

WSCC would be pleased to make full CAD versions of these drawings available to other highway authorities who may wish to use them. - Please contact: planning.services@westsussex.gov.uk

DRAWING INDEX					
No:	Title	Rev:	Creation Date:	Revision Comment:	Date Modified:
S278/38/01	Alternative Methods of Laying Kerbs	C	31.05.2012	Carriageway reinstatement requirements added	25.04.2017
S278/38/02	Approved Kerb Type Selection Sheet 1	B	31.05.2012	Drain kerb added	25.04.2017
S278/38/03	Approved Kerb Type Selection Sheet 2	A	31.05.2012	Corrected ref to CS1	28.02.2013
S278/38/04	Footway/Cycleway Type 1 & 2	B	31.05.2012	Tactile paving types added	09.09.2013
S278/38/05	Footway/Cycleway Type 3 & 4	C	31.05.2012	Footway Width increased to 2m	13.05.2014
S278/38/06	Public Footpath (Rural) Type 5	A	31.05.2012	Notes amended	13.05.2014
S278/38/07	Footway Crossover Type 1 - Residential	C	31.05.2012	Note at * added	13.05.2014
S278/38/08	Footway Crossover Type 2 - Industrial	C	31.05.2012	Note at * added	13.05.2014
S278/38/09	Service Margins	B	31.05.2012	EF edging omitted for verges abutting walls	09.09.2013
S278/38/10	Preferred Arrangement of Services with Public Highway	A	31.05.2012	Notes amended	28.02.2013
S278/38/11	Drainage - Gully A Pre-cast Concrete	D	31.05.2012	General Update	15.03.2019
S278/38/12	Drainage - Pre-cast Concrete Ring Soakaway	E	31.05.2012	General Update	15.03.2019
S278/38/13	Drainage - Type B Catchpit	E	31.05.2012	Minimum pipe diameters added	15.03.2019
S278/38/14	Drainage - Type B Vortex Flow Control	C	31.05.2012	General Update	15.03.2019
S278/38/15	Street Furniture - Rumble Strips	C	31.05.2012	Block paving to be butt jointed	25.04.2017
S278/38/16	Street Furniture - Ramp Feature	D	31.05.2012	Notes 16 added. Ramp height now 65mm	14.12.2015
S278/38/17	Street Furniture - Bollards	B	31.05.2012	Notes amended	13.05.2014
S278/38/18	Street Furniture - Tactile Crossings	A	31.05.2012	Notes amended	28.02.2013
S278/38/19	Street Furniture - Refuge Islands	D	31.05.2012	'TVL requirements' changed to 'WSCC standards'. Bollard offset and tactile dims added	14.12.2015
S278/38/20	Carriageway - Tie-in Options	B	31.05.2012	IAN 154/12 extract amended	28.02.2013
S278/38/21	Carriageway - Flexible Specification	F	31.05.2012	HRA spec added, CBR notes amended, road type thresholds added, preference for herringbone block paviour pattern.	12.04.2019
16..05.2016	Chute Gully	-	28.02.2013	Initial Issue	28.02.2013
S278/38/23	Headwall Detail - Concrete Bagwork up to 600 diam	A	25.09.2013	Exposed pipes to be UV stable	25.04.2017
S278/38/24	Headwall Detail - Engineering Brickwork up to 600 diam	A	25.09.2013	Exposed pipes to be UV stable	25.04.2017
S278/38/25	Highway Ditch detail	A	14.12.2015	Exposed pipes to be UV stable	25.04.2017
S278/38/26	Highway Swale Detail	A	14.12.2015	Exposed pipes to be UV stable	25.04.2017
S278/38/27	Highway Swale - Check dam detail	-	14.12.2015	Initial Issue	14.12.2015
S278/38/28	Trench Soakaway	A	07.11.2017	General Update	15.03.2019
S278/38/29	Filter Drain Collector	A	07.11.2017	General Update	15.03.2019
S278/38/30	Permeable Carriageway Sht 1	A	07.11.2017	General Update	15.03.2019
S278/38/31	Permeable Carriageway Sht 2	A	07.11.2017	General Update	15.03.2019
S278/38/32	Simple Headwall	A	07.11.2017	General Update	15.03.2019
S278/38/33	Pipe Bedding	A	07.11.2017	General Update	15.03.2019
S278/38/34	Cellular Storage Sht 1	A	07.11.2017	General Update	15.03.2019
S278/38/35	Cellular Storage Sht 2	A	07.11.2017	General Update	15.03.2019
S278/38/36	Pipe Junctions - Lateral Connections	A	07.11.2017	General Update	15.03.2019

H	All changes dates April 2019	MJA	MJA	12.04.19	West Sussex County Council Infrastructure Group County Hall, West Street Chichester West Sussex PO19 1RH (01243) 642105 	Project Name Section 278/38 Highway Agreement Standard Details		Original Drawing Size : A3 Scale : N/A Dimensions :		
G	All changes dates March 2019	MJA	MJA	15.03.19						
F	All changes dates April 2017	DJL	DJL	25.04.17						
Rev	Revision details	Chkd	Appd	Date		Drawing Title Drawing Index Sheet		Drawing No.		Rev
Drawn: MJA			For comment					S278/38/00		H
Chkd:			For tender							
Appd:			For construction							
Date: 28.02.2013			As constructed							
File ref:										
IWP Ref:										

CDM HAZARD ASSESSMENT

No:	Title	Rev:	Comment Date:	Potential Hazards:
S278/38/01	Alternative Methods of Laying Kerbs	C	15.11.2017	Strain injury due to repetitive lifting. Kerbs to be lifted mechanically.
S278/38/02	Approved Kerb Type Selection Sheet 1	B	15.11.2017	Strain injury due to repetitive lifting. Kerbs to be lifted mechanically.
S278/38/03	Approved Kerb Type Selection Sheet 2	A	15.11.2017	Strain injury due to repetitive lifting. Kerbs to be lifted mechanically.
S278/38/04	Footway/Cycleway Type 1 & 2	B	15.11.2017	-
S278/38/05	Footway/Cycleway Type 3 & 4	C	15.11.2017	-
S278/38/06	Public Footpath (Rural) Type 5	A	15.11.2017	Deterioration of surface uniformity over time. Surface to be monitored and repaired as required.
S278/38/07	Footway Crossover Type 1 - Residential	C	15.11.2017	-
S278/38/08	Footway Crossover Type 2 - Industrial	C	15.11.2017	-
S278/38/09	Service Margins	B	15.11.2017	-
S278/38/10	Preferred Arrangement of Services with Public Highway	A	15.11.2017	-
S278/38/11	Drainage - Gully A Pre-cast Concrete	D	15.03.2019	-
S278/38/12	Drainage - Pre-cast Concrete Ring Soakaway	E	15.03.2019	Unknown depth of chamber when full. Consider installing signage and omitting step rungs.
S278/38/13	Drainage - Type B Catchpit	E	15.03.2019	Unknown depth of sump when full. Consider installing signage and omitting step rungs.
S278/38/14	Drainage - Type B Vortex Flow Control	C	15.03.2019	Unknown depth of chamber if full due to blockage. Consider installing signage.
S278/38/15	Street Furniture - Rumble Strips	C	15.11.2017	-
S278/38/16	Street Furniture - Ramp Feature	D	15.11.2017	-
S278/38/17	Street Furniture - Bollards	B	15.11.2017	-
S278/38/18	Street Furniture - Tactile Crossings	A	15.11.2017	-
S278/38/19	Street Furniture - Refuge Islands	D	15.11.2017	-
S278/38/20	Carriageway - Tie-in Options	B	15.11.2017	-
S278/38/21	Carriageway - Flexible Specification	E	15.11.2017	Strain injury due to repetitive lifting of blocks. Consider laying Blocks mechanically.
S278/38/22	Chute Gully	-	15.11.2017	-
S278/38/23	Headwall Detail - Concrete Bagwork up to 600 diam	A	15.11.2017	Falling from height. Consider installation of edge protection.
S278/38/24	Headwall Detail - Engineering Brickwork up to 600 diam	A	15.11.2017	Falling from height. Consider installation of edge protection.
S278/38/25	Highway Ditch detail	A	15.11.2017	Falling from height. Consider installation of edge protection.
S278/38/26	Highway Swale Detail	A	15.11.2017	Falling from height. Consider installation of edge protection.
S278/38/27	Highway Swale - Check dam detail	-	15.11.2017	-
S278/38/28	Trench Soakaway	A	15.03.2019	-
S278/38/29	Filter Drain Collector	A	15.03.2019	Silt removal maintenance to be undertaken using vacuum apparatus from ground level.
S278/38/30	Permeable Carriageway (Sheet 1)	A	15.03.2019	-
S278/38/31	Permeable Carriageway (Sheet 2)	A	15.03.2019	-
S278/38/32	Headwall Detail - Pipes 150Ø - 450Ø	A	15.03.2019	Falling from height. Consider installation of edge protection.

CDM Regulations 2015:

- In preparing the following drawings West Sussex County Council would fall under the scope of a Designer as defined by the CDM regulation 2015. However, as these drawings are not project specific it is not possible for West Sussex County Council to list all hazards that may occur because of the implementation of the details.
- The Project team must determine any hazards associated with their project due to the implementation of these details.
- The comments against each detail may or may not apply to a project but are given to assist the project team and to meet West Sussex County Councils obligations under the Regulations. The comments are made on the basis that work will be undertaken by a competent company/person.
- West Sussex County Council must be informed of the Dutyholders and be provided with the project teams hazard assessment.
- The client and project team must ensure that all drawings, specifications and the West Sussex County Council Section 278/38 Highway Agreement Standard Details are supplied to the contractor responsible for implementing the Highway Works.

CDM HAZARD ASSESSMENT

No:	Title	Rev:	Comment Date:	Potential Hazards:
S278/38/33	Pipe Bedding	A	15.03.2019	-
S278/38/34	Cellular Storage (sheet 1)	A	15.03.2019	Strain injury due to repetitive lifting. Kerbs to be lifted mechanically.
S278/38/35	Cellular Storage (sheet 2)	A	15.03.2019	-
S278/38/36	Lateral Connections	A	15.03.2019	-

A	General update	MJA	MJA	15.03.19
-	Initial Issue	-	-	-
Rev	Revision details	Chkd	Appd	Date
Drawn:	MJA		For comment	
Chkd:			For tender	
Appd:			For construction	
Date:	07.11.2017		As constructed	
File ref:				
IWP Ref:				

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west
sussex
county
council

Project Name

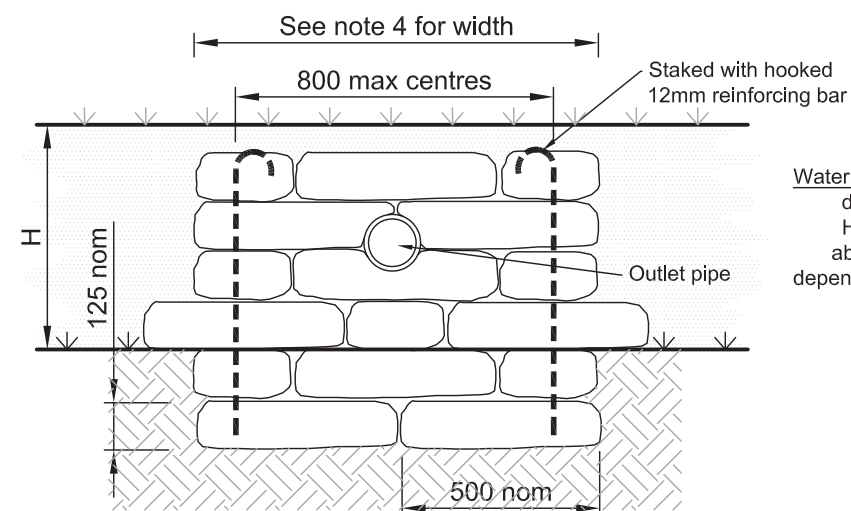
Section 278/38 Highway Agreement
Standard Details

Drawing Title

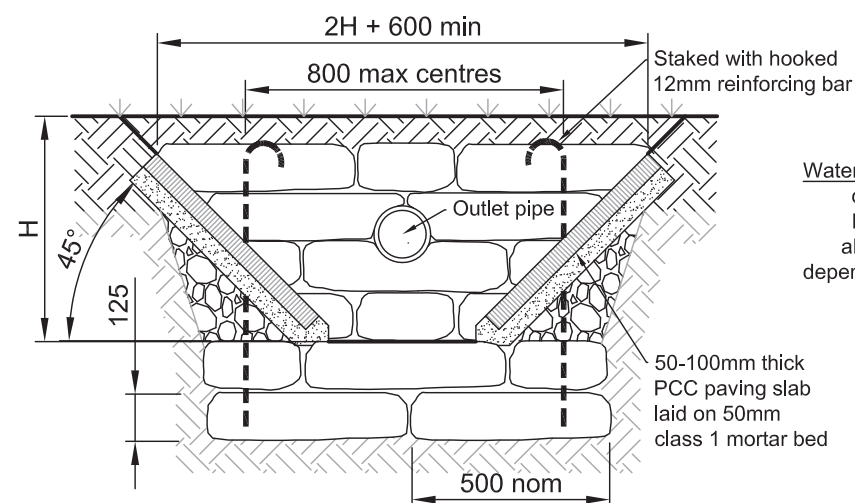
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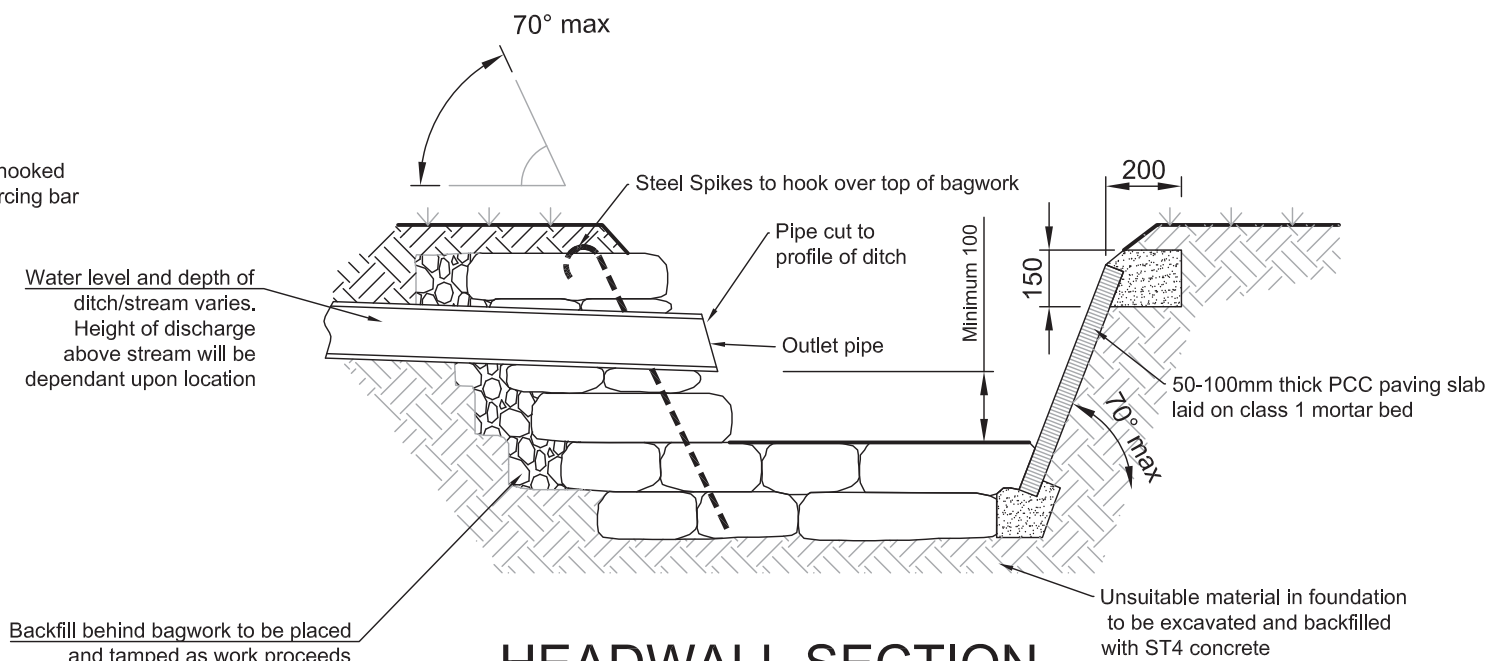
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Scale : N/A	Dimensions :
Drawing No. S278/38/CDM	Rev A



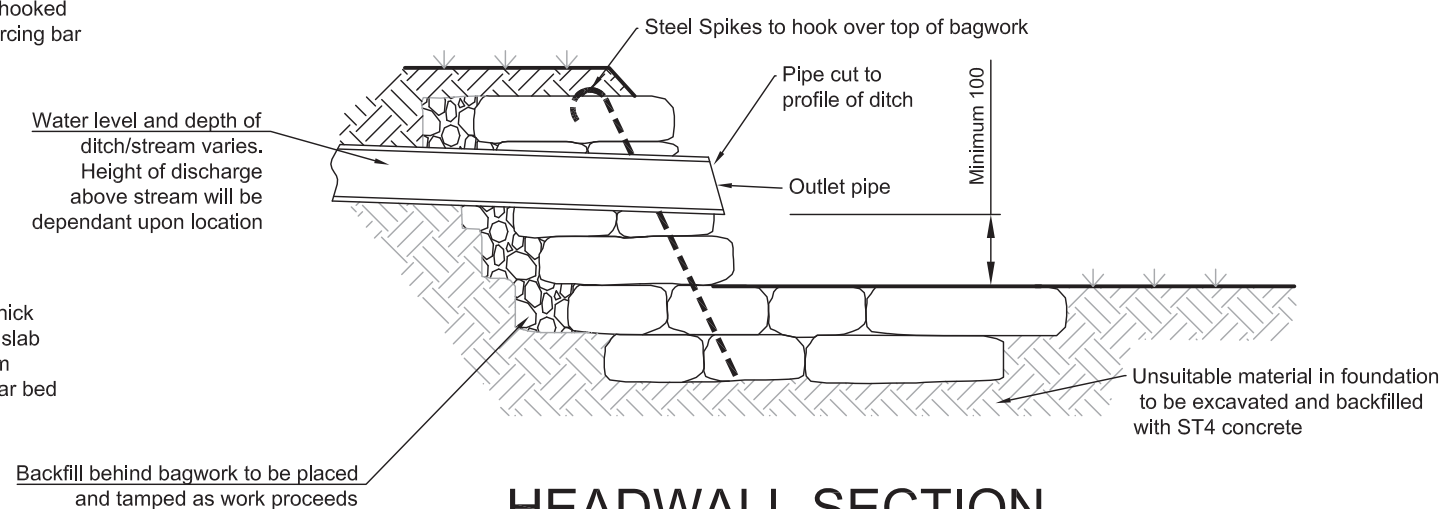
ELEVATION OF HEADWALL
OUTFALL TO POND / SIDE OF DITCH



ELEVATION OF HEADWALL OUTFALL TO END OF DITCH



HEADWALL SECTION OUTFALL TO SIDE OF DITCH



HEADWALL SECTION
OUTFALL TO POND / END OF DITCH

NOTES

1. Bags shall be of Hessian or Canvas and shall be of a size to provide a wall thickness of 500mm
2. Concrete bagwork shall be to Clause 519 and be three quarter filled with 25mm slump ST4 concrete immediately prior to placing with the ends sewn.
3. The bags shall be placed in a modified Flemish bond so as to 'break joint' with the mouths away from the surface and be tamped into position to form a rectangular block
4. Extent of outlet protection to be the greater of 1500mm or pipe diameter + 1200mm spanning the outlet pipe.
5. Headwall design may need to be adjusted to on site conditions following approval from WSCC Inspector
6. For vehicular crossings of ditches pipes shall be min 450mm diam and be set to invert of ditch. Ditch to be regraded to achieve satisfactory falls.
7. For $H > 600$ appropriate vehicular or pedestrian containment shall be installed.
8. The nearest edge of any carriageway shall be set back at least H from the base of the ditch
9. All exposed pipework to be certified UV stable.

A	Note 9 added	DL	HM	25.04.17
Rev	Revision details	Chkd	Appd	Date
Drawn:	DJL		For comment	
Chkd:	GM		For tender	
Appd:	AH	X	For construction	
Date:	SEPT 2013		As constructed	
File ref:				
IWP Ref:				

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Project Name

Section 278/38 Highway Agreement Standard Details

Drawing Title

Headwall Detail for pipe sizes up to 600 diam Concrete Bagwork



Original Drawing Size :	A3
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Scale : 1:20

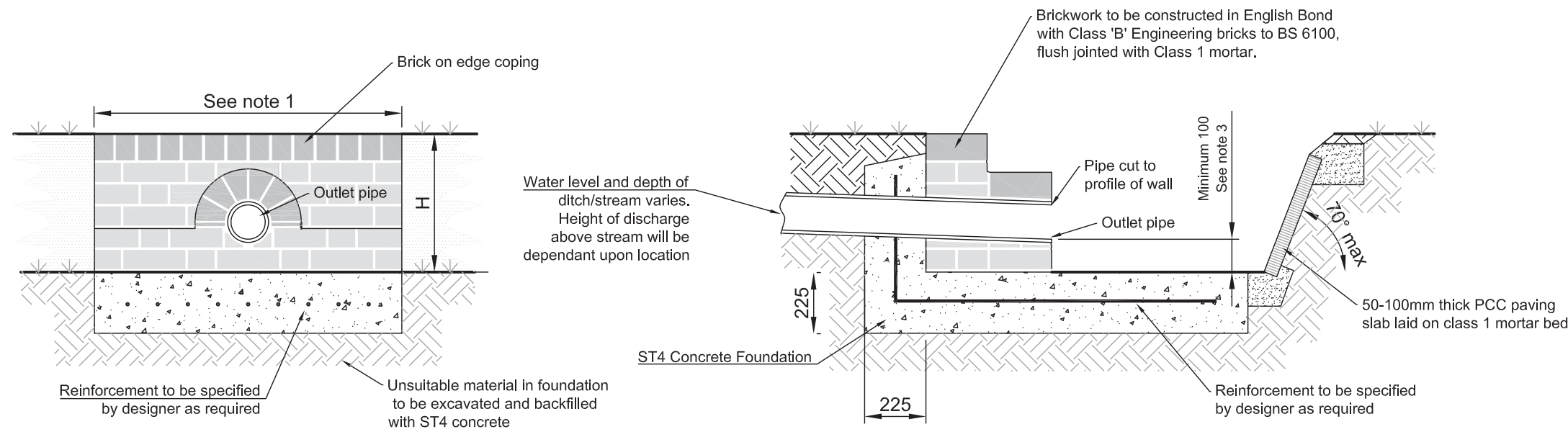
Dimensions : mm

Drawing No.

S278/38/23

Rev

A

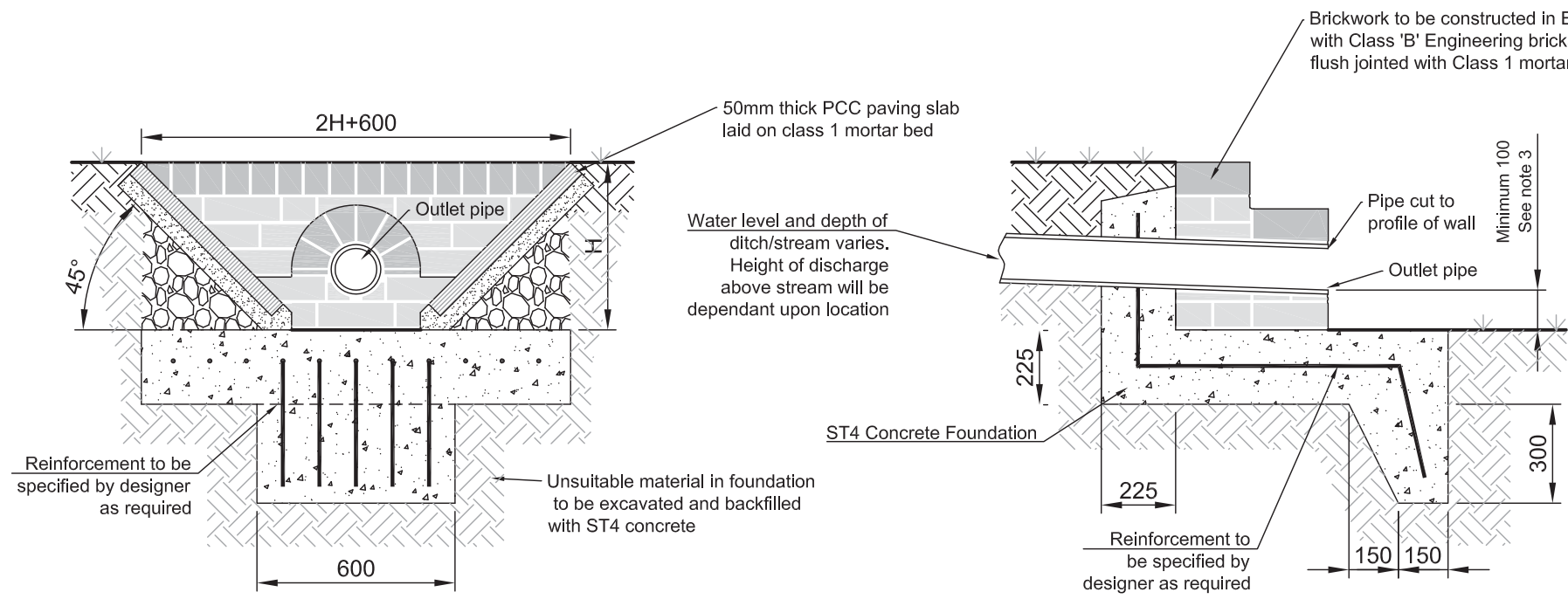


ELEVATION OF HEADWALL
OUTFALL TO POND / SIDE OF DITCH

HEADWALL SECTION
OUTFALL TO SIDE OF DITCH

NOTES

1. Extent of outlet protection to be the greater of 1500mm or pipe diameter + 1200mm spanning the outlet pipe.
2. Headwall design may need to be adjusted to on site conditions following approval from WSCC Inspector.
3. For vehicular crossings of ditches pipes shall be min 450mm diam and be set to invert of ditch. Ditch to be regraded to achieve satisfactory falls.
4. For H>600 appropriate vehicular or pedestrian containment shall be installed.
5. The nearest edge of any carriageway shall be set back at least H from the base of the ditch
6. All exposed pipework to be UV stable



ELEVATION OF HEADWALL
OUTFALL TO END OF DITCH

HEADWALL SECTION
OUTFALL TO POND / END OF DITCH

A	Note 6	DJL	HM	25.04.17
Rev	Revision details	Chkd	Appd	Date
Drawn:	DJL		For comment	
Chkd:	GM		For tender	
Appd:	AH	X	For construction	
Date:	SEPT 2013		As constructed	
File ref:				
IWP Ref:				

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Project Name

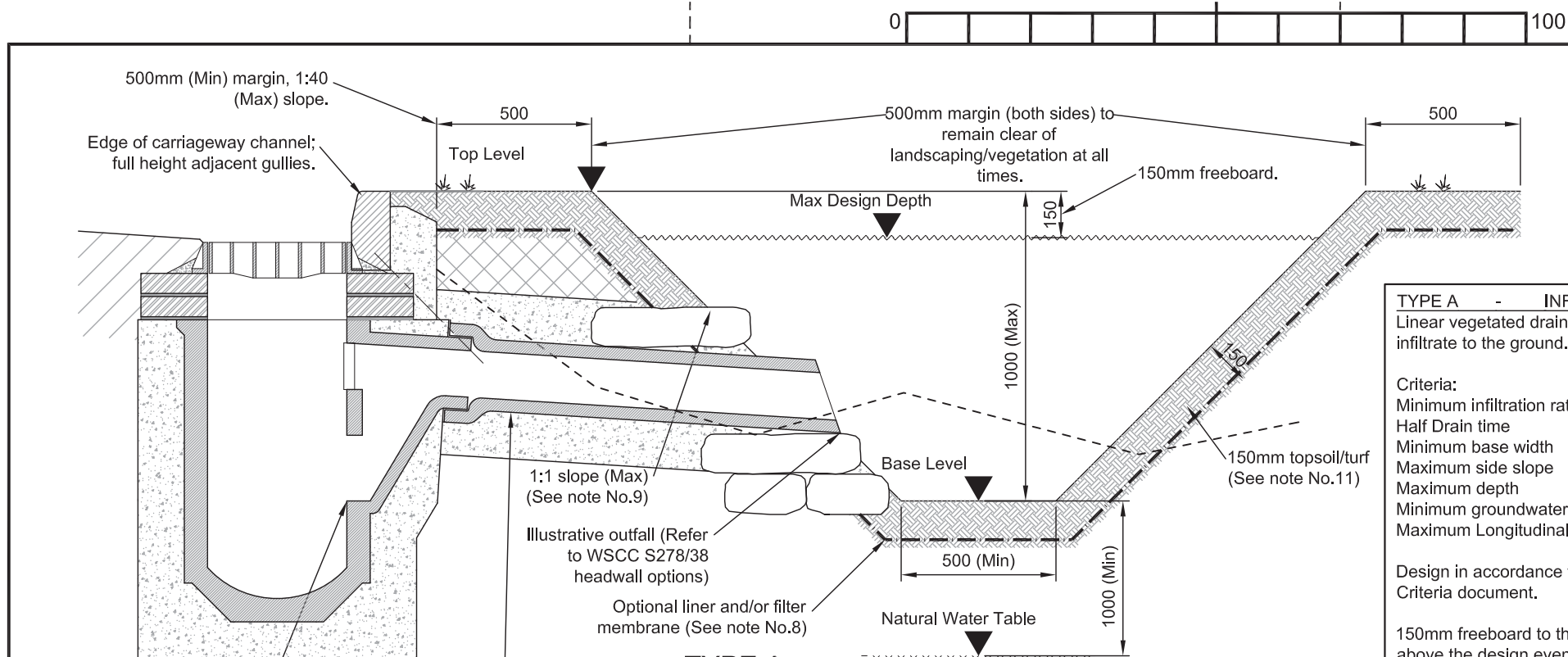
Section 278/38 Highway Agreement
Standard Details

Drawing Title

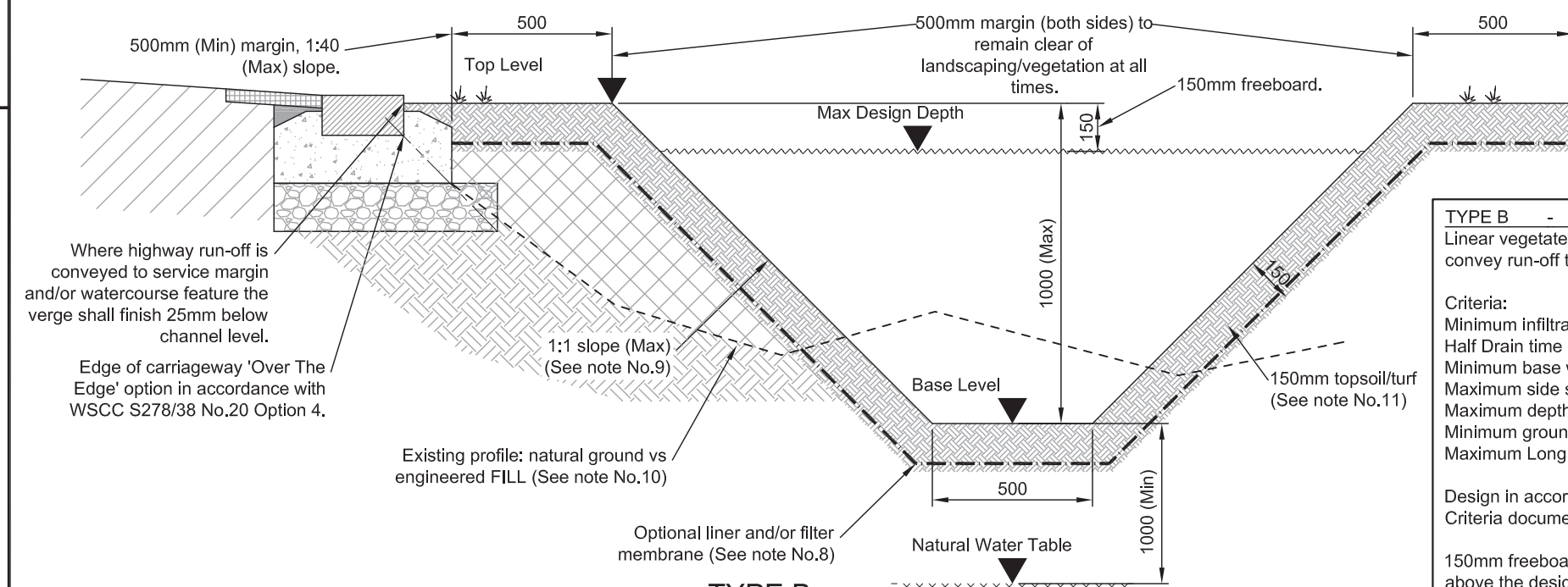
Headwall Detail for pipe sizes up to 600 diam
Engineering Brickwork



Original Drawing Size :	A3
Scale :	1:20
Dimensions :	mm
Drawing No.	Rev
S278/38/24	A



TYPE A
SECTION
(Scale 1:20)



TYPE B
SECTION
(Scale 1:20)

TYPE A	-	INFILTRATION
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Linear vegetated drainage feature designed to store and infiltrate to the ground.

Criteria:

Minimum infiltration rate	-	1x10(-5)m/sec
Half Drain time	-	24hrs
Minimum base width	-	500mm
Maximum side slope	-	1:1
Maximum depth	-	1m
Minimum groundwater freeboard	-	1m (Note 7)
Maximum Longitudinal grade	-	2% (1:50)

Design in accordance with WSCC Highway Drainage Criteria document.

150mm freeboard to the top of the ditch shall be included above the design event depth.

TYPE B - FLOW CONVEYANCE

Linear vegetated drainage feature designed to store and convey run-off to an ultimate outfall.

Criteria:

Minimum infiltration rate	-	N/A
Half Drain time	-	N/A
Minimum base width	-	500mm
Maximum side slope	-	1:1
Maximum depth	-	1m
Minimum groundwater freeboard	-	1m (Note 7)
Maximum Longitudinal grade	-	2% (1:50)

Design in accordance with WSCC Highway Drainage Criteria document.

150mm freeboard to the top of the ditch shall be included above the design event depth.

Type B ditches must be linked to an ultimate outfall feature and cannot be used in isolation.

A	Pipes to be UV stable	DJL	HM	25.04.17
Rev	Revision details	Chkd	Appd	Date
Drawn:	MJA		For comment	
Chkd:	DJL		For tender	
Appd:	DJL		For construction	
Date:	14/12/2015		As constructed	
File ref:				
IWP Ref:				

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Project Name

Section 278/38 Highway Agreement Standard Details

Drawing Title

Drainage
Highway Ditch



Original Drawing Size :	A3
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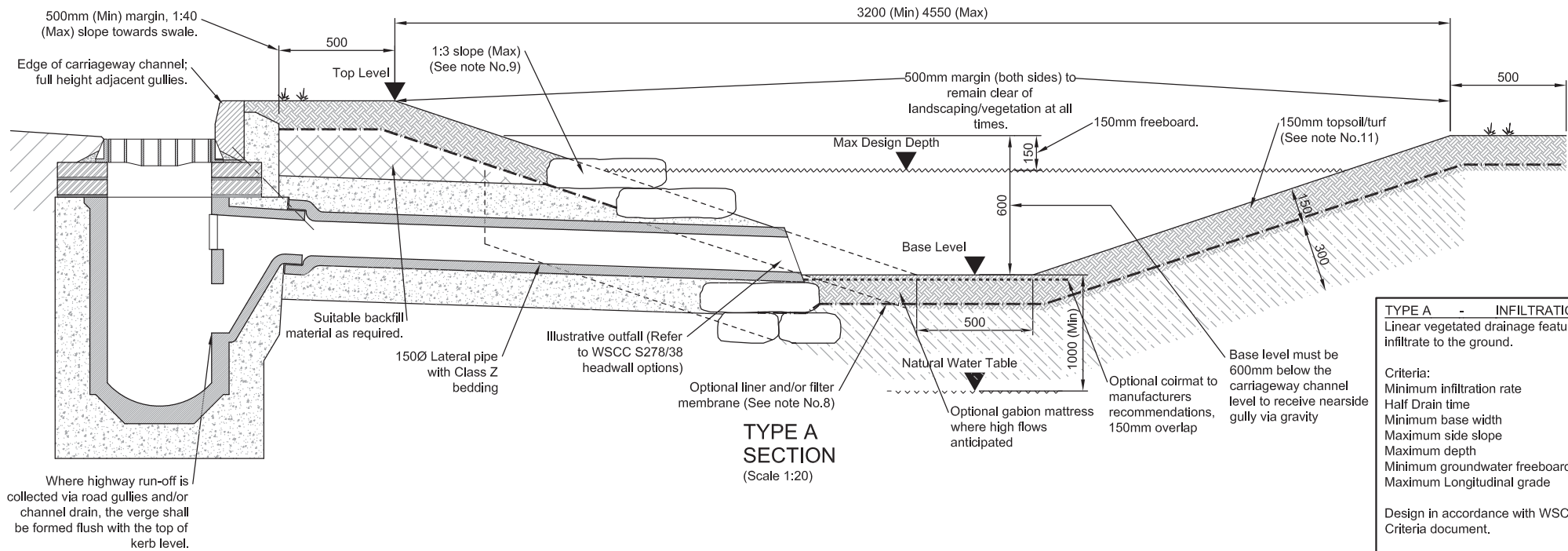
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Drawing No.
S278/38/25

Rev
A

- ## NOTES

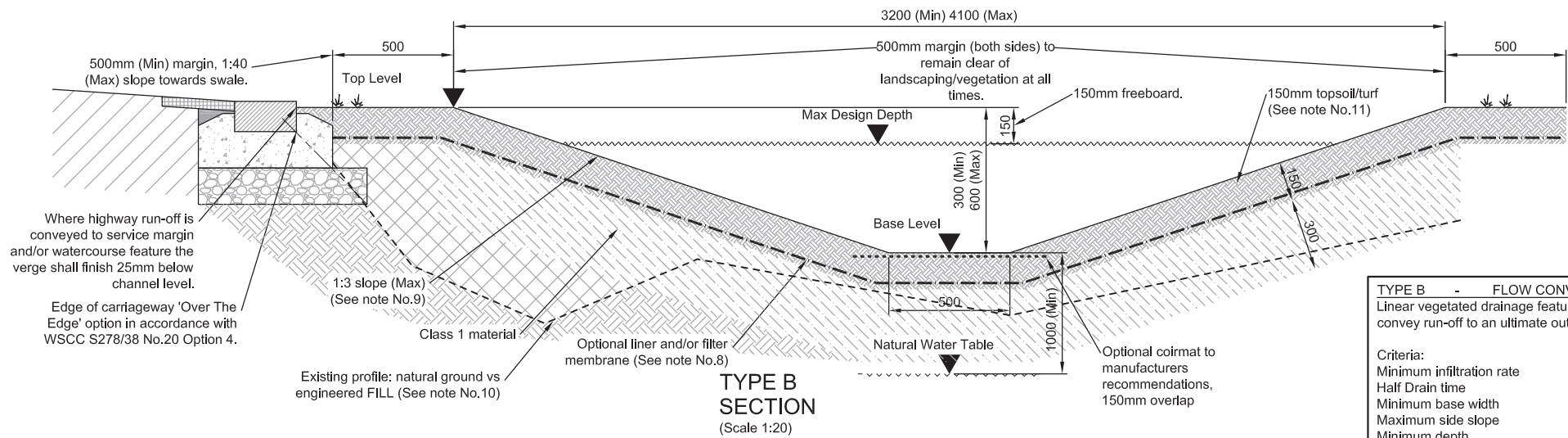
1. Do not scale from this drawing.
2. The design criteria shall be in accordance with CIRIA C697 and agreed in principle with WSCC as per the box note options.
3. Drainage strategy and flood risk reports shall be provided where applicable. In addition of this information the designer shall ensure compliance as follows:
 - Site topographical survey - (Outfall & Flow Conveyance)
 - Site Investigation Report - (Soil Type, Infiltration Test Results, Groundwater Levels, Contamination)
 - Design - (Area of Catchment, Design calculations in accordance with BRE365 or CIRIA 156, Design for 1:100yr Return Period and include an allowance for climate change)
4. Any design proposals impacting on or in close vicinity to an 'Ordinary Watercourse' shall be subject to the approval of West Sussex County Council Land Drainage Consent.
5. Any design proposals impacting on or in close vicinity to a 'Main River' shall be subject to the approval of The Environment Agency Land Drainage Consent.
6. Highway ditches to be sited at least 500mm clear of service margins in order to avoid obstructing the route of public utilities.
7. Ground water monitoring may be necessary to establish highest seasonal variation. Where 1m of unsaturated ground below ditch cannot be achieved, seek advice from WSCC.
8. Lining/membranes will be required if location in area of high pollution or risk of contamination.
9. Slope grade shall be a maximum 1:1 but may need to be slacker depending on the geology of the natural soil or the nature of the engineered FILL, and will be subject to determination of maintenance access and locality i.e. some area may need to be laid flatter to allow safe egress.
10. All design proposals must identify the extents of ditch to be formed in 'natural ground' or 'engineered FILL'. Where applicable geotechnical evidence may need to demonstrate method of construction, vehicular loads, angle of repose and long-term settlement.
11. Slope finish to be dense turf with a water tolerant grass specification to minimise erosion. Turf to be pinned if necessary to prevent slumping off the slope. Topsoil and seeding may be an acceptable alternative and will be dependant on slope grade, seasonal laying and when the feature will become operational post construction i.e. risk of wash out.
12. Erosion/scour protection may be necessary if the ditch intersects existing land drains or other incoming drains subject to determination of anticipated flow rates.
13. All exposed pipework shall be UV stable



TYPE A
SECTION
(Scale 1:20)

TYPE A - INFILTRATION	
Linear vegetated drainage feature designed to store and infiltrate to the ground.	
Criteria:	
Minimum infiltration rate	- 1x10(-5)m/sec
Half Drain time	- 24hrs
Minimum base width	- 500mm
Maximum side slope	- 1:3
Maximum depth	- 1m
Minimum groundwater freeboard	- 1m (Note 7)
Maximum Longitudinal grade	- 2% (1:50)
Design in accordance with WSCC Highway Drainage Criteria document.	
150mm freeboard to the top of the swale shall be included above the design event depth.	

- NOTES
- Do not scale from this drawing.
 - The design criteria shall be in accordance with CIRIA C697 and agreed in principle with WSCC as per the box note options.
 - Drainage strategy and flood risk reports shall be provided where applicable. In addition of this information the designer shall ensure compliance as follows:
 - Site topographical survey - (Outfall & Flow Conveyance)
 - Site Investigation Report - (Soil Type, Infiltration Test Results, Groundwater Levels, Contamination)
 - Design - (Area of Catchment, Design calculations in accordance with BRE365 or CIRIA 156, Design for 1:100yr Return Period and include an allowance for climate change)
 - Any design proposals impacting on or in close vicinity to an 'Ordinary Watercourse' shall be subject to the approval of West Sussex County Council Land Drainage Consent.
 - Any design proposals impacting on or in close vicinity to a 'Main River' shall be subject to the approval of The Environment Agency Land Drainage Consent.
 - Highway ditches to be sited at least 500mm clear of service margins in order to avoid obstructing the route of public utilities.
 - Ground water monitoring may be necessary to establish highest seasonal variation. Where 1m of unsaturated ground below ditch cannot be achieved, seek advice from WSCC.
 - Lining/membranes will be required if location in area of high pollution or risk of contamination.
 - Slope grade shall be a maximum 1:1 but may need to be slacker depending on the geology of the natural soil or the nature of the engineered FILL, and will be subject to determination of maintenance access and locality i.e. some area may need to be laid flatter to allow safe egress.
 - All design proposals must identify the extents of ditch to be formed in 'natural ground' or 'engineered FILL'. Where applicable geotechnical evidence may need to demonstrate method of construction, vehicular loads, angle of repose and long-term settlement.
 - Slope finish to be dense turf with a water tolerant grass specification to minimise erosion. Turf to be pinned if necessary to prevent slumping off the slope. Topsoil and seeding may be an acceptable alternative and will be dependant on slope grade, seasonal laying and when the feature will become operational post construction i.e. risk of wash out.
 - Erosion/scour protection may be necessary if the ditch intersects existing land drains or other incoming drains subject to determination of anticipated flow rates.
 - Exposed pipes to be UV stable.



TYPE B
SECTION
(Scale 1:20)

TYPE B - FLOW CONVEYANCE	
Linear vegetated drainage feature designed to store and convey run-off to an ultimate outfall.	
Criteria:	
Minimum infiltration rate	- N/A
Half Drain time	- N/A
Minimum base width	- 500mm
Maximum side slope	- 1:3
Minimum depth	- 300mm
Maximum depth	- 600mm
Minimum groundwater freeboard	- 1m (Note 7)
Maximum Longitudinal grade	- 2% (1:50)
Design in accordance with WSCC Highway Drainage Criteria document.	
150mm freeboard to the top of the swale shall be included above the design event depth.	
Type B swales must be linked to an ultimate outfall feature and cannot be used in isolation.	

A	Note 13	DJL	HM	25.04.17
Rev	Revision details	Chkd	Appd	Date
Drawn: MJA		For comment		
Chkd: DJL		For tender		
Appd: DJL		For construction		
Date: 14/12/2015		As constructed		
File ref:				
IWP Ref:				

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(01243) 642105



Project Name

Section 278/38 Highway Agreement
Standard Details

Drawing Title

Drainage
Highway Swale



Original Drawing Size : A3

Scale : As Shown

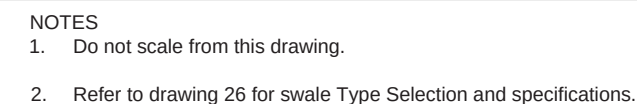
Dimensions :

Drawing No.

S278/38/26

Rev

A



CHECK DAM - CONCRETE BAGWORK OPTION SECTION

(Scale 1:25)

Labels and dimensions:

- 500 (Total width)
- 150mm topsoil/turf (See note No.11)
- Concrete bagging, staggered in layers
- Concrete joint
- 150mm freeboard.
- 150mm ST4 concrete wall and pipe surround
- 150 (Height of topsoil)
- 150 (Height of freeboard)
- 150 (Height of bedding)
- 500 (Base width)
- Class 1 material
- 150mm ST4 concrete bedding

CHECK DAM

Criteria:

- To b laid
- Heig
- (*) T upst dam app

Permitted

- Gab
- C

CHECK DAMS

Criteria:

- To be provided where longitudinal grades cannot be laid flatter than 2%.
- Heights shall be 150mm below the top of swale (*).
- (*) To be provided at intervals of 10-20m to ensure the upstream toe water level matches the downstream dam. WSSC may require a long section to demonstrate appropriate spacing.

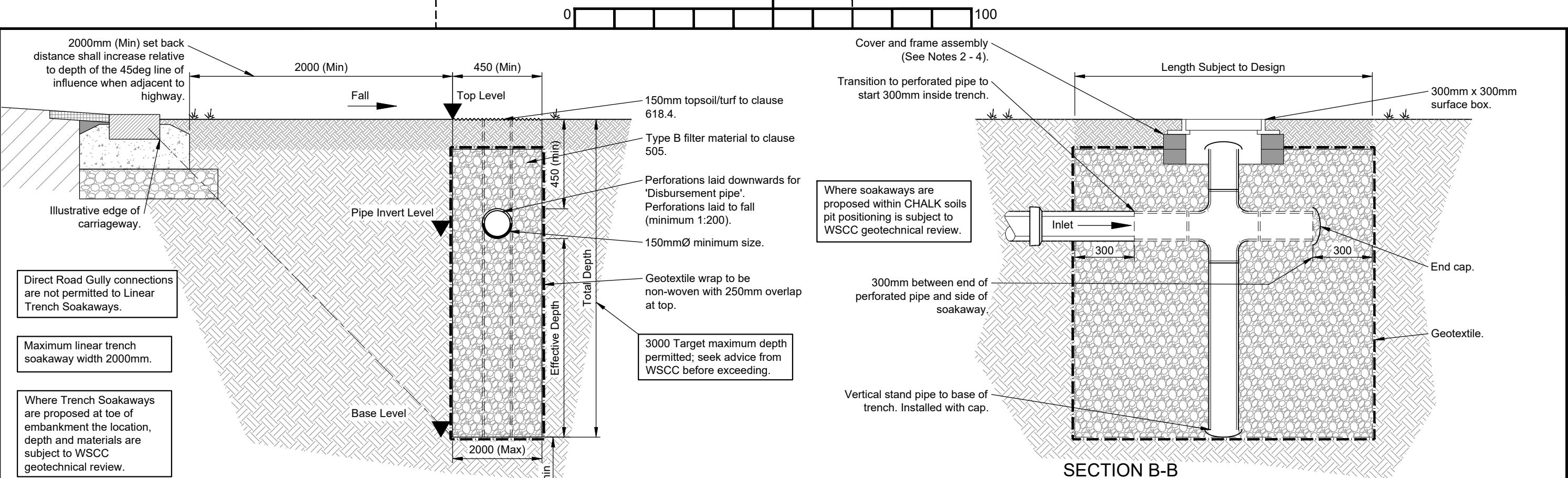
Permitted Types:

- Gabion Wall
- Concrete Bagwork
- Earth berm (CLAY Core)

Loose aggregate and/or wooden boards are not accepted.

All check dams shall include a low level pipe (weep hole) to maintain baseline flows. Only 100Ø, 150Ø or 225Ø pipe sizes are permