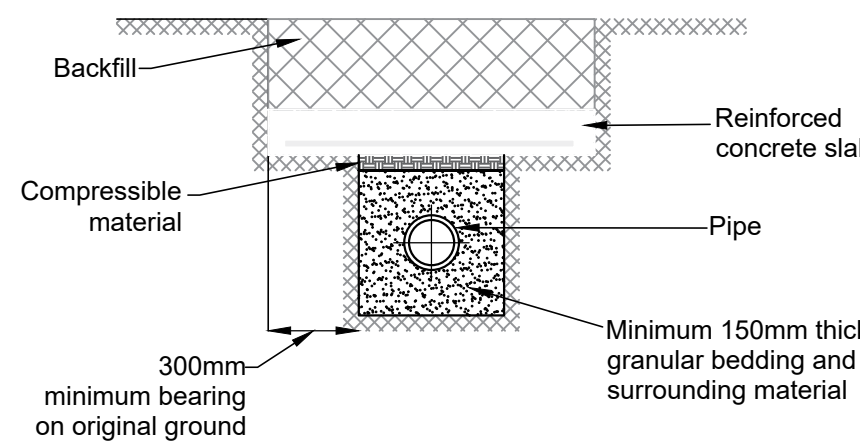
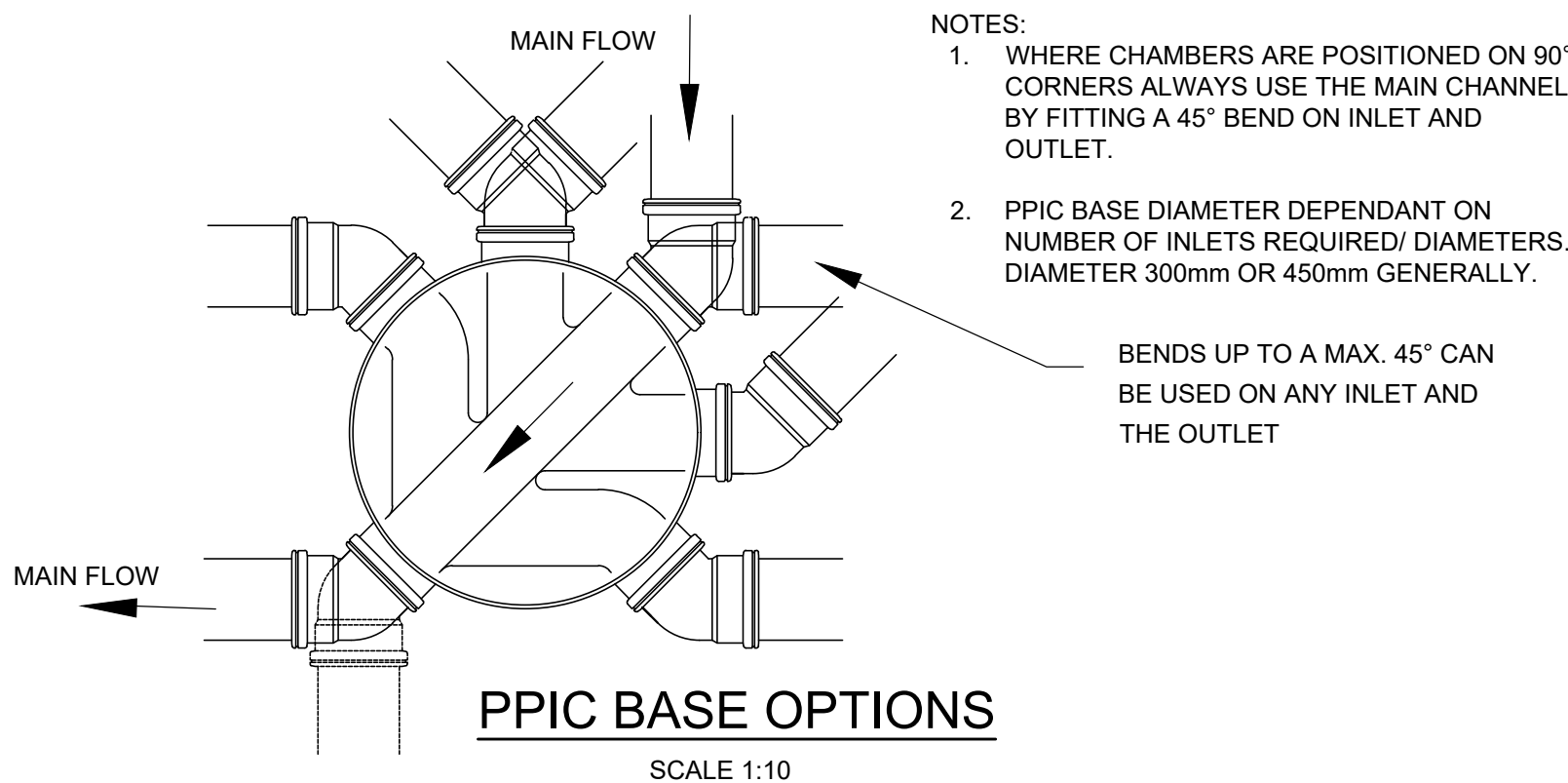
SECTION A-A

