

Manchester College

Drainage Management & Maintenance Plan

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Quality information

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Approved by

Vin Bamford
Director

Revision History

Revision	Revision date	Details	Authorized	Name	Position
C01	08/09/2021	For Planning		Vin Bamford	Technical Director

Distribution List

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1 Introduction

The following report has been prepared in response to Planning Condition 11.

The conditions stated the following:

“Prior to the first use of the development, details of the implementation, maintenance and management of sustainable drainage scheme shall be submitted for approval in writing by the City Council, as Local Planning Authority.

For the avoidance of doubt, this shall include:

- Management and maintenance plan for the lifetime of the development which shall include the arrangements adoption by any public body or statutory undertaker, or any other arrangements to secure the operation of the sustainable drainage scheme throughout its lifetime.”

This condition is required in response to the Manchester Core Strategy (2012), specifically policies SP1, EN14 and DM1 which look to manage flooding and pollution as well as ensuring that a managing body is in place for sustainable drainage systems.

This report will summarise the management schedule and arrangements for the proposed drainage network.

2 Management & Maintenance Plan

All drainage proposed for the development is to remain privately owned and operated by Manchester College maintenance team. Both the foul and surface water will discharge into the existing 600mm diameter combined sewer located in Great Ducie Street to the south of the development.

The ongoing management and maintenance of the proposed surface water drainage systems will fall under the responsibility of the site owner.

Piped Drainage and Manhole Chamber Maintenance

Table 1: Piped Drainage, Channel Drains and Manhole Chambers Maintenance Schedule

Maintenance Schedule	Required Action	Frequency
Before Start up	Removal of any inappropriate material from within the chamber and dispose off-site	At Start
	All pipelines to be flushed with water to remove silt and check for blockages	At Start
Regular Maintenance	Removal of debris (which could include leaves, rubbish, branches) from areas served by drainage (where it may cause risk to performance)	Monthly
Remedial Actions	For blockages resulting in flooded manhole chambers, drain down manhole chamber and unblock	As required
	For pipe blockages, rod between access points to unblock	As required
Monitoring	Lift covers and inspect chambers. Inspect covers, surrounding gullies and ACO channels for signs of damage and incorrect operation. If required, undertake remedial action.	As required

Flow Control Device

Table 2: Flow Control Device Maintenance Schedule

Maintenance Schedule	Required Action	Frequency
Before Start	Removal of any inappropriate material from within the chambers and dispose off-site	At Start
Regular Maintenance (as per manufacturer's requirements)	Removal of debris (which could include leaves, rubbish and branches) from areas served by the drainage (where it may cause risk to performance)	Monthly
Remedial Actions	For blockages resulting in flooded manhole chambers, drain down manhole chamber and unblock	As required
Monitoring	Inspect unit and hose down is required	Monthly at the start for three months, then six monthly

Source: Available on the website (<http://www.hydro-international.biz>)

Geocellular Storage Systems / Permeable Paving**Table 3: Geocellular Storage System Maintenance Schedule**

Maintenance Schedule	Required Action	Frequency
Before Start	A pre-handover inspection should be carried out and the geocellular storage system cleaned prior to final handover	At Start
Regular Maintenance (as per manufacturer's requirements)	Remove litter and blockages as required; records of inspections and maintenance undertaken should be kept by the client	As required
	Inspect all chambers for silt and oil build up; sweep external surfaces	Every 12 months
Remedial Actions	A spillage kit appropriate to the size of the road surfaces should be kept by the site caretaker. This should include absorbent pads, socks and rain seals. As soon as a spillage is identified, the drain inlets in that area should be covered to prevent pollution entering the system. The pollution should then be cleared from the road surface. The local channel system and/or separator receiving the spillage should be emptied of all pollution that has entered. The Environment Agency should be informed of the spillage and the appropriate actions should be taken.	As required
Monitoring	Inspections of channels, road/yard gullies for signs of blockage and oil spillage	3 monthly

Source: *Permavoid System Technical Manual* available on the website:

(https://www.polypipe.com/sites/default/files/web_pcl_14_234_permavoid_technical_manual_2015_4.pdf)

Appendix A – Drainage Drawings



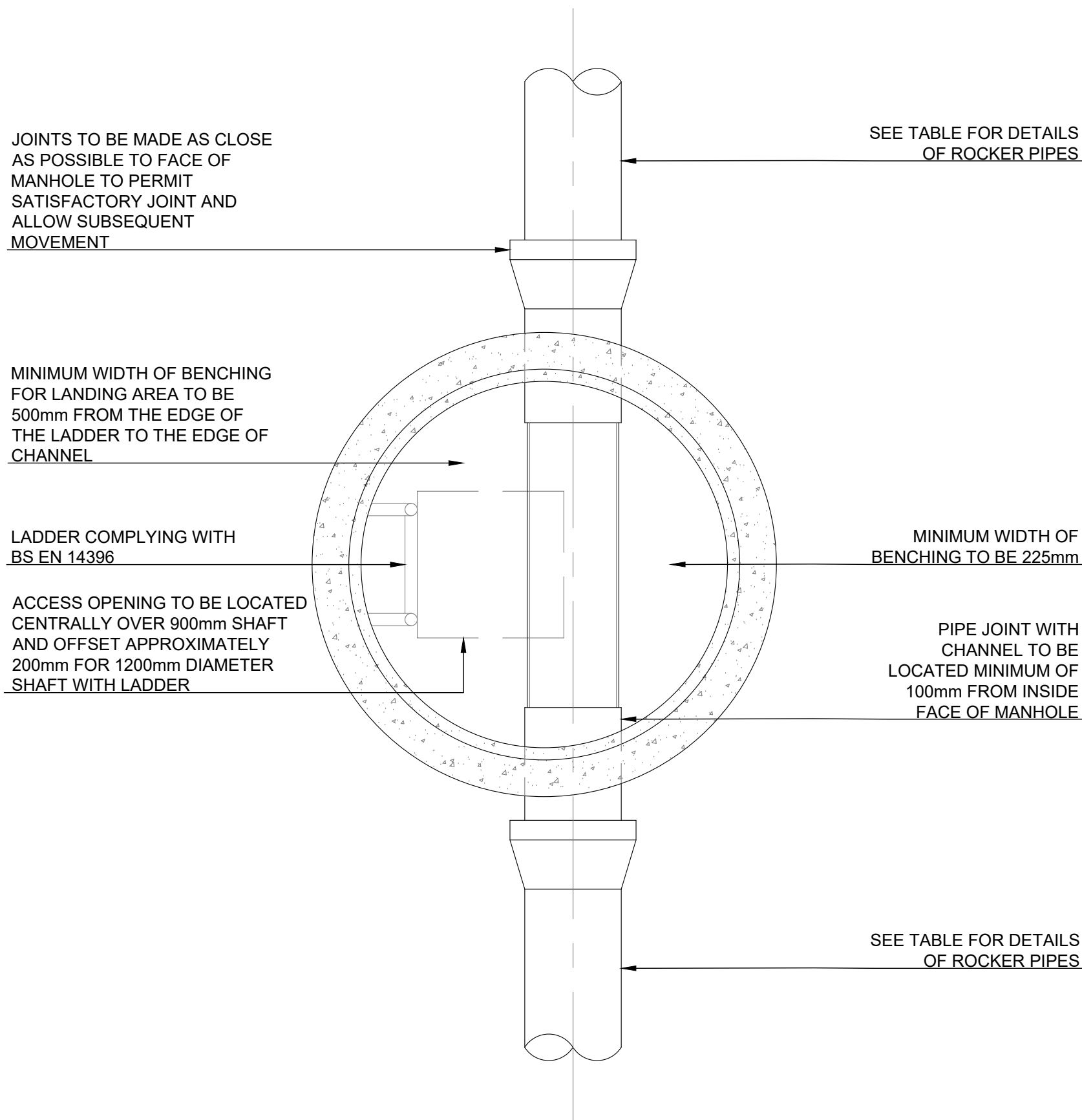
SURFACE WATER MANHOLES

Manhole Number	Cover Level	Connections	Pipe		Manhole Size	Cover
Coordinates	Depth To Soffit		Invert	Dia.		
MHS1A	29.800		1 *28.200	300	MIN. 1500	Min. 600 x 600 D400 Vented Cover to provide 2590cm ² waterway venting
E. 383840.813	1.075		2 *28.200	300		
N. 399212.987			3 *28.300	225		
			4 *28.300	300		
			5 *28.300	300		
		0 *28.200	225		*LEVELS TO BE AGREED ON SITE PRIOR TO COMMENCING WORKS	
MHS1	29.763		1 28.038	225	2100	600 x 600 D400
E. 383822.530	2 28.038		300			
N. 399219.005	3 28.038		300			
	0 26.775		525			
MHS2	29.203		1 28.023	150	1200	600 x 600 C250
E. 383757.759	1.030		2 28.023	150		
N. 399216.463			3 28.023	150		
			0 27.948	225		
MHS3	29.737		1 28.796	150	1200	600 x 600 C250
E. 383811.100	1.911		2 27.601	225		
N. 399240.273			0 27.601	225		
MHS4 (INTERCEPTOR)	29.665		1 27.506	225	NSB6	600 x 600 D400
E. 383817.349	1.984		2 27.581	150		
N. 399237.415			3 27.581	150		
			0 27.456	225		
MHS5	29.674		1 28.330	150	1200	600 x 600 D400
E. 383821.581	1.194		2 28.330	150		
N. 399228.232			3 27.581	150		
			0 28.330	150		
MHS6	29.637		1 27.018	225	1800	600 x 600 D400
E. 383814.624	2.394		2 26.718	525		
N. 399236.160			0 26.718	525		
MHS7	29.061		1 26.533	525	2100	600 x 600 D400
E. 383759.111	2.003		0 26.533	525		
N. 399210.576						
MHS8 (FLOW CONTROL)	29.939		1 28.982	150	2100	600 x 600 C250 RECESSED
E. 383788.185	3.323		2 26.391	525		
N. 399147.134			3 27.935	225		
			0 26.391	225		
MHS9	29.978		1 28.144	150	1050	600 x 600 C250 RECESSED
E. 383797.302	1.684		2 28.144	150		
N. 399132.354			0 28.069	225		
MHS10	29.975		1 27.951	225	1050	600 x 600 C250 RECESSED
E. 383790.088	1.799		0 27.951	225		
N. 399148.011						

