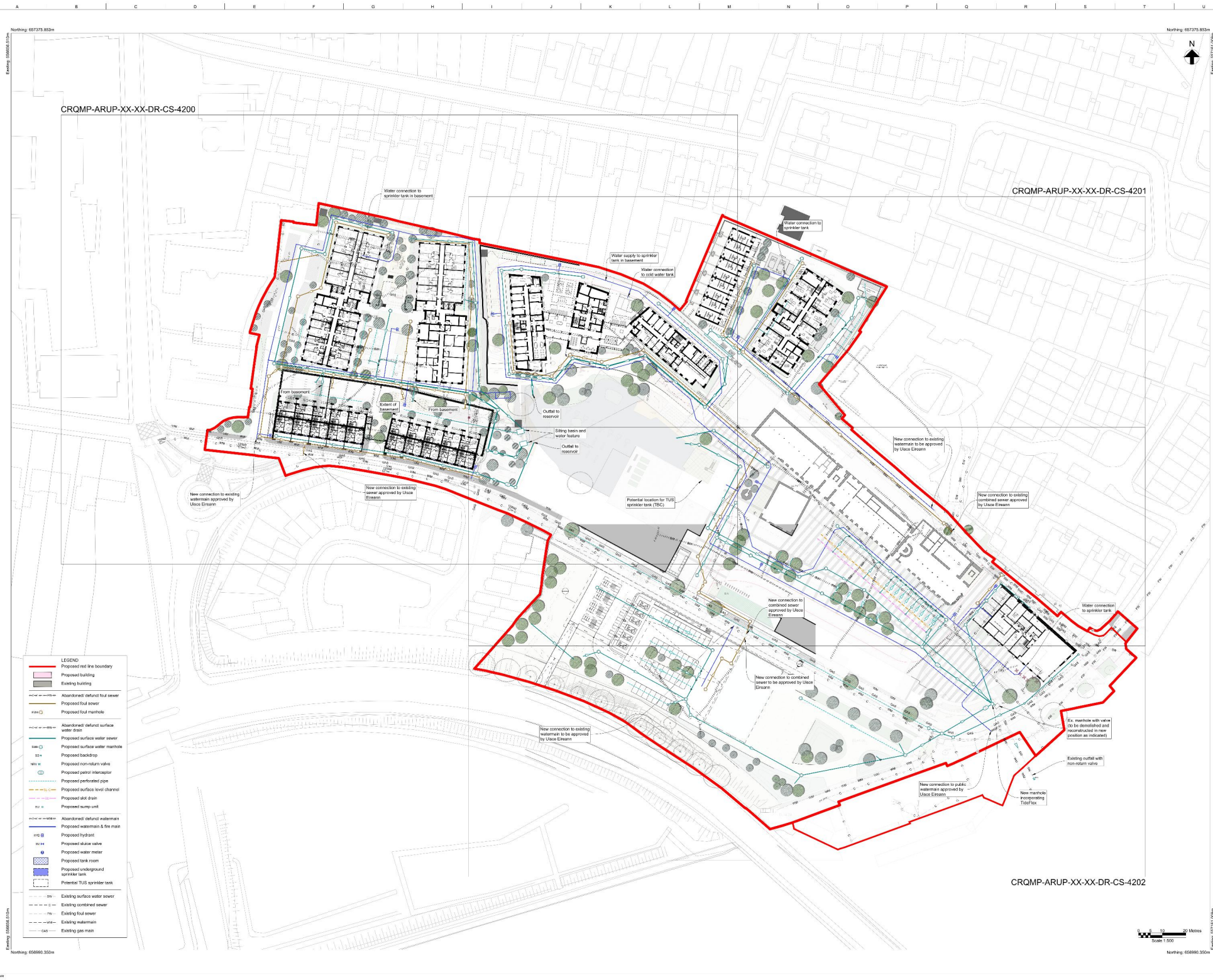


Appendix A



CRQMP-ARUP-XX-XX-DR-CS-4200

CRQMP-ARUP-XX-XX-DR-CS-4201

CRQMP-ARUP-XX-XX-DR-CS-4202

- LEGEND**
- Proposed red line boundary
 - Proposed building
 - Existing building
 - Abandoned/detuned foul sewer
 - Proposed foul sewer
 - Proposed foul manhole
 - Abandoned/detuned surface water drain
 - Proposed surface water sewer
 - Proposed surface water manhole
 - SDA
 - Proposed backdrop
 - NRV R
 - Proposed non-return valve
 - Proposed percolation riser
 - Proposed perforated pipe
 - Proposed surface level channel
 - Proposed silt drain
 - Proposed sump unit
 - Abandoned/detuned watermain
 - Proposed watermain & fire main
 - Proposed hydrant
 - Proposed sluice valve
 - Proposed water meter
 - Proposed tank room
 - Proposed underground sprinkler tank
 - Potential TUS sprinkler tank
 - Existing surface water sewer
 - Existing combined sewer
 - Existing foul sewer
 - Existing watermain
 - Existing gas main

Notes:

1. SuDS - Use blue green roofs to attenuate surface water flow.
2. Use permeable paving/porous surfacing to car parking space/pavements.
3. Provide green waste as attenuation basins, tree pits etc.

CRQMP-ARUP-XX-XX-DR-CS-4200

CRQMP-ARUP-XX-XX-DR-CS-4201

CRQMP-ARUP-XX-XX-DR-CS-4202

LEGEND

- Proposed red line boundary
- Proposed building
- Existing building
- Abandoned/detuned foul sewer
- Proposed foul sewer
- Proposed foul manhole
- Abandoned/detuned surface water drain
- Proposed surface water sewer
- Proposed surface water manhole
- SDA
- Proposed backdrop
- NRV R
- Proposed non-return valve
- Proposed percolation riser
- Proposed perforated pipe
- Proposed surface level channel
- Proposed silt drain
- Proposed sump unit
- Abandoned/detuned watermain
- Proposed watermain & fire main
- Proposed hydrant
- Proposed sluice valve
- Proposed water meter
- Proposed tank room
- Proposed underground sprinkler tank
- Potential TUS sprinkler tank
- Existing surface water sewer
- Existing combined sewer
- Existing foul sewer
- Existing watermain
- Existing gas main

ARUP

From: 10/10/2025
To: 10/10/2025
Project: 277875-00
Client: Limerick Twenty Thirty

CRQMP-ARUP-XX-XX-DR-CS-4200

CRQMP-ARUP-XX-XX-DR-CS-4201

CRQMP-ARUP-XX-XX-DR-CS-4202

LEGEND

- Proposed red line boundary
- Proposed building
- Existing building
- Abandoned/detuned foul sewer
- Proposed foul sewer
- Proposed foul manhole
- Abandoned/detuned surface water drain
- Proposed surface water sewer
- Proposed surface water manhole
- SDA
- Proposed backdrop
- NRV R
- Proposed non-return valve
- Proposed percolation riser
- Proposed perforated pipe
- Proposed surface level channel
- Proposed silt drain
- Proposed sump unit
- Abandoned/detuned watermain
- Proposed watermain & fire main
- Proposed hydrant
- Proposed sluice valve
- Proposed water meter
- Proposed tank room
- Proposed underground sprinkler tank
- Potential TUS sprinkler tank
- Existing surface water sewer
- Existing combined sewer
- Existing foul sewer
- Existing watermain
- Existing gas main

CRQMP-ARUP-XX-XX-DR-CS-4200

CRQMP-ARUP-XX-XX-DR-CS-4201

CRQMP-ARUP-XX-XX-DR-CS-4202

LEGEND

- Proposed red line boundary
- Proposed building
- Existing building
- Abandoned/detuned foul sewer
- Proposed foul sewer
- Proposed foul manhole
- Abandoned/detuned surface water drain
- Proposed surface water sewer
- Proposed surface water manhole
- SDA
- Proposed backdrop
- NRV R
- Proposed non-return valve
- Proposed percolation riser
- Proposed perforated pipe
- Proposed surface level channel
- Proposed silt drain
- Proposed sump unit
- Abandoned/detuned watermain
- Proposed watermain & fire main
- Proposed hydrant
- Proposed sluice valve
- Proposed water meter
- Proposed tank room
- Proposed underground sprinkler tank
- Potential TUS sprinkler tank
- Existing surface water sewer
- Existing combined sewer
- Existing foul sewer
- Existing watermain
- Existing gas main

Keyplan
Scale: NTS



- LEGEND**
- Proposed red line boundary
 - Proposed building
 - Existing building
 - Abandoned/Defunct foul sewer
 - Abandoned/Defunct combined sewer
 - Proposed foul sewer
 - Proposed foul manhole
 - Abandoned/Defunct surface water drain
 - Proposed surface water drain
 - Proposed perforated pipe
 - Proposed surface level channel
 - Proposed sill drain
 - Proposed surface water manhole
 - Proposed surface water inspection chamber
 - Proposed petrol interceptor
 - Proposed sump unit
 - Proposed back drop
 - Proposed non-return valve
 - Abandoned/Defunct watermain
 - Proposed surface water drain
 - Proposed hydrant
 - Proposed sluice valve
 - Proposed water meter
 - Existing Surface Water
 - Existing Foul Sewer
 - Existing Combined Sewer
 - Existing Watermain
 - Existing Gas
 - Existing Electrical
 - Existing COMMS
 - Existing Public Lighting
 - Existing Eir
 - Existing Unknown Service

Scale 1:250
0 5 10 Metres

Notes:

CH	02/10/20	Issued for Planning (Status A2)
PG	09/10/20	Issued for Information (Status S2)
AP	16/05/20	Issued for Information (Status S2)
Rev	000	Concept



Client
Limerick Twenty Thirty

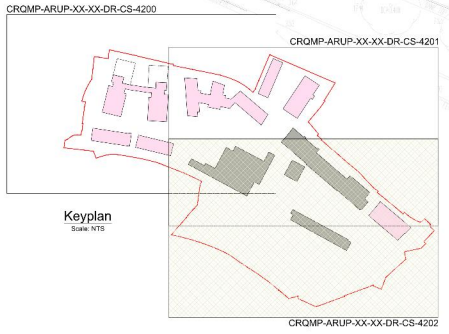
Project Name
Cleaves Riverside Quarter Masterplan

Drawing Title
Salesians Proposed Drainage Layout

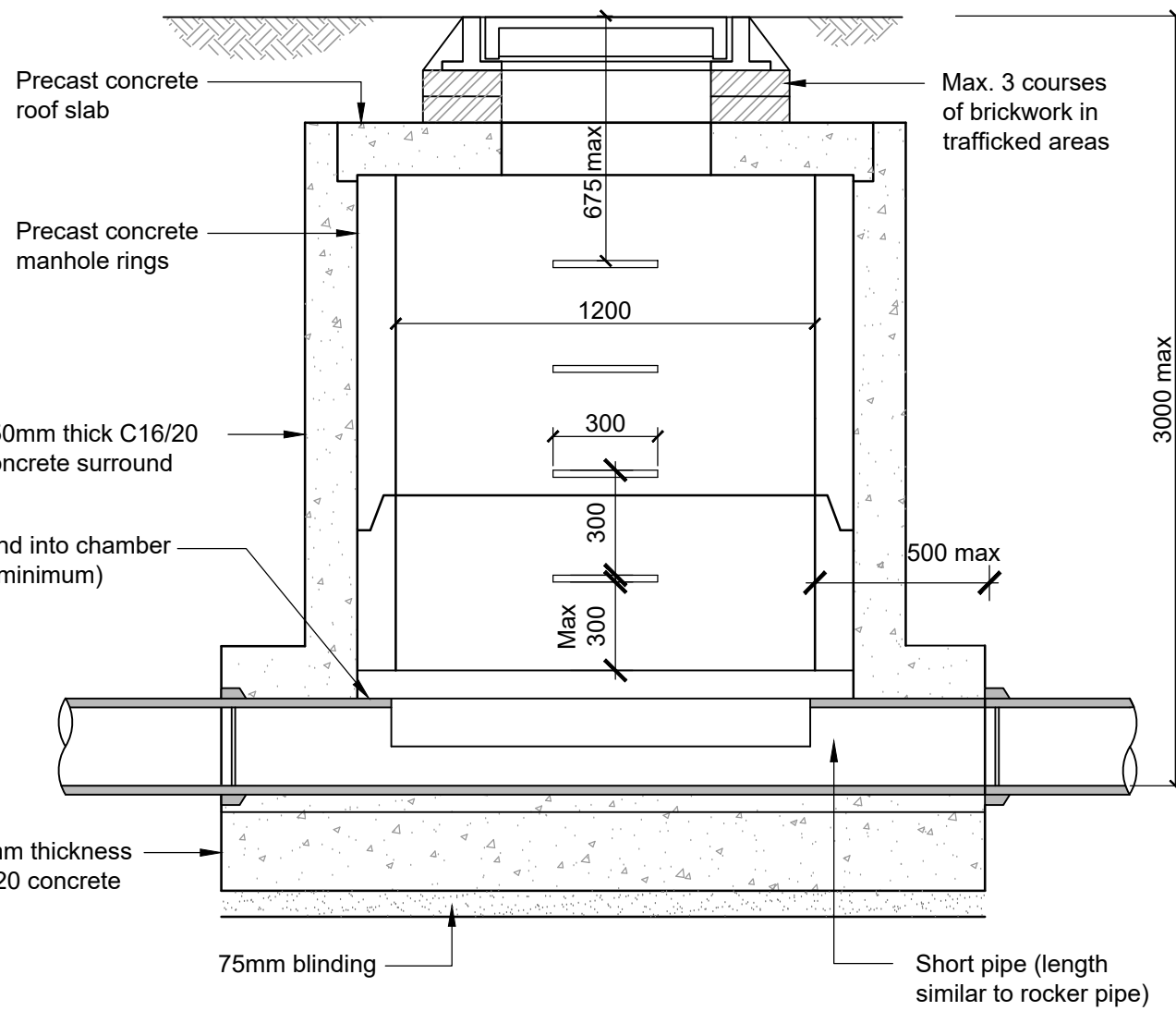
Drawn by NK	Checked by AS
Designed by AS	Approved by GS

Scale at A2: 1:250
Rev: Civil Drainage
Rev: A2 - Issued for Planning
Rev: 277975-00
Drawing No: 277975-00
Drawing Title: CROMP-ARUP-XX-00-DR-CE-4200

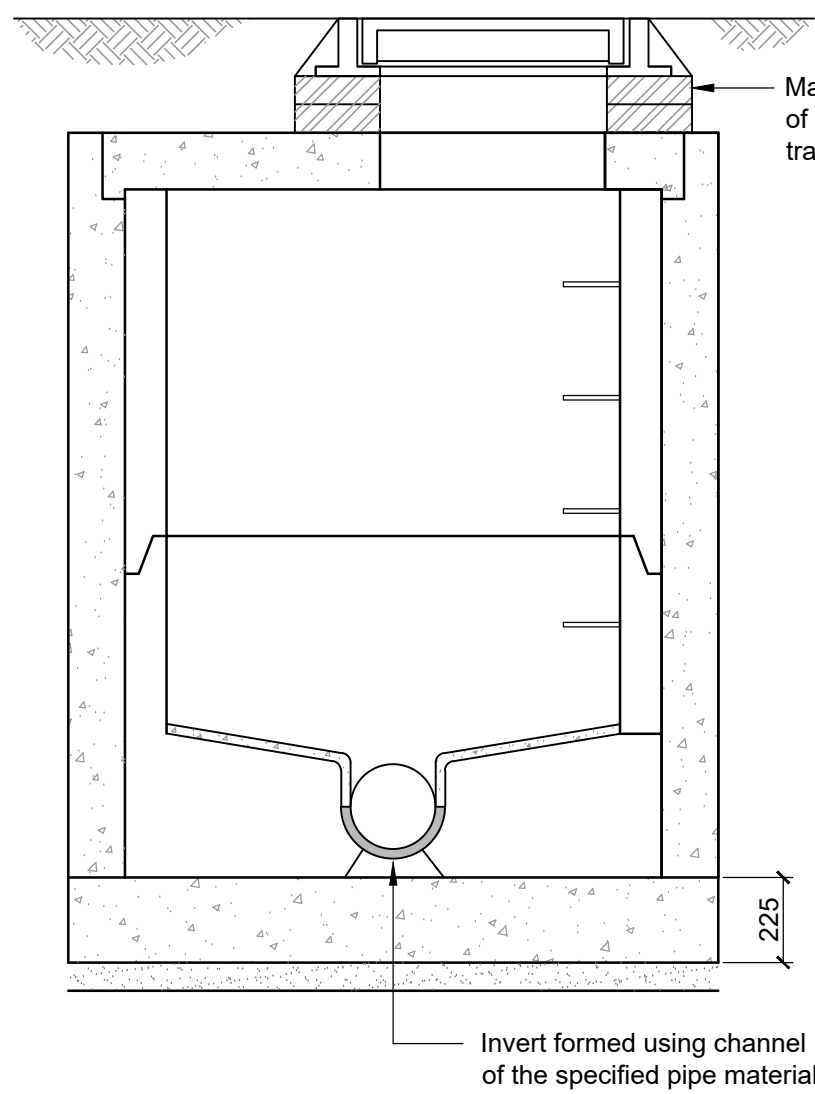




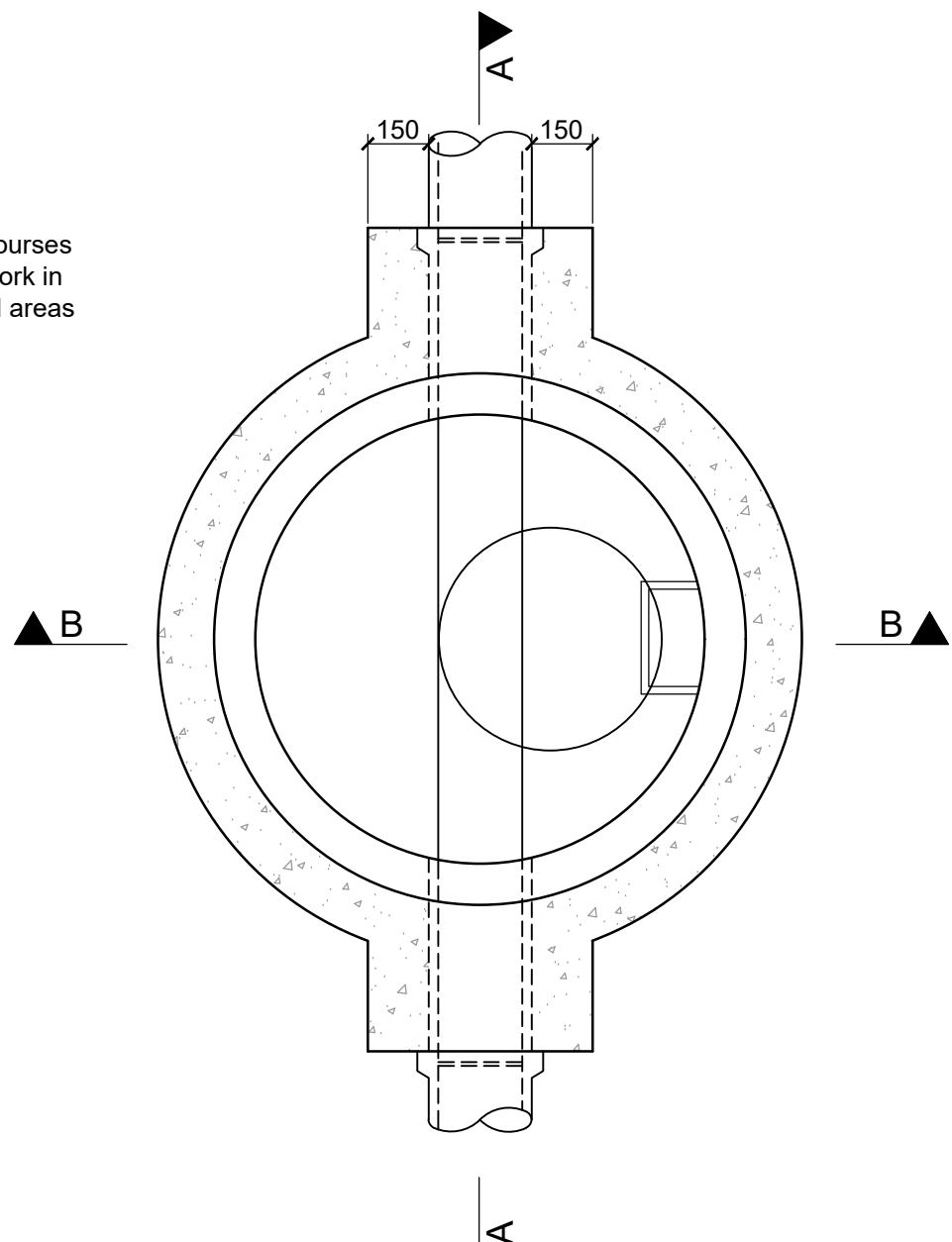
- LEGEND**
- Proposed site boundary
 - Proposed building
 - Existing building
 - Abandoned/Defunct foul sewer
 - Proposed foul sewer
 - Proposed foul manhole
 - Abandoned/Defunct surface water drain
 - Proposed surface water drain
 - Proposed perforated pipe
 - Proposed surface-level channel
 - Proposed silt drain
 - Proposed surface water manhole
 - Proposed surface water inspection chamber
 - Proposed water interceptor
 - Proposed surge air
 - Proposed back drop
 - Proposed non-return valve
 - Abandoned/Defunct watermain
 - Proposed surface water drain
 - Proposed hydrant
 - Proposed sluice valve
 - Proposed water meter
 - Existing Surface Water
 - Existing Foul Sewer
 - Existing Combined Sewer
 - Existing Watermain
 - Existing Gas
 - Existing Electrical
 - Existing COMMS
 - Existing Public Lighting
 - Existing Air
 - Existing Unknown Service