TYPICAL CATCHPIT DETAIL

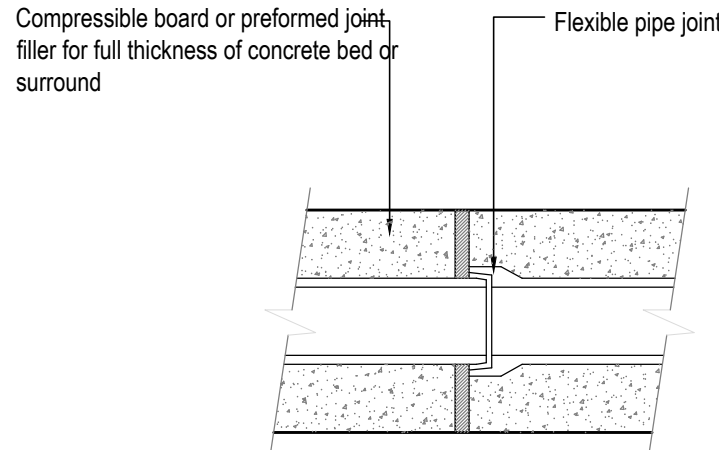
SCALE 1:20



PLAN



SHALLOW DEPTHS PIPE PROTECTION TYPICAL DETAIL



JOINTS FOR CONCRETE SURROUND TO PIPES

(To occur at each pipe joint)
SCALE: NTS

NOTES

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PROJECT

PHASE 3, BICESTER
SYMMETRY PARK

TITLE

DRAINAGE STANDARD DETAILS
SHEET 3

HYDROCK PROJECT NO.

22281

SCALE @ A1

AS SHOWN

STATUS DESCRIPTION

SUITABLE FOR REVIEW & COMMENT

STATUS

S3

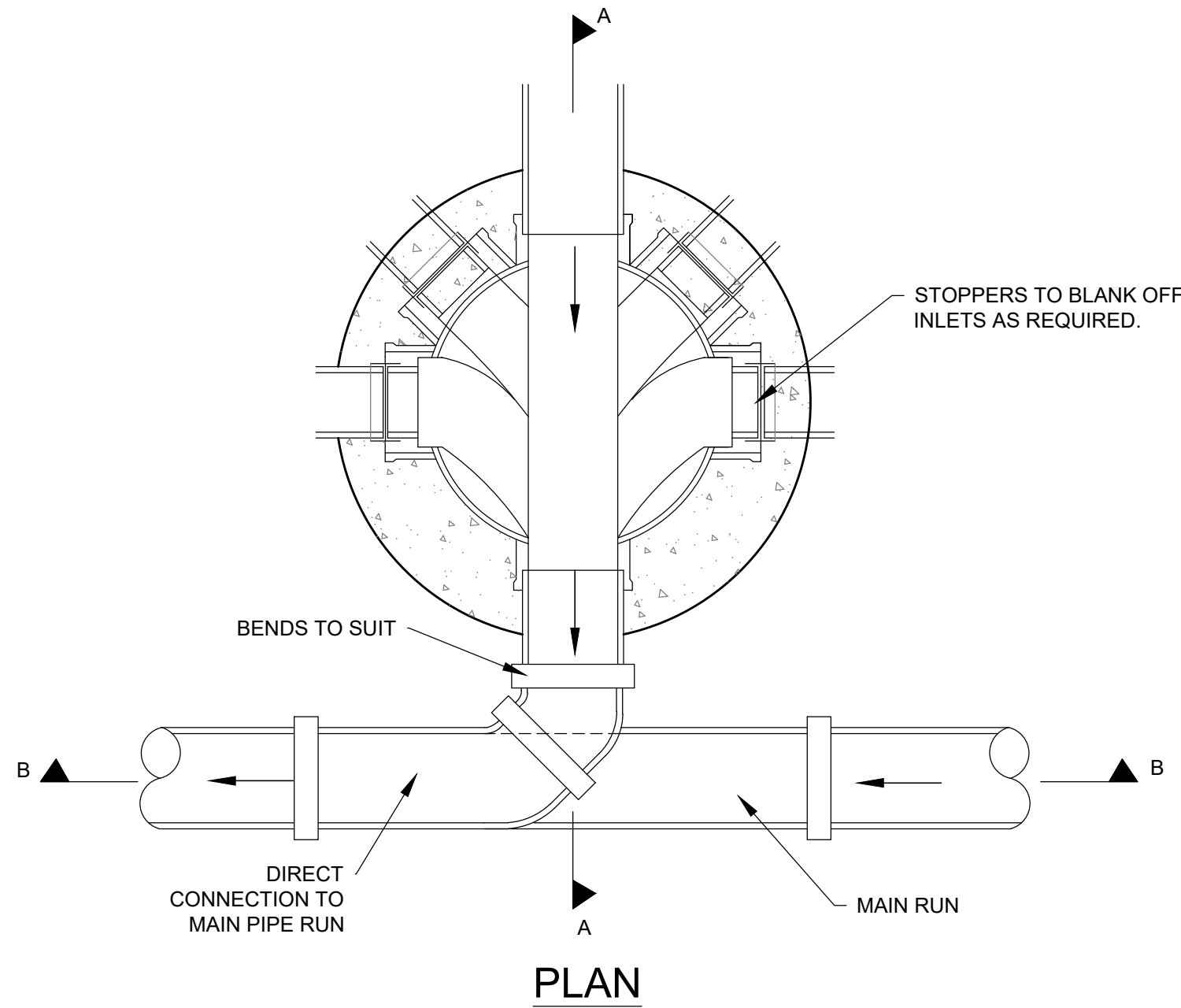
