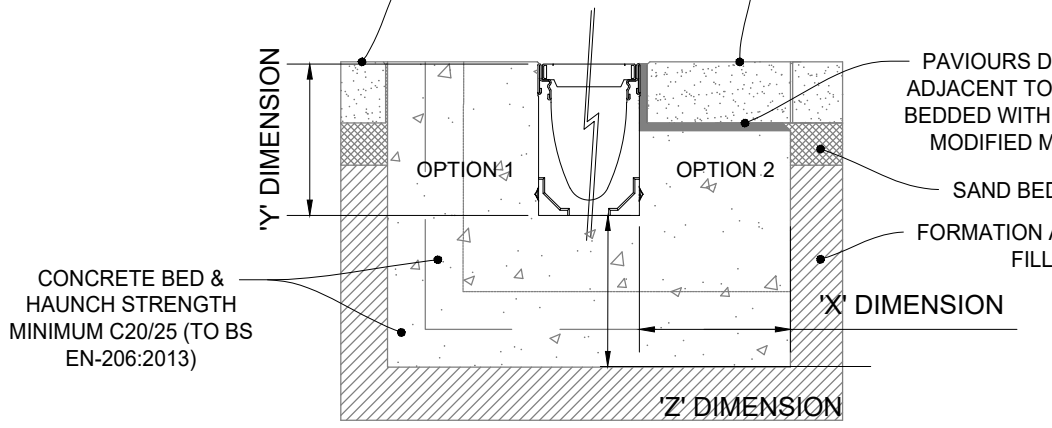


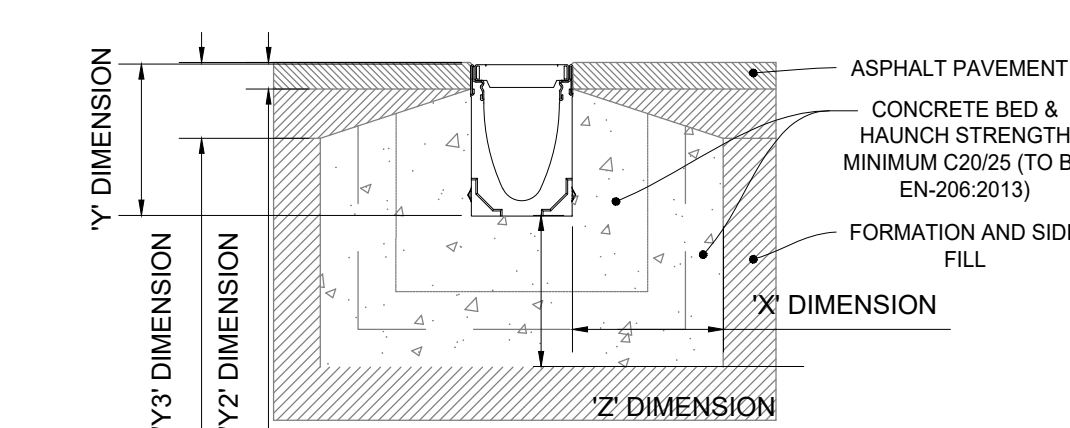
Load Class	A 15	B 125	C 250	D 400*
Minimum Dimensions (mm)	X 100 Y Full Channel Height (Less Y2 where applicable)	150 150	150 150	200 200
Maximum Dimensions (mm)	Y2 35 Y2 1, 100, 50	35 50	35 50	35 60

ACO CHANNEL INSTALLED IN ACCORDANCE WITH MANUFACTURER'S DETAILS.

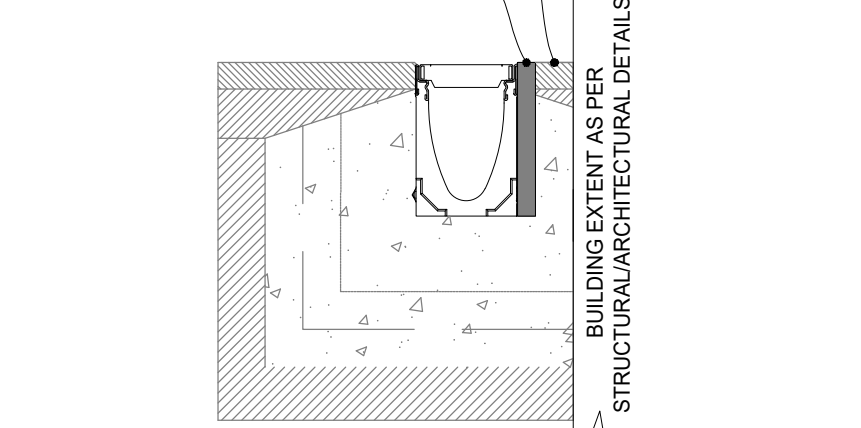
* e.g. parking areas for all types of road vehicle. Not suitable for carriageway of roads or industrial areas.



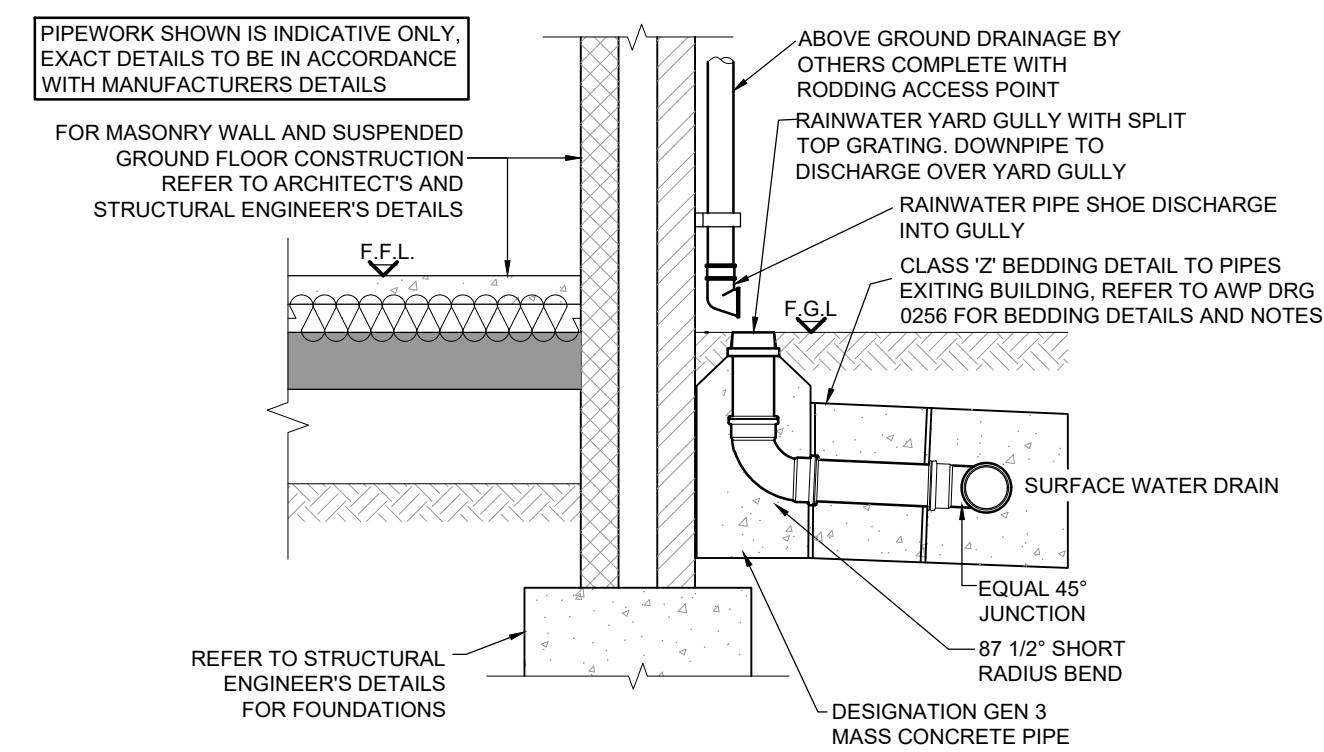
ACO MULTIDRAIN BLOCK PAVEMENT DETAIL SCALE 1:10