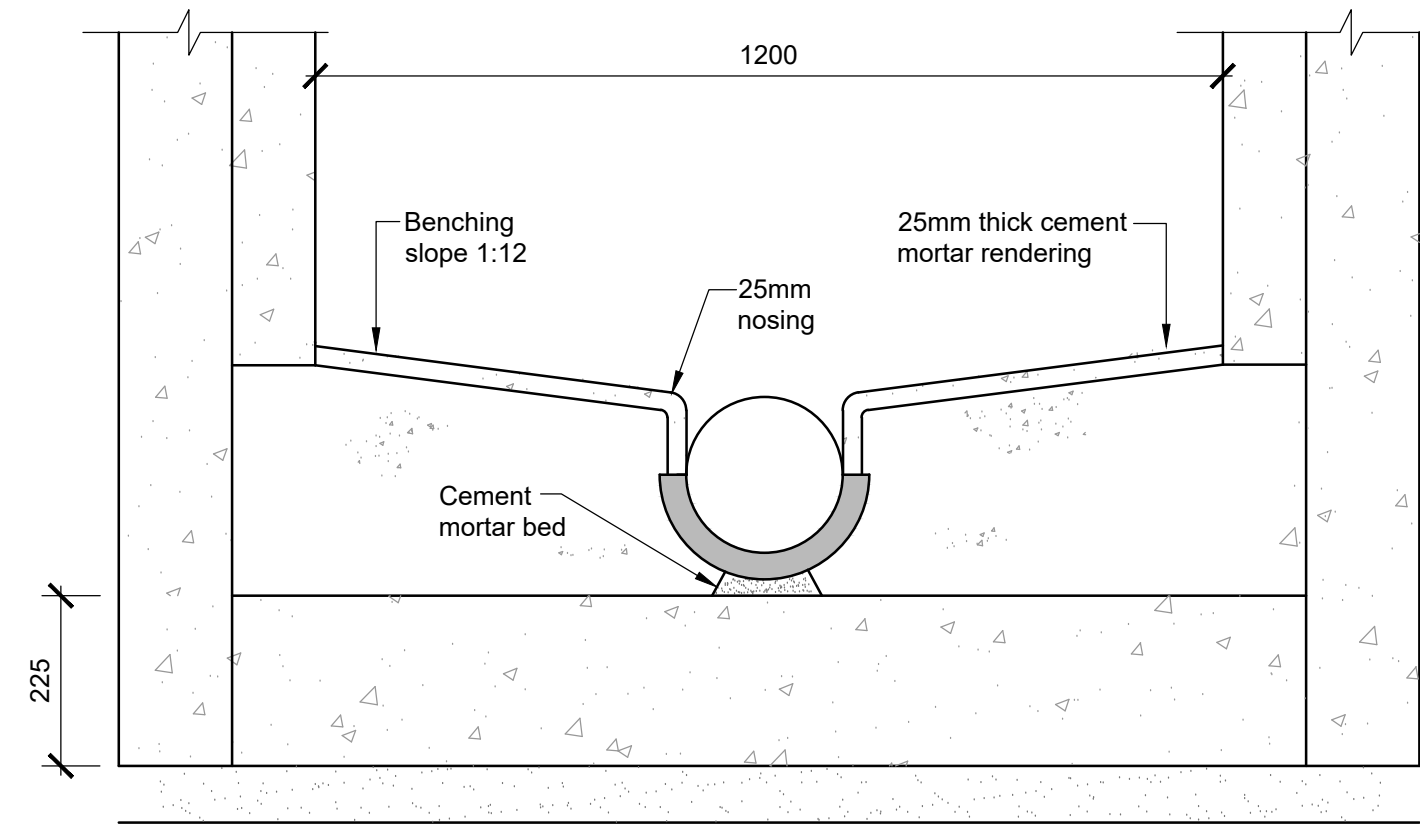
Section A-A



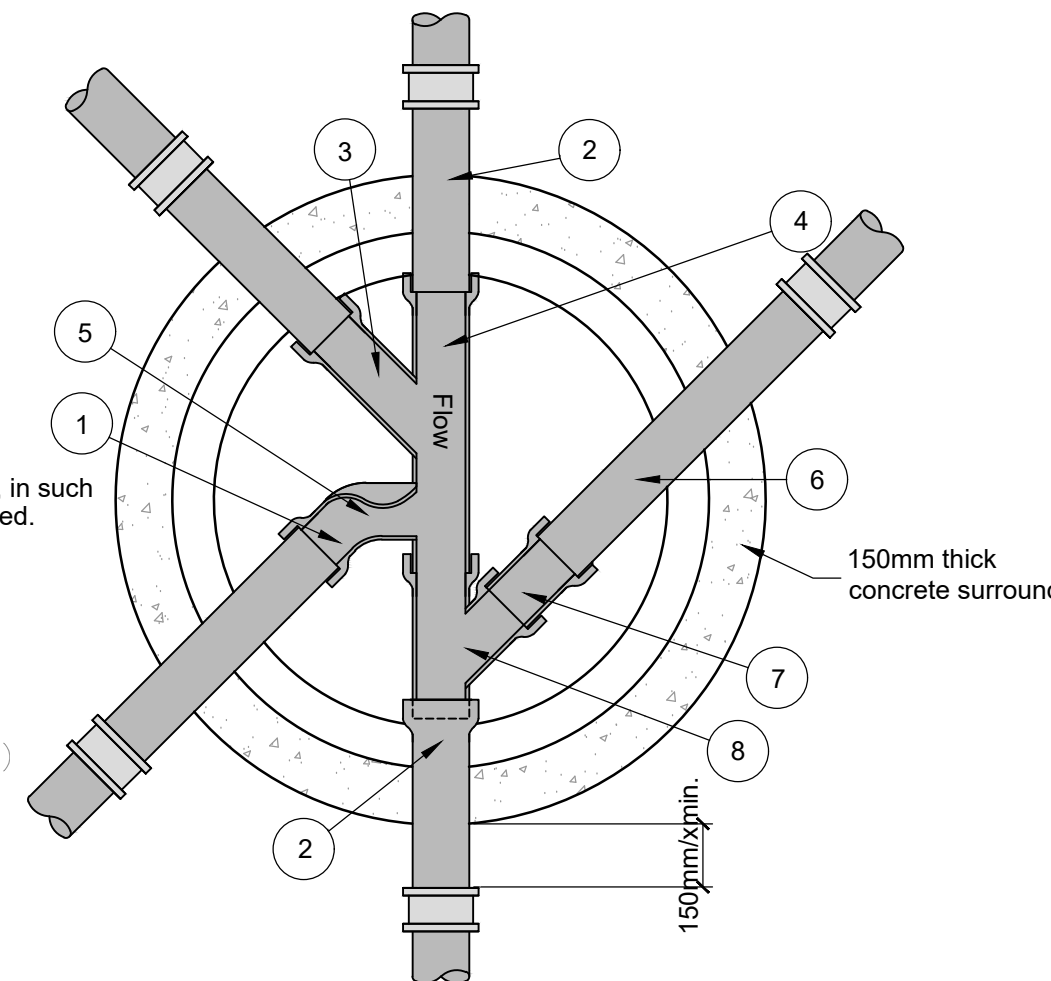
Section B-B



Sectional plan

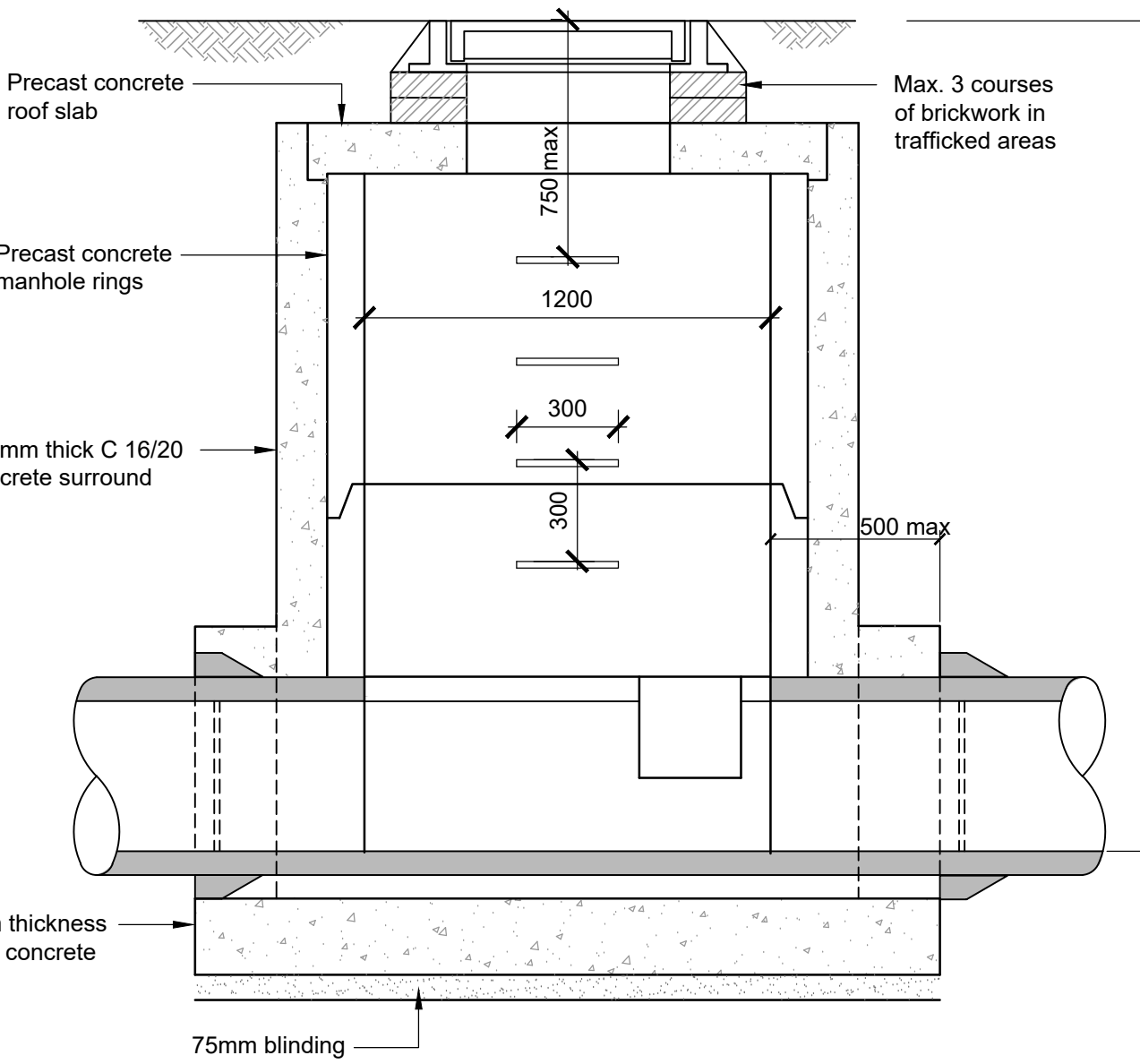


Benching detail
1:10

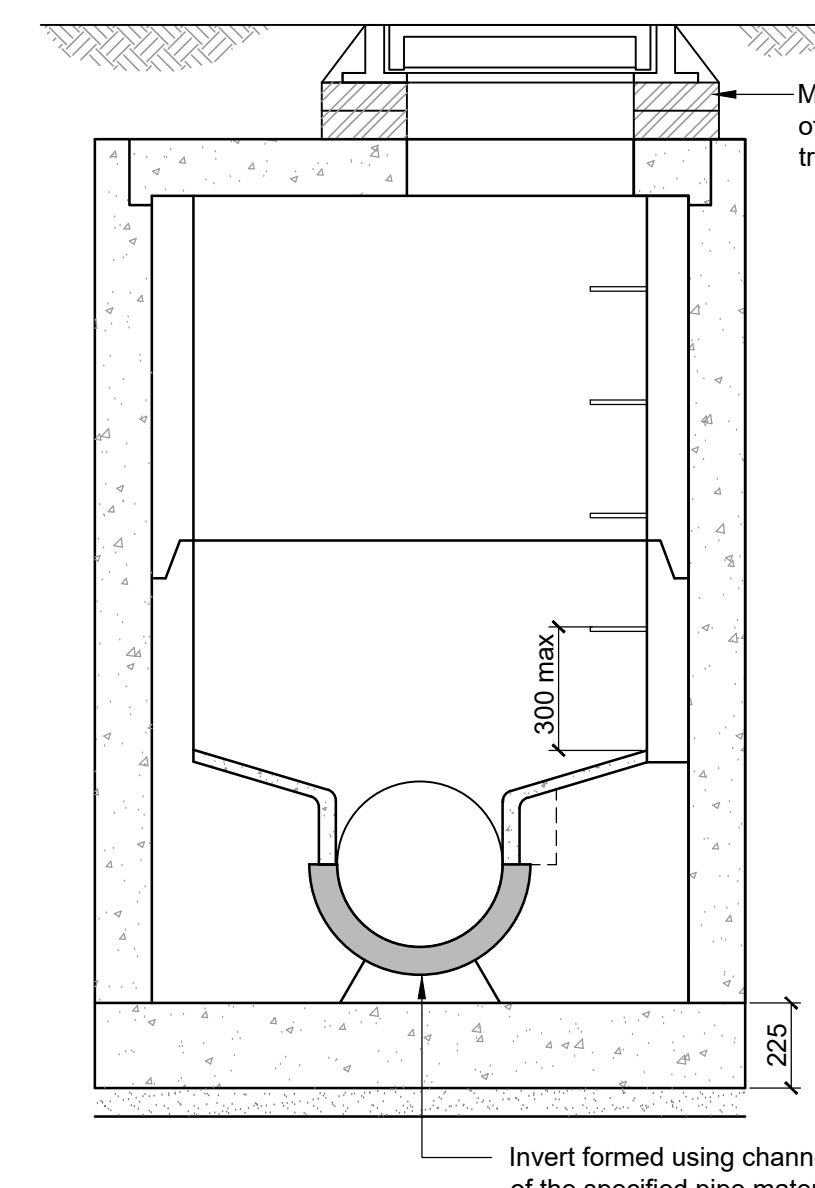


1. Angles over 90° are not preferred, in such cases 3/4 section bends must be used.
2. Short length of pipe. (rocker pipe)
3. 1/2 section bend.
4. Channel pipe.
5. 3/4 section bend.
6. Short length pipe. (rocker pipe)
7. Short section of channel pipe.
8. Right hand channel junction.

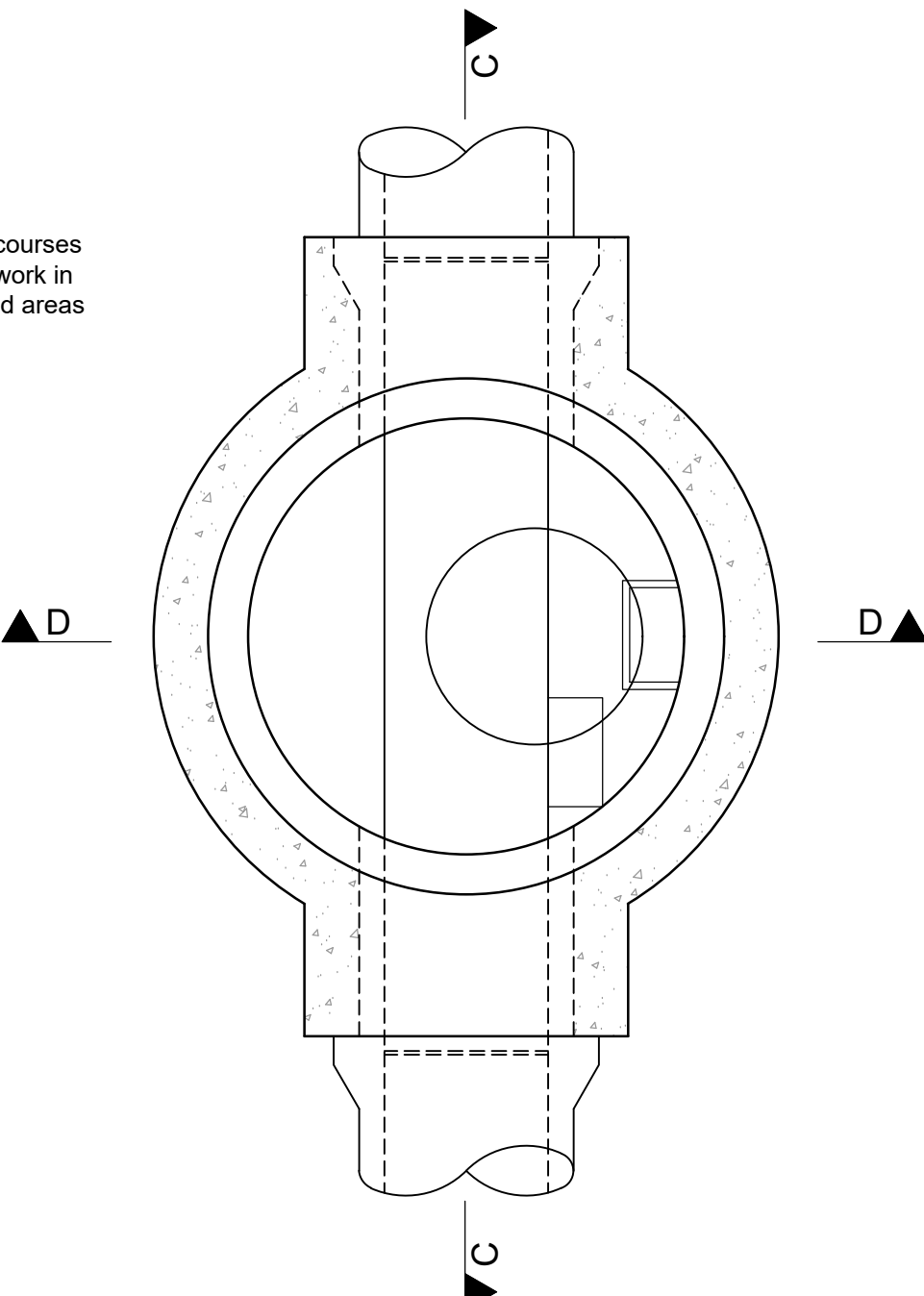
Typical Channel Details
Around Manhole
Scale 1:20