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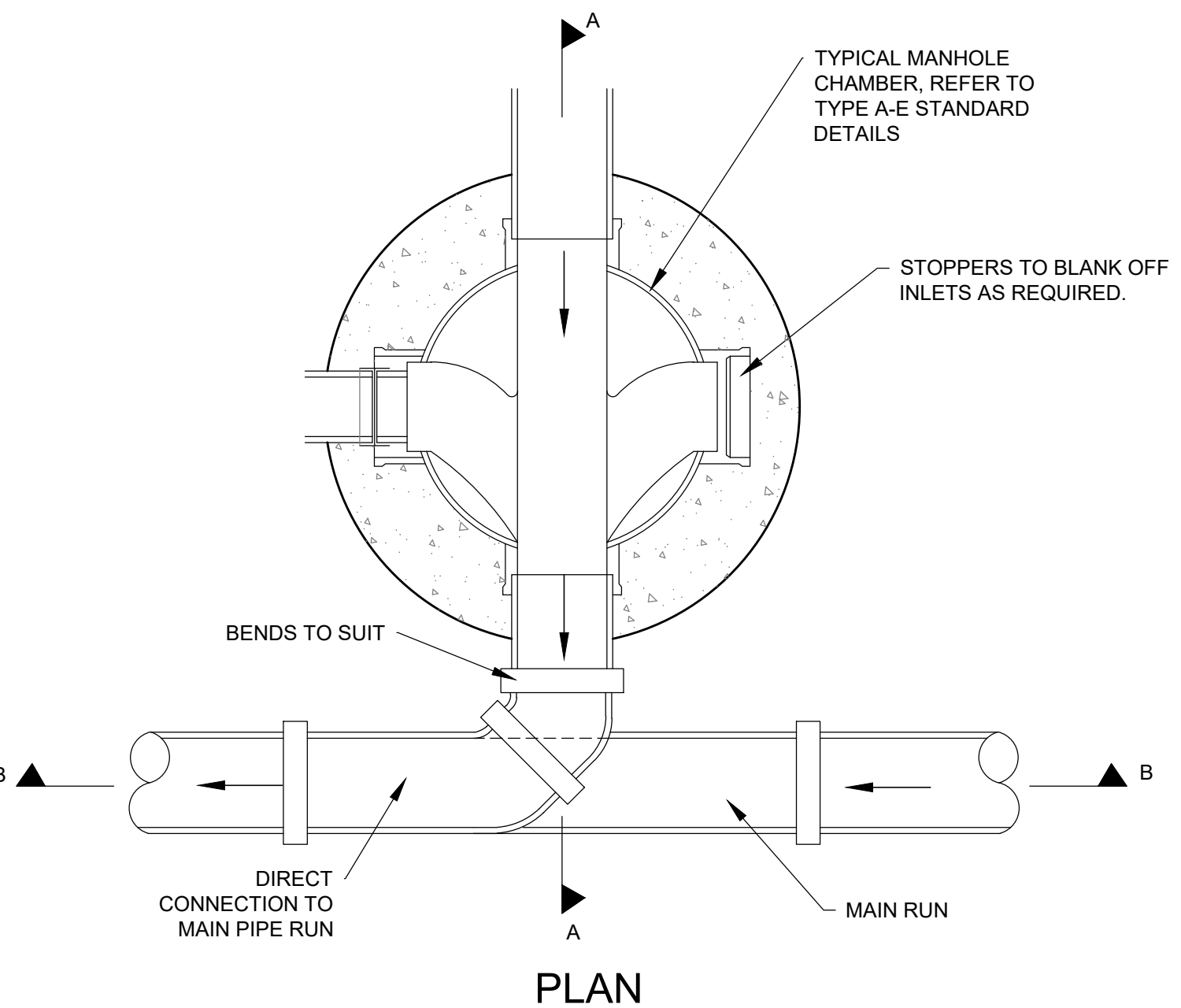
REVISION

P02

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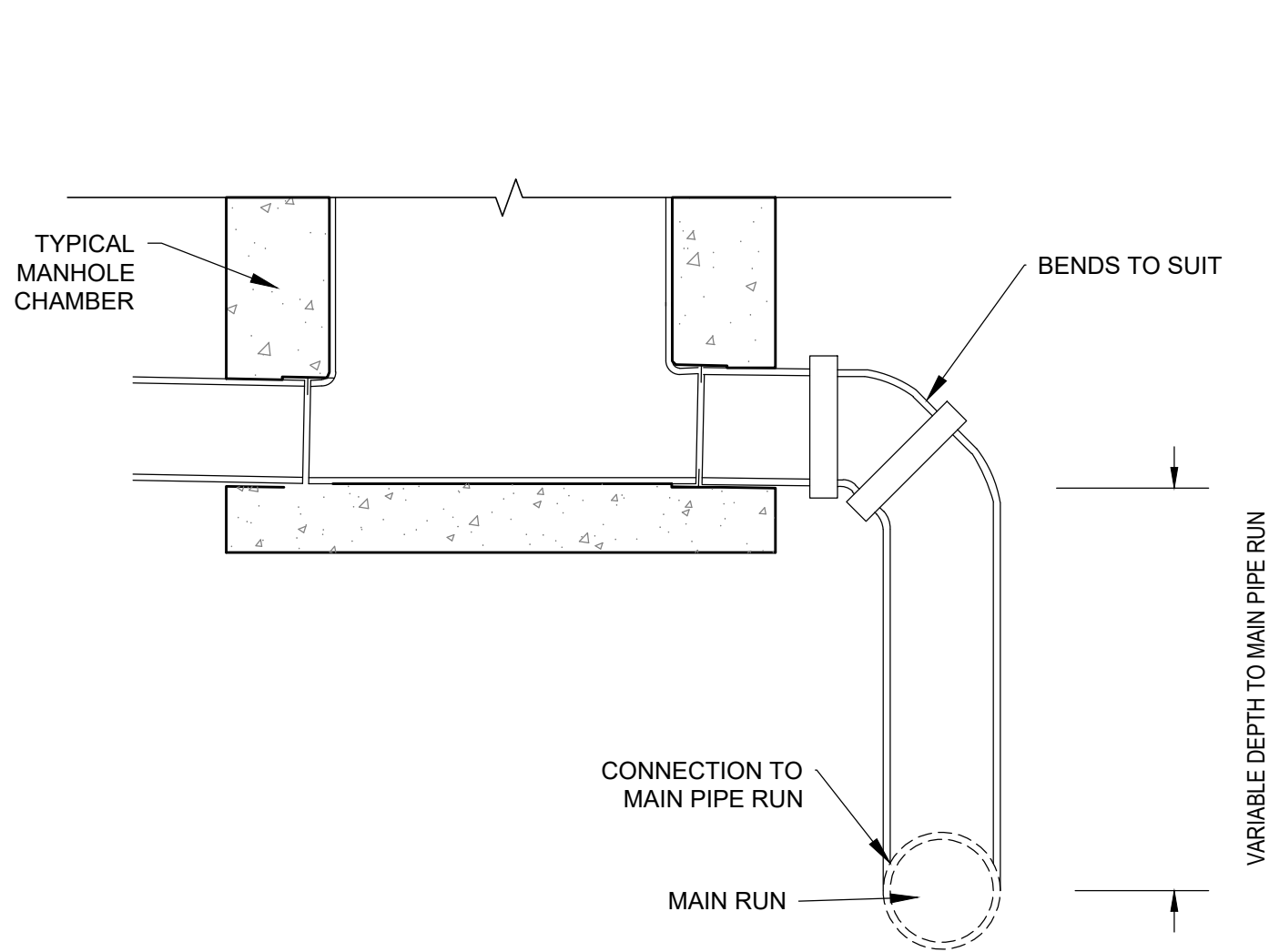
PLAN



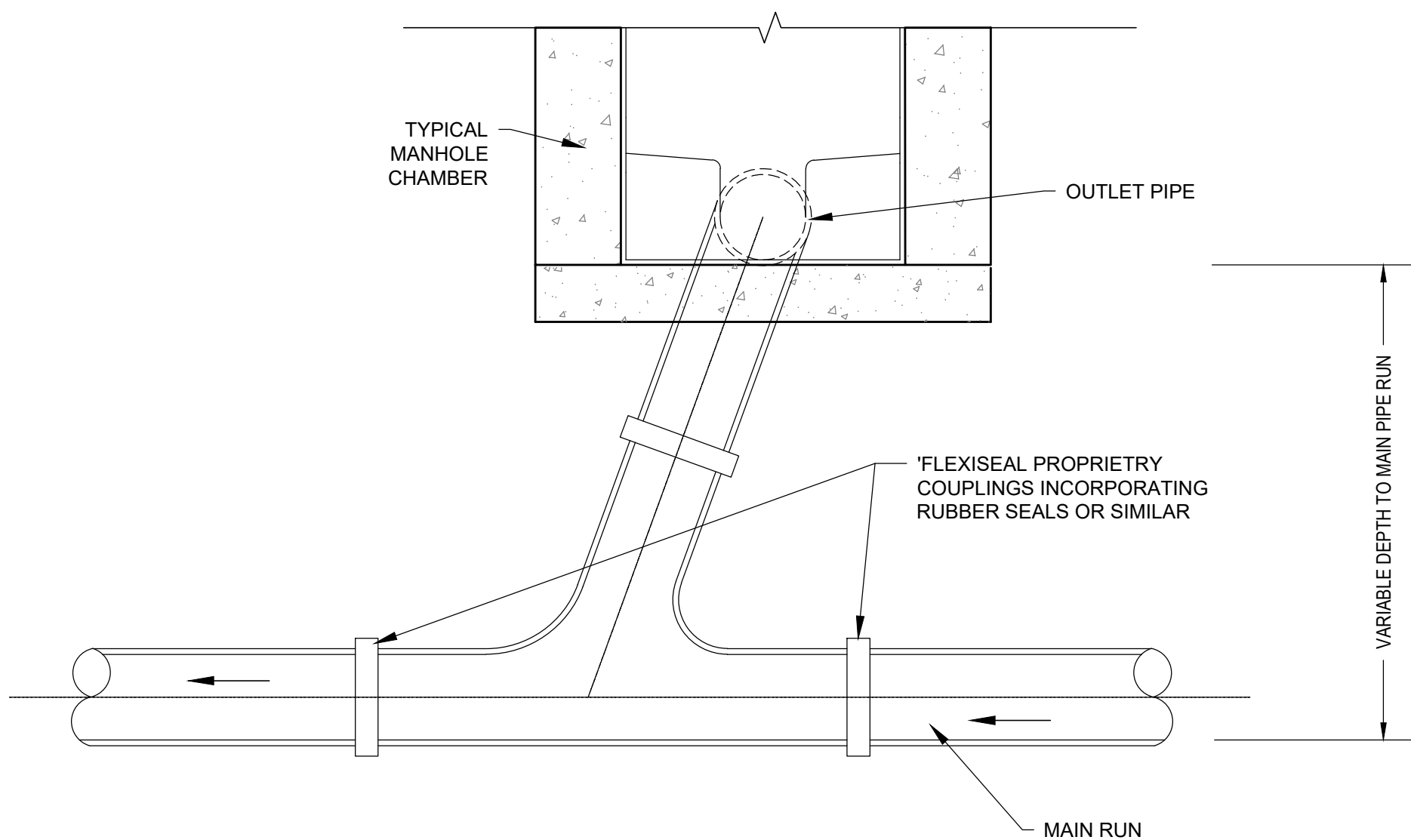
PLAN

TYPICAL MANHOLE OUTLET PIPE ARRANGEMENTS

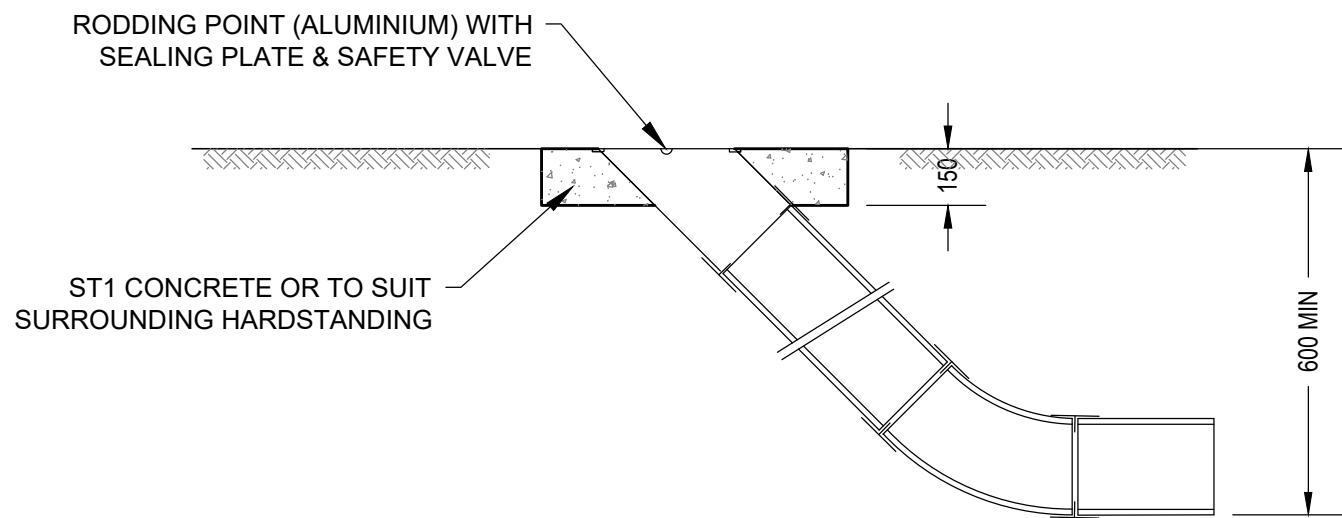
SCALE 1:10



SIDE ELEVATION (SECTION A-A)

