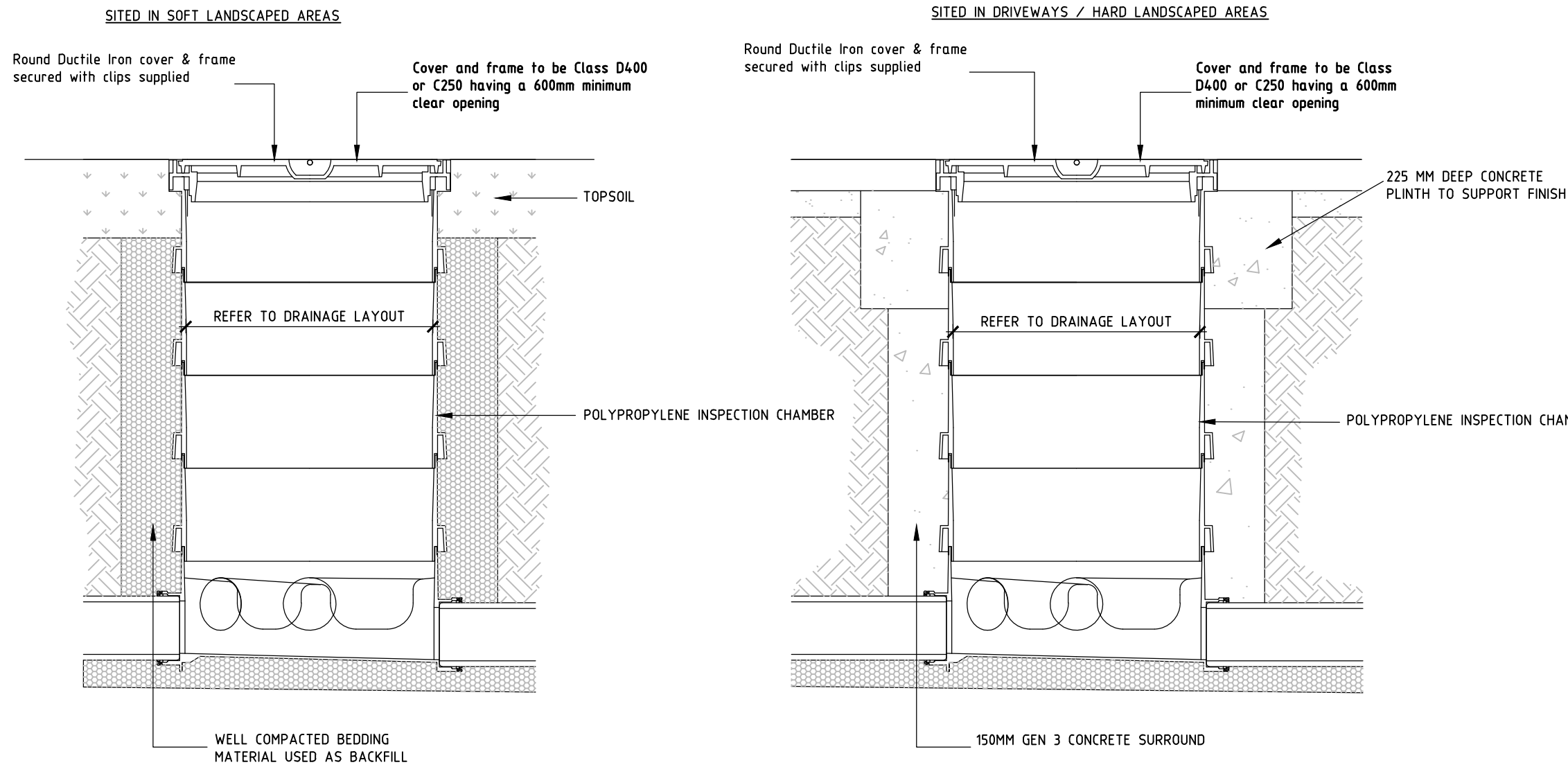
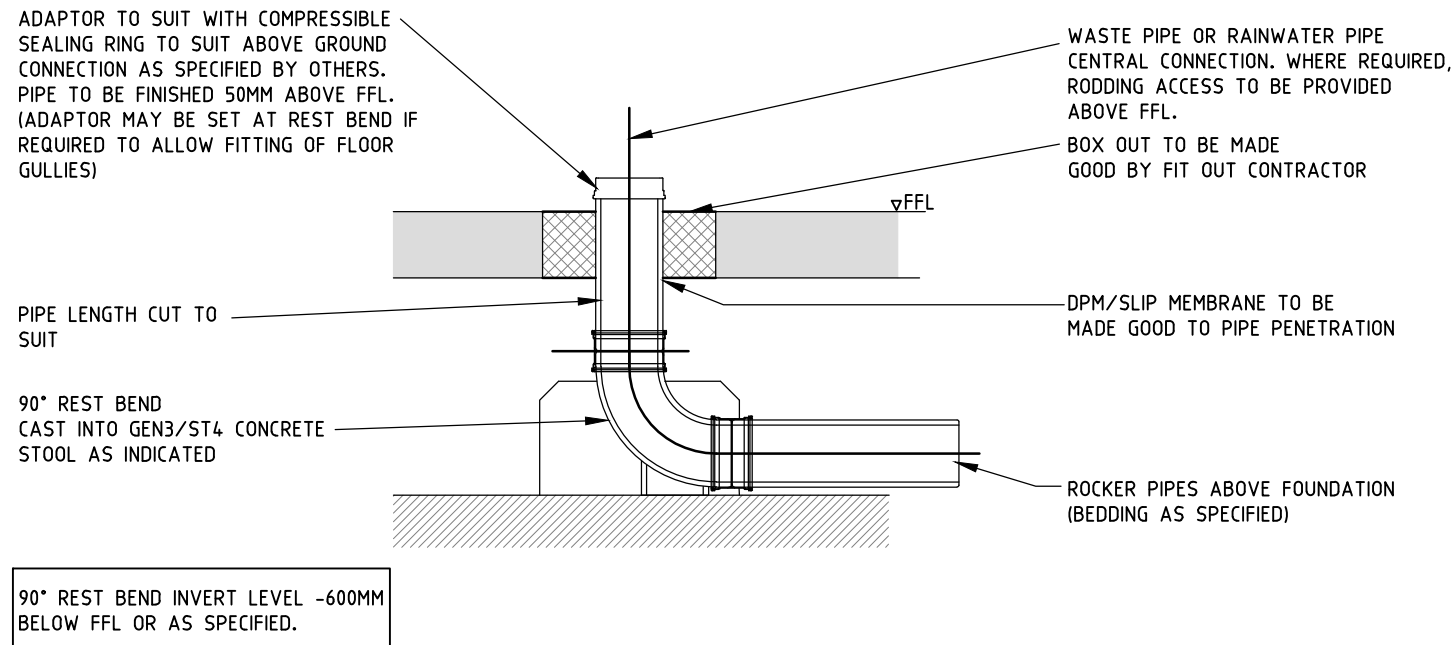