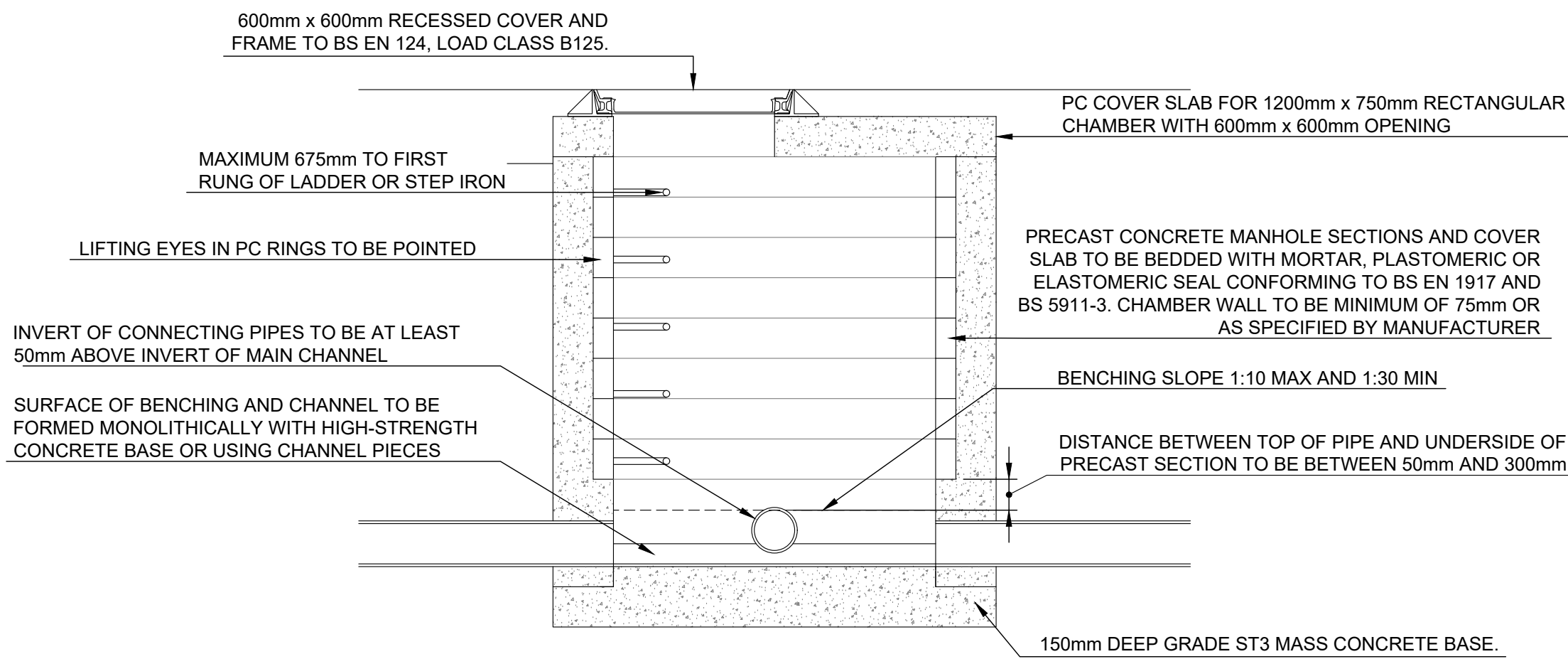
FOUL WATER MANHOLES

Manhole Number		Cover Level	Connections	Pipe		Manhole Size	Cover
Coordinates		Depth To Soffit		Invert	Dia.		
MHF1		0.000		1 28.850	100	900Ø	600 x 600 A15 RECESSED
E. 383861.813		1.075		3 28.850	100		
N. 399170.047				0 28.850	100		
MHF1a		30.000		1 28.780 2 28.780 3 29.220	100 100 100	900Ø	600 x 600 A15 RECESSED
E. 383856.591		1.120					
N. 399167.874				0 28.780	100		
MHF1b		30.000		1 28.566 2 28.566 3 28.566 4 28.566	100 100 100 100	900Ø	600 x 600 A15 RECESSED
E. 383850.354		1.334					
N. 399165.591				0 28.566	100		
MHF2		30.000		1 28.339 2 28.339 3 28.339 4 28.339	100 100 100 100	900Ø	600 x 600 A15 RECESSED
E. 383833.202		1.561					
N. 399159.896				0 28.289	150		
MHF2a		30.000		1 28.292 2 28.292 3 28.292 4 28.242	100 100 100 150	900Ø	600 x 600 A15 RECESSED
E. 383830.273		1.608					
N. 399162.247				0 28.242	150		
MHF2b		30.000		1 29.220 2 27.880 3 27.830	100 100 150	900Ø	600 x 600 A15 RECESSED
E. 383799.689		2.020					
N. 399149.839				0 27.830	150		
MHF3		29.945				1200	600 x 600 C250 RECESSED
E. 383791.668		2.354					
N. 399140.399				0 27.491	100		
MHF4		30.000		1 29.348 2 29.348 3 29.348	100 100 100	900Ø	600 x 600 D400 RECESSED
E. 383842.491		0.552					
N. 399201.351				0 29.348	100		
MHF5		30.000		1 28.943 2 28.943 3 28.943	100 100 100	900Ø	600 x 600 A15 RECESSED
E. 383831.453		0.957					
N. 399196.264				0 28.943	100		
MHF6		30.000		1 28.773 2 28.773 3 28.773	100 100 100	900Ø	600 x 600 A15 RECESSED
E. 383833.581		1.127					
N. 399191.647				0 28.723	150		
MHF6a		30.000		1 28.484 2 28.434 3 28.484 4 28.484	100 150 100 100	900Ø	600 x 600 A15 RECESSED
E. 383812.228		1.416					
N. 399181.709				0 28.434	150		
MHF7a		30.000		1 29.335 2 29.335 3 29.335 4 29.335	100 100 100 100	900Ø	600 x 600 A15 RECESSED
E. 383799.774		0.565					
N. 399185.301				0 29.335	100		
MHF7a		30.000		1 29.335 2 29.335 3 29.335 4 29.335	100 100 100 100	900Ø	600 x 600 A15 RECESSED
E. 383799.774		0.565					
N. 399185.301				0 29.335	100		
MHF7b		30.000		1 28.353 2 29.220	150 100	900Ø	600 x 600 A15 RECESSED
E. 383806.266		1.497					
N. 399179.143				0 28.353	150		

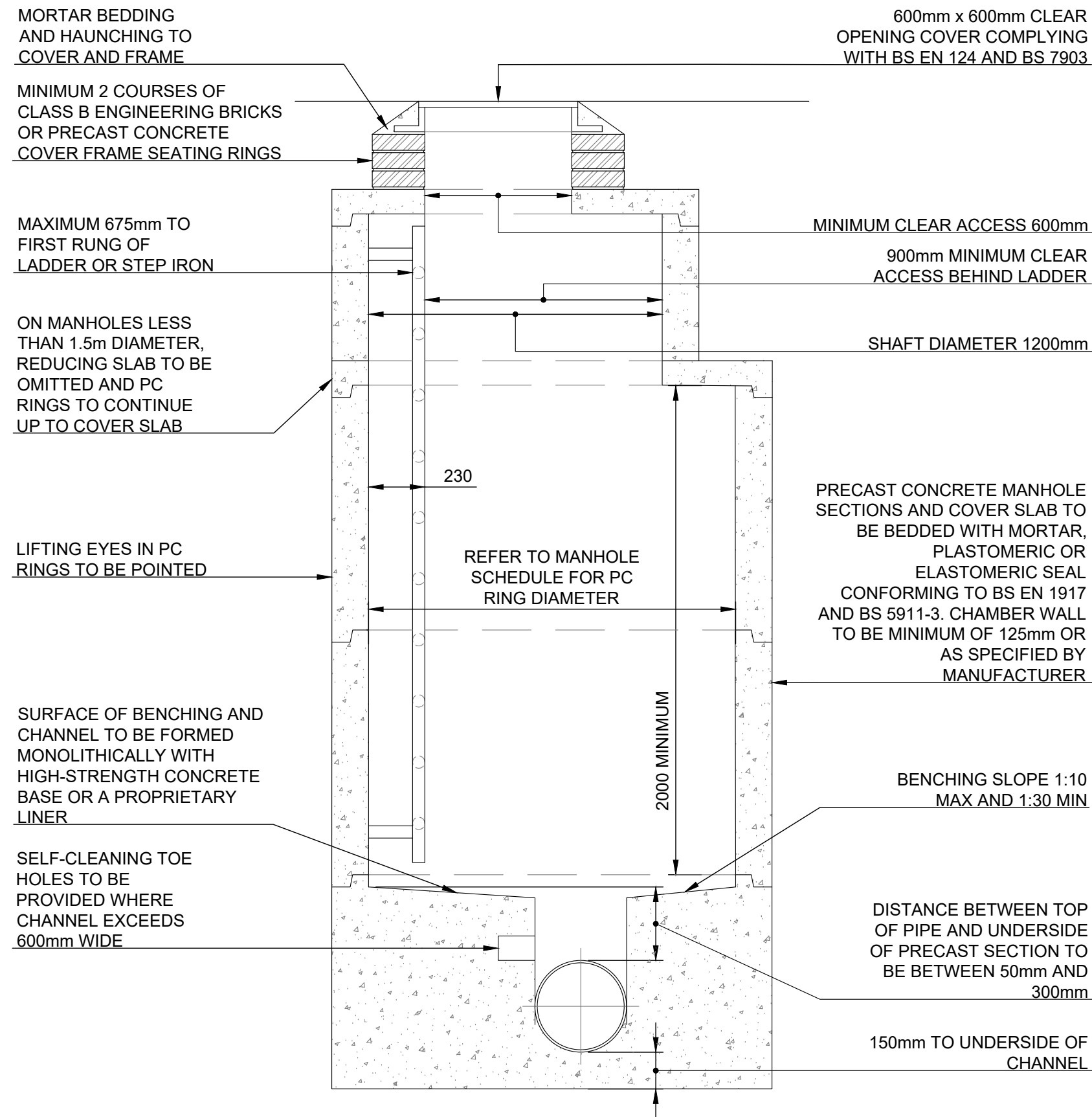
MHF7	30.000		1	2	29.220	100	900Ø	600 x 600 A15 RECESSED
E. 383802.880	1.541		2	2	28.309	150		
N. 399178.561			0	28.309	150			
MHF8a	30.000		1	2	28.394	100	900Ø	600 x 600 A15 RECESSED
E. 383790.090 N. 399166.187	1.506		2	2	28.394	100		
			3	3	28.394	100		
			4	4	28.394	100		
			5	5	28.394	100		
0	0	28.394	100					
MHF8b	30.000		1	2	28.147	100	900Ø	600 x 600 A15 RECESSED
E. 383788.020 N. 399170.680	1.753		2	2	28.097	150		
			3	3	28.147	100		
			4	4	28.147	100		
0	0	28.097	150					
MHF8c	30.000		1	2	28.208	100	900Ø	600 x 600 A15 RECESSED
E. 383791.589 N. 399174.026	1.692		2	2	28.158	150		
			3	3	28.208	100		
			4	4	28.208	100		
0	0	28.158	150					
MHF8d	30.000		1	2	28.620	100	900Ø	600 x 600 A15 RECESSED
E. 383794.250 N. 399168.004	1.280		2	2	28.620	100		
			3	3	28.620	100		
			4	4	28.620	100		
0	0	28.620	100					
MHF8e	30.000		1	2	28.079	100	900Ø	600 x 600 A15 RECESSED
E. 383783.045 N. 399168.387	1.821		2	2	28.029	150		
			3	3	28.079	100		
0	0	28.029	150					
MHF8f	30.000		1	2	28.568	100	900Ø	600 x 600 A15 RECESSED
E. 383789.550 N. 399162.751	1.332		2	2	28.568	100		
			3	3	28.568	100		
0	0	28.568	100					
MHF8	29.974		1	27.991	150	1200	600 x 600 C250 RECESSED	
E. 383780.343 N. 399167.126	1.833		0	27.991	150			
MHF9	29.959		1	2	27.700	150	1200	600 x 600 C250 RECESSED
E. 383790.032 N. 399145.984	2.109		2	2	27.700	150		
			0	27.700	150			