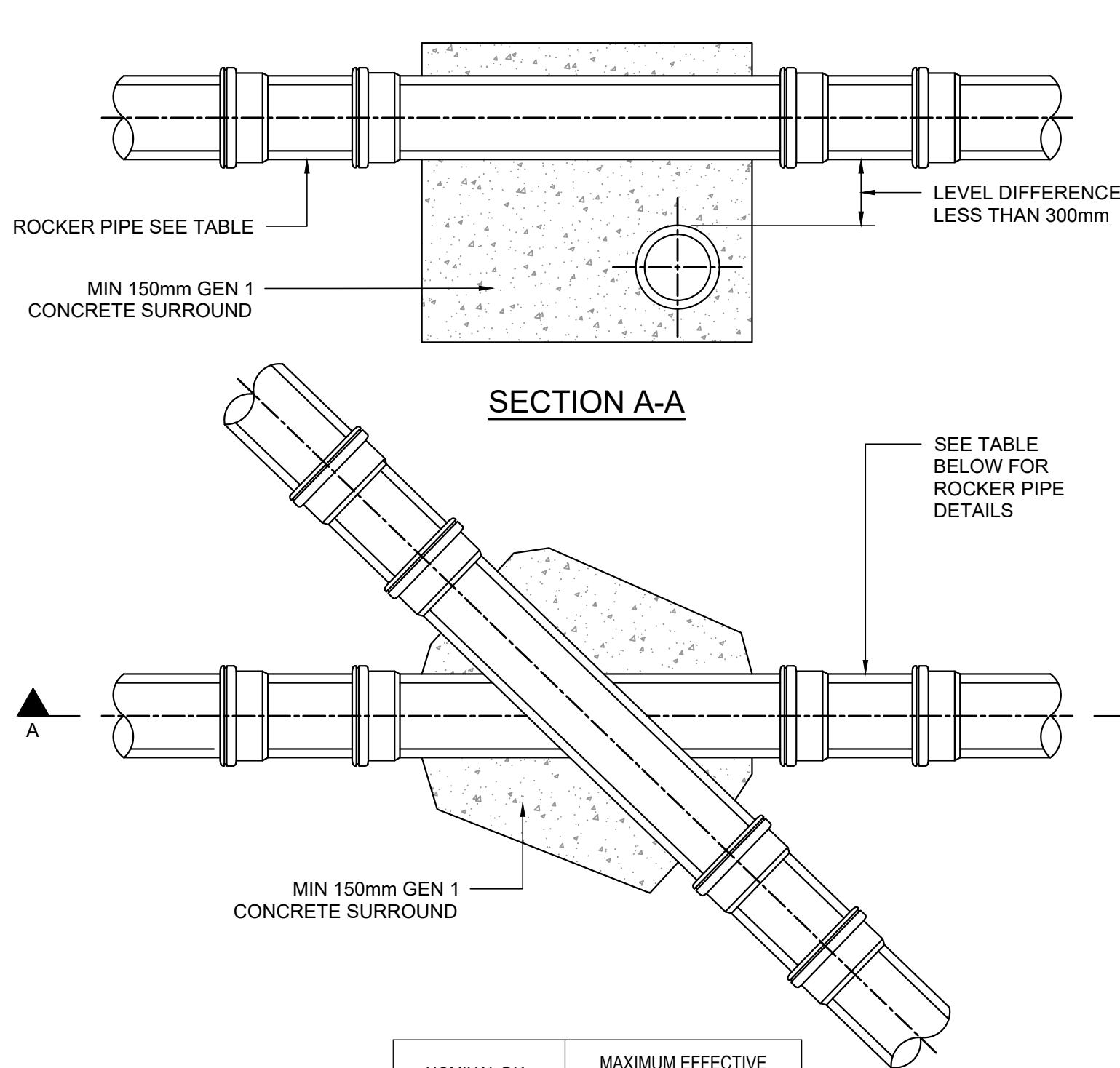


FRONT ELEVATION (SECTION B-B)