FILENAME

PLOT DATE

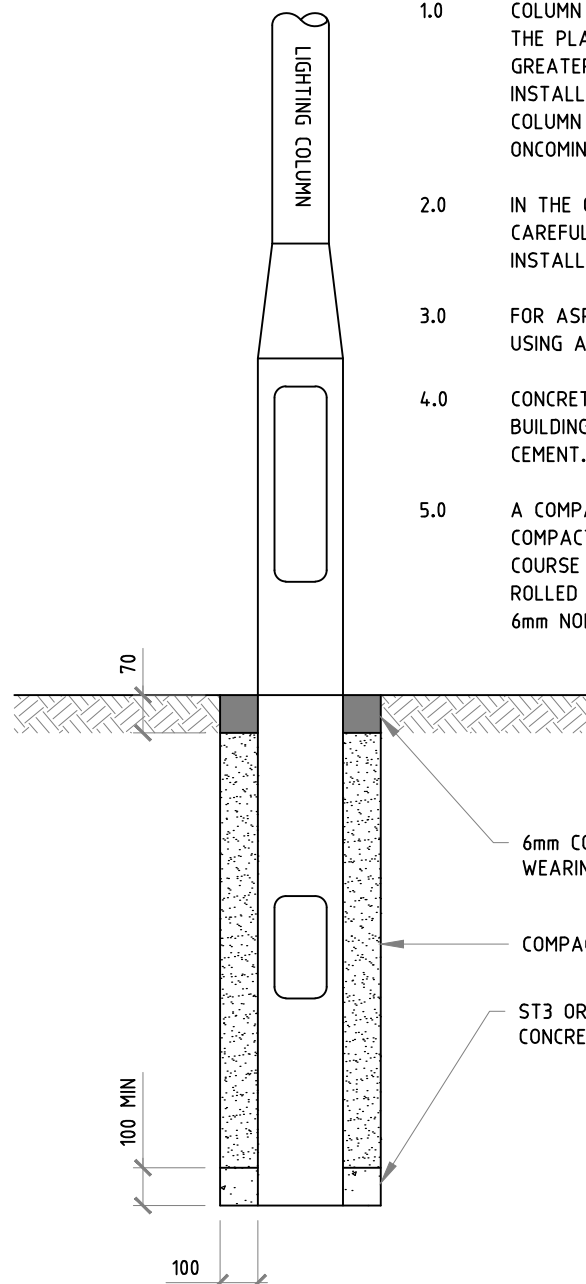


POLYPROPYLENE INSPECTION CHAMBER
INSTALLATION DETAIL
SCALE 1:20

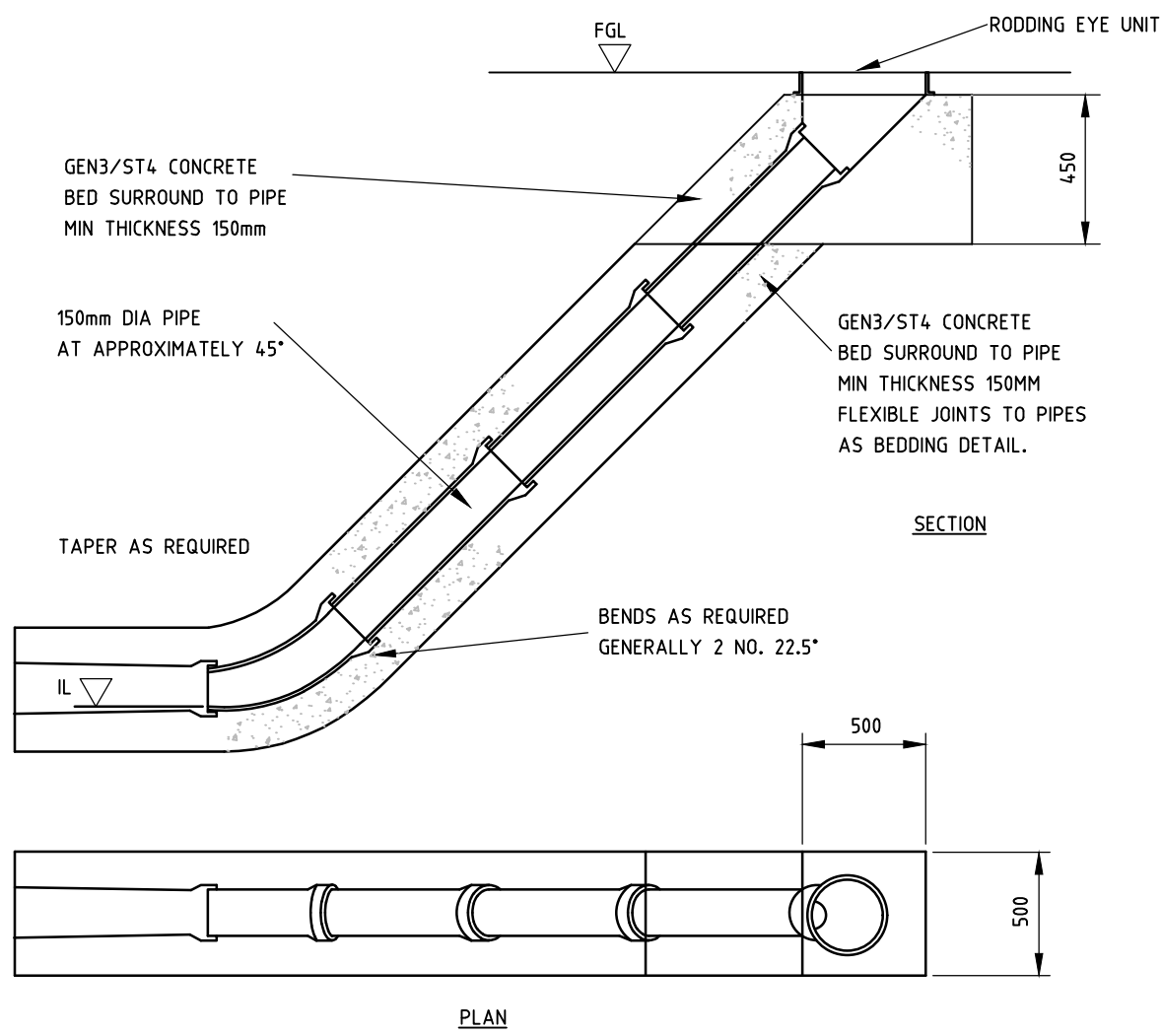


TYPICAL BELOW GROUND PIPE CONNECTION

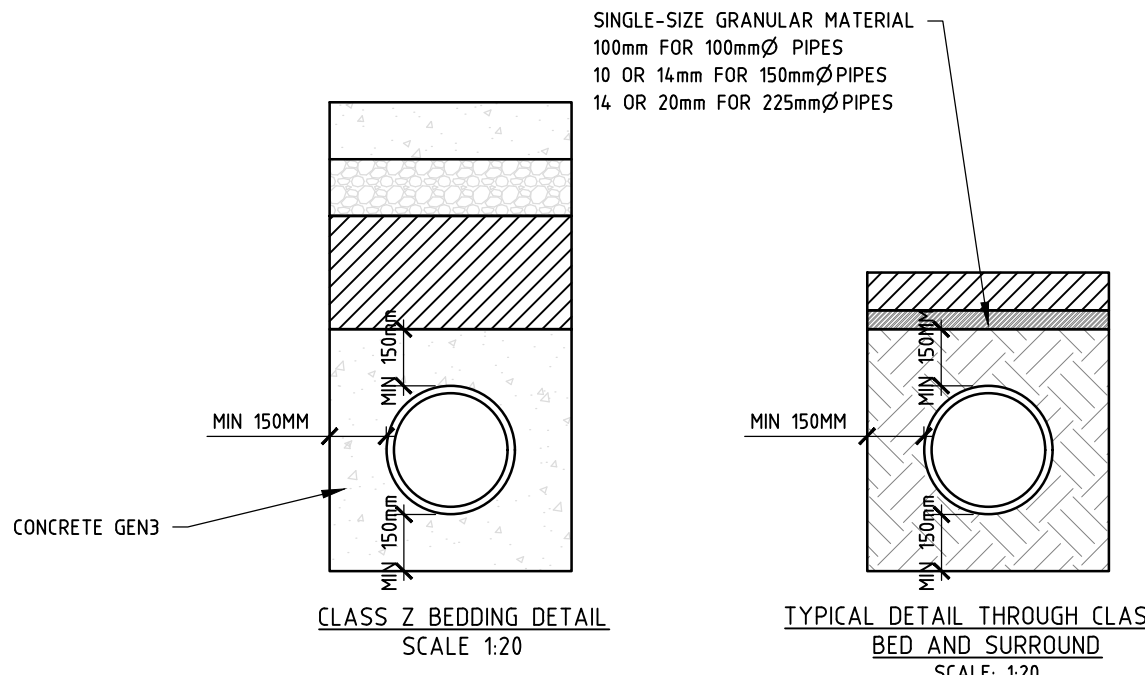
NOTE: 90° REST BEND INVERT LEVELS AS SPECIFIED.
BRANCH CONNECTIONS OFF FOUNDATIONS MAY BE SET DEEPER TO ALLOW FOR CONNECTION TO MAIN DRAIN RUN.
ALTERNATIVELY, THE 90° REST BEND MAY BE REPLACED BY 45°/30°/15° BENDS TO ALLOW FOR STEEP BRANCH CONNECTIONS.