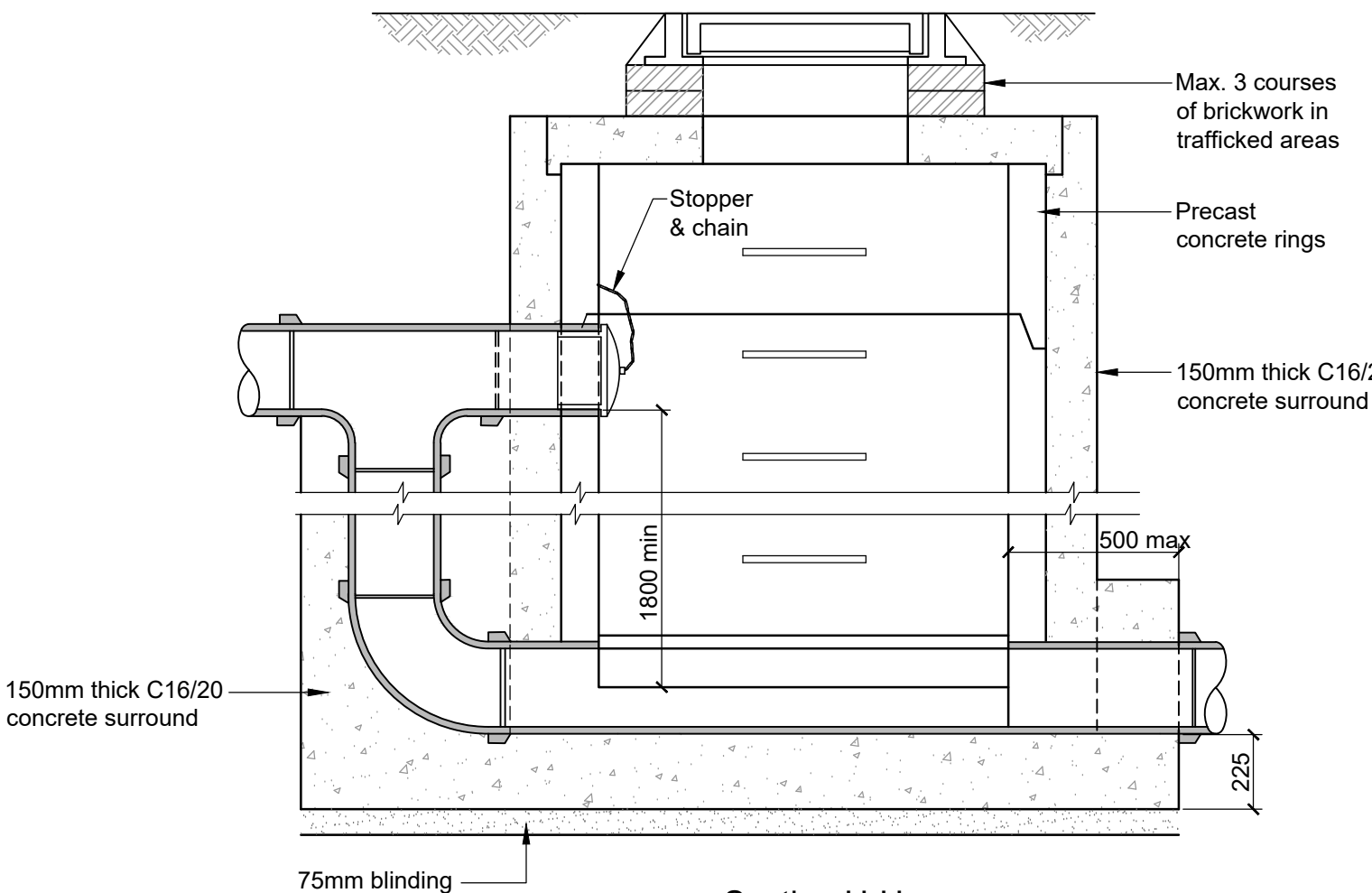
Section C-C



Section D-D



Sectional plan

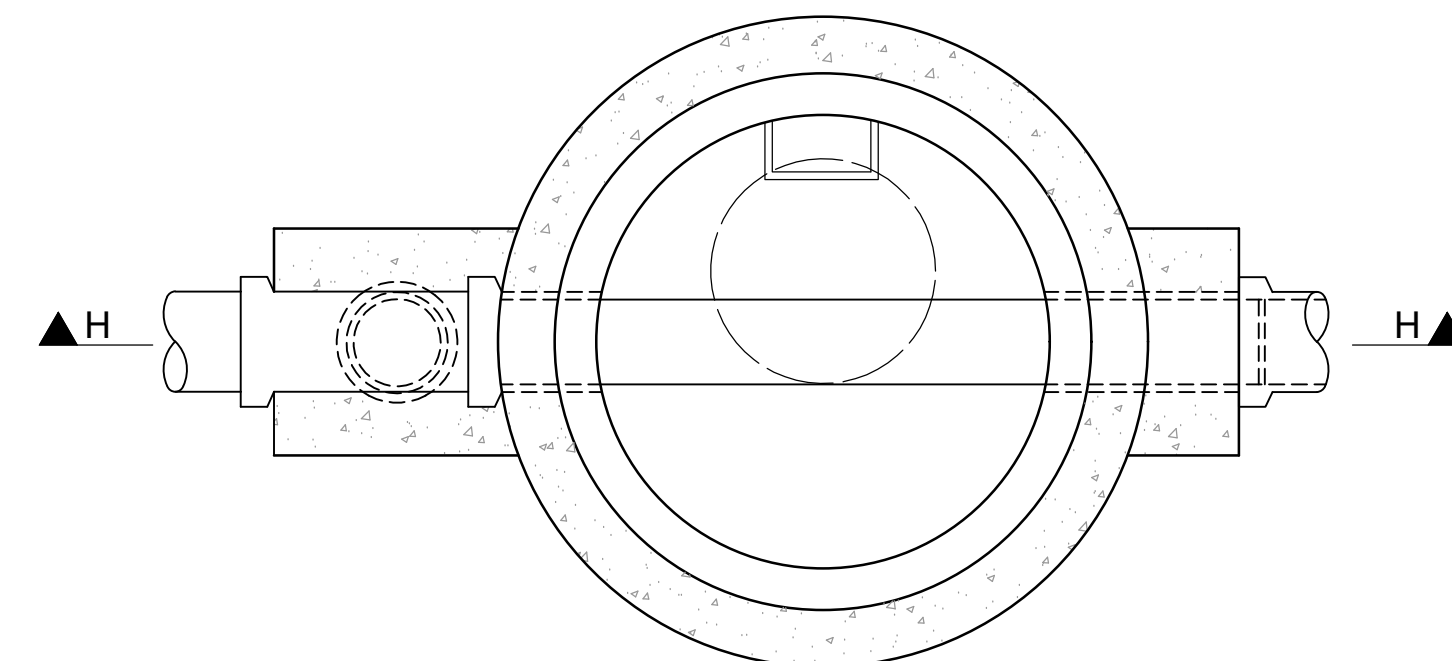


Section H-H

Shallow precast concrete manhole

(depths up to 3.0m on pipes greater than 300mm dia.)
1:20

Manhole sizes	
Pipe dia. mm	Manhole size dia.
100 - 300	1.2m Ø
375 - 750	1.5m Ø
750 - 900	1.8m Ø



Vertical backdrop manhole
1:20

C01	03/10/25	DB	AS	GS
Issued for Planning (Status A2)				
P01	02/07/25	DB	AS	GS
Issued for Information (Status S2)				
Rev	Date	By	Chkd	Appd

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Client
Limerick Twenty Thirty