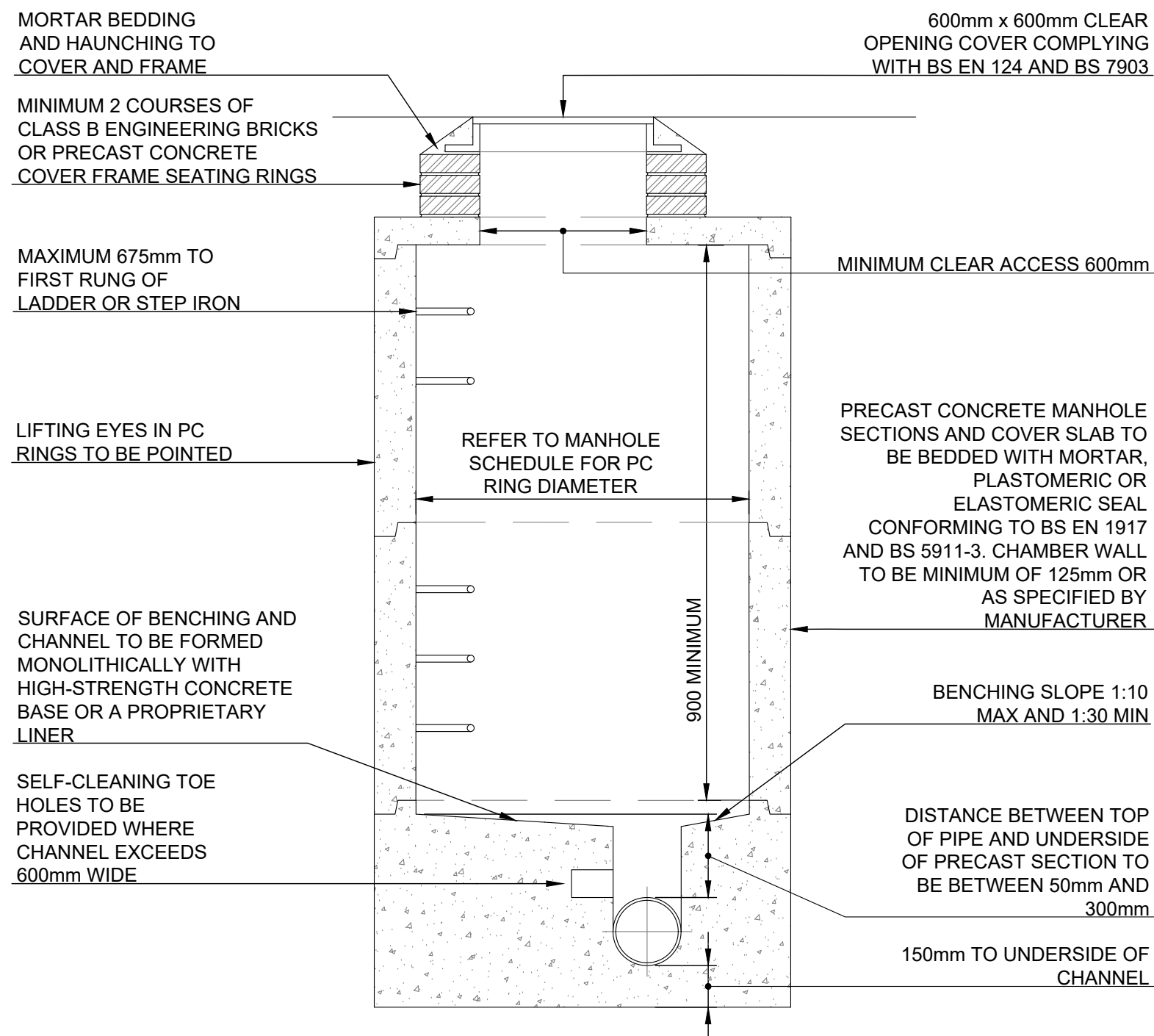
TYPICAL PLAN ON MANHOLE
(Scale 1:20)



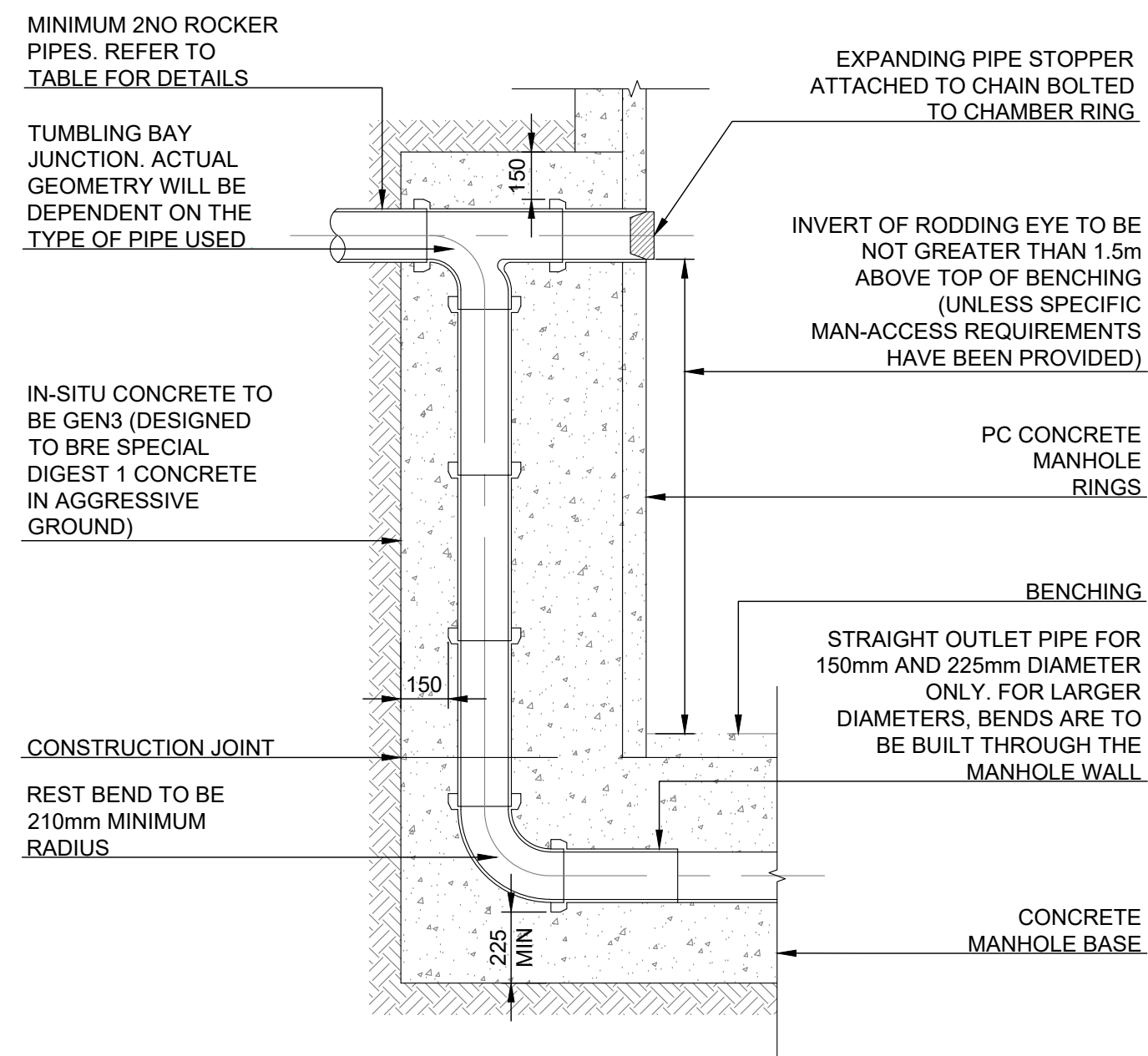
1200mm x 750mm RECTANGULAR MANHOLE DETAIL
(DEPTH TO PIPE SOFFIT 3m MAX.)
(Scale 1:10)



MANHOLE TYPE 1A
(DEPTH TO PIPE SOFFIT 3m - 6m)
(Scale 1:20)



MANHOLE TYPE 2
(DEPTH TO PIPE SOFFIT 3m MAX.)
(Scale 1:20)



TYPICAL VERTICAL BACKDROP DETAIL
(Scale 1:20)

- DO NOT SCALE FROM THIS DRAWING. ONLY STATED DIMENSIONS ARE TO BE USED.