ACO MULTIDRAIN ASPHALT PAVEMENT DETAIL SCALE 1:10

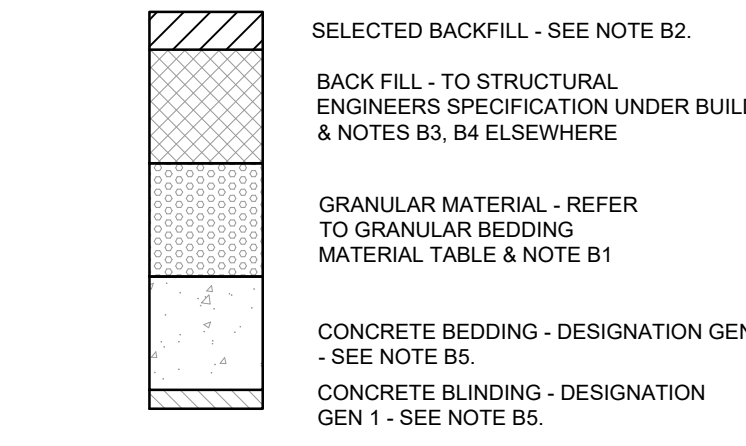


ACO MULTIDRAIN THRESHOLD DETAIL SCALE 1:10



TYPICAL RWP TO DRAIN DETAIL SURFACE SCALE 1:20

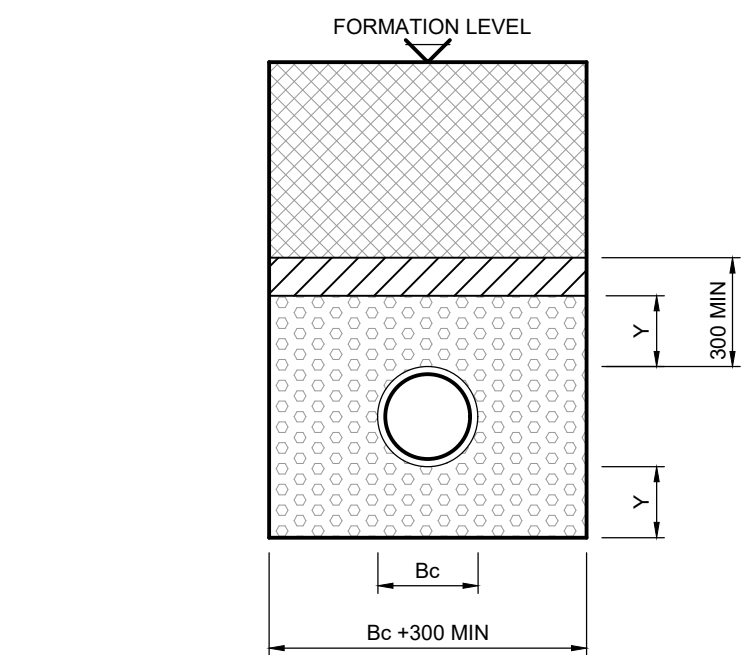
PIPE BEDDING DETAIL KEY



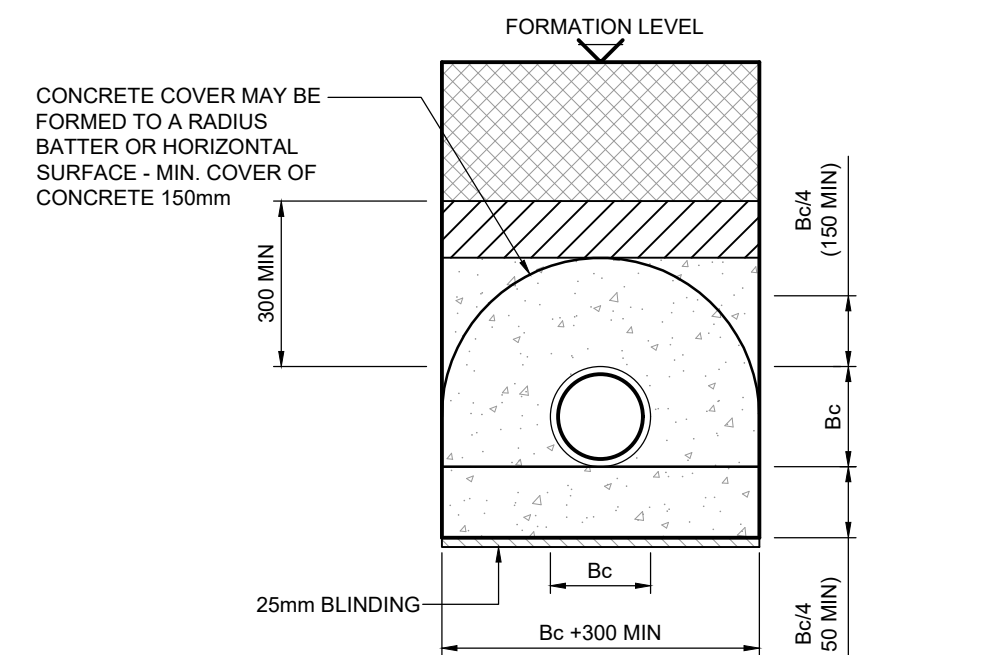
- BEDDING NOTES:**
- B1. PIPE BEDDING MATERIALS TO COMPLY GENERALLY WITH SHW - SERIES 500 - CLASS 503 GRANULAR BEDDING MATERIALS TO ALSO COMPLY WITH BS EN 13242 & THE GRANULAR BEDDING MATERIAL TABLE ON THIS DRAWING.
 - B2. SELECTED BACKFILL MATERIAL TO BE PROVIDED ABOVE THE PIPE SURROUNDING TO A HEIGHT OF 300mm MINIMUM ABOVE THE TOP OF THE PIPE. SELECTED BACKFILL MATERIAL TO BE CLASS 8 - LOWER TRENCH ALL MATERIAL IN ACCORDANCE WITH SHW - SERIES 600 TABLE B1 & TO COMPRISE OF UNIFORM SOIL, FREE FROM STONES LARGER THAN 20mm LUMPS OF CLAY OVER 100mm. TRENCH FILL MATERIAL TO BE CLASS 8 - LOWER TRENCH ALL MATERIAL IN ACCORDANCE WITH SHW - SERIES 600 TABLE B1 EXCEEDING 150mm IN THICKNESS. SHOULD THE MATERIAL BE UNSUITABLE OR WEATHER CONDITIONS AFFECT THE MATERIALS STABILITY, THEN A SUITABLE HARD GRANULAR MATERIAL SHALL BE USED UP TO FORMATION LEVEL.
 - B3. GENERAL BACKFILL TO DRAINAGE TRENCHES OTHER THAN FILTER DRAINING IN VEHICULAR TRAFFICKED AREAS ABOVE THE PIPE BEDDING & SELECTED BACKFILL SHALL BE CLASS 1, 2 OR 3 GENERAL FILL MATERIAL IN ACCORDANCE WITH SHW - SERIES 600.
 - B4. GENERAL BACKFILL UNDER NON-VEHICULAR TRAFFICKED AREAS TO BE SUITABLE AS DUS MATERIAL COMPACTED IN ACCORDANCE WITH SHW - SERIES 600 IN LAYERS NOT EXCEEDING 225mm. EACH LAYER COMPACTED TO FORM A STABLE TRENCH BACKFILL. SHOULD THE MATERIAL BE UNSUITABLE OR WEATHER CONDITIONS AFFECT THE MATERIALS STABILITY, THEN A HARD GRANULAR MATERIAL SHALL BE USED UP TO FORMATION LEVEL.
 - B5. ALL CONCRETE TO BE DESIGNATED CONCRETE TO CONFORM TO BS 8500-2.