Project Title
Cleaves Riverside Quarter
Masterplan

Drawing Title
Proposed Details
Sheet 1

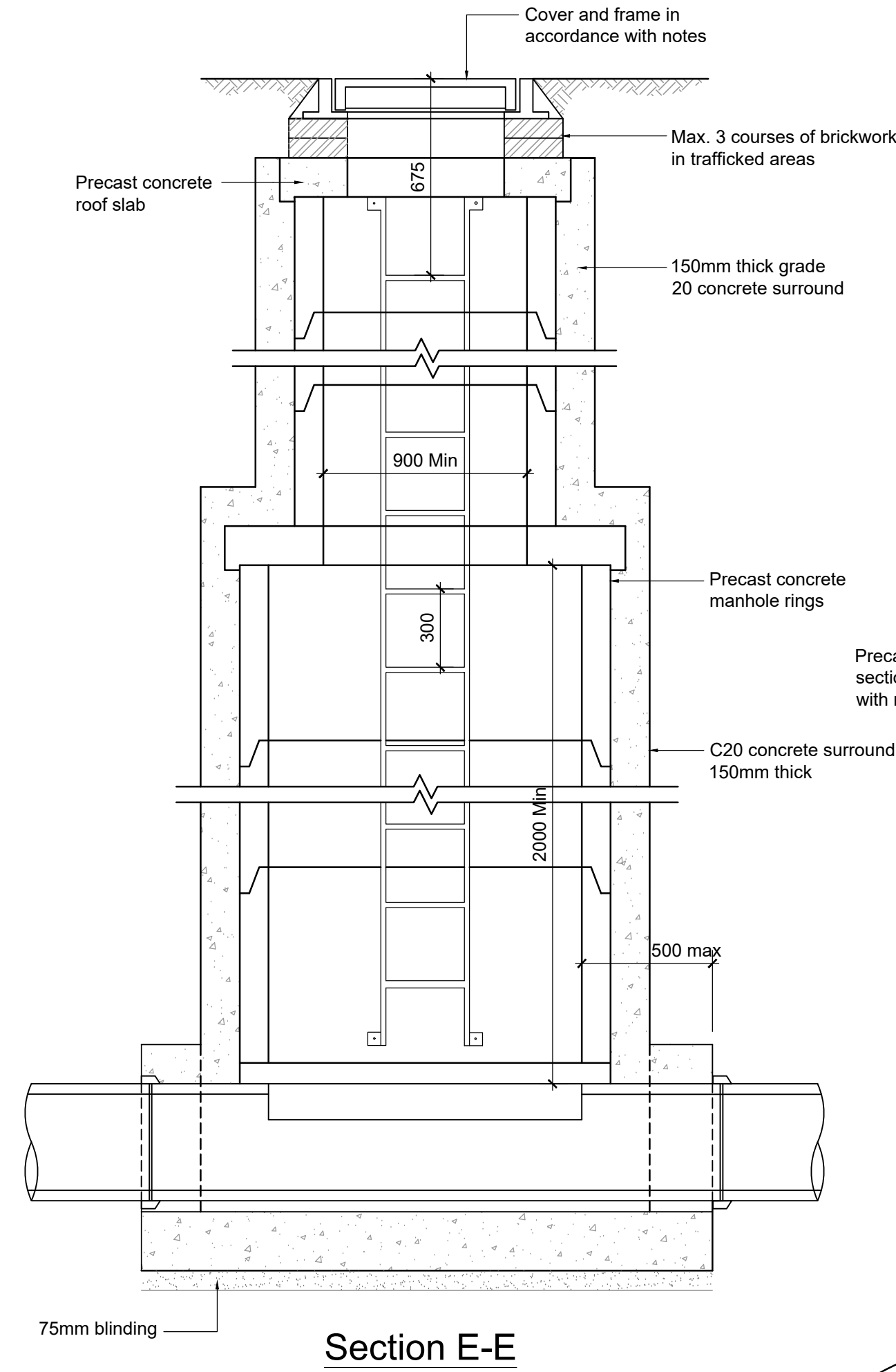
Scale at A1
As Shown

Role
Civil Drainage

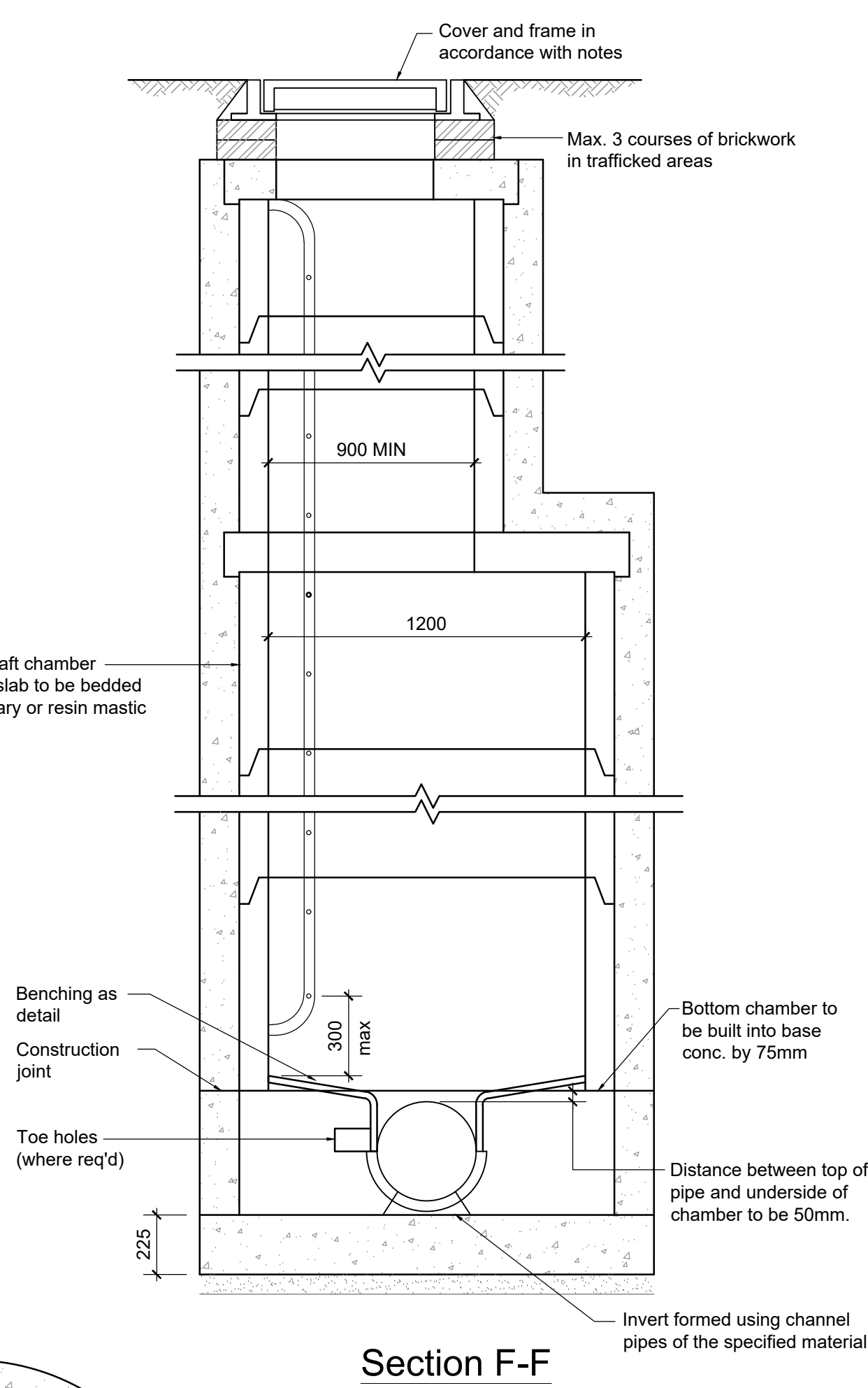
Suitability
A2 - Issued for Planning

Arup Job No
277975-00

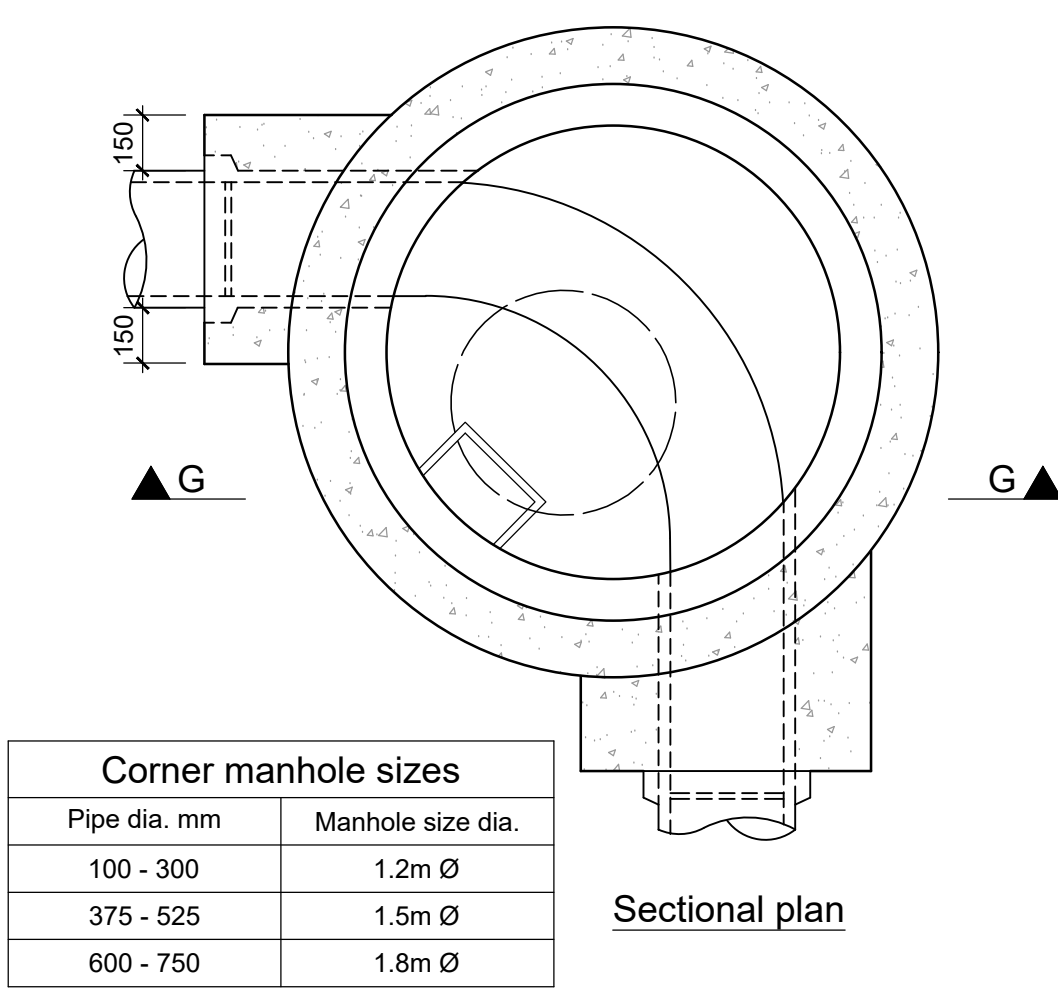
Name
CRQMP-ARUP-XX-00-DR-CE-4203



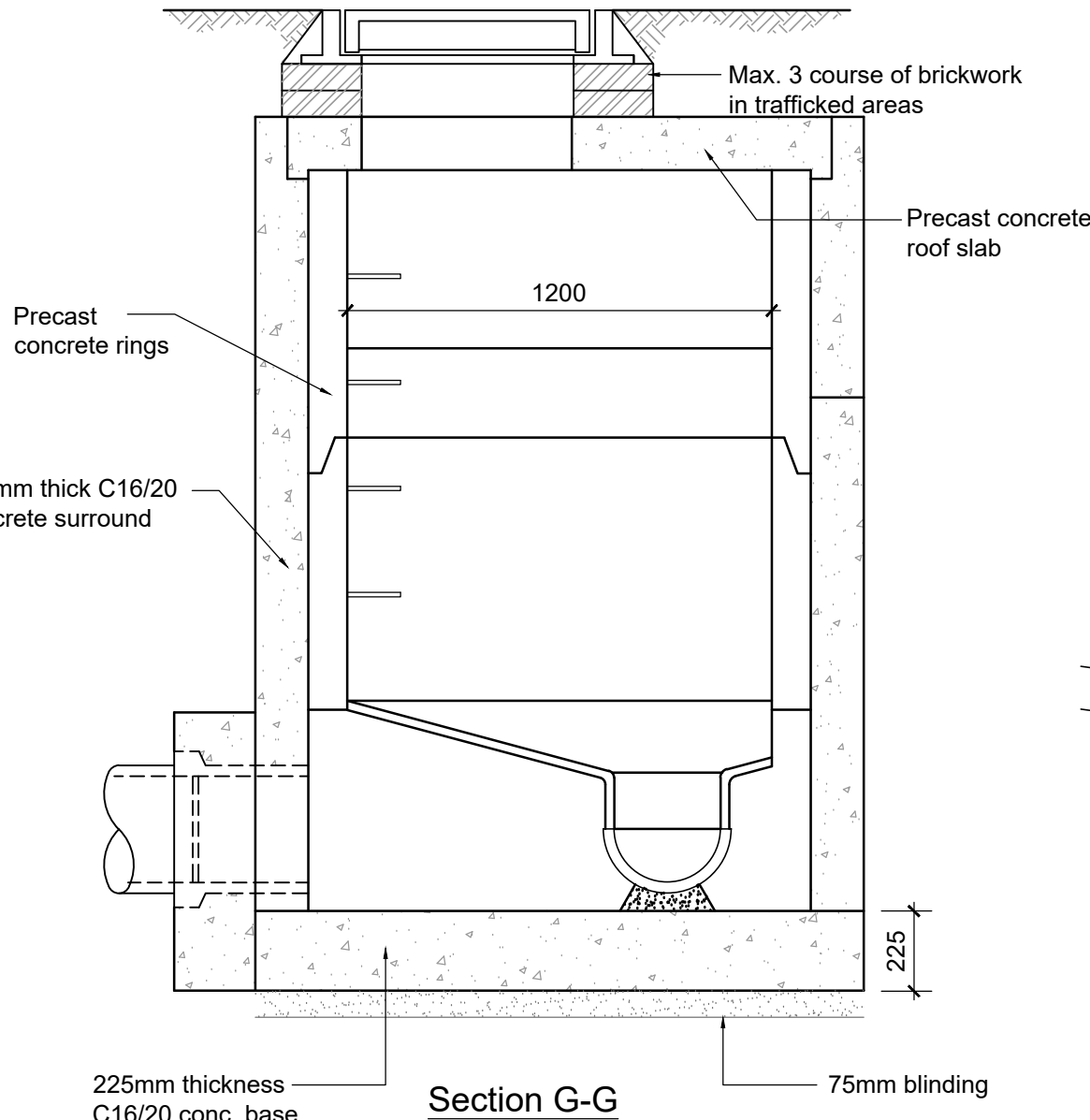
Section E-E



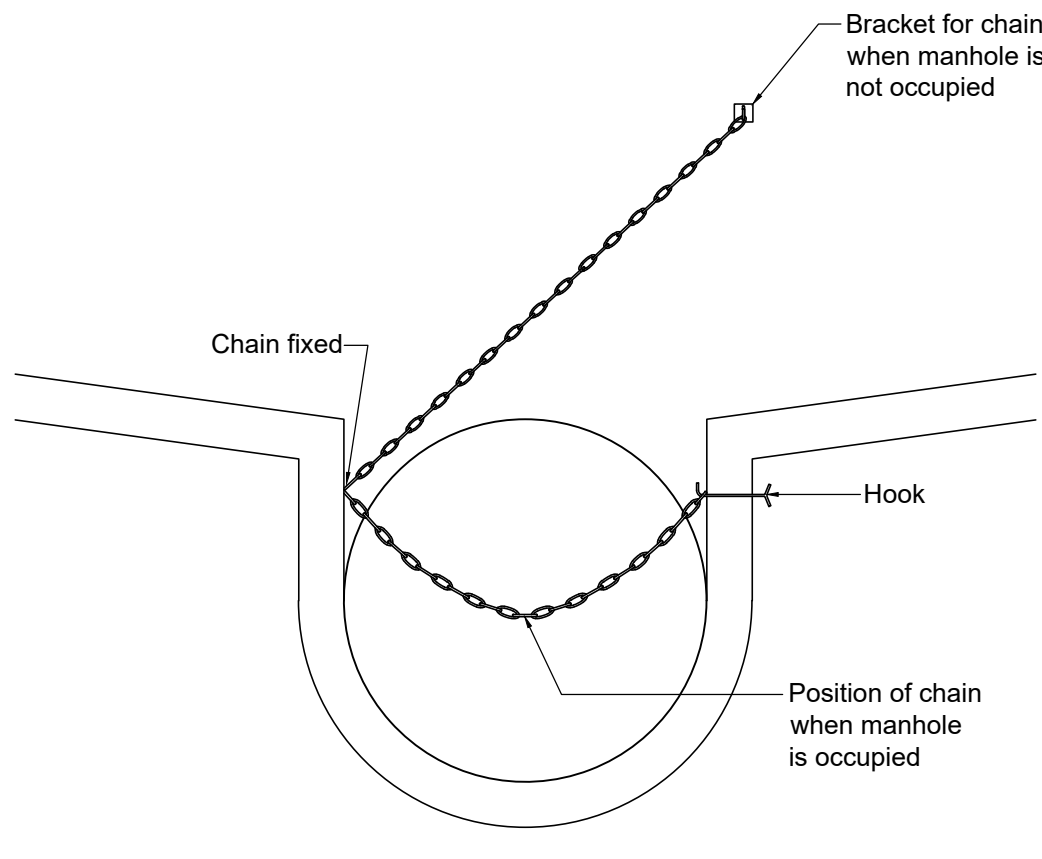
Section F-F



Corner manhole sizes	
Pipe dia. mm	Manhole size dia.
100 - 300	1.2m Ø
375 - 525	1.5m Ø
600 - 750	1.8m Ø



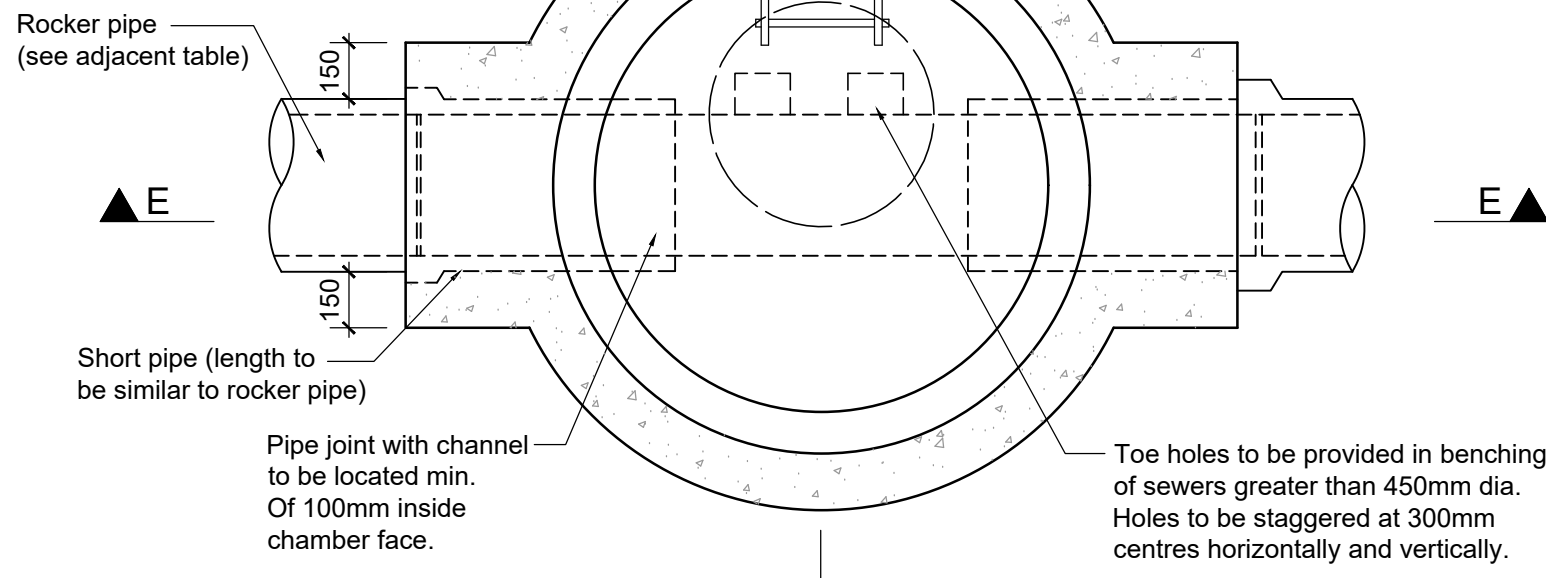
Precast concrete corner manhole
(If over 3.0m deep use shaft for deep manhole)
1:20



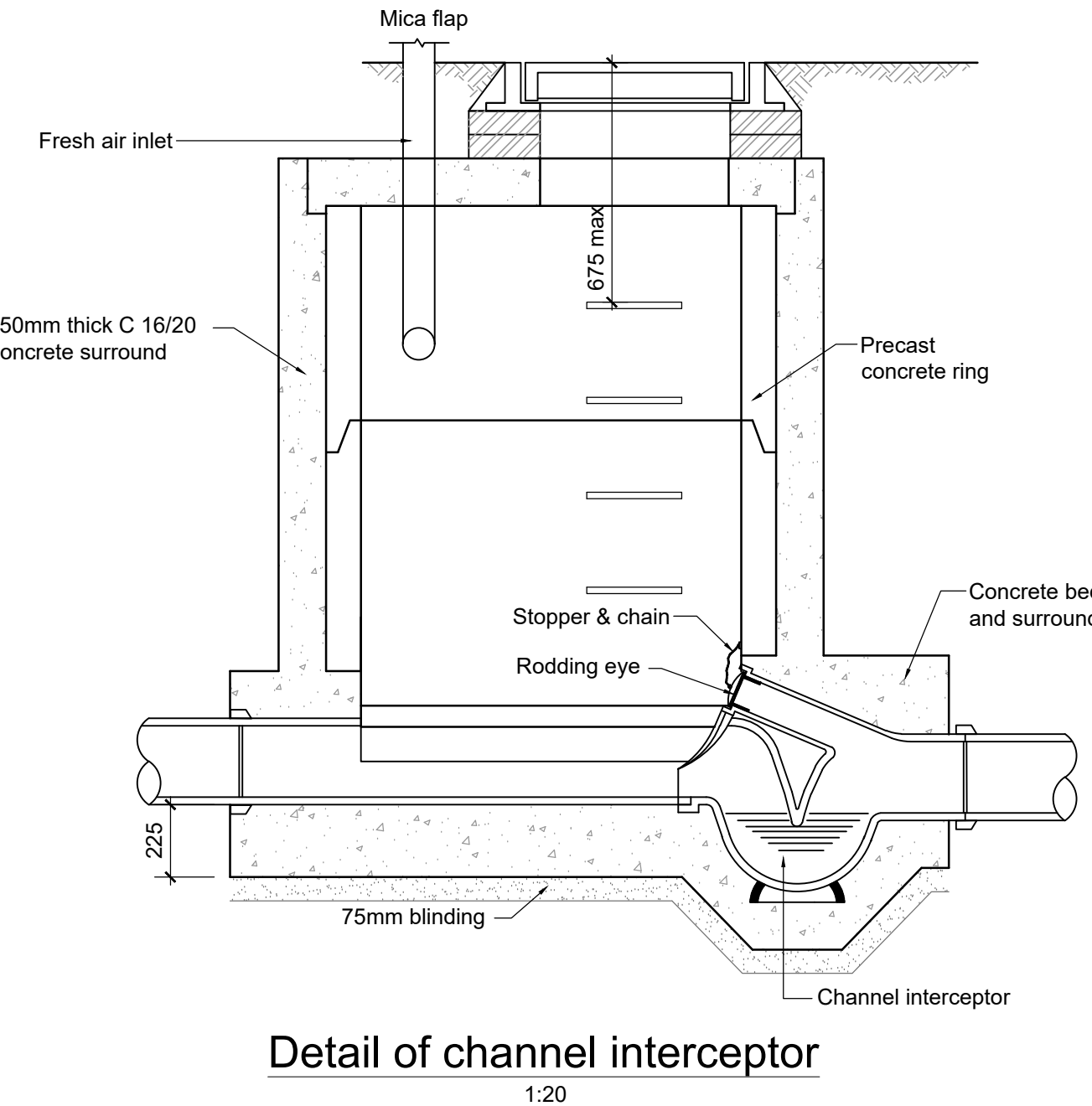
Safety chain detail
(For pipe diameters greater than 600mm)
1:20

Manhole sizes	
Pipe dia. Mm	Manhole size dia.
100 - 300	1.2m Ø
375 - 750	1.5m Ø
750 - 900	1.8m Ø
1050-1200	2.1m Ø

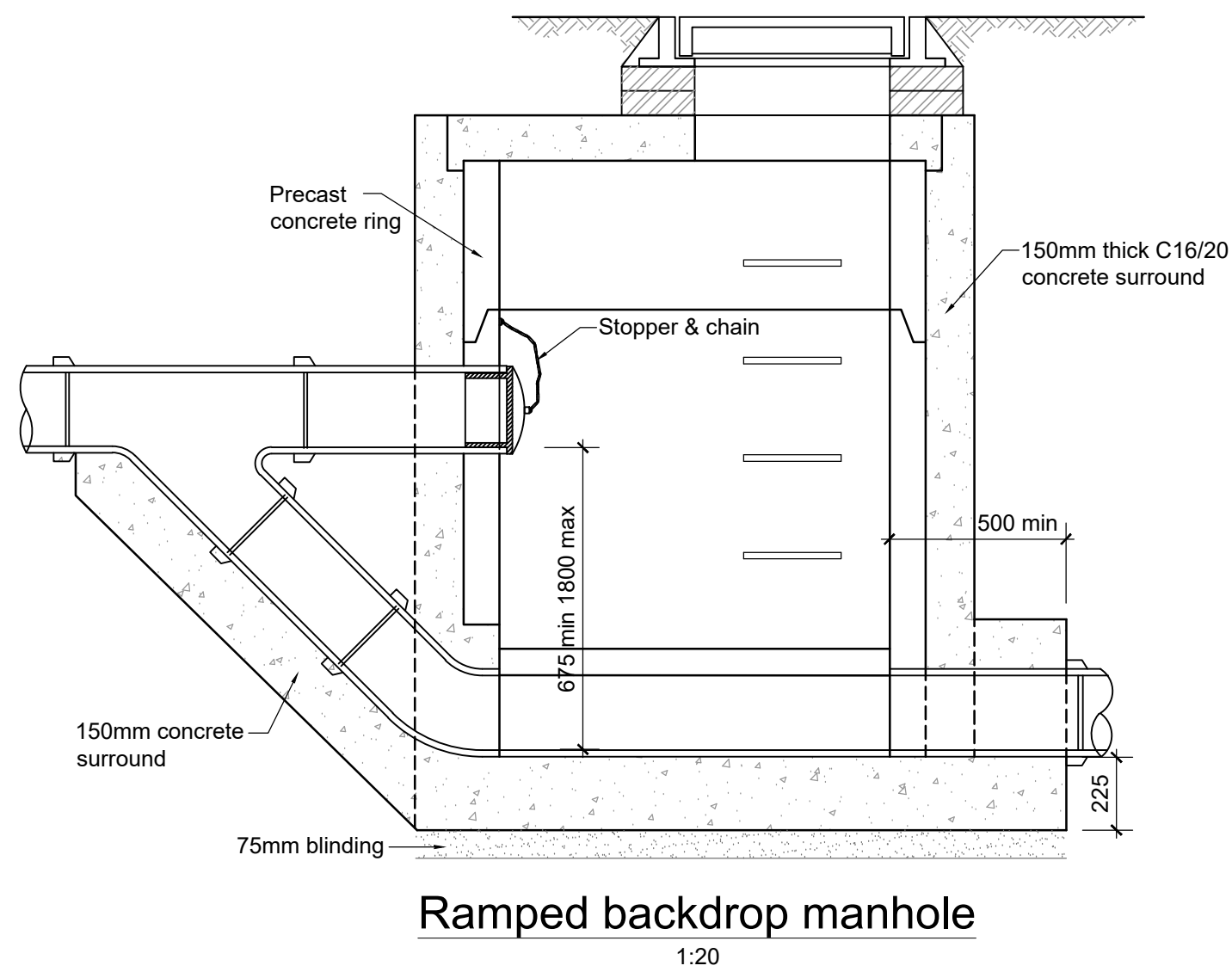
Rocker pipes	
Pipe dia. mm	Rocker pipe length
150 - 450	0.5 - 0.75m
525 - 750	0.75 - 1.0m



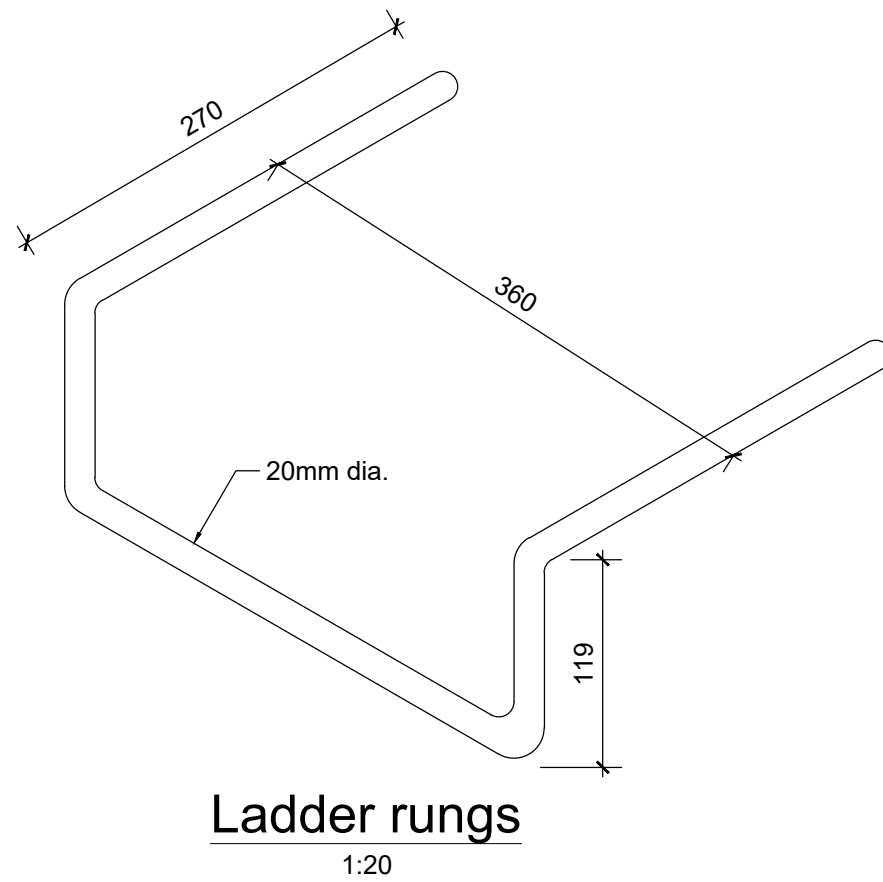
Sectional plan
Deep precast concrete manhole
(Depths over 3.0m & up to 5.5m)
1:20



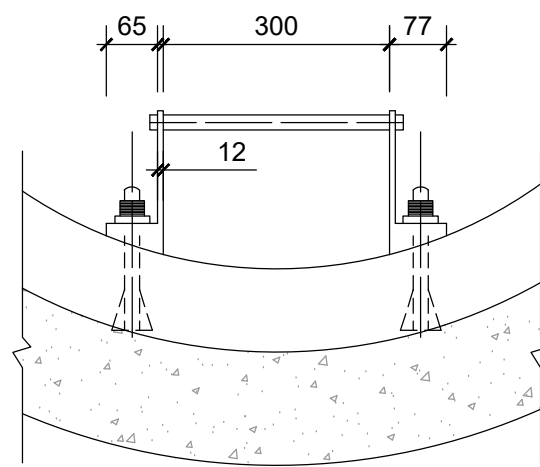
Detail of channel interceptor
1:20



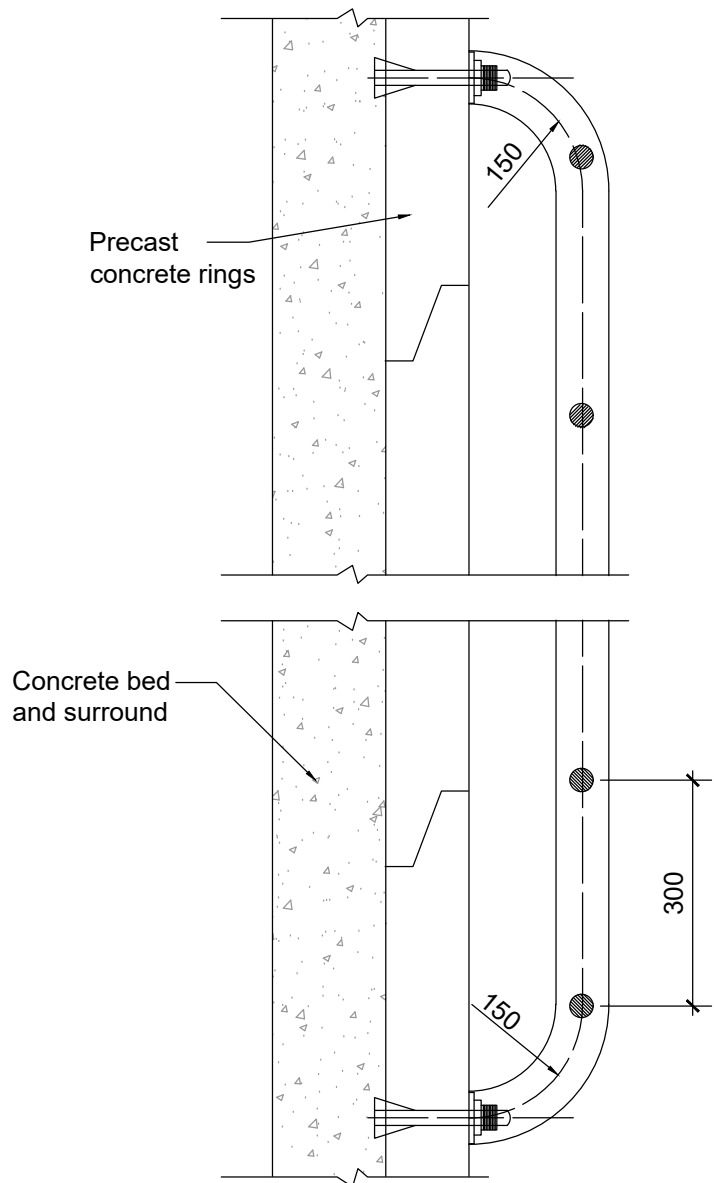
Ramped backdrop manhole
1:20



Ladder rungs
1:20



Access ladder detail
1:20



Notes:
Manhole construction

Concrete manholes shall be constructed of precast units complying with I.S.420 and shall be of the dimensions as shown on the drawing. The base, and benching shall be formed insitu of C16/20 concrete. The base shall be 225mm thick and the channel be purpose made half round channels. The precast rings shall be surrounded in 150mm thick C16/20 concrete. A flexible joint shall be provided to each pipe within 500mm of the inner face of the manhole wall. Projecting pipes shall be surrounded with C16/20 concrete with the base been cast monolithically with the manhole base. A further "rocker" pipe shall be provided for pipes up to 450mm dia. Of 500mm to 750mm length, and pipes greater than 450mm dia. 750mm to 1000mm length.