STAGE 5

ISSUE/REVISION

NO	DATE	DESCRIPTION
C01	26/02/20	STAGE 5 ISSUE
P02	10/02/20	STAGE 4 ISSUE
P01	22/11/19	FOR INFORMATION ONLY
I/R	DATE	DESCRIPTION

SUITABILITY STATUS

A1 - Suitable for Construction

PROJECT NUMBER

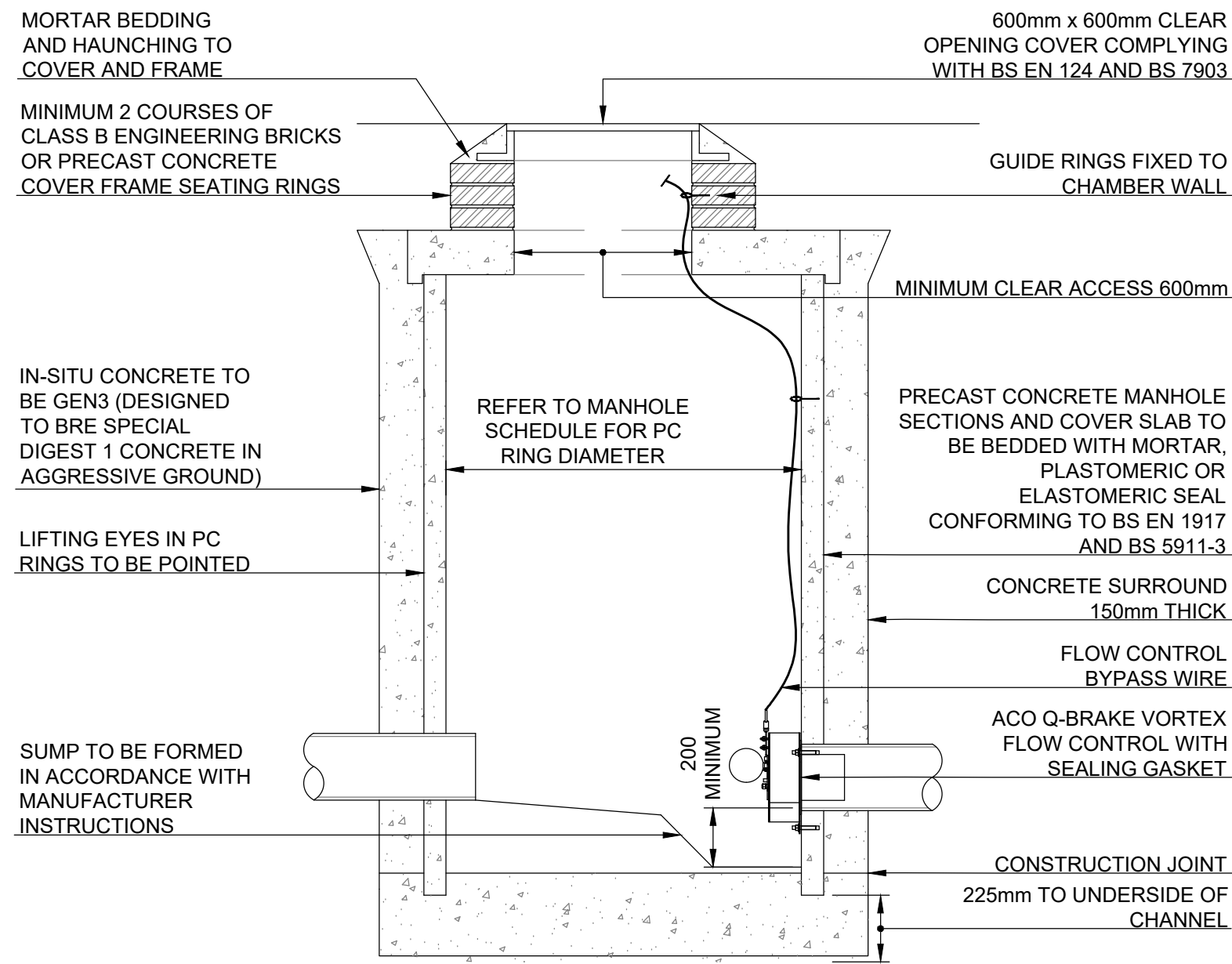
60594458

SHEET TITLE

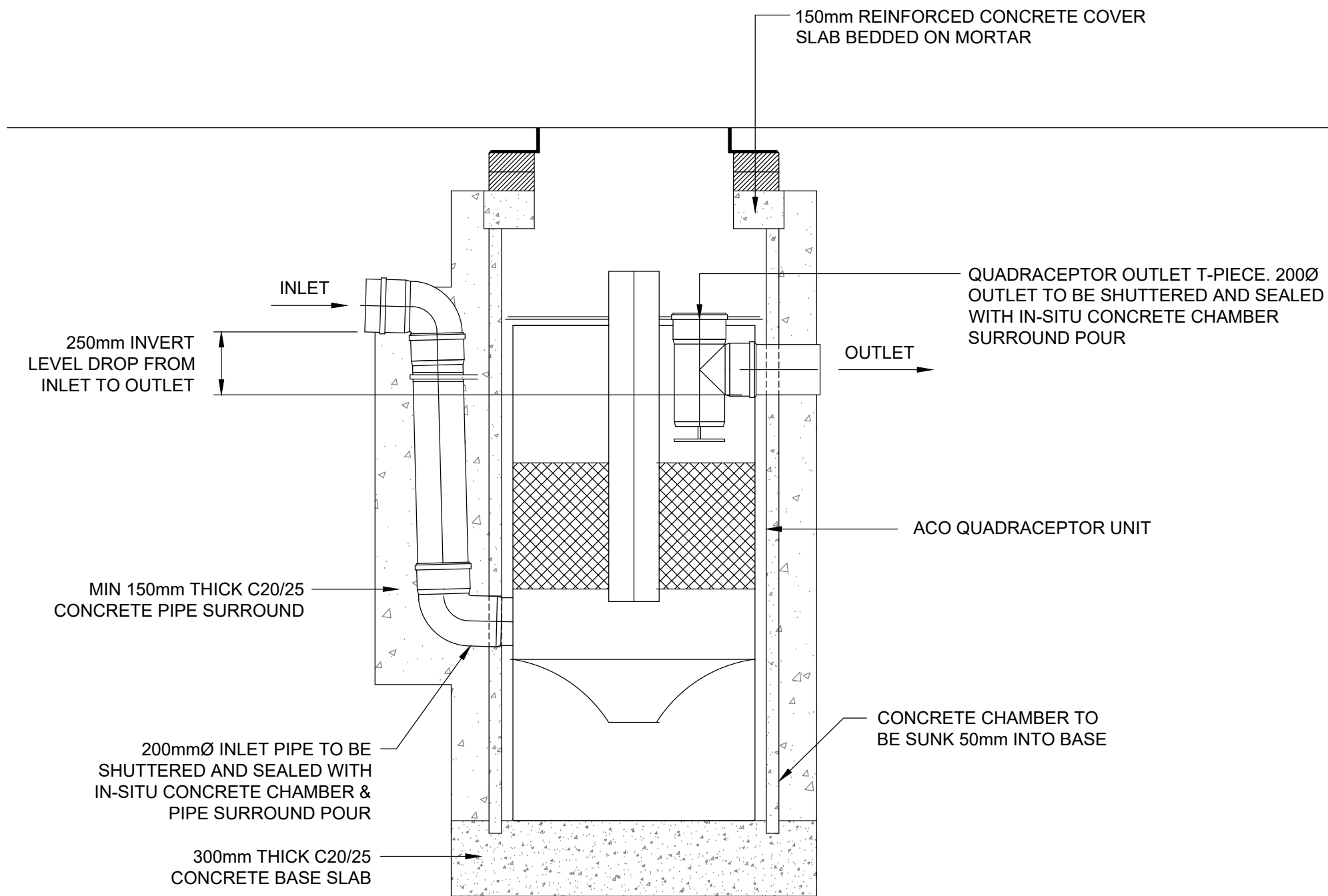
DRAINAGE DETAILS
(SHEET 1)

SHEET NUMBER

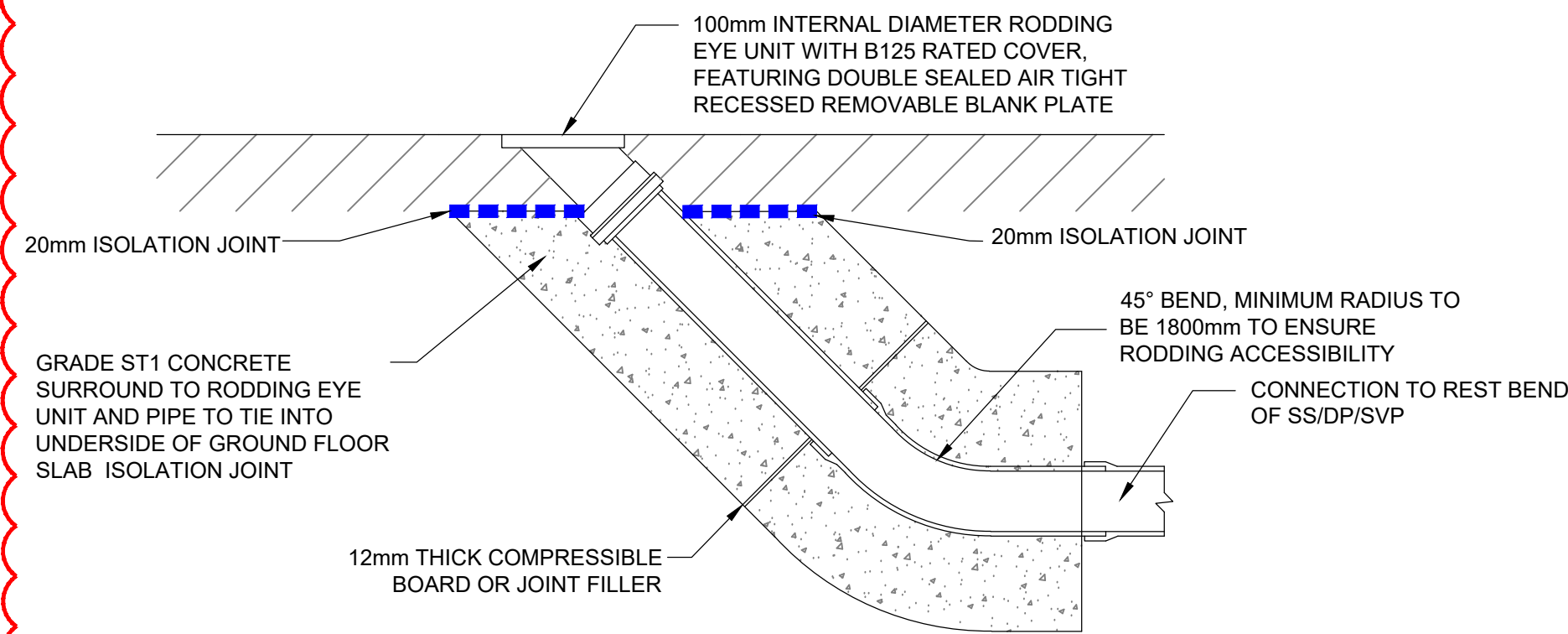
CC-ACM-PH1-XX-DR-D-9002



**ACO Q-BRAKE VORTEX
FLOW CONTROL
INSTALLATION DETAIL**

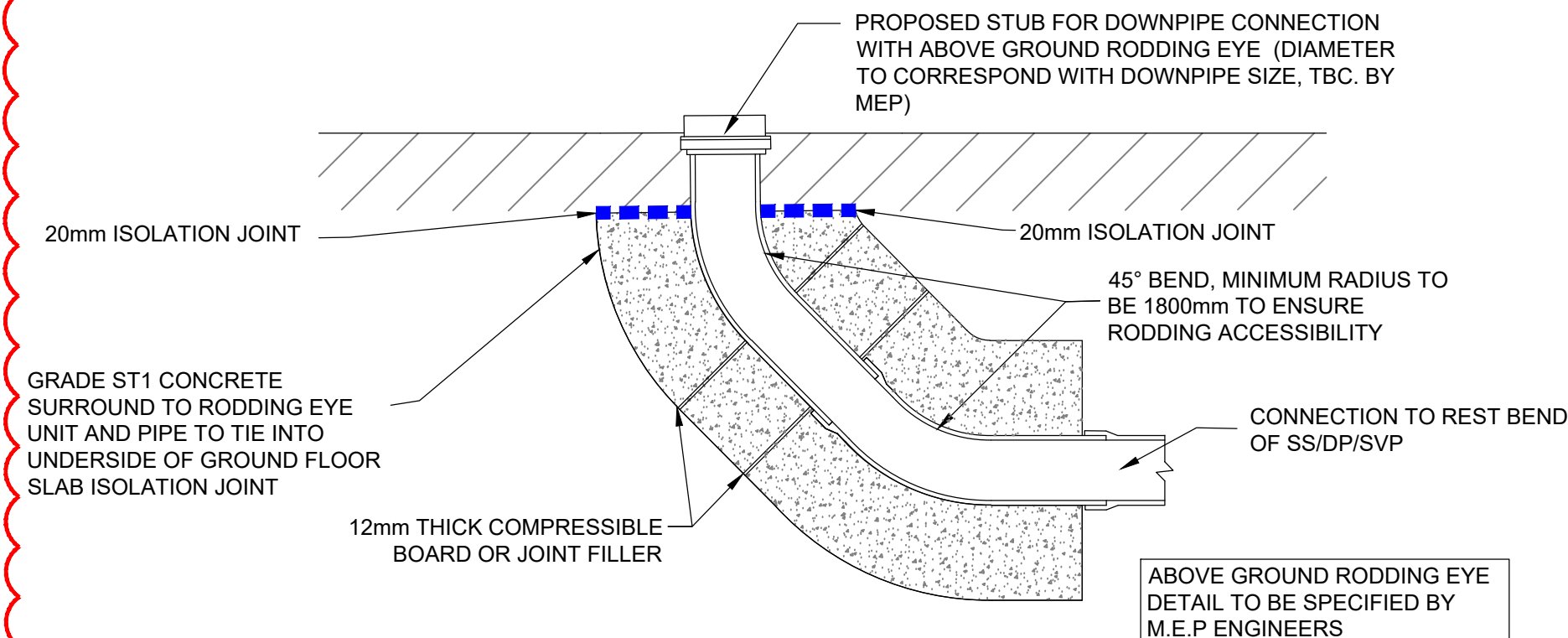


**ACO QUADRACEPTOR
INSTALLATION DETAIL**
(Scale 1:20)



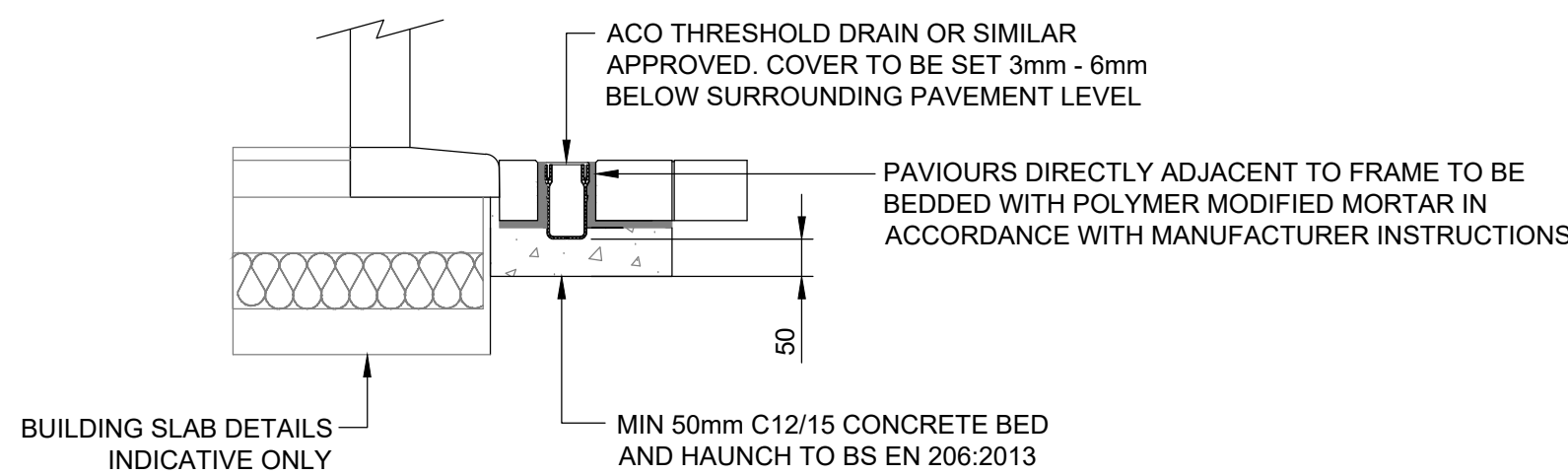
**TYPICAL 45° RODDING EYE
DETAIL**
(Scale 1:10)

ABOVE GROUND RODDING EYES ON DOWN PIPES TO BE AS PER M.E.P DESIGN

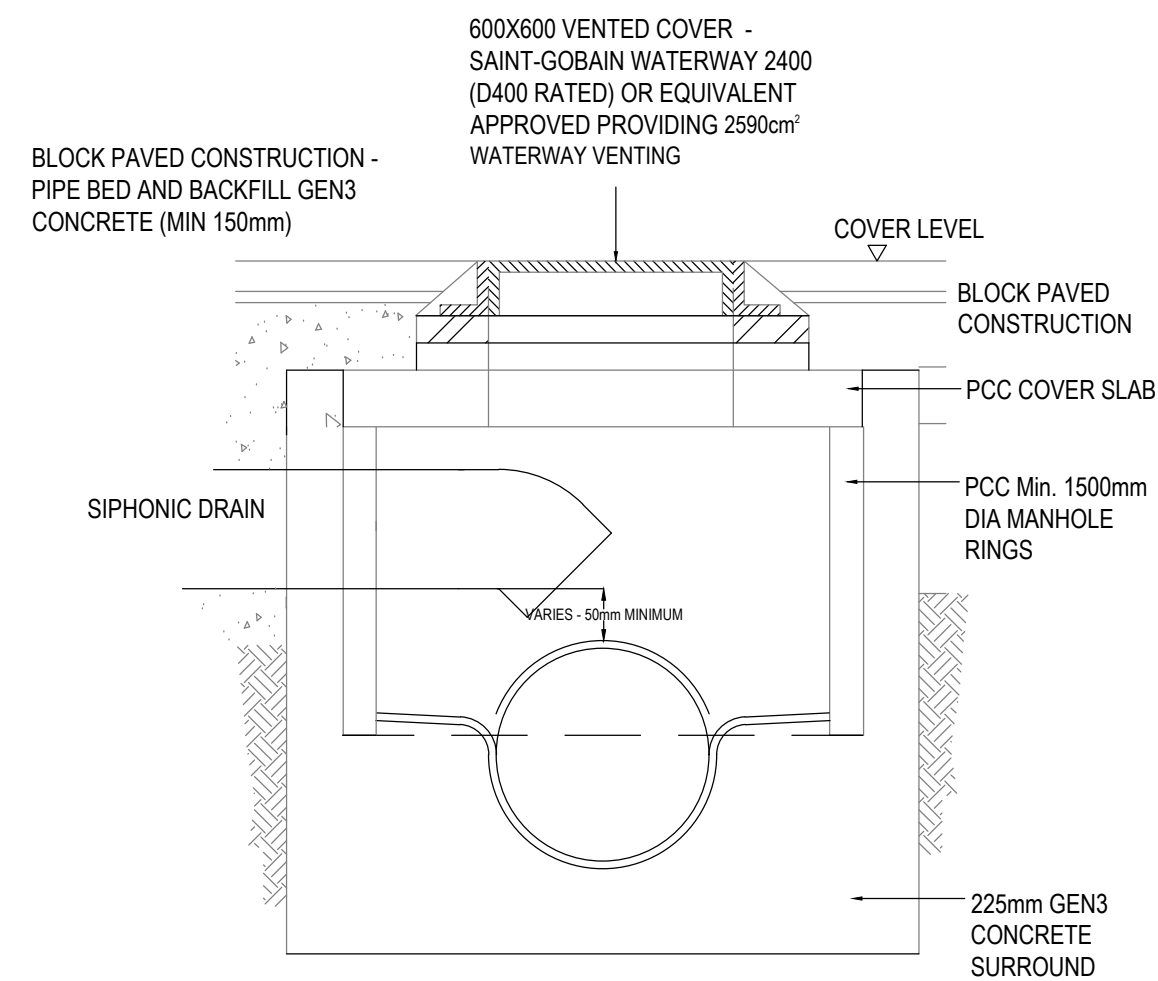


**TYPICAL ABOVE GROUND
RODDING EYE STUB
CONNECTION DETAIL**
(Scale 1:10)

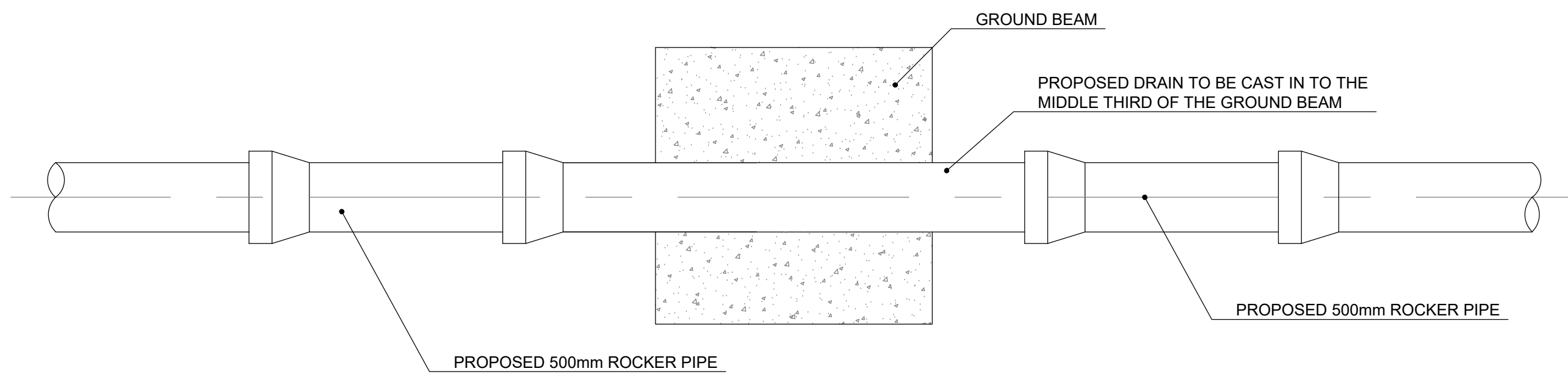
ABOVE GROUND RODDING EYE DETAIL TO BE SPECIFIED BY M.E.P ENGINEERS



**TYPICAL THRESHOLD
DRAIN DETAIL**
(Scale 1:10)



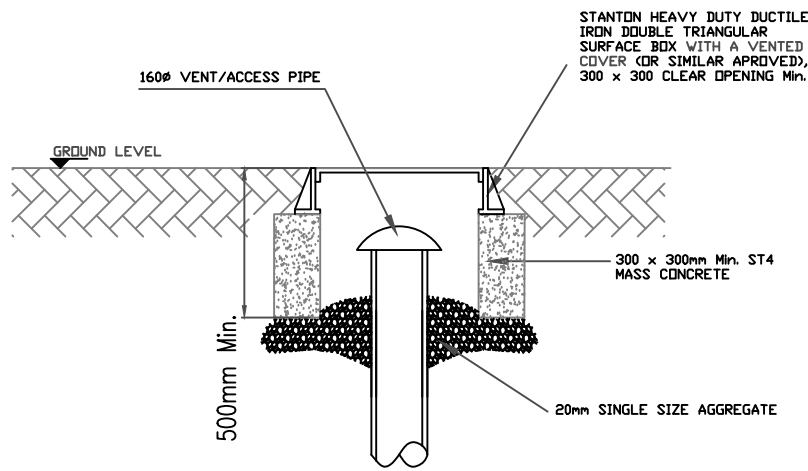
**TYPICAL AIR BRAKE MANHOLE DETAIL
TO BE USED TO AERATE DOWNSTREAM
SIPHONIC DRAINAGE SYSTEM (MH S1A)**
(NTS)



**PIPE CAST IN TO GROUND
BEAM DETAIL**
(Scale 1:10)

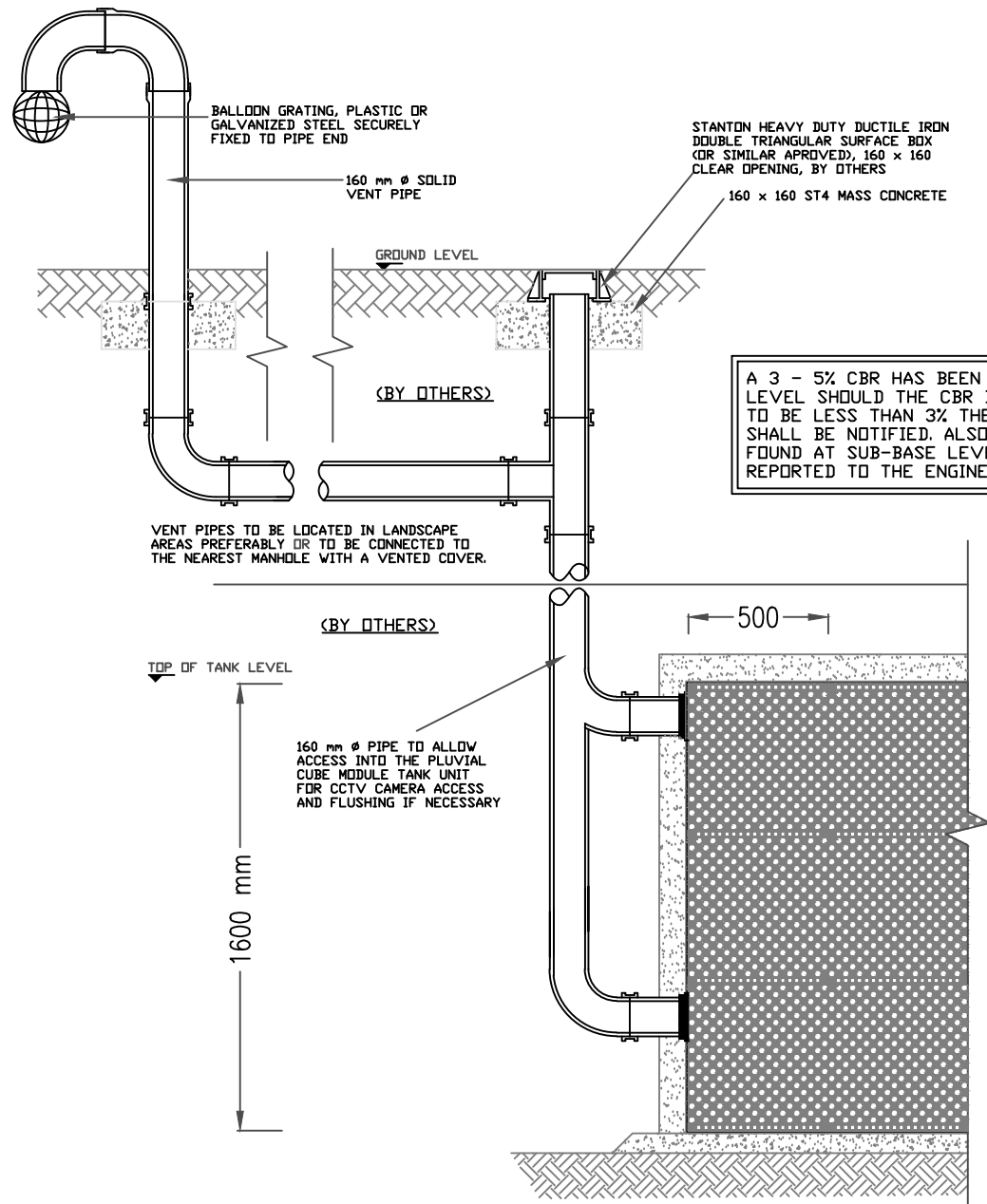
- DO NOT SCALE FROM THIS DRAWING. ONLY STATED DIMENSIONS ARE TO BE USED.
- ABOVE GROUND RODDING EYE DETAIL TO BE SPECIFIED BY MEP ENGINEERS.

NO	DATE	DESCRIPTION
C04	29/09/20	AIR BRAKE MANHOLE
C03	18/09/20	RODDING EYE DETAIL
C02	06/08/20	GROUND BEAM DETAIL ADDED
C01	26/02/20	STAGE 5 ISSUE
P02	10/02/20	STAGE 4 ISSUE
P01	22/11/19	FOR INFORMATION ONLY
I/R	DATE	DESCRIPTION



VENT BOX DETAIL
BY OTHERS
(OPTIONAL)

VENT/ACCESS TERMINATION DETAILS OPTIONS
TO SUIT SITE AND ENGINEER REQUIREMENTS.

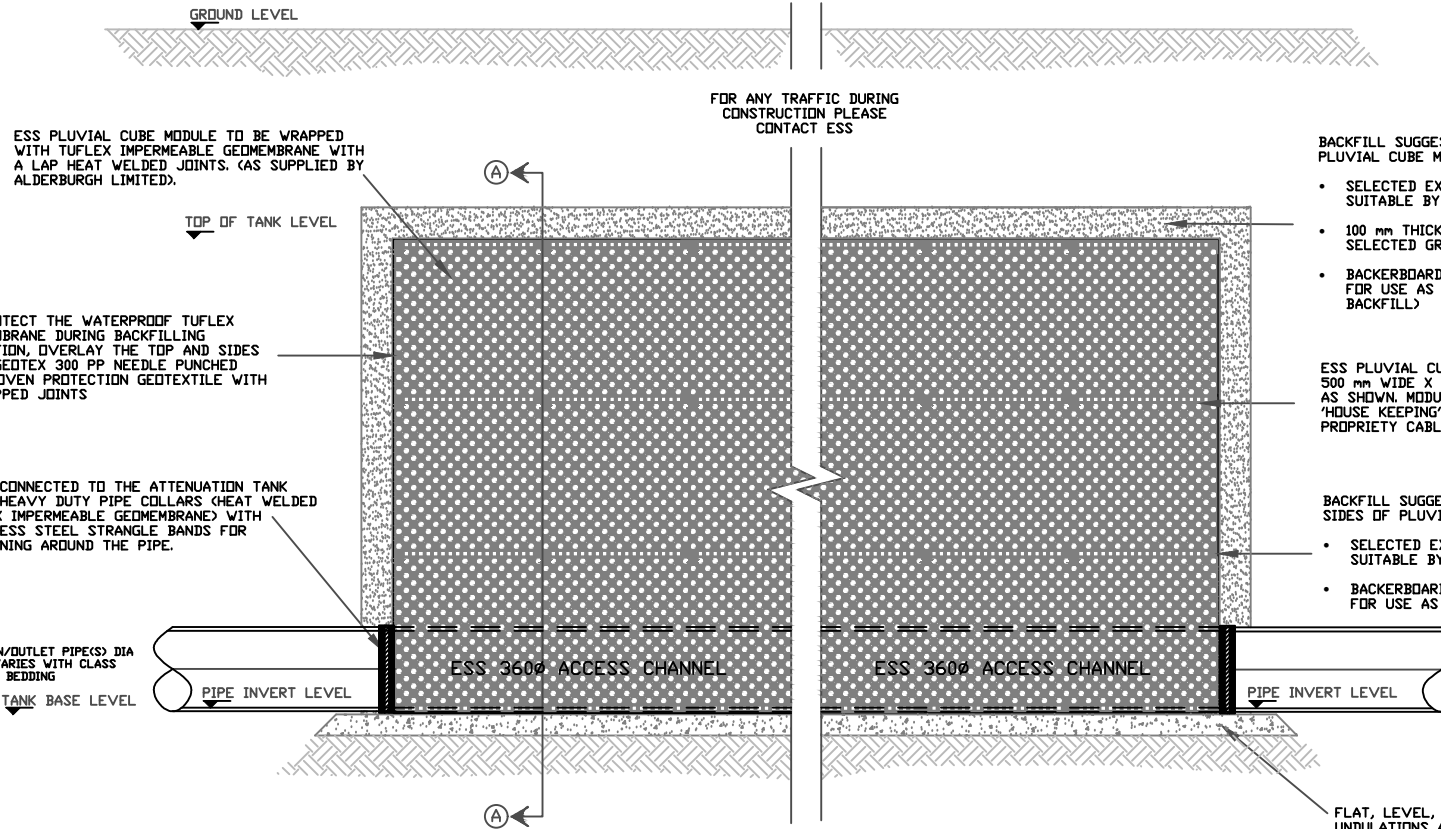


TYPICAL 160mm VENT/ACCESS PIPE CONNECTION

TO PROTECT THE WATERPROOF TUFLEX GEOMEMBRANE DURING BACKFILLING OPERATION, OVERLAY THE TOP AND SIDES WITH GEOTEX 300 PP NEEDLE PUNCHED NON-WOVEN PROTECTION GEOTEXTILE WITH AN LAPPED JOINTS

PIPES CONNECTED TO THE ATTENUATION TANK USING HEAVY DUTY PIPE COLLARS (HEAT WELDED TUFLEX IMPERMEABLE GEOMEMBRANE) WITH STAINLESS STEEL STRANGLE BANDS FOR FASTENING AROUND THE PIPE.

IN/OUTLET PIPE(S) DIA VARIES WITH CLASS S BEDDING
TANK BASE LEVEL



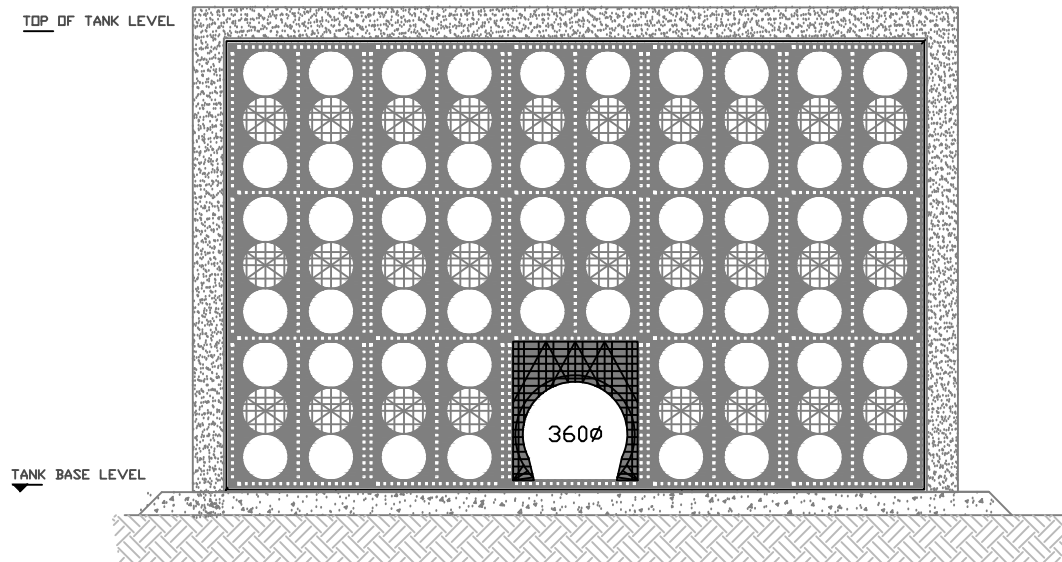
TYPICAL INLET/OUT PIPE CONNECTION

TYPICAL OUTLET PIPE CONNECTION

TYPICAL DETAILS OF ATTENUATION TANK USING
PLUVIAL CUBE MODULAR UNITS

THE CONTRACTOR SHALL PROHIBIT THE MOVEMENT OF CONSTRUCTION PLANT ACROSS THE STORAGE TANK AND WHERE NECESSARY PROVIDE ADDITIONAL SUPPORT AND PROTECTION TO THE STRUCTURE. PARTICULARLY POST CONSTRUCTION. TEMPORARY FENCING CAN BE USED TO PROHIBIT TRADE STOCKS, PILING MATERIALS, HEAVY PLANTS ETC.,

INLET/OUTLET PIPES MUST BE SUPPORTED WITH CONCRETE TO PROTECT IT DURING BACKFILLING



TYPICAL DETAILS OF ATTENUATION TANK USING
PLUVIAL CUBE MODULAR UNITS
(SECTION A-A)

- BACKFILL SUGGESTIONS OPTIONS ABOVE THE PLUVIAL CUBE MODULAR UNIT:
- SELECTED EXCAVATED MATERIAL IF SEEN SUITABLE BY THE SITE ENGINEER.
 - 100 mm THICK COARSE SAND OR CLASS 6H SELECTED GRANULAR MATERIAL.
 - BACKERBOARD HD (IS A PREMOULDED BOARD FOR USE AS PROTECTION AGAINST BACKFILL)

ESS PLUVIAL CUBE MODULE (500 mm LONG x 500 mm WIDE x 1600 mm HIGH) ARRANGEMENTS AS SHOWN. MODULES CAN BE SECURED AS A 'HOUSE KEEPING' MEASURE WITH PLASTIC PROPRIETY CABLE TIES.

- BACKFILL SUGGESTIONS OPTIONS AROUND THE SIDES OF PLUVIAL CUBE MODULAR UNIT:
- SELECTED EXCAVATED MATERIAL IF SEEN SUITABLE BY THE SITE ENGINEER.
 - BACKERBOARD HD (IS A PREMOULDED BOARD FOR USE AS PROTECTION AGAINST BACKFILL)

OUTLET PIPE(S) DIA VARIES WITH CLASS S BEDDING

FLAT, LEVEL, SMOOTH BASE WITH NO UNDULATIONS AND HAS 3-5% CBR

Notes :-

1. ALL STORAGE TANK DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE SPECIFICATIONS, METHOD STATEMENTS AND RECOMMENDATIONS OF ENVIRONMENTAL SUSTAINABLE SOLUTIONS (ESS) LIMITED, ROCHDALE.
2. THE LOCATION, SIZE AND DEPTH OF ALL EXISTING DRAINS / SEWERS AND SERVICES SHALL BE ESTABLISHED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORKS ON SITE. ANY DISCREPANCIES FROM THE INFORMATION INDICATED ON THESE DRAWINGS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
3. 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.
4. THE CONTRACTOR SHALL ALLOW FOR DEALING WITH SURFACE WATER RUN-OFF INTO EXCAVATIONS 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.
5. ALL LEVELS AND DIMENSIONS SHALL BE VERIFIED ON SITE PRIOR TO THE COMMENCEMENT OF ANY WORKS. ANY DISCREPANCIES SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
6. THE CONTRACTOR SHALL TAKE ALL NECESSARY SAFETY PRECAUTIONS IN LINE WITH CURRENT LEGISLATION WHEN WORKING IN / NEAR CONFINED SPACES, DEEP EXCAVATIONS AND MACHINERY.
7. THE CONTRACTOR SHALL TAKE ALL NECESSARY SAFETY TO PROTECT PEDESTRIANS AND VEHICLES FROM THE WORKING AREAS.
8. TO PROTECT THE ESS PLUVIAL CUBE MODULAR ATTENUATION / STORAGE TANK FROM CONSTRUCTION SITE DEBRIS, THE CONTRACTOR SHALL ENSURE THAT STOPPERS ARE SECURELY PLACED IN ALL CONNECTIONS IMMEDIATELY UPSTREAM OF THE TANK UNITS, ONLY TO BE REMOVED ONCE THE FINAL CLEANING OF THE ROADS / DRAINAGE HAS BEEN COMPLETED.
9. UPON COMPLETION OF THE WORKS THE CONTRACTOR SHALL CLEAN ALL DRAINAGE BY JETTING, REMOVING ALL DEBRIS FROM SITE, NO DEBRIS SHALL BE PERMITTED TO ENTER THE TANK STORAGE SYSTEM.
10. NUMBER OF VENT UNITS DEPENDS ON THE SIZE OF THE TANK (REFER LAYOUT DRAWING)
11. REFER SEQUENCE OF WORK DOCUMENT FOR DETAILED INSTALLATION METHODOLOGY (CONTACT ENVIRONMENTAL SUSTAINABLE SOLUTIONS (ESS) LIMITED)

Notes :- All the Dimensions by Millimeters

ENVIRONMENTAL SUSTAINABLE SOLUTIONS (ESS) LIMITED

SOLUTION HOUSE
DANE STREET
ROCHDALE
OL11 4EZ
TEL: 01706 374416
FAX 01706 376785
EMAIL: TECHNICAL@Y-ESS.COM

PROJECT

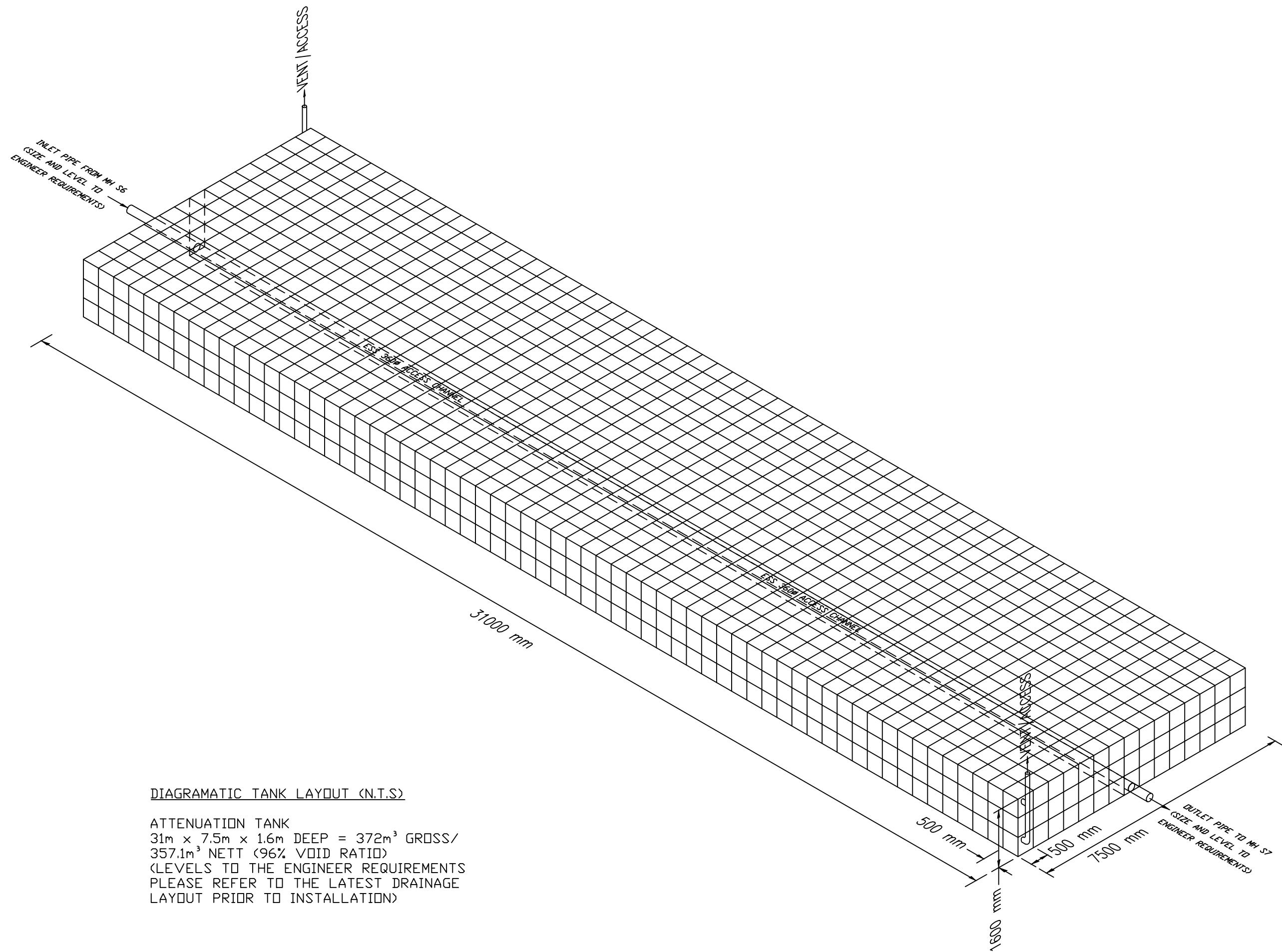
NEW CITY CENTER CAMPUS, M3
ATTENUATION TANK - DETAILS

TITLE

ATTENUATION STORAGE TANK
DETAILS USING PLUVIAL CUBE
MODULE UNITS.

Scale	Drawn	Checked
N.T.S.	AY	KD
Date	Drawing No.	Revision
20/03/2020	PCST - 3.0 Job Ref. (RP/16561)	R0

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DIAGRAMATIC TANK LAYOUT (N.T.S.)

ATTENUATION TANK
31m x 7.5m x 1.6m DEEP = 372m³ GROSS/
357.1m³ NETT (96% VOID RATIO)
(LEVELS TO THE ENGINEER REQUIREMENTS
PLEASE REFER TO THE LATEST DRAINAGE
LAYOUT PRIOR TO INSTALLATION)

- Notes :-
1. ALL STORAGE TANK DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE SPECIFICATIONS, METHOD STATEMENTS AND RECOMMENDATIONS OF ENVIRONMENTAL SUSTAINABLE SOLUTIONS (ESS) LIMITED, ROCHDALE.
 2. THE LOCATION, SIZE AND DEPTH OF ALL EXISTING DRAINS / SEWERS AND SERVICES SHALL BE ESTABLISHED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORKS ON SITE. ANY DISCREPANCIES FROM THE INFORMATION INDICATED ON THESE DRAWINGS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
 3. 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.
 4. THE CONTRACTOR SHALL ALLOW FOR DEALING WITH SURFACE WATER RUN-OFF INTO EXCAVATIONS 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.
 5. ALL LEVELS AND DIMENSIONS SHALL BE VERIFIED ON SITE PRIOR TO THE COMMENCEMENT OF ANY WORKS. ANY DISCREPANCIES SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
 6. THE CONTRACTOR SHALL TAKE ALL NECESSARY SAFETY PRECAUTIONS IN LINE WITH CURRENT LEGISLATION WHEN WORKING IN / NEAR CONFINED SPACES, DEEP EXCAVATIONS AND MACHINERY.
 7. THE CONTRACTOR SHALL TAKE ALL NECESSARY SAFETY TO PROTECT PEDESTRIANS AND VEHICLES FROM THE WORKING AREAS.
 8. TO PROTECT THE ESS PLUVIAL CUBE MODULAR ATTENUATION / STORAGE TANK FROM CONSTRUCTION SITE DEBRIS, THE CONTRACTOR SHALL ENSURE THAT STOPPERS ARE SECURELY PLACED IN ALL CONNECTIONS IMMEDIATELY UPSTREAM OF THE TANK UNITS, ONLY TO BE REMOVED ONCE THE FINAL CLEANING OF THE ROADS / DRAINAGE HAS BEEN COMPLETED.
 9. UPON COMPLETION OF THE WORKS THE CONTRACTOR SHALL CLEAN ALL DRAINAGE BY JETTING, REMOVING ALL DEBRIS FROM SITE, NO DEBRIS SHALL BE PERMITTED TO ENTER THE TANK STORAGE SYSTEM.
 10. NUMBER OF VENT UNITS DEPENDS ON THE SIZE OF THE TANK (REFER LAYOUT DRAWING)
 11. REFER SEQUENCE OF WORK DOCUMENT FOR DETAILED INSTALLATION METHODOLOGY (CONTACT ENVIRONMENTAL SUSTAINABLE SOLUTIONS (ESS) LIMITED)

R1	27/03/20	TANK SIZE HAS BEEN CHANGED.
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Notes :- All the Dimensions by Millimeters

ENVIRONMENTAL SUSTAINABLE SOLUTIONS (ESS) LIMITED

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PROJECT
NEW CITY CENTER CAMPUS-M3
ATTENUATION TANK - LAYOUT

TITLE
ATTENUATION STORAGE TANK
DETAILS USING PLUVIAL CUBE
MODULE UNITS.

Scale N.T.S.	Drawn AY	Checked KD
Date 20/03/2020	Drawing No. PCST - 31 Job Ref. (RP/16561)	Revision R1