SIEVE SIZE (mm)	PERCENTAGE PASSING (%)
40	100
31.5	98 - 100
20	90 - 99
10	25 - 70
4	0 - 15
2	0 - 5

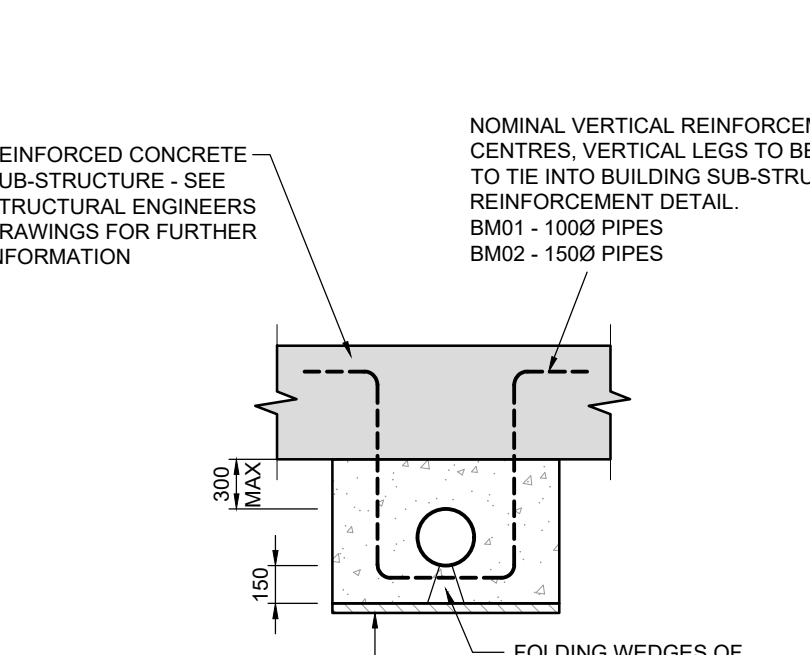
TABLE 2 4/20 COARSE GRADED AGGREGATE GRADING TABLE



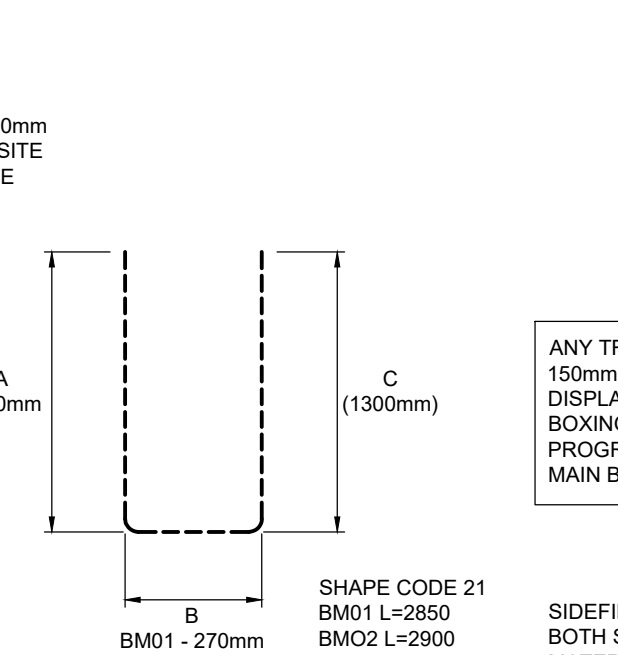
CLASS S BEDDING DETAIL SCALE 1:20



CLASS Z CONCRETE BEDDING DETAIL (EXTERNALLY AS PER NOTE 15 OF DRAINAGE NOTES) SCALE 1:20



CLASS Y CONCRETE BEDDING DETAIL (WHERE COVER TO PIPE CROWN UNDER BUILDING IS LESS THAN 300mm) SCALE 1:20



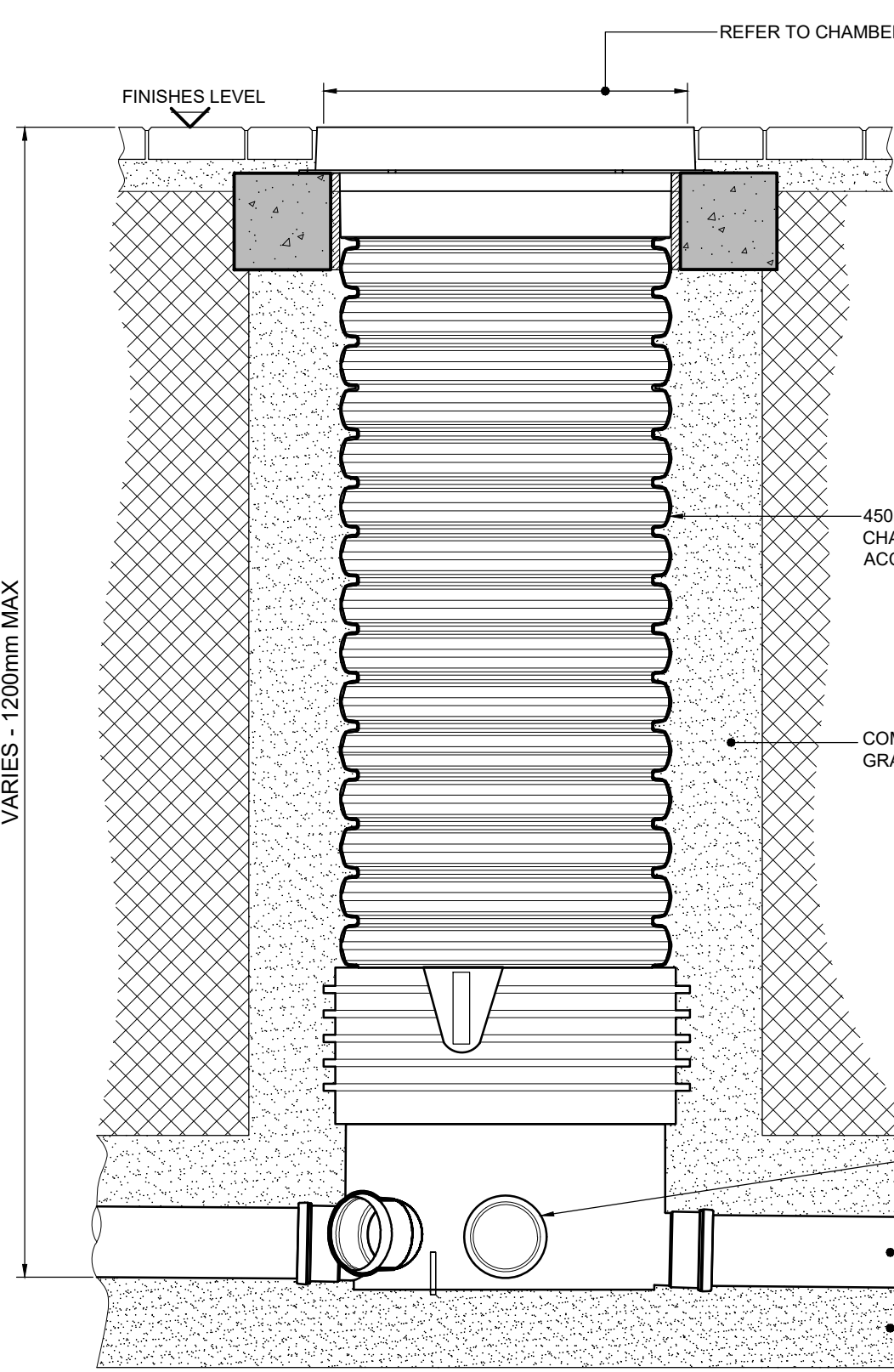
CLASS Y BEDDING REINFORCEMENT DETAIL SCALE 1:20

NOMINAL PIPE DIA (mm)	SINGLE SIZED (mm)	GRADED (mm)
100	10	N/A
OVER 100 TO 150	14 TO 20	14 TO 5
OVER 150 TO 200	14 TO 5 OR 20 TO 5	14 TO 5 OR 20 TO 5
OVER 200 TO 225	14 TO 5 OR 20	14 TO 5 OR 20 TO 5
GREATER THAN 225	14 TO 5 OR 20	14 TO 5 OR 20 TO 5

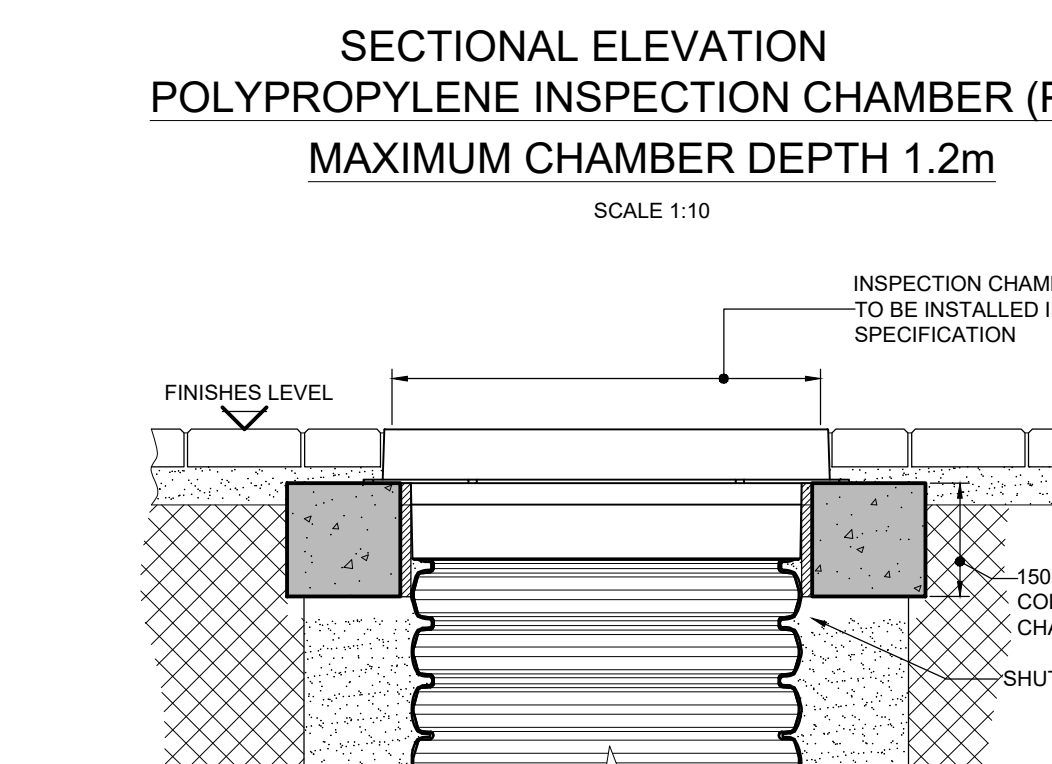
GRANULAR BEDDING MATERIAL TABLE

ALL AGGREGATES TO BS EN 13242, PD 6682-6:2003 & BS EN 13055-2

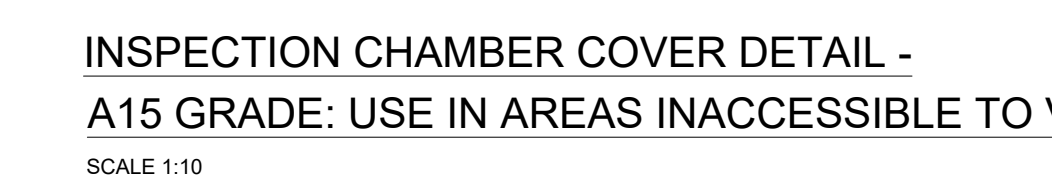
- NOTES:**
- A) Bc = OUTSIDE DIAMETER OF PIPE BARREL.
 - B) Y = FOR UNIFORM SOLES.
 - SLEEVE JOINTED PIPES, MIN 20mm OR 1/8", WHICHEVER IS THE GREATER, SOCKETED PIPE, MIN 100mm OR 1/8", WHICHEVER IS THE GREATER UNDER BARRELS. NOT LESS THAN 15mm UNDER SOCKETS FOR ROCK OR MIXED SOILS CONTAINING ROCK BANDS, Boulders, STONES OR OTHER IRREGULAR HARD SPOTS. SLEEVE JOINTED PIPES, MIN 150mm OR 1/8", WHICHEVER IS THE GREATER, SOCKETED PIPE, MIN 200mm OR 1/8", WHICHEVER IS THE GREATER UNDER BARRELS. NOT LESS THAN 15mm UNDER SOCKETS.
 - CONCRETE BED AND SURROUND TO BE DISCONTINUED AT EVERY PIPE JOINT (NOT TO EXCEED 5m) USING COMPRESSIBLE FILLER, COMPRESSIBLE FILLER TO BE 15mm THICK FOR PIPEWORK UP TO 450mm DIAMETER, FOR PIPES OVER 450mm FLEXIBLE JOINTS TO BE 30mm THICK.



PLAN - CHAMBER (100mm PIPEWORK)



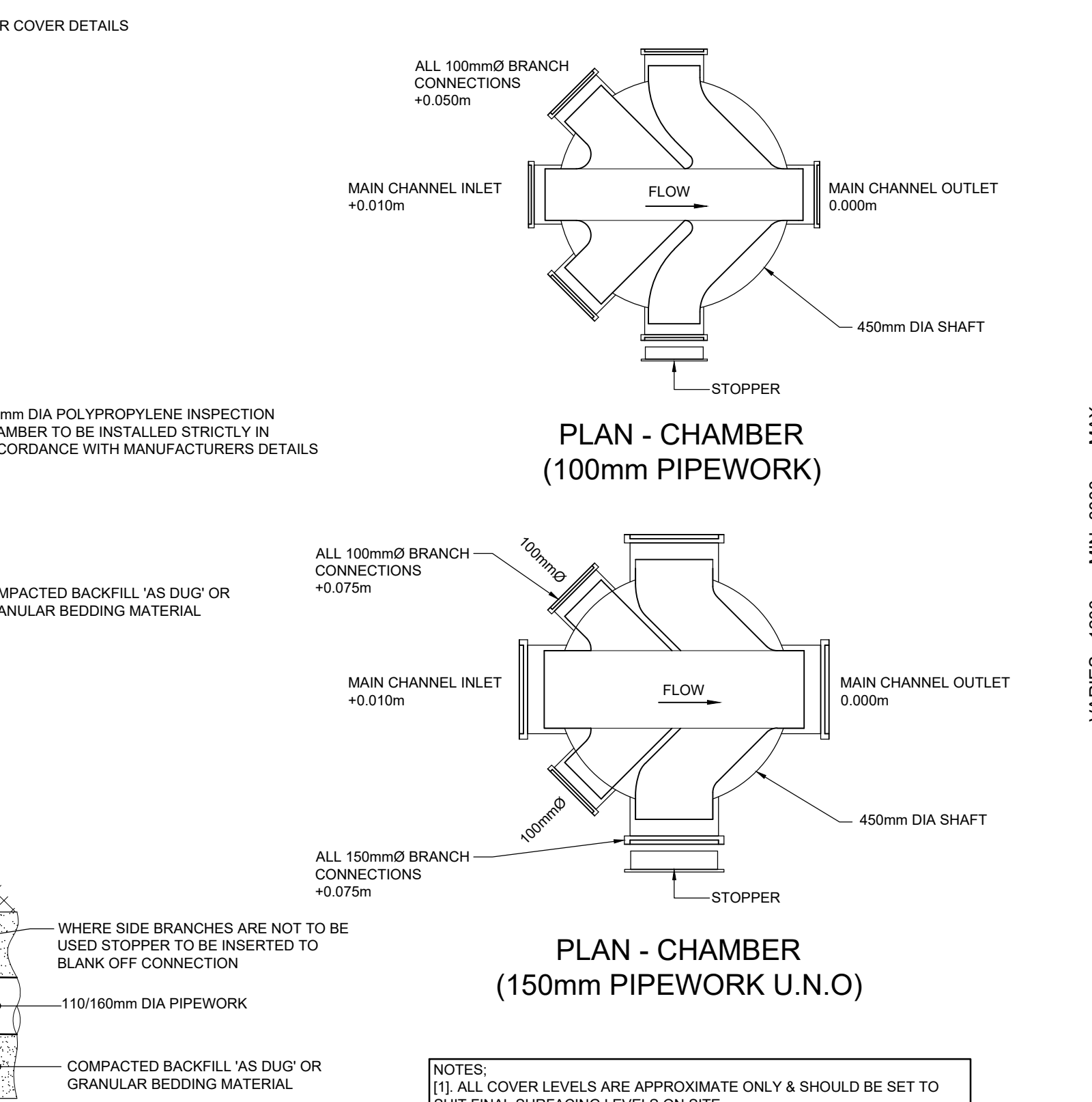
PLAN - CHAMBER (150mm PIPEWORK U.N.O)



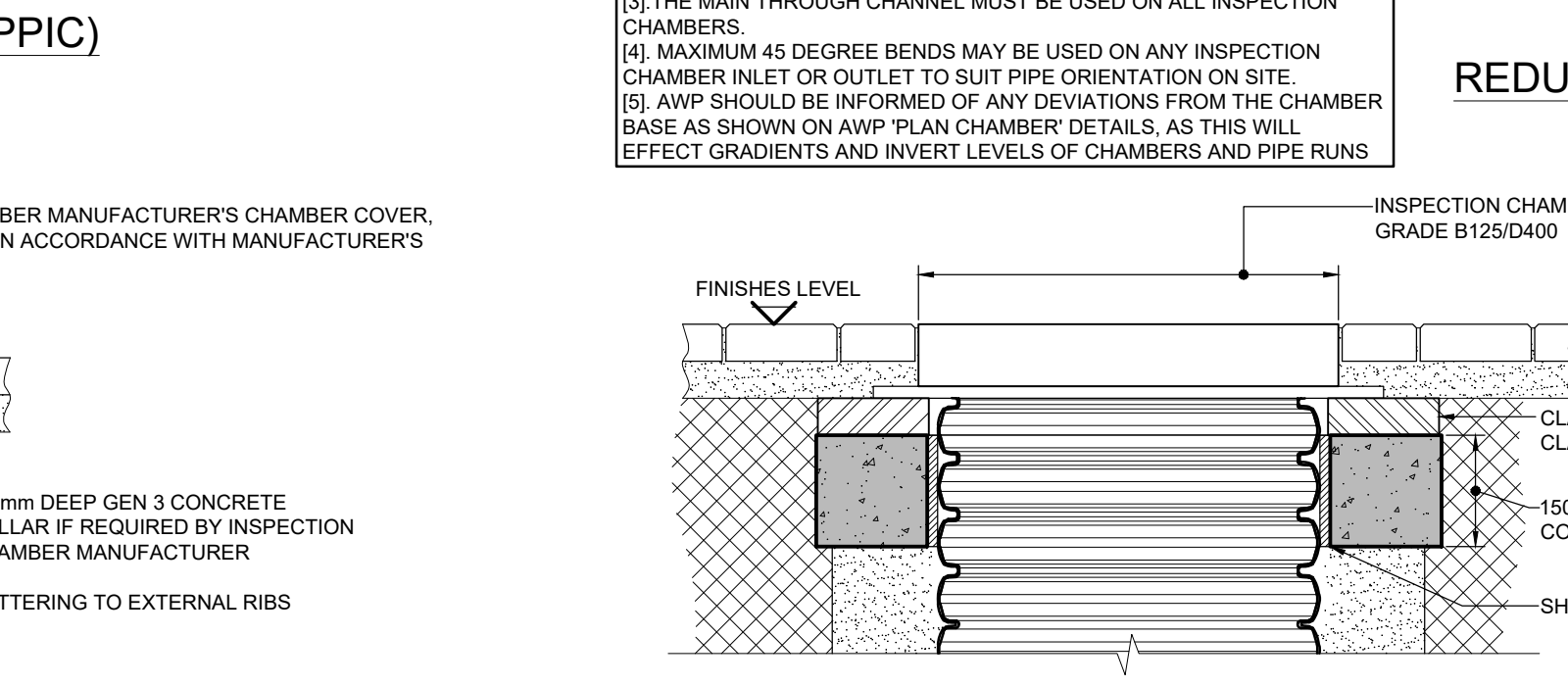
SECTIONAL VIEW POLYPROPYLENE INSPECTION CHAMBER (PPIC) MAXIMUM CHAMBER DEPTH 1.2m SCALE 1:10



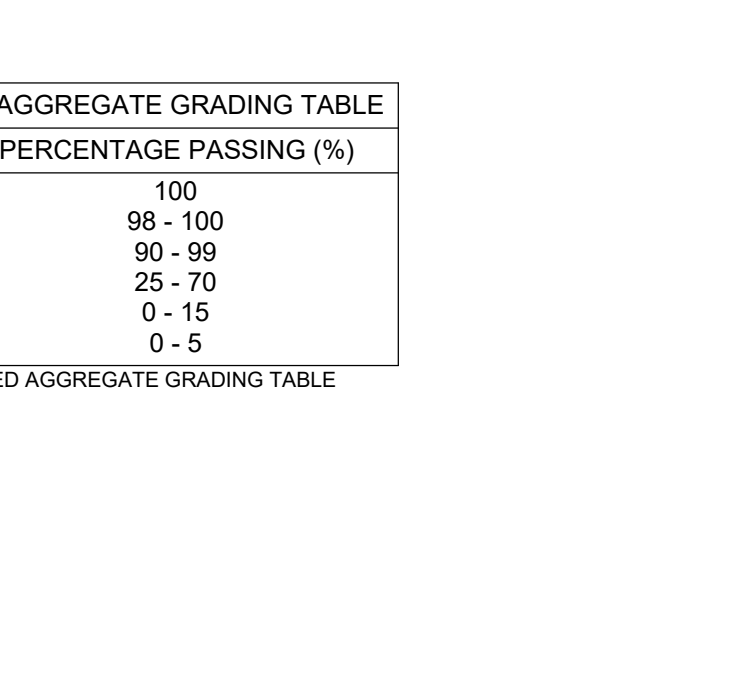
INSPECTION CHAMBER COVER DETAIL - A15 GRADE: USE IN AREAS INACCESSIBLE TO VEHICLES ONLY SCALE 1:10



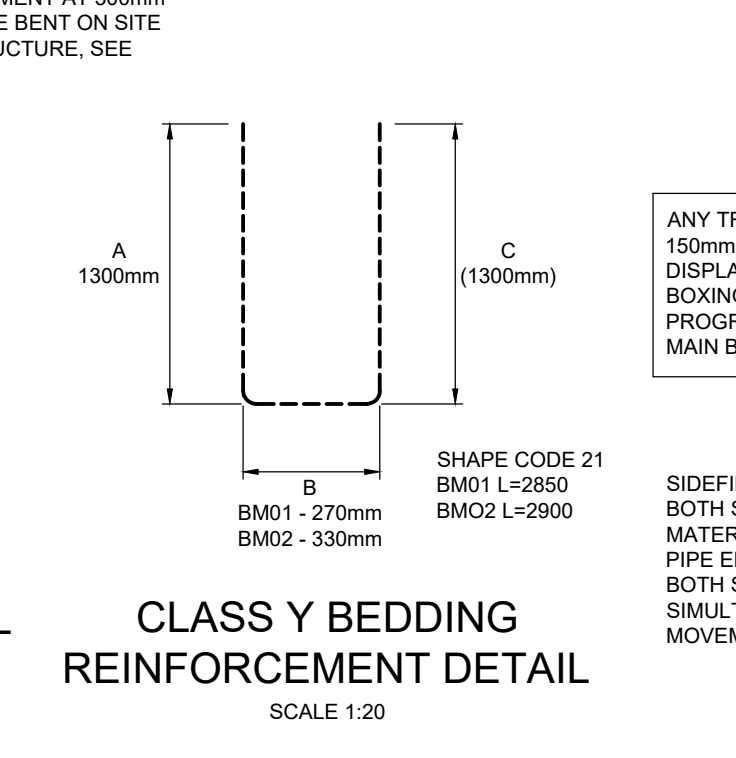
SECTIONAL VIEW REDUCED ACCESS POLYPROPYLENE INSPECTION CHAMBER (PPIC) CHAMBER DEPTH >1.2m < 3.0m SCALE 1:10



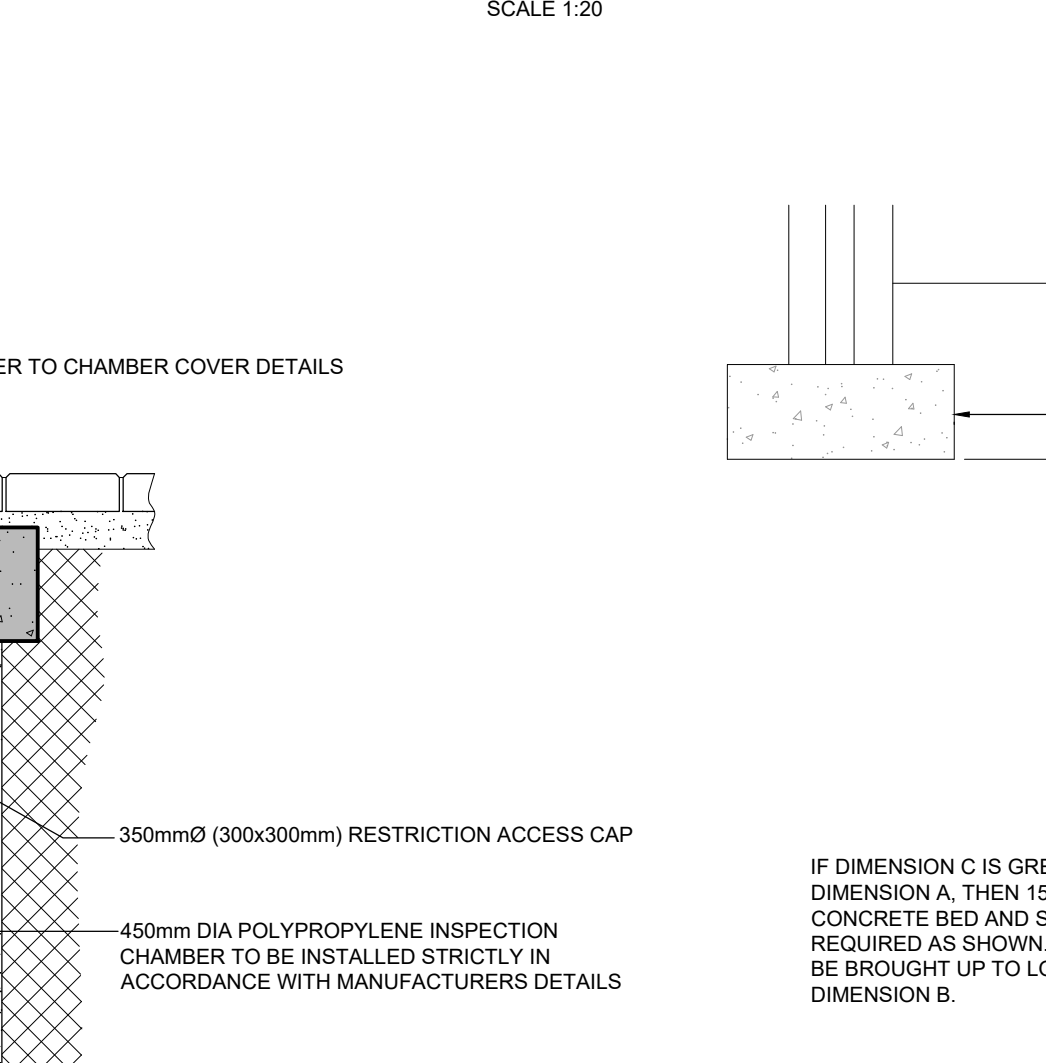
INSPECTION CHAMBER COVER DETAIL - B125 GRADE: USE IN PRIVATE DRIVES D400 GRADE: USE IN PRIVATE ROADS SCALE 1:10



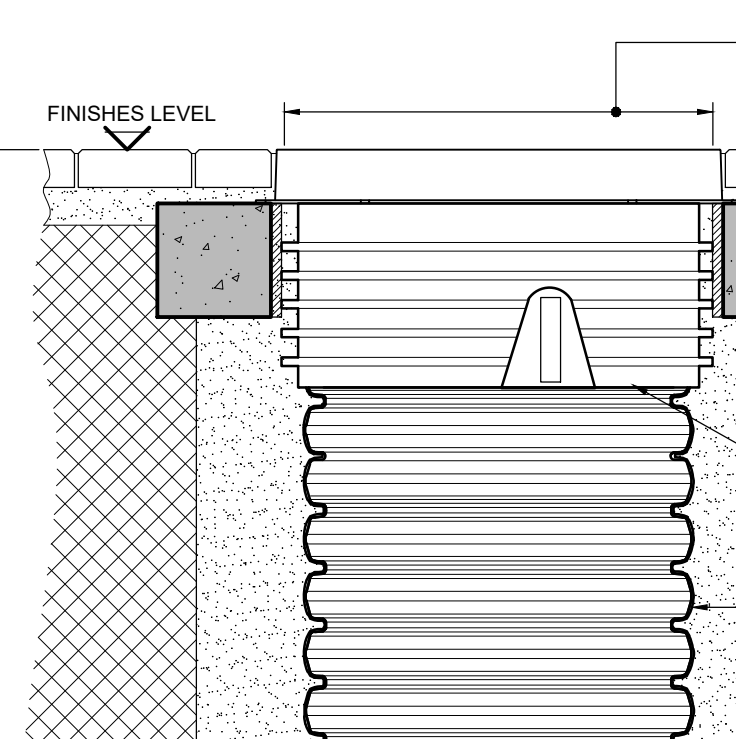
CONCRETE PROTECTION DETAIL SCALE 1:20



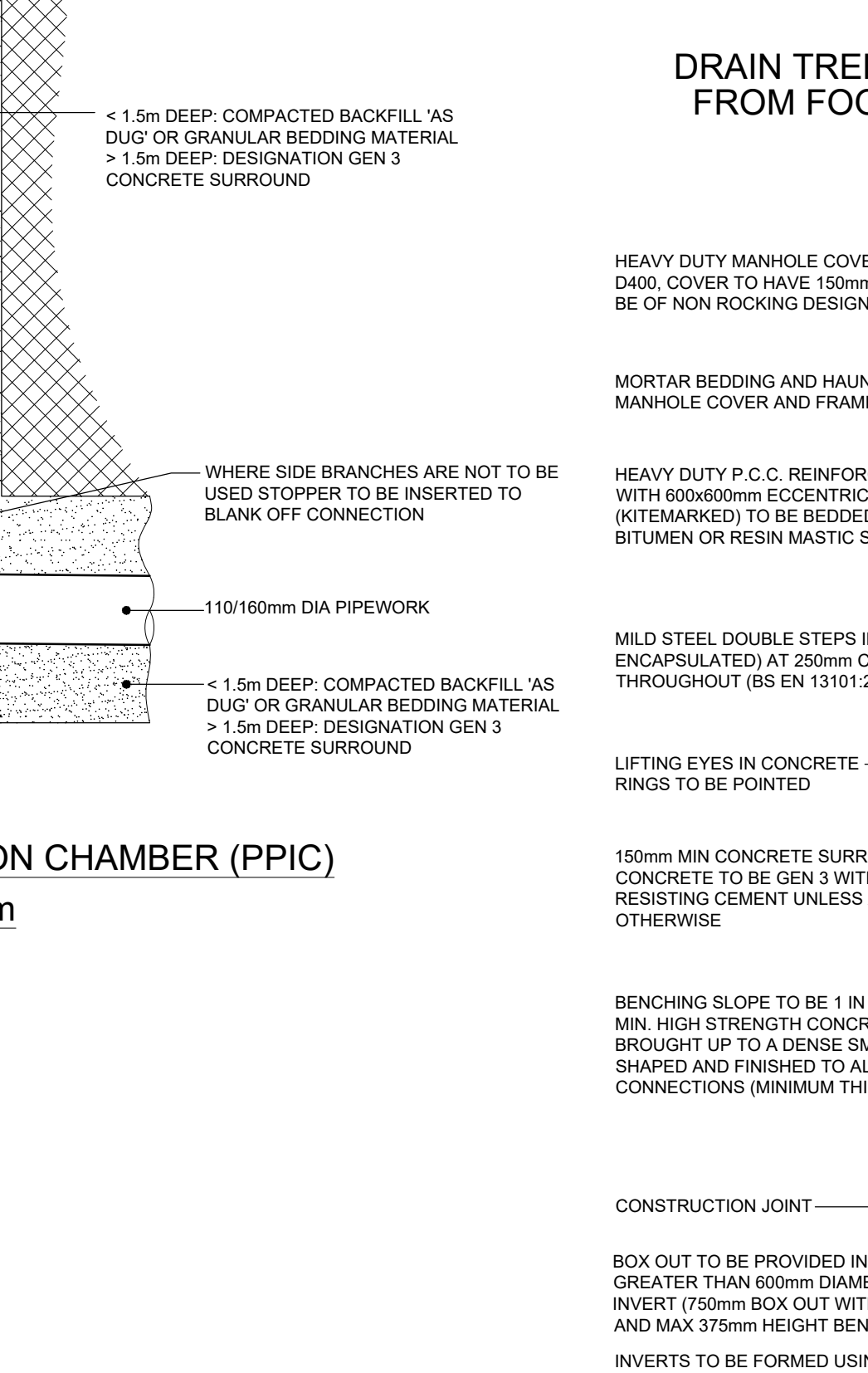
TYPICAL DETAIL THROUGH BEDDING TO STRUCTURED WALL SEWER PIPE TO WIS 4-35-01 SCALE 1:20



TYPICAL HYDROBRAKE DETAIL SCALE: NTS



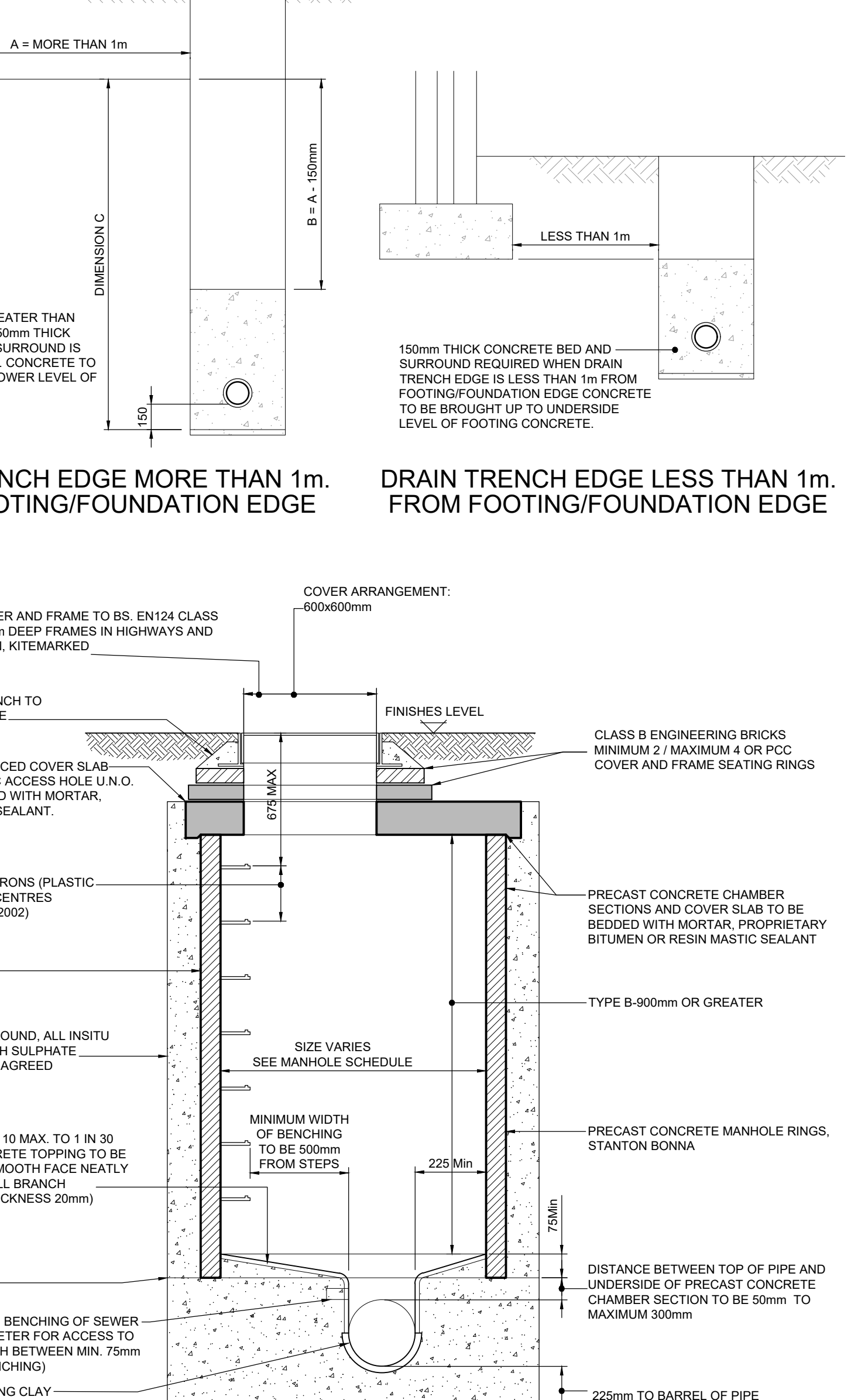
DRAIN TRENCH EDGE MORE THAN 1m FROM FOOTING/FOUNDATION EDGE



DRAIN TRENCH EDGE LESS THAN 1m FROM FOOTING/FOUNDATION EDGE



MANHOLE TYPE B - DEPTH 1.5-3.0m SOFFIT SCALE 1:20



TYPICAL VERTICAL BACKDROP DETAIL SCALE 1:20

HEALTH & SAFETY RISKS

- IN ADDITION TO THE STANDARD HAZARDS AND RISKS NORMALLY ASSOCIATED WITH THE TYPE OF WORK DETAILED ON THIS DRAWING, PLEASE NOTE THE FOLLOWING RESILIENCE HEALTH AND SAFETY RISKS:
- CONSTRUCTION RISKS**
- CR 01 BURIED SERVICES - BURIED SERVICES - DAMAGE MAY RESULT IN ELECTROUTION, GAS LEAK, EXPLOSION, WATER LEAK, OR TANK ACCIDENT. LOCATIONS OF UNDERGROUND SERVICES PRIOR TO EXCAVATION.
 - CR 02 UNKNOWN SERVICES - UNMARKED CABLES SHOULD BE TREATED AS LIVE UNTIL TESTED AND PROVEN OTHERWISE.
 - CR 03 LIKED TO RISK ASSESSMENT IN GROUND INVESTIGATION.
 - CR 04 DEEP EXCAVATIONS - RISK OF TRENCH COLLAPSE. LIMIT DEPTH OF EXCAVATIONS WHERE PRACTICAL.
 - CR 05 INTRINSICALLY POLLUTED WATER CAN CAUSE HEALTH THROUGH WATERBODIES CREATED FROM LEAKY WORKING OR DRINKING SERVICES WILL BE AWARE OF RISK.
 - CR 06 GROUND AND GROUNDWATER CONDITIONS RISK OF CONTAMINATION. CONSTRUCTION SHOULD BE MANAGED IN ACCORDANCE WITH CONSTRUCTION PLAN.
- OPERATION & MAINTENANCE RISKS**
- MR 01 DRAINAGE TO BE MAINTAINED IN ACCORDANCE WITH ALAN WOOD MAINTENANCE PLAN AND MANUFACTURER MAINTENANCE REQUIREMENTS.
- IT IS ASSURED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING IN ACCORDANCE WITH THE REQUIREMENTS DEFINED IN THE CDM REGULATIONS.

DRAINAGE NOTES:

- DRAINAGE SYSTEMS TO COMPLY WITH THE FOLLOWING STANDARDS:
 - BS EN 1228
 - BUILDING REGULATIONS APPROVED DOCUMENT PART H, 2015 EDITION.
 - NBS STANDARDS CHAPTER 5.3, 2017 EDITION.
 - NBS STANDARDS PLUS, 2017
- ALL COMPONENTS USED IN DRAINAGE SYSTEMS TO COMPLY WITH THE FOLLOWING BS EN 476:2011
- ALL DRAINAGE SYSTEMS AND COMPONENTS TO BE CONSTRUCTED AND TESTED TO THE FULL SATISFACTION OF BOTH BUILDING REGULATIONS AND WARRANTY PROVIDER INSPECTORS
- ALL DRAINAGE TO BE CONSTRUCTED AND TESTED IN ACCORDANCE WITH BS EN 1228-2:2015
- V.C. DENOTES VITRIFIED CLAY VITRIFIED CLAY PIPES AND FITTINGS TO COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 1241-1:2013-2015 AND BS 65 PROTECTIVES AND BE KITEMARKED. ALL PIPES SHALL BE EXTRA STRENGTH TO BS 65 OR EQUIVALENT BS EN205 PIPE CRUSHING STRENGTH.
- LATERAL DRAIN CONNECTIONS (PIPES CONNECTING INTO ACCEPTABLE SEWERS) TO BE VITRIFIED CLAY WHERE COVER IS LESS THAN 1.2m TO GROUND LEVEL. PIPE PROTECTION IS REQUIRED IN THE FORM OF A CONCRETE COVER SLAB.
- PVC-U DENOTES UNPLASTICISED POLY(VINYL CHLORIDE). PVC-U PIPES AND FITTINGS TO COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 1228-2:2015 AND BS EN 1241-1:2013-2015 AND BS 65 PROTECTIVES AND BE KITEMARKED.
- PRECAST CONCRETE MANHOLES TO BE IN ACCORDANCE WITH BS EN 1241-2:2015 AND BS EN 1241-1:2013-2015 AND BS 65 PROTECTIVES AND BE KITEMARKED. PRECAST CONCRETE RINGS AND COVER SLABS TO CONCRETE PIPES TO BE JOINTED WITH CEMENT MORTAR UNLESS NOTED OTHERWISE.
- INSITU PRECAST CONCRETE UNITS SHALL HAVE SULPHATE RESISTING PORTLAND CEMENT TO BS EN 197-1:2011.
- POLYPROPYLENE INSPECTION CHAMBERS TO COMPLY WITH BS EN 1241-2:2015 AND BS EN 1241-1:2013-2015 AND BS 65 PROTECTIVES AND BE KITEMARKED.
- MANHOLE COVERS AND FRAMES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 1241-1:2013-2015 AND BS 65 PROTECTIVES AND BE KITEMARKED. LOAD CLASS A5 COVERS TO BE USED IN AREAS INACCESSIBLE TO VEHICLES. LOAD CLASS B125 COVERS TO BE USED IN FOOTWAYS. LOAD CLASS D400 COVERS TO BE USED IN PRIVATE ROADS. SUPPLY UNIT AND SALT BUCKET UNITS TO BE USED ON ALL GULLIES.
- ROAD GULLY GRATES AND FRAMES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 1241-1:2013-2015 AND BS 65 PROTECTIVES AND BE KITEMARKED. LOAD CLASS D400 GRATES TO BE USED IN PRIVATE ROADS. TYPE D400 GRATE AND FRAME. MINIMUM AREA OF WATERWAY TO BE 100cm².
- DRAINAGE CHANNELS TO BE ACCO M1000 0.0 MULTIDRAIN CHANNEL. (G.A.) FITTED WITH SLOTTED DUCTILE IRON GRATING. GRATES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 1241-1:2013-2015 AND BS 65 PROTECTIVES AND BE KITEMARKED. LOAD CLASS A5 GRATES TO BE USED IN AREAS INACCESSIBLE TO VEHICLES. LOAD CLASS B125 GRATES TO BE USED IN FOOTWAYS. LOAD CLASS D400 GRATES TO BE USED IN PRIVATE ROADS. SUPPLY UNIT AND SALT BUCKET UNITS TO BE USED ON ALL GULLIES.
- CLASS Z BEDDING DETAIL SHALL BE PROVIDED:
 - WHERE COVER TO PIPE BARREL IS:
 - (i) < 1.2m IN VEHICULAR TRAFFICKED AREAS
 - (ii) < 1.2m IN AREAS INACCESSIBLE TO VEHICLES
 - AT ALL ROAD GULLY, RWP, SWP AND DRAINAGE CHANNEL BRANCHES
 - AREAS OF DEEP ROOTING VEGETATION
 - WHERE TWO PIPES CROSS WITH A CLEAR GAP OF 300mm CLASS Z SURROUND TO EXTEND A MINIMUM OF 1.0m FROM THE CENTRE OF THE CROSSING POINT & EXTENDED TO WITHIN 150mm OF THE NEAREST FLEXIBLE JOINT, WHERE REQUIRED.
- CLASS Y BEDDING DETAIL TO BE PROVIDED TO ALL PIPEWORK BENEATH BUILDING FOOTPRINT WITH ROCKER PIPES PROVIDED AS CLOSE AS POSSIBLE TO BUILDING STRUCTURE WHERE PIPE EXITS
- NO MECHANICAL COMPACTION OF FILL MATERIAL WITHIN 300mm OF THE CROWN OF ANY PIPE.

THE VERSIONS OF BRITISH STANDARDS AND OTHER PUBLICATIONS LISTED ABOVE ARE CURRENT AT THE TIME OF THE DRAWING ISSUE. HOWEVER IF THESE HAVE BEEN REVISED OR UPDATED THEN THE NEWER VERSIONS SHOULD BE USED. ANY DISCREPANCIES SHOULD BE NOTIFIED TO AWP IMMEDIATELY.

100% STAGE 4 SUBMISSION

NOTES:

- THESE NOTES ARE INTENDED TO ALIGN DRAWINGS AND SPECIFICATIONS. WHERE CONFLICT OF REQUIREMENTS EXIST THE ORDER OF PRECEDENCE SHALL BE AS SHOWN IN THE SPECIFICATION. OTHERWISE BE THE STRICTEST PROVISION SHALL COVER.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERS AND ARCHITECTS DRAWINGS.
- DRAWINGS NOT TO BE SCALED. ALL DIMENSIONS TO BE CHECKED ON SITE BY THE CONTRACTOR. ANY DISCREPANCIES TO BE NOTIFIED TO THE ENGINEER AND FURTHER INSTRUCTIONS OBTAINED BEFORE WORK IS COMMENCED.
- THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE BUILDING IS FULLY COMPLETED. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO ENSURE THE ERECTION PROCEDURE AND SEQUENCE OF WORKS ENSURE THAT BUILDING AND ITS COMPONENTS ARE SAFE DURING ERECTION. THIS INCLUDES THE ADDITION OF TEMPORARY BRACING, CUTS OR TIE DOWN BRACING WHERE NECESSARY. SUCH MATERIAL REMAINING THE PROPERTY OF THE CONTRACTOR ON COMPLETION AND FOR ENSURING THAT THE WORKS ARE AS SAFE IN THE TEMPORARY CONDITION.

JOB NO: 49046 DRAWING REFERENCE TABLE

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE DRAWINGS LISTED BELOW

ALAN WOOD & PARTNERS	DRAWING REFERENCE
- DRAINAGE LAYOUT	- 29A8403Y20-3000
- MANHOLE SCHEDULE SHEET 1	- 29A8403Y20-3001
- DRAINAGE SECTIONS SHEET 1	- 29A8403Y20-3000
- DRAINAGE DETAILS	- 29A8403Y20-3001
- SITE HAZARD DRAWING	- 29A8403Y20-4001
- TOPOGRAHY SURVEY & DRAINAGE	- 29A8403Y20-4002
- ENABLING WORKS & DIVERSIONS	- 29A8403Y20-4031
- CONSTRUCTION SPECIFICATIONS & KEBRING	- 29A8403Y20-4030
- PROPOSED SITE STRIP PLAN AND VOLUMES	- 29A8403Y20-4034
- PROPOSED FORMATION AREAS PLAN	- 29A8403Y20-4035
- TOPSOIL STRIP TO PROPOSED LEVELS	- 29A8403Y20-4036

DRAINAGE SYSTEMS TO COMPLY WITH THE FOLLOWING STANDARDS:
BS EN 1228
BUILDING REGULATIONS APPROVED DOCUMENT PART H, 2015 EDITION.
NBS STANDARDS CHAPTER 5.3, 2017 EDITION.
NBS STANDARDS PLUS, 2017

Control Point	Head (m)	Flow (l/s)
Primary Design	1.000	5.000
Flush-Flo™	0.296	4.974
Kick-Flo™	0.637	4.060
Mean Flow		4.334

Technical Specification

- Hydro-Brake Optimum Flow Control including:
- 3mm grade 304L stainless steel
 - Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, cw stainless steel operating rope
 - Beee blasted finish to maximise corrosion resistance
 - Stainless steel fixings
 - Rubber gasket to seal outlet
 - Indicative Weight: 10 kg

HYDROBRAKE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S DETAILS. DESIGN AND SPECIFICATION SUBJECT TO CONNECTION INVERT CONFIRMATION.

Rev	Description	Date	By	Chk	JAG
P2	RWP ADDITION	15.01.23	TO	DC	JAG
P1	FIRST ISSUE	16.10.23	DC	DC	JAG

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PROPOSED BARRACKS AT WATTISHAM AIRFIELD, IPSWICH

Client: ESS MODULAR

Drawing: DRAINAGE DETAILS

Rev: CIVIL ENGINEERING

Drawing Status: FOR APPROVAL

Scale: AS NOTED

Job no: 49046

Project Originator: Volume Level Type: Rev: P2

29A8403Y20 - AWP - ZZ - XX - DR - C - 00003601