RODDING EYE DETAIL

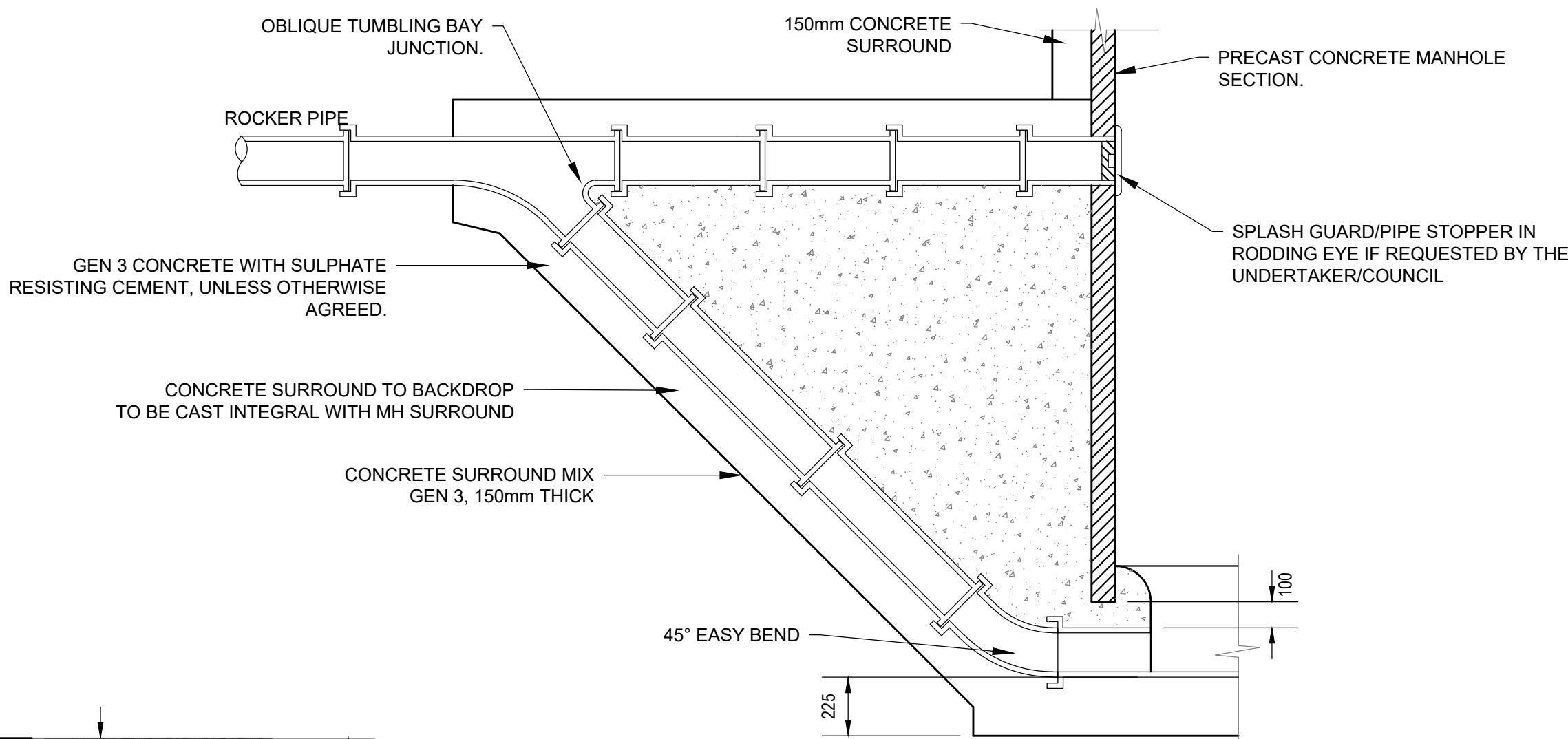
SCALE 1:20



NOMINAL DIA.	MAXIMUM EFFECTIVE LENGTH
150-600	600
601-750	1000
OVER 750	1250

TYPICAL CROSSOVER DETAIL

SCALE 1:25



45° BACKDROP DETAIL

SCALE 1:20

NOTES

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BIG BOX

PROJECT

PHASE 3, BICESTER
SYMMETRY PARK

TITLE
DRAINAGE STANDARD DETAILS
SHEET 4

HYDROCK PROJECT NO.
22281

SCALE @ A1
AS SHOWN

STATUS DESCRIPTION
SUITABLE FOR REVIEW & COMMENT

STATUS
S3

DRAWING NO.
22281-HYD-XX-XX-DR-C-0553

REVISION
P02



ACO CHANNEL SECTION

Scale 1:10



1. THIS DRAWING IS NOT TO BE SCALED.
2. TO BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS.
3. ALL DIMENSIONS ARE TO BE CHECKED ON SITE BEFORE THE COMMENCEMENT OF WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT AND ENGINEER FOR VERIFICATION. FIGURED DIMENSIONS ONLY ARE TO BE TAKEN FROM THIS DRAWING.
4. 'MARKED UP' DRAWINGS ARE TO BE PROVIDED TO THE ENGINEER UPON COMPLETION TO ENABLE PRODUCTION OF 'AS BUILT' DRAWING IN ACCORDANCE WITH CONSTRUCTION (DESIGN & MANAGEMENT): 2015 REGULATIONS 22(j).

REVISIONS					
P02	REVISED PLANNING	20/11/24	AB	AB CK	
P01	PLANNING	19/09/24	MC	AB CK	
Rev.	Revision Notes	Date	Drawn By	Checked	Approved

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 **TRITAX
BIG BOX**

PROJECT

**PHASE 3, BICESTER
SYMMETRY PARK**

TITLE DRAINAGE STANDARD DETAILS SHEET 5	
HYDROCK PROJECT NO. 22281	SCALE @ A1 AS SHOWN
STATUS DESCRIPTION SUITABLE FOR REVIEW & COMMENT	STATUS S3
DRAWING NO. 22281-HYD-XX-XX-DR-C-0554	REVISION P02