Covers

Manhole covers and frames to comply with the requirements of IS/EN 124:2015. Covers in roadways to be an approved minimum Class D400 with 600mm clear opening with polyester resin bedding material for fixing manhole frames as per clause in Arup Specification (Materials). Covers in grassed areas and footpaths not adjacent to roadways to be minimum Class C250 with 600mm clear opening. Maximum of 3 courses of engineering bricks to be provided under manhole frames in trafficked areas with 2 courses in un-trafficked areas.

Ladder rungs

Ladder rungs shall be 20mm diameter mild steel heavily galvanised after manufacture as shown on the drawing and fitted at 300mm centres. Length embedded in wall 125mm.

Access ladders

Access ladders to be manufactured from mild steel with 65mm x 12mm stringers 300mm apart with 20mm diameter rungs at 300mm c/c. Mild steel stays 65mm x 12mm to be provided at intervals not exceeding 2.4m. Ladder and stays to be heavily galvanised to BS 729 after manufacture. The ladder is to be fixed with 18mm diameter stainless steel bolts.

Benching

Benching is to be formed in C16/20 concrete and should rise vertically from the top edge of the channel to a height not less than that of the soffit of the outlet and slope upwards to meet the wall of the manhole at at gradient of 1:12 (min. rise 25mm). It should be floated with a steel float to a smooth hard surface with a 25mm thick coat of 1:2 cement mortar laid while the benching concrete is still green. The channel shall be purpose made half round channels of the same material as the pipeline or other as approved by the engineer.

C01	03/10/25	DB	AS	GS
Issued for Planning (Status A2)				
P01	02/07/25	DB	AS	GS
Issued for Information (Status S2)				
Rev	Date	By	Chkd	Appd

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Client
Limerick Twenty Thirty

Project Title
Cleaves Riverside Quarter
Masterplan

Drawing Title
Proposed Details
Sheet 2

Scale at A1	1:20
Role	Civil Drainage
Suitability	A2 - Issued for Planning
Arup Job No	277975-00
Name	CRQMP-ARUP-XX-00-DR-CE-4402
Rev	C01

A1

A B C D E F G H I J K L M N

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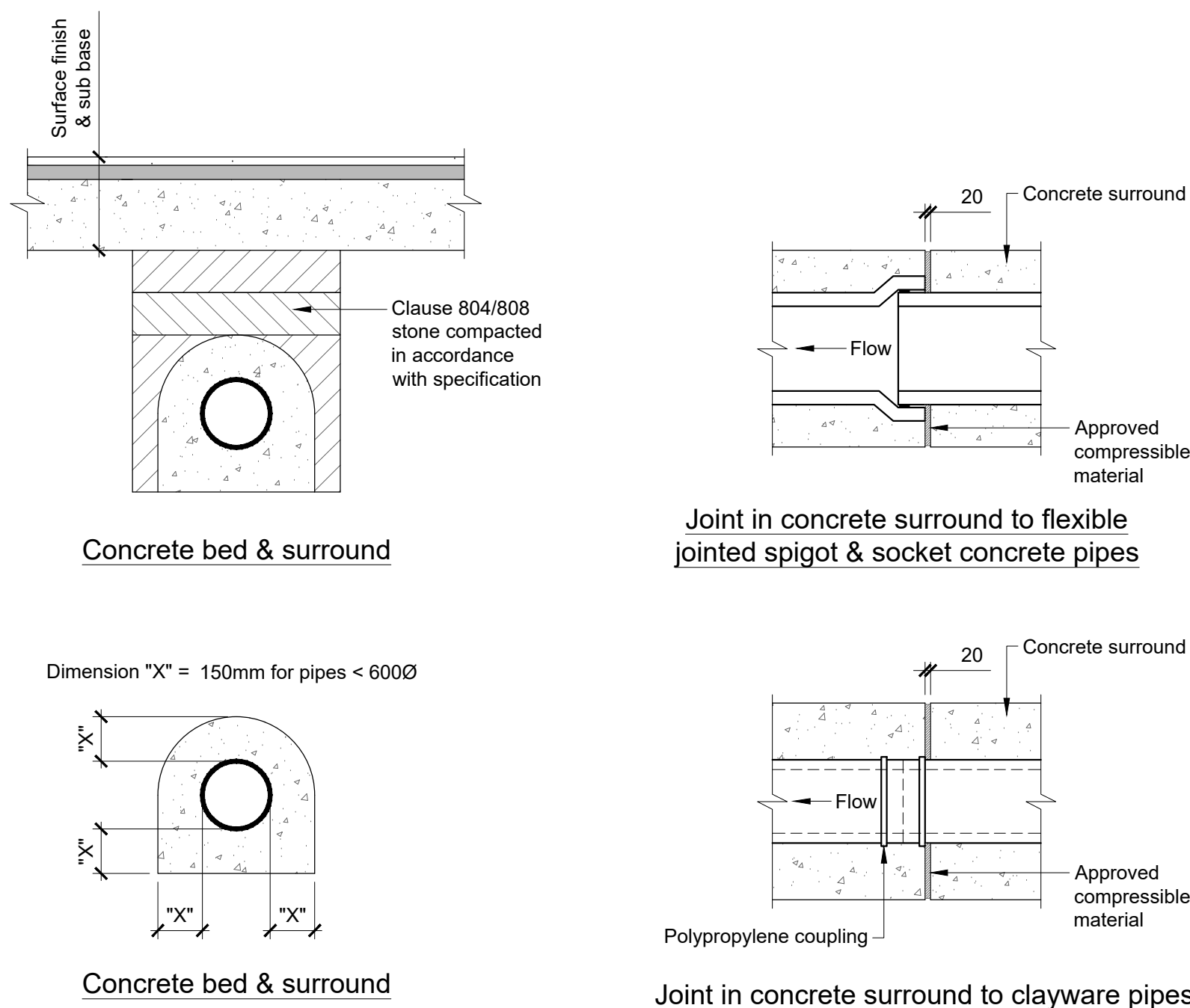
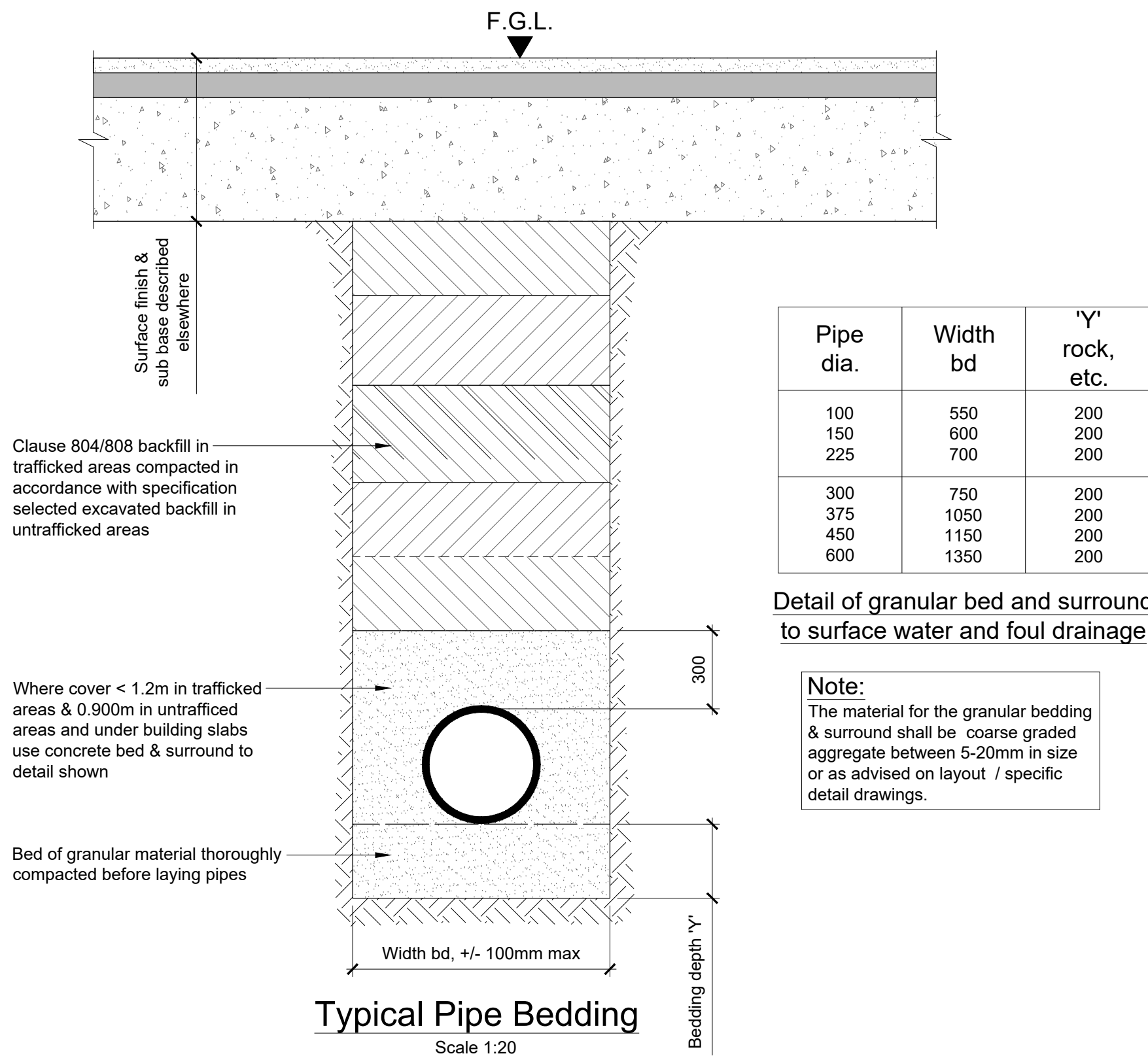
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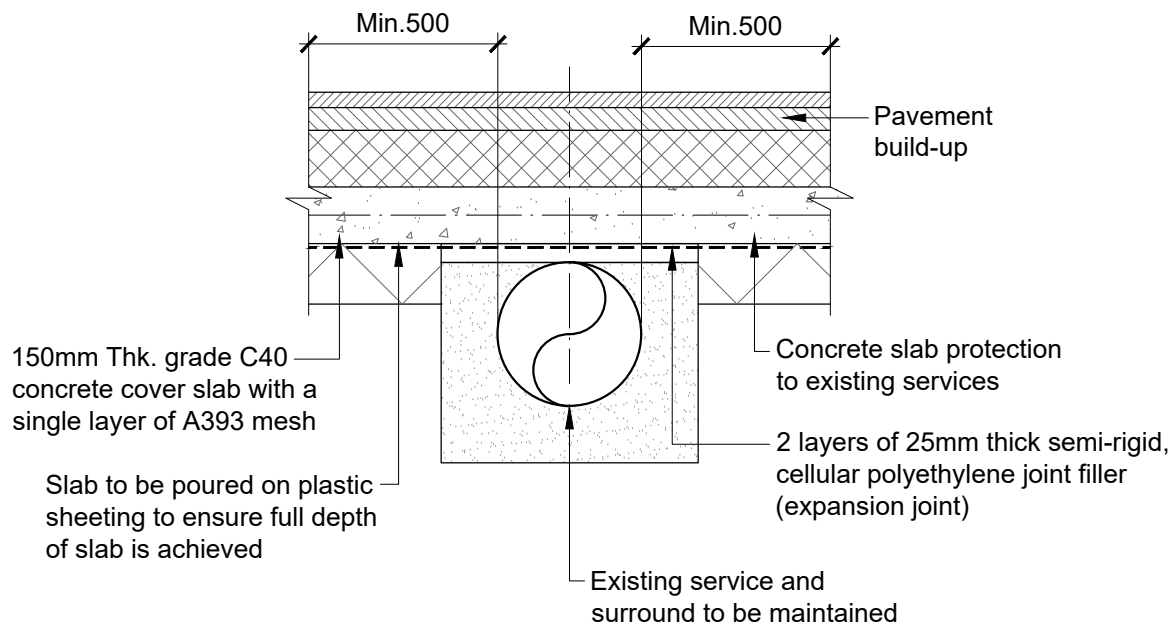
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11

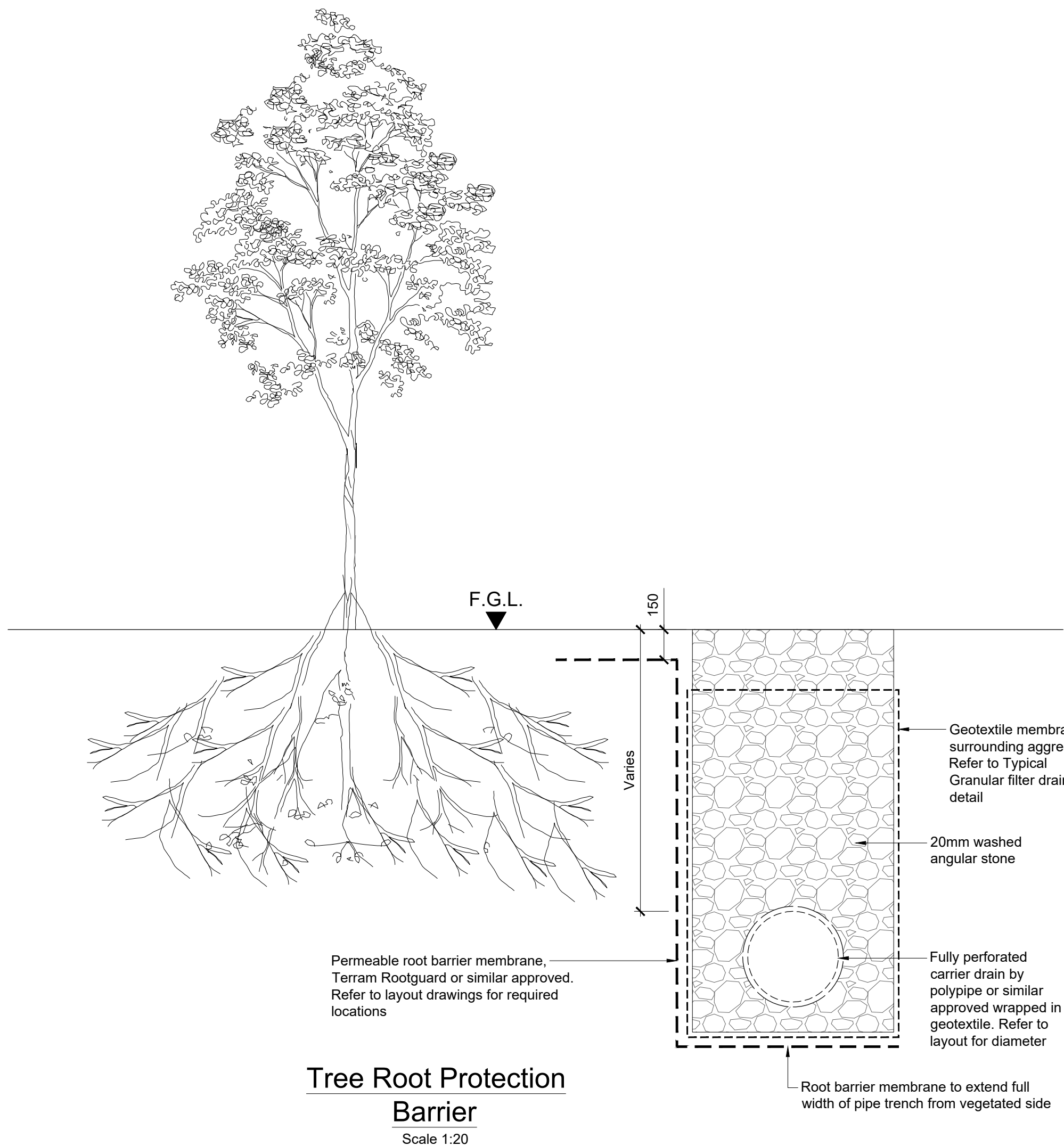
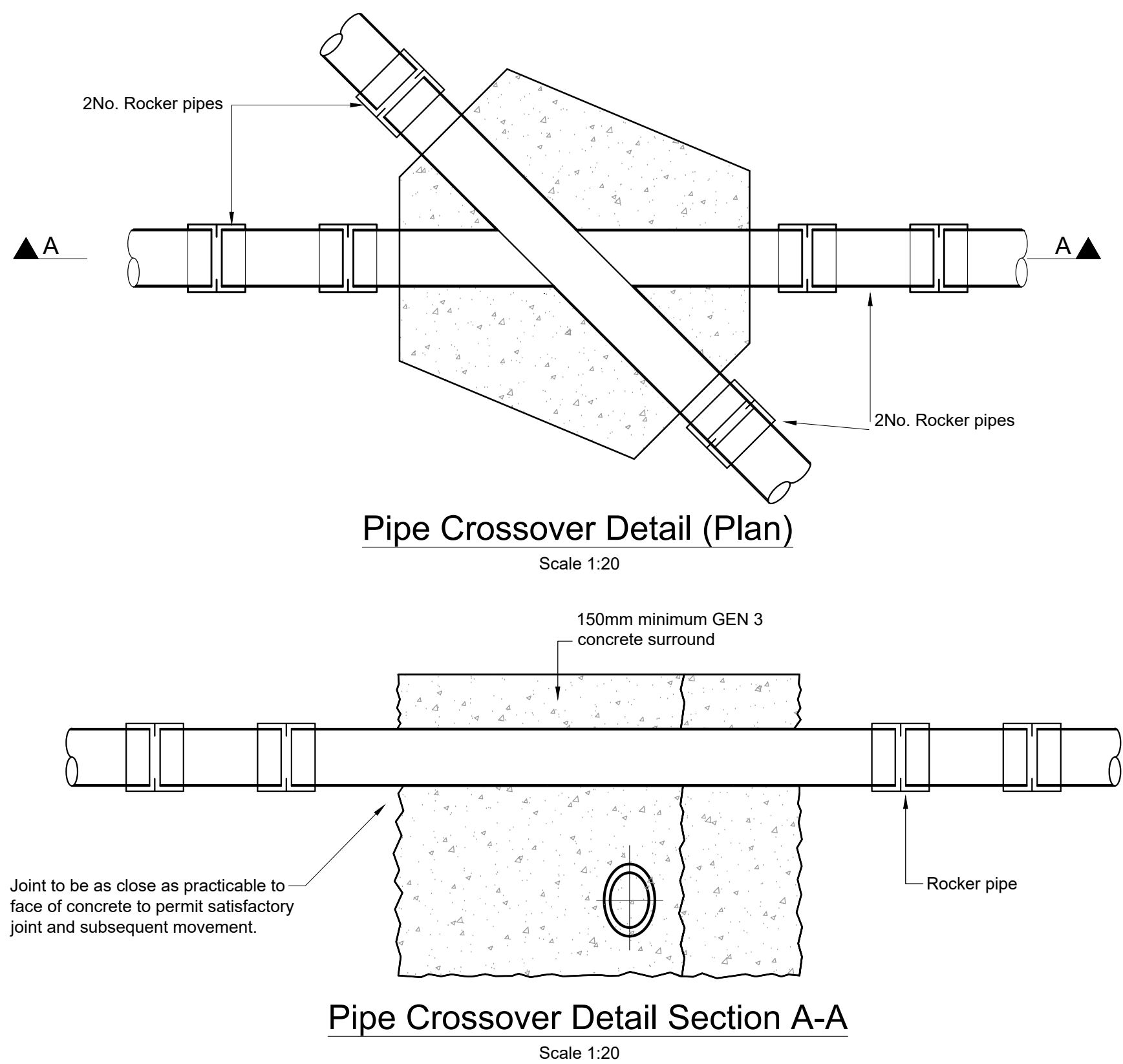


Notes:
1. Concrete to be grade 20
2. Joints with approved compressible material shall not be more than 5m apart
3. Where sewers have a concrete bed & surround, flexibility of all joints is to be maintained by providing a flexible joint through concrete using a compressible board. Board to be pre-cut to pipe diameter and to provide a complete break between the concrete surrounds. The compressible board is to be 18mm thick for pipe sizes up to 450mm diameter and 36mm thick for larger diameters



Pipe Protection Detail 1
Scale 1:20

Pipe Protection Detail 2
Scale 1:20



C01	03/10/25	DB	AS	GS
Issued for Planning (Status A2)				
P01	01/07/25	DB	AS	GS
Issued for Information (Status S2)				
Rev	Date	By	Chkd	Appd

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Client
Limerick Twenty Thirty

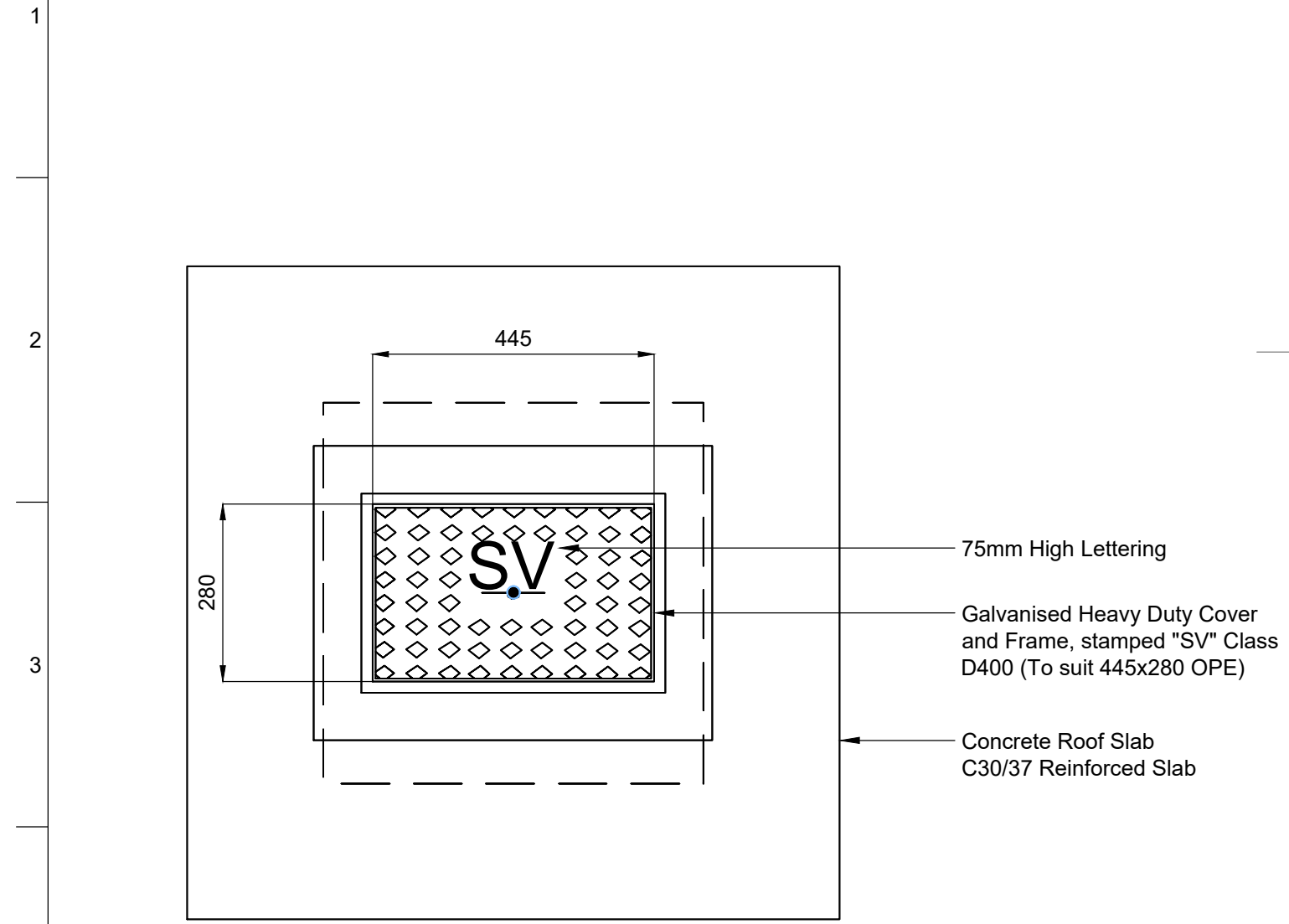
Project Title
Cleevs Riverside Quarter
Masterplan

Drawing Title
Proposed Details
Sheet 3

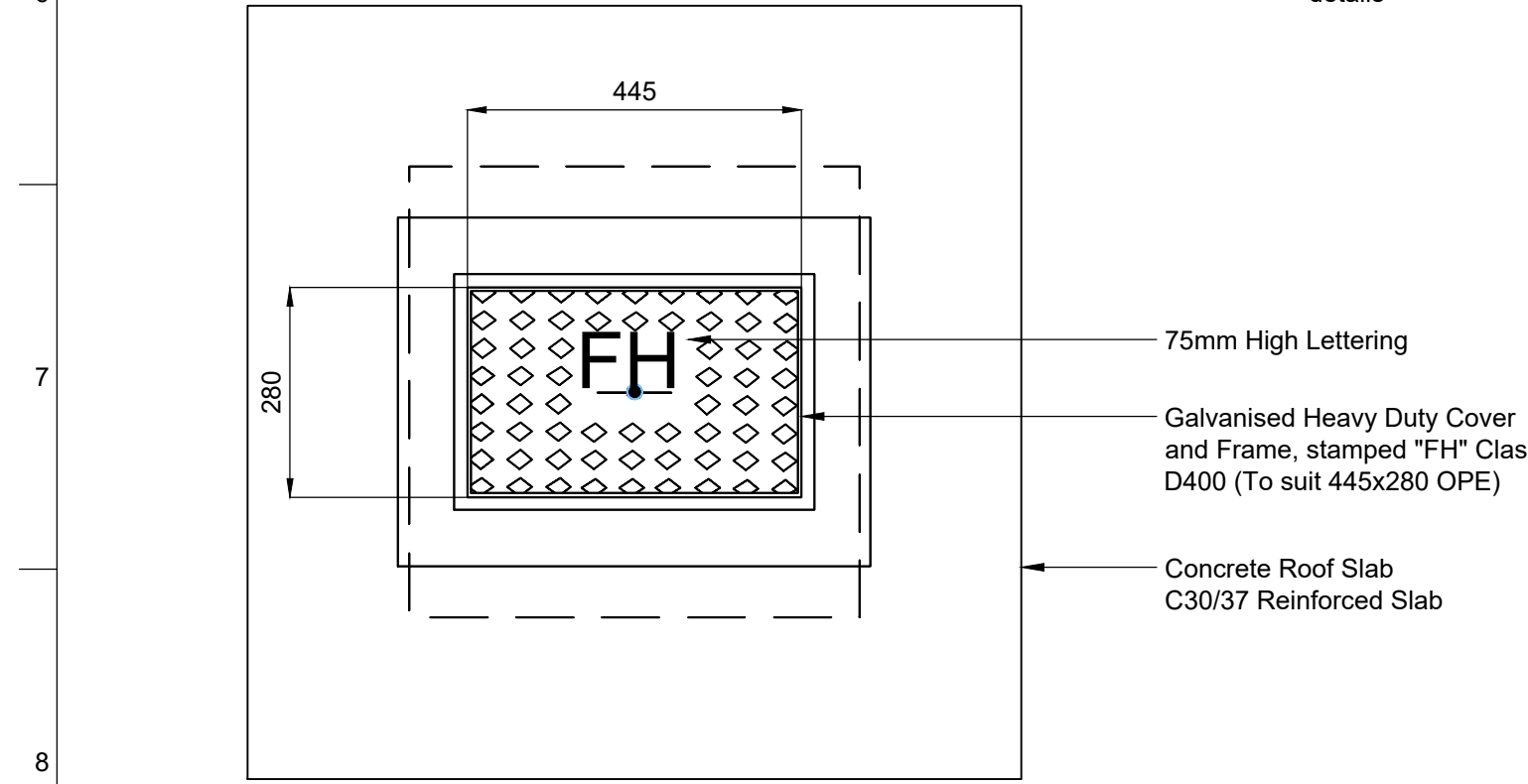
Scale at A1	1:20
Role	Civil Drainage
Suitability	A2 - Issued for Planning
Arup Job No	277975-00
Name	CRQMP-ARUP-XX-00-DR-CE-4403
Rev	C01

A1

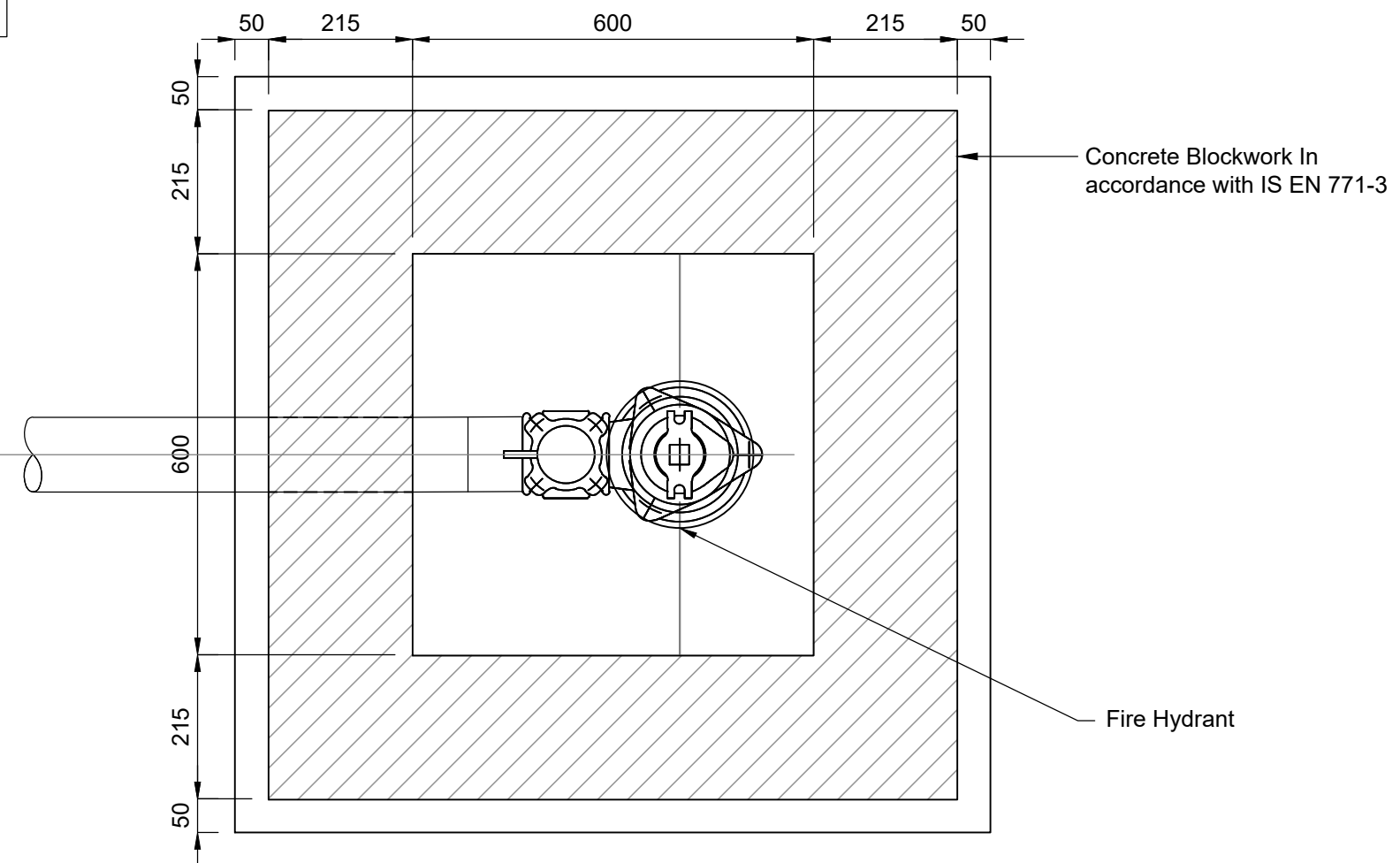
Note: Use class B125 surface boxes in grassed areas, class D400 in trafficked areas



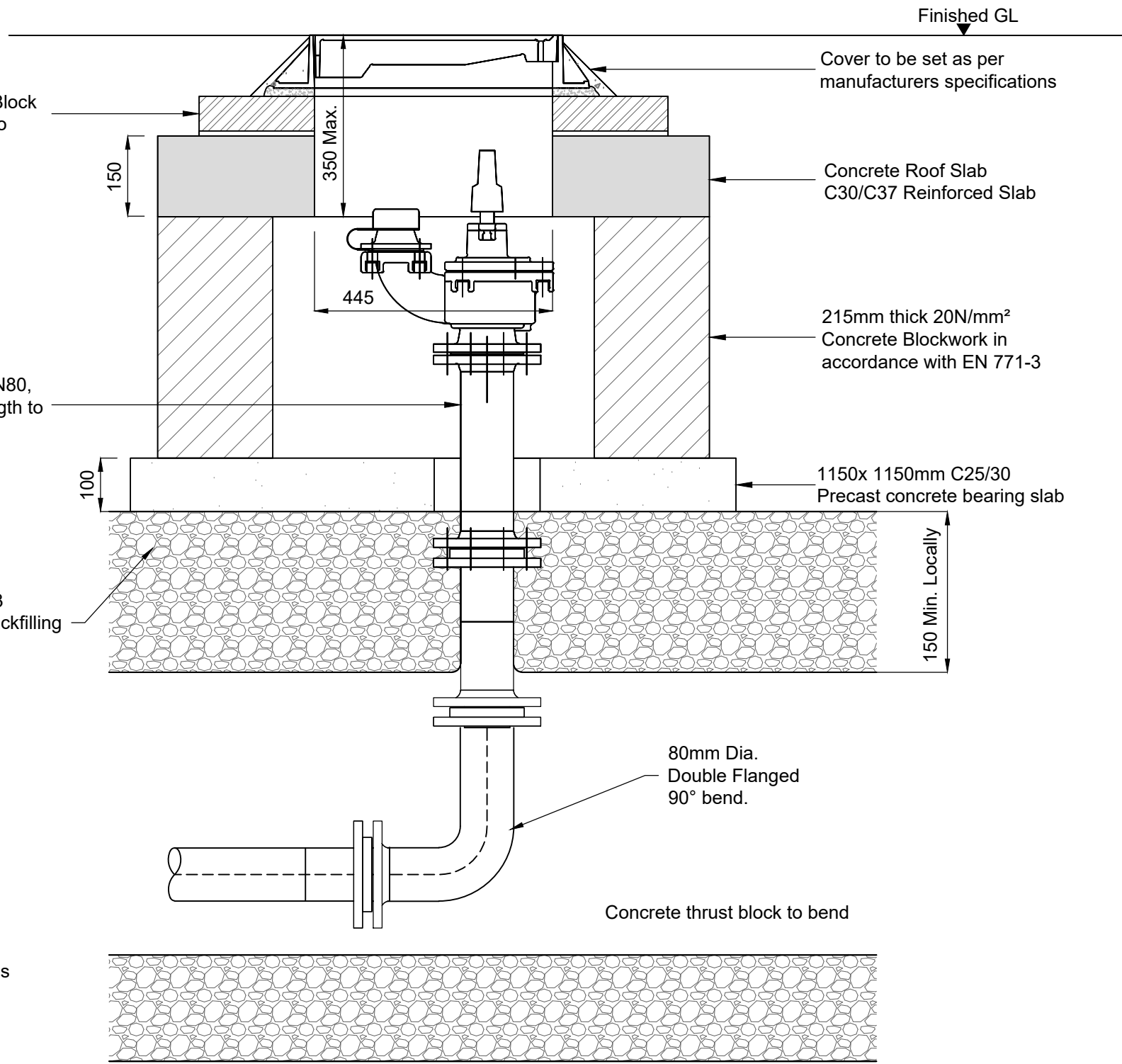
Sluice Valve Roof Plan
Scale 1:10



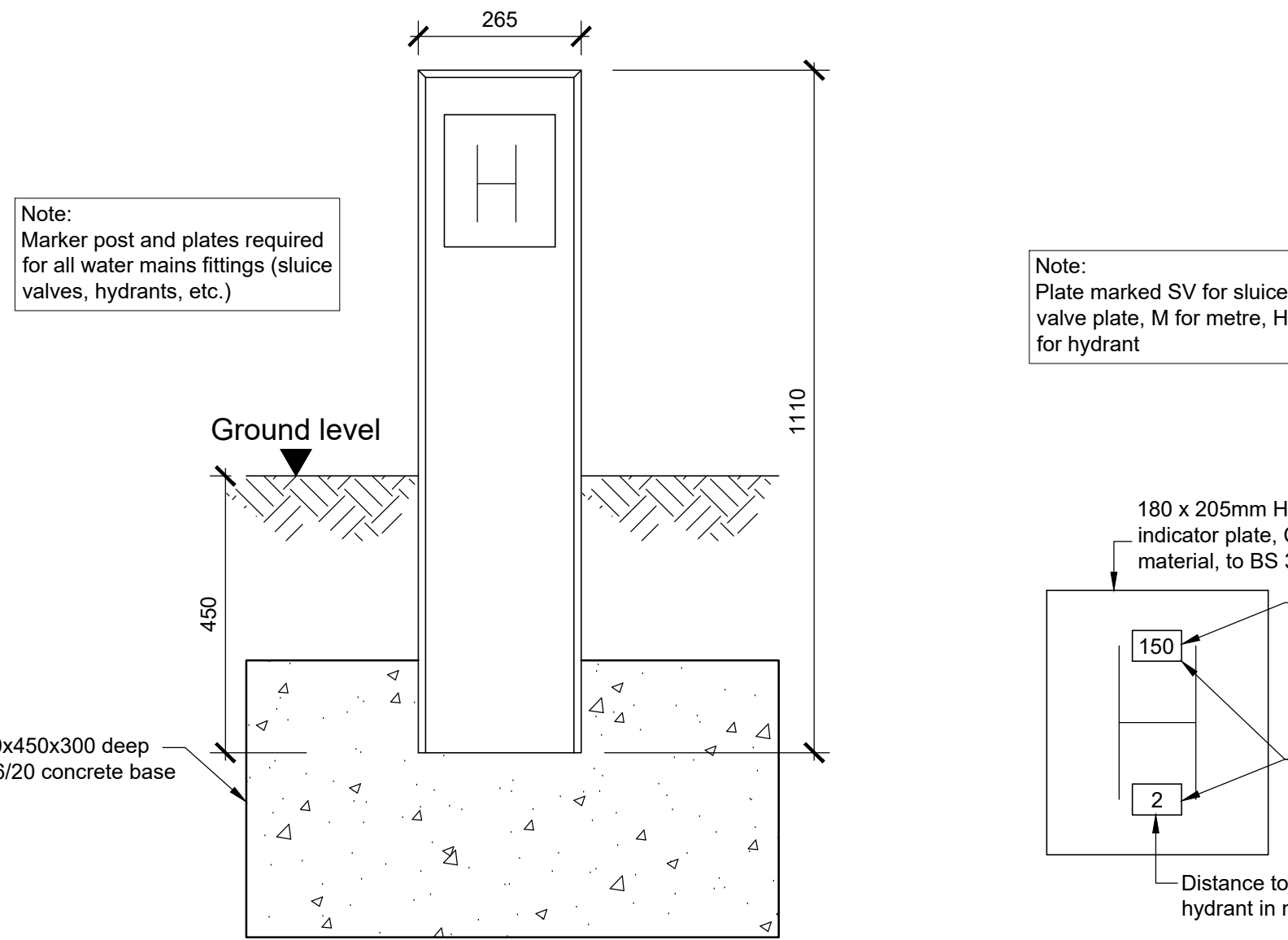
Fire Hydrant Roof Plan
Scale 1:10



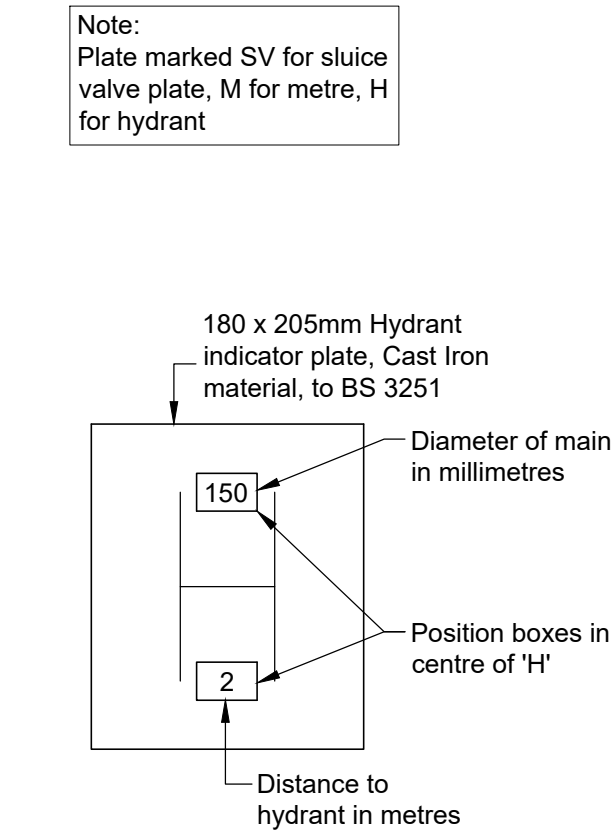
Fire Hydrant Floor Plan
Scale 1:10



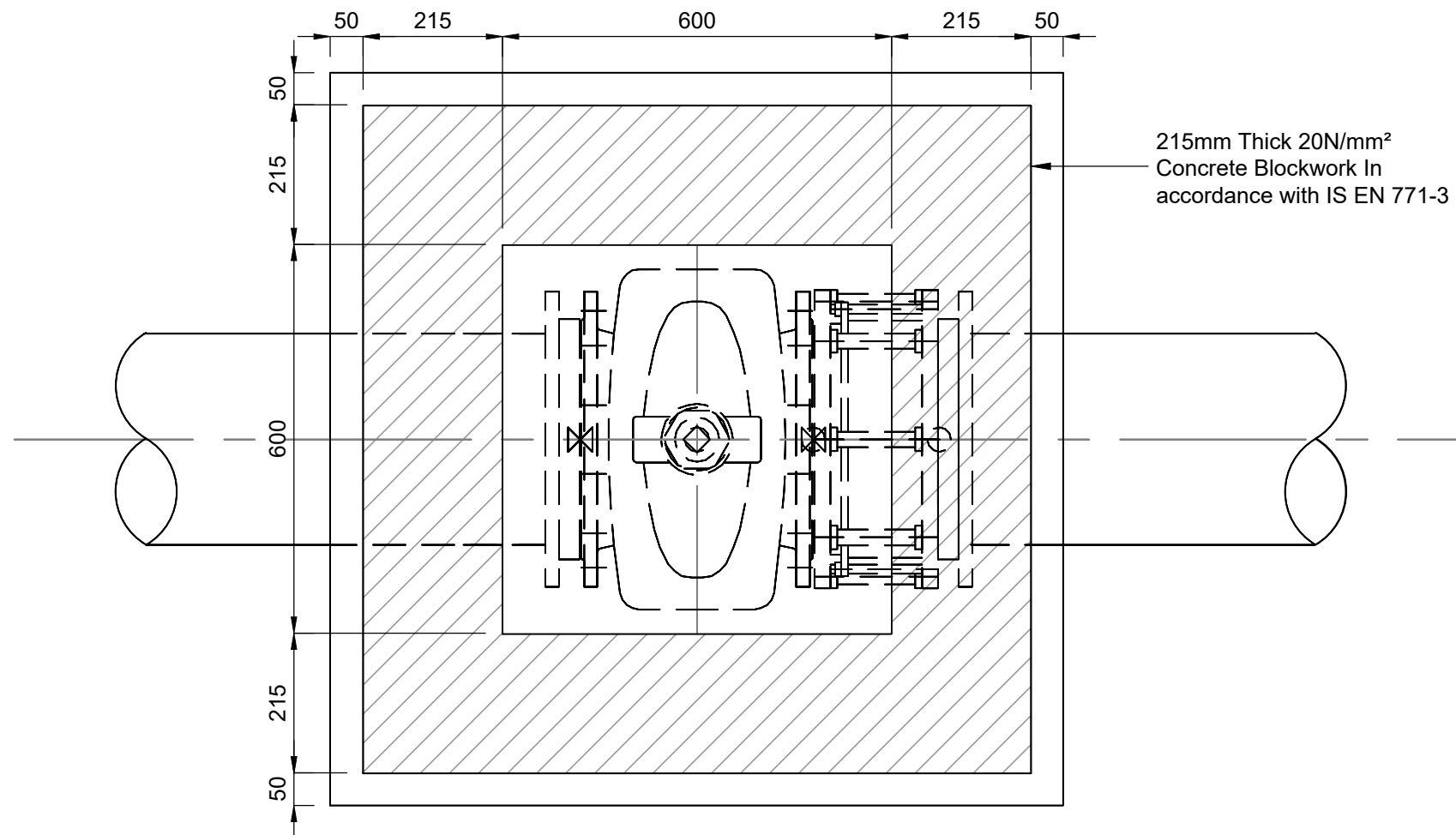
Fire Hydrant Section
Scale 1:10



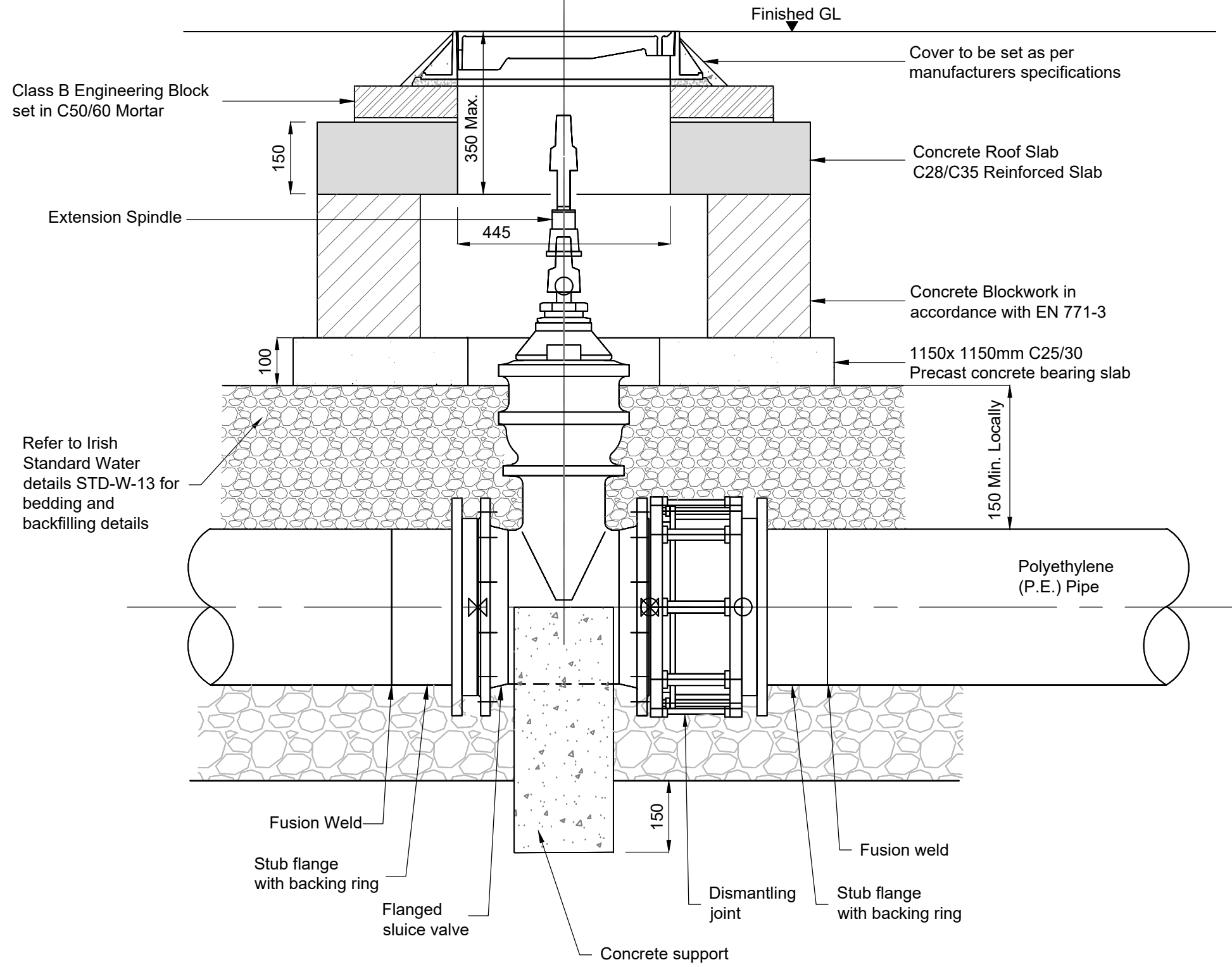
Concrete Indicator Post Detail
Scale 1:10



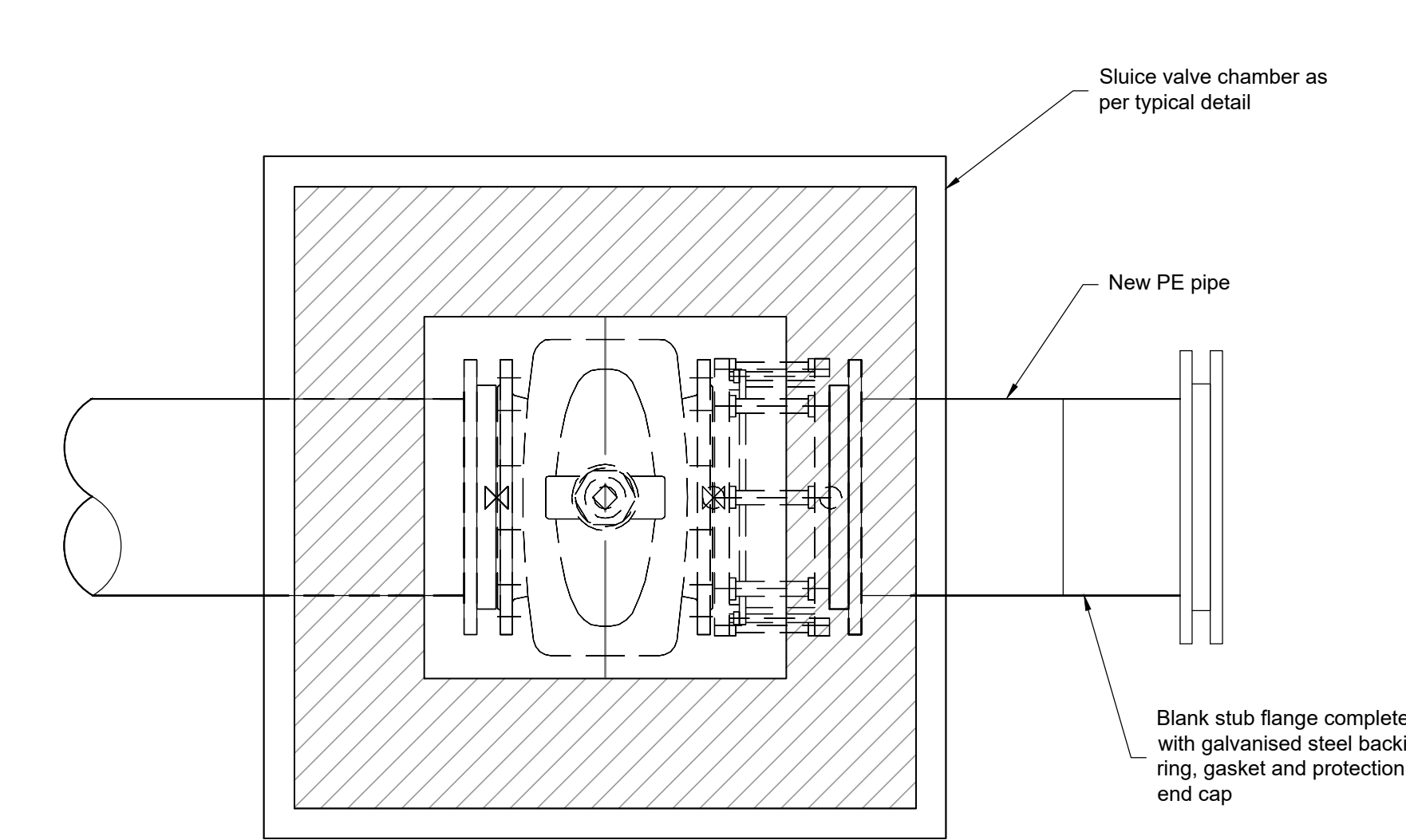
Hydrant Plate Detail
Scale 1:10



Sluice Valve Floor Plan
Scale 1:10



Sluice Valve Section
Scale 1:10



Battery Limit Sluice Valve with Blank Stub Flange
Scale 1:10

C01	03/10/25	DB	AS	GS
Issued for Planning (Status A2)				
P01	02/07/25	DB	AS	GS
Issued for Information (Status S2)				
Rev	Date	By	Chkd	Appd

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Client
Limerick Twenty Thirty

Project Title
Cleevs Riverside Quarter
Masterplan

Drawing Title
Proposed Details
Sheet 4

Scale at A1	1:10
Role	Civil Drainage
Suitability	A2 - Issued for Planning
Arup Job No	277975-00
Name	CRQMP-ARUP-XX-00-DR-CE-4404
Rev	C01

A1

A

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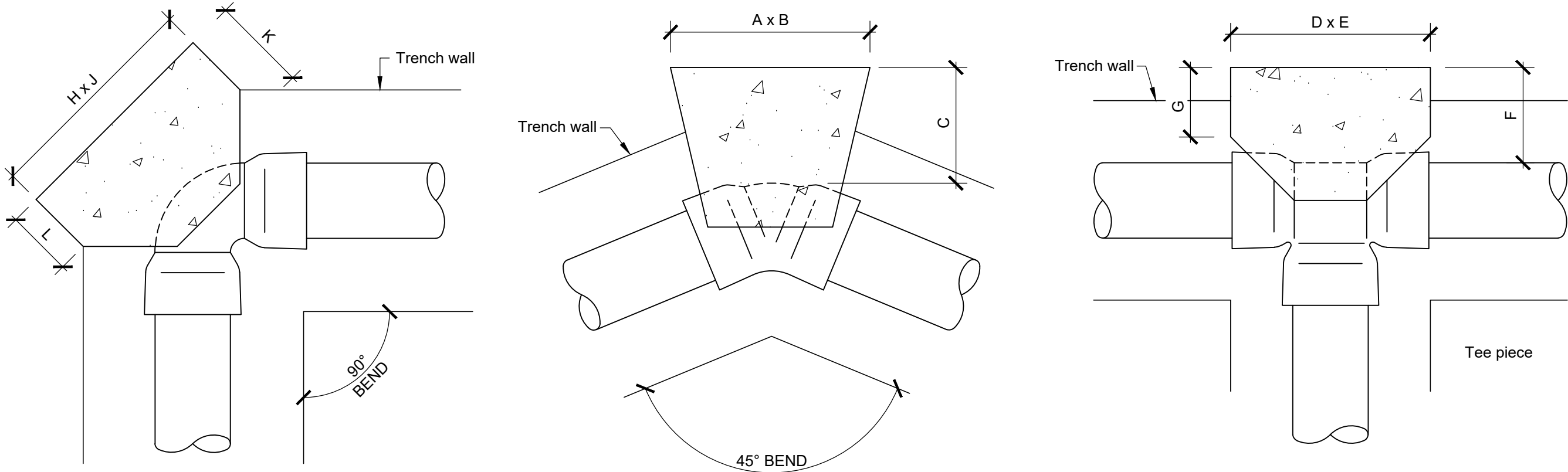
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10

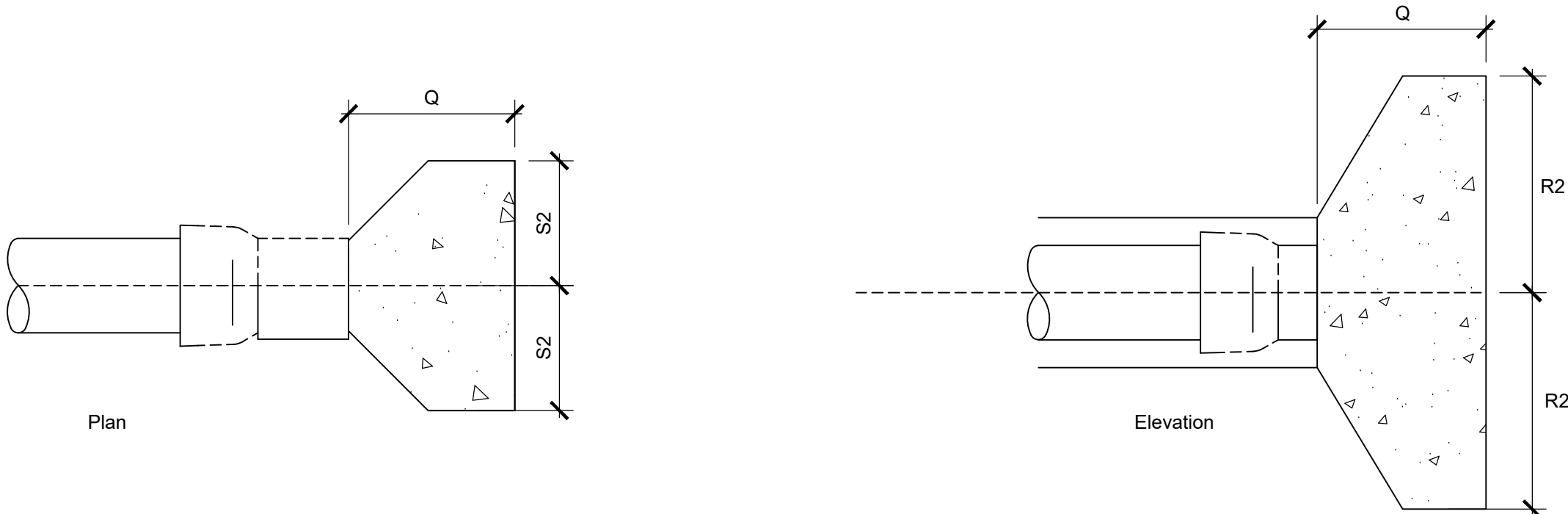
11

Note:
Thrust blocks are designed for an average ground bearing pressure of 100kn/m² (typical for soft clay). For other ground conditions actual dimensions may be altered on instructions from the Employer's Representative.

Pipe Dia.	45° Bend		Tee piece			90° Bend		
12.5 Bar pressure	A x B	C	D x E	F	G	H x J	K	L
100	330x350	200	390x350	200	50 Min.	600x350	200	50 Min.
150	510x450	225	660x450	225	50 Min.	950x450	225	50 Min.
200	600x650	225	790x650	300	50 Min.	1150x650	300	50 Min.



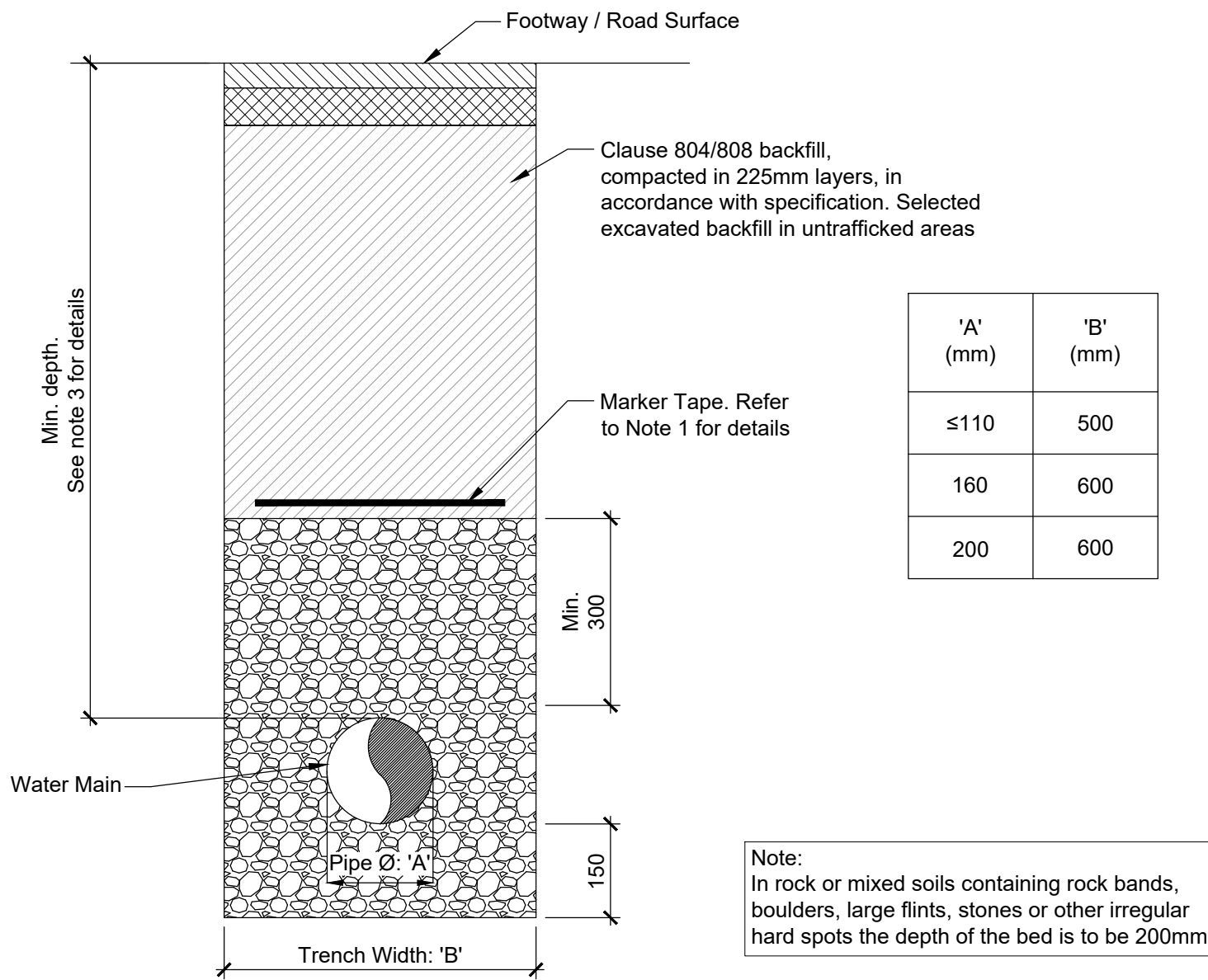
Nom. Dia. (mm)	Dimensions									
	M	N	O	P	Q	R	S	T	U	V
110	600	330	160	80	200	350	390	700	600	400
160	950	510	260	130	225	450	660	900	750	600
200	1150	600	310	160	300	650	790	1050	900	700



Blank End Thrust Block

Thrust Block Details

Scale: 1:10



Watermain & White Water Main Trench Detail

Scale 1:10

C01	03/10/25	DB	AS	GS
Issued for Planning (Status A2)				
P01	02/07/25	DB	AS	GS
Issued for Information (Status S2)				
Rev	Date	By	Chkd	Appd

ARUP

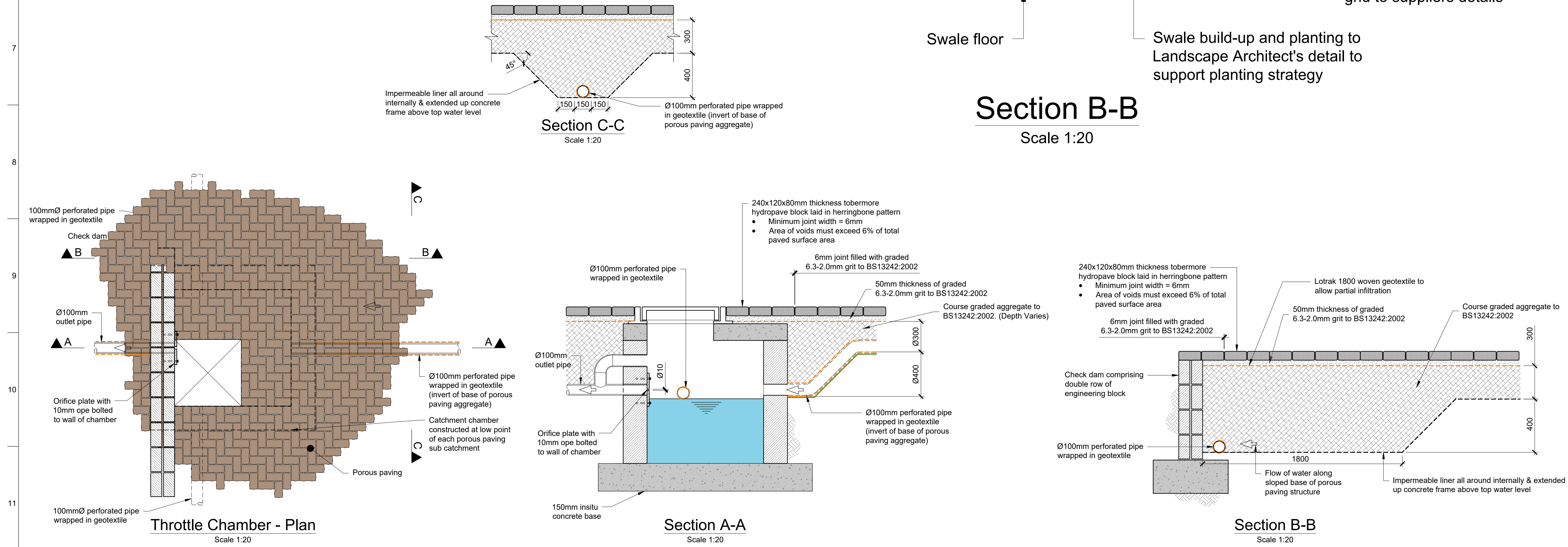
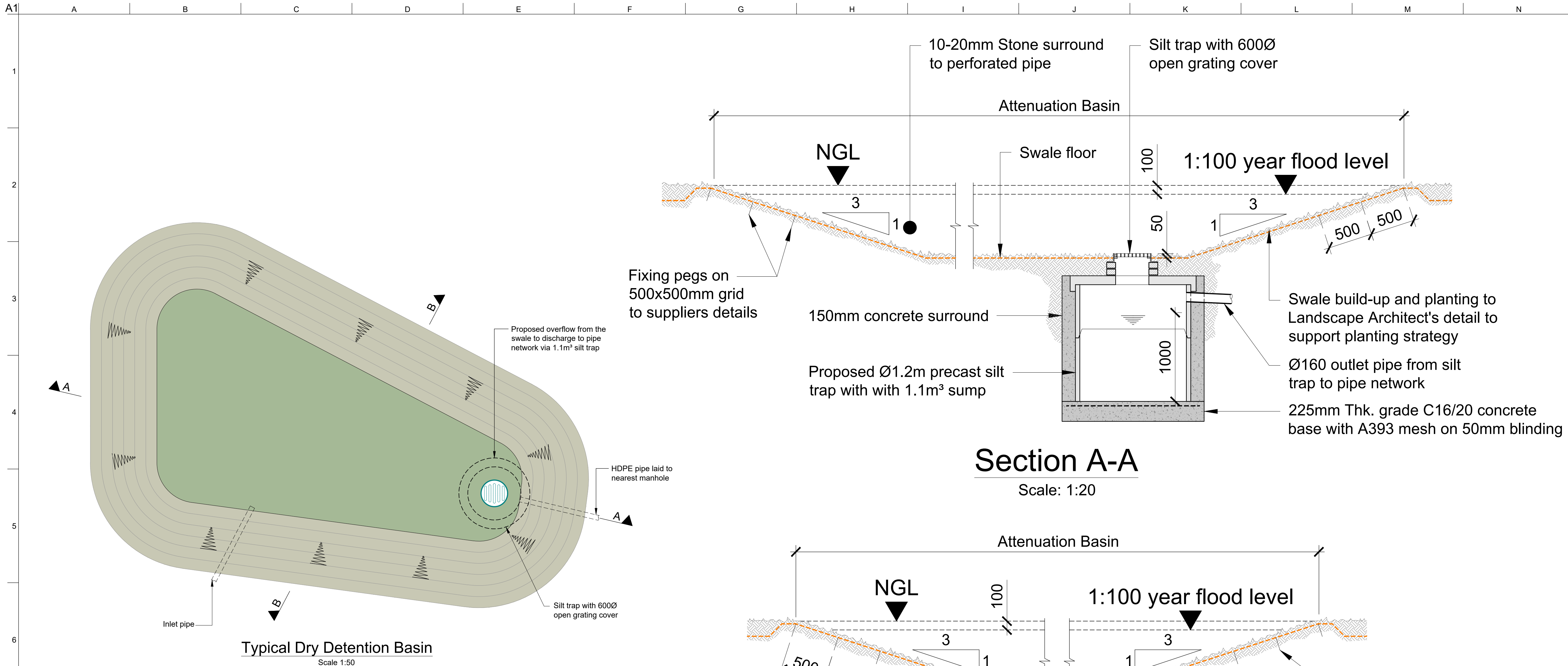
Arup, 50 Ringsend Road
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Tel +353(0)1 233 4455 Fax +353(0)1 668 3169

Client
Limerick Twenty Thirty

Project Title
Cleaves Riverside Quarter
Masterplan

Drawing Title
Proposed Details
Sheet 5

Scale at A1	1:10
Role	Civil Drainage
Suitability	A2 - Issued for Planning
Arup Job No	277975-00
Name	CRQMP-ARUP-XX-00-DR-CE-4405
Rev	C01



C01	03/10/25	DB	AS	GS
Issued for Planning (Status A2)				
P01	04/07/25	DB	AS	GS
Issued for Information (Status S2)				
Rev	Date	By	Chkd	Appd

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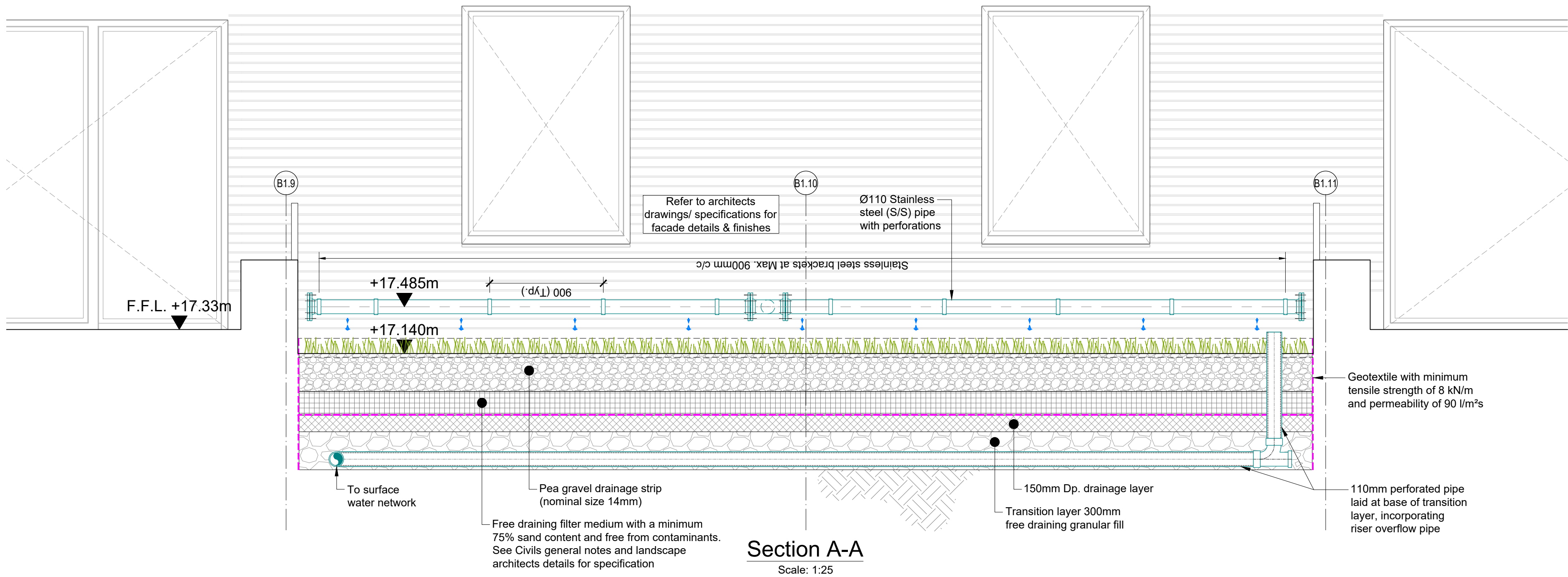
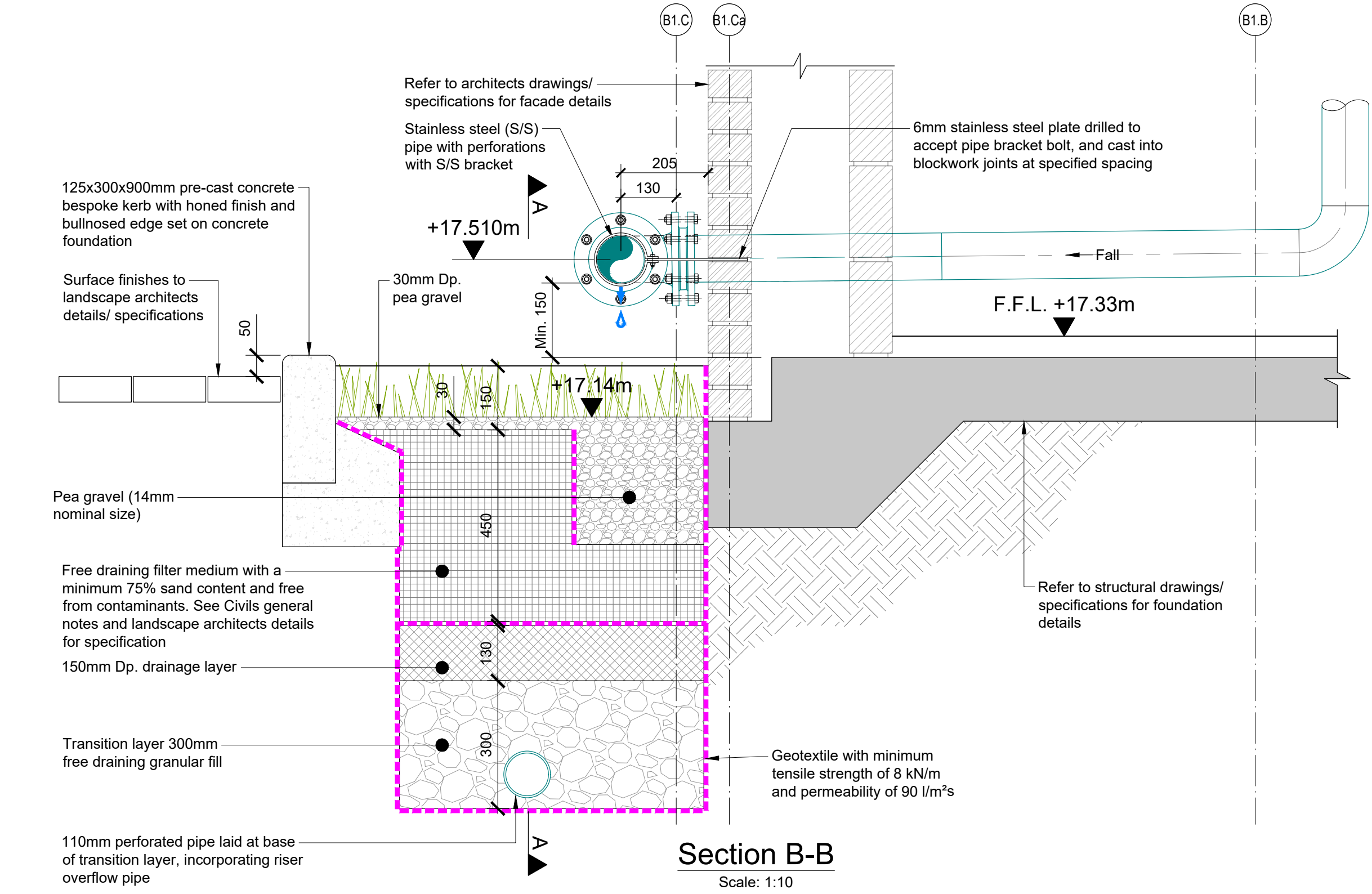
Project Title
Cleaves Riverside Quarter Masterplan

Drawing Title
SuDS Elements Proposed Details

Scale at A1	As Shown
Role	Civil Drainage
Suitability	A2 - Issued for Planning
Arup Job No	277975-00
Name	CRQMP-ARUP-XX-00-DR-CE-4406
Rev	C01

A1
1
2
3
4
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6
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9
10
11

A B C D E F G H I J K L M N



C01	03/10/25	DB	AS	GS
Issued for Planning (Status A2)				
P01	04/07/25	DB	AS	GS
Issued for Information (Status S2)				
Rev	Date	By	Chkd	Appd

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Client
Limerick Twenty Thirty

Project Title
Cleaves Riverside Quarter
Masterplan

Drawing Title
SuDS Elements
Proposed Details

Scale at A1
As Shown

Role
Civil Drainage

Suitability
A2 - Issued for Planning

Arup Job No
277975-00
Name
CRQMP-ARUP-XX-00-DR-CE-4407

Rev
C01