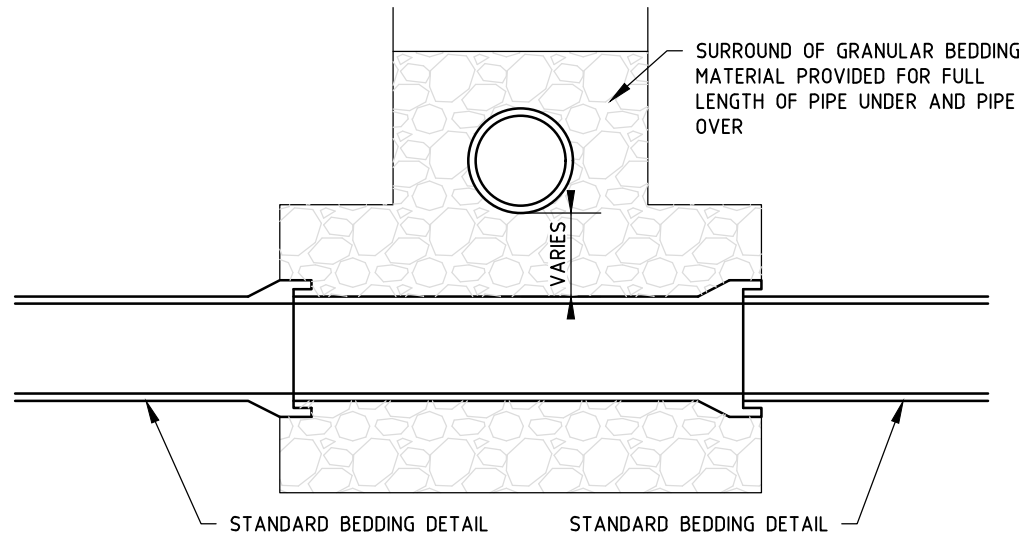
TYPICAL LIGHTING COLUMN
FOUNDATION DETAIL
SCALE 1:20



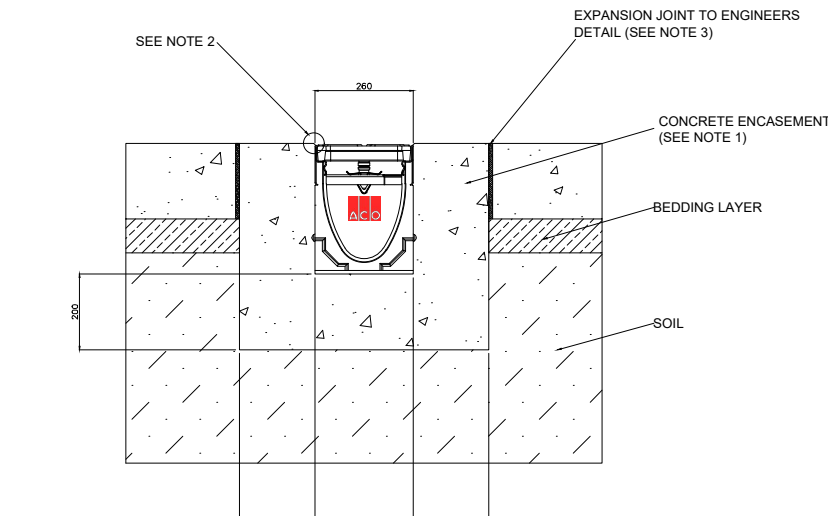
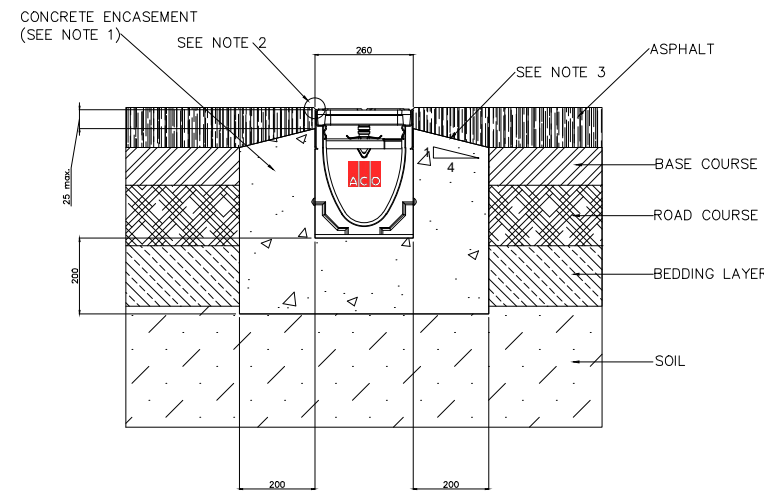
TYPICAL RODDING EYE DETAIL
NTS



TYPICAL DETAIL THROUGH CLASS S
BED AND SURROUND
SCALE 1:20



PIPE CROSSING OVER
NTS



SPECIFICATION CLAUSE
KLASSIKODRAIN K100 - LOAD CLASS A-B

GENERAL
THE SURFACE DRAINAGE SYSTEM SHALL BE ACO'S KLASSIKODRAIN K100 POLYMER CONCRETE V-PROFILE CHANNEL SYSTEM WITH GALVANISED STEEL EDGE RAILS AS MANUFACTURED BY ACO.

MATERIALS
K100 CHANNELS SHALL BE MANUFACTURED FROM POLYESTER RESIN POLYMER CONCRETE WITH AN INTEGRALLY CAST-IN GALVANISED STEEL EDGE RAIL. PROPERTIES OF POLYMER CONCRETE WILL BE AS FOLLOWS WITH SUPPORTING DOCUMENTATION:

COMPRESSIVE STRENGTH:	98 MPa
FLEXURAL STRENGTH:	24 MPa
TENSILE STRENGTH:	14 MPa
WATER ABSORPTION:	0.07%
FROST PROOF:	YES
COEFFICIENT OF EXPANSION/CONTRACTION:	2.02x10 ⁻⁵ /°C
WATER VAPOUR TRANSMISSION:	0.0364g/m ²
NON FLAMMABLE:	YES
COEFFICIENT OF ROUGHNESS (MANNINGS):	n=0.011
RESISTANT TO WEATHERING:	YES
DILUTE ACID AND ALKALI RESISTANT:	YES
SF SEALANT GROOVE	YES

CHANNELS
K100 CHANNEL SHALL BE 100mm NOMINAL INTERNAL WIDTH WITH AN OVERALL WIDTH OF 130mm. CHANNEL INVERT SHALL HAVE A V-PROFILE TO ALLOW EFFICIENT DRAINAGE. K100 SLOPED CHANNELS SHALL HAVE A BUILT-IN SLOPE OF 0.5%. ALL CHANNELS SHALL BE INTERLOCKING WITH A MALE/FEMALE JOINT.

GRATES
INSERT SPECIFICATION FOR THE SELECTED GRATE. REFER TO THE RELEVANT ACO SPECIFICATION INFORMATION SHEET, CLICK www.acodrain.com.au/resources.

INSTALLATION
THE COMPLETE DRAINAGE SYSTEM SHALL BE BY ACO AND TO BE INSTALLED FOR ITS INTENDED PURPOSE. ANY DEVIATION OR PARTIAL USE OF THE SPECIFIED SYSTEM AND/OR IMPROPER INSTALLATION WILL VOID ALL WARRANTIES PROVIDED BY ACO.

- NOTES:
- Specific site conditions may require an increase in concrete encasement dimensions and/or reinforcement. It is the customer's responsibility to ensure the concrete encasement is designed for the application. A minimum concrete strength of 25MPa is recommended. The concrete should be vibrated to eliminate air pockets. Engineering advice may be required.
 - The finished level of the asphalt must be approximately 3mm above the top of the channel edge.
 - Haunch slopes away at a ratio of 14 or approximately 15°.
 - For further details, refer to ACO's design & site installation files at www.acodrain.com/resources.

COLUMN FOUNDATION NOTES

- ALL SEWERS ARE DESIGNED IN ACCORDANCE WITH DESIGN AND CONSTRUCTION GUIDANCE FOR FOUL AND SURFACE WATER SEWERS OFFERED FOR ADOPTION 2.1 VERSION AND UNITED UTILITIES GUIDELINES AND STANDARD DETAILS.
- DRAWING IS SUBJECT TO APPROVAL BY UNITED UTILITIES UNDER A SECTION 10 AGREEMENT AND CONSTRUCTION WORKS UNDERTAKEN PRIOR TO TECHNICAL APPROVAL ARE AT THE DEVELOPERS RISK.
- ALL CO-ORDINATES AND LEVELS SHOWN ARE RELATIVE TO THE TOPOGRAPHIC SURVEY DRAWING '02591/TOP0' BY GEOMATIC SURVEYS LTD.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR INVESTIGATING AND VERIFYING ALL THE EXISTING DRAINAGE CRITICAL TO THE PROPOSED SCHEME PRIOR TO COMMENCING ANY WORK AS FOLLOWS:
 - MANHOLE LOCATIONS
 - OUTFALL INVERT LEVELS
 - INTER-CONNECTION OF SEWERS
- ANY INACCURACIES OR INCONSISTENCIES ON THE DRAWING RESULTING FROM THE FINDINGS SHALL BE REPORTED TO THE ENGINEER.
- PRIOR TO THE COMMENCEMENT OF ANY ON SITE WORKS THE CONTRACTOR MUST CONTACT THE STATUTORY UNDERTAKER AND BE IN POSSESSION OF THE LATEST DRAWINGS SHOWING THEIR APPARATUS.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ALLOW FOR THE SUPERVISION OF THE CONSTRUCTION WORKS BY UNITED UTILITIES. THE CONTRACTOR WILL NOTIFY THE SUPERVISING OFFICER GIVING NOTICE WHICH WILL BE IN ACCORDANCE WITH THE AUTHORITIES REQUIREMENTS.
- THE PROPOSED SEWERS WILL BE CLAY PIPE WORK AND SHALL BE EXTRA STRENGTH TO BS EN 295:1991 PART 1.
- ANY PCC PIPE WORK WILL BE IN ACCORDANCE WITH BS EN 1916:2002.
- THE CONTRACTOR MAY ELECT TO USE REINFORCED PVC PIPES COVERED BY BS EN 13476-2, B.S 4660:200 & B.S EN 1401-1. STRUCTURED WALL UPVC PIPES TO COMPLY WITH WIS 4-35-01 UP TO AND INCLUDING 300MM. MAX PIPE LENGTH TO BE 3.0M.
- ALL MANHOLES AND CHAMBERS SHALL BE IN ACCORDANCE WITH BS EN 1917:2002.
- ADAPTABLE SEWERS WITH COVER TO SOFFIT GREATER THAN 1.2m IN ROADS AND 0.9m IN FIELDS SHALL HAVE CLASS 5 GRANULAR BED AND SURROUND.
- ANY SEWER FOR ADOPTION WITH A COVER OF LESS THAN 1.2m TO PIPE SOFFIT IN ROADS OR 0.9m TO PIPE SOFFIT IN FIELDS WILL HAVE A MINIMUM 150mm GEN 3 CONCRETE BED AND SURROUND WITH FLEXIBILITY MAINTAINED WITH FLEXCELL EXPANSION JOINT FILLER OR SIMILAR APPROVED AT EACH PIPE JOINT.
- ALL PIPES BUILT INTO THE MANHOLE INVERTS SHALL BE INSTALLED WITH SOFFITS LEVEL, UNLESS SHOWN OTHERWISE.
- THE CONNECTION TO THE ADAPTABLE SEWER SHALL BE MANUFACTURED JUNCTION PIPES. A SADDLE CONNECTION IS NOT PERMITTED UNLESS IT IS CLEARLY SPECIFIED.
- CONNECTIONS TO THE EXISTING PUBLIC SEWER WILL BE IN ACCORDANCE WITH APPROVAL GRANTED BY THE STATUTORY UNDERTAKER.
- PRIVATE DRAINAGE CONNECTIONS TO THE SEWER WILL BE 150MM DIAMETER AND LAID TO THE SPECIFIED INVERT.
- THE INVERT LEVELS SPECIFIED AT THE DRAG OUT CHAMBER ARE INCOMING LEVELS.
- A PROTECTIVE GEOTEXTILE/PLASTIC MEMBRANE IS TO BE APPLIED TO ALL FOUL SEWERS LAID ABOVE STORM SEWERS WITH LESS THAN 500MM OF COVER.
- CENTRE OF MANHOLES MAY NOT BE AT THE SAME LOCATION AS PIPE INTERSECTION OR AS SHOWN IN THE LAYOUT. THE MANHOLE RINGS SHALL BE ADJUSTED OVER THE MANHOLE BASE TO SATISFY THE FOLLOWING REQUIREMENTS:
 - CLEARANCE FROM THE ADJACENT PIPE WORK
 - CLEARANCE FROM THE KERB LINE (THE BISCUIT OF THE MANHOLE SHALL NOT PROJECT UNDER THE ROAD CHANNEL LINE).
 - TO PROVIDE THE MINIMUM STANDING SPACE ON THE BENCHING AND THEREBY LOCATE THE MANHOLE COVER AND ENTRY ACCESS.
 - TO PROVIDE THE MINIMUM 250MM OF BEARING FOR THE MANHOLE RING OVER THE CAST IN STUB PIPES.
- IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO LIAISE WITH THE HIGHWAY AND SEWERAGE AUTHORITIES FOR APPROVALS, INTERIM INSPECTION, SNAGGING AND FINAL INSPECTIONS OF THEIR WORK TO ADAPTABLE STANDARDS.
- AT THE CONCLUSION OF THE WORKS THE CONTRACTOR SHALL PROVIDE A MARKED UP DRAWING TO RECORD ANY AS BUILT VARIATIONS NOT SHOWN ON THE DRAWINGS.

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Rev	Date	Description	By	CHK
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Project Name NORTH MANCHESTER GOLF CLUB				
Client DUCHY HOMES				
Designed	Drawn	Checked	Scale @ A1	
H.S.	H.S.	RA	1:20	
Drawing Title DRAINAGE CONSTRUCTION DETAILS SHEET 2				
Project No. 210701				
Drawing No. 210701-EDGE-XX-XX-DR-C-3203				
Revision P01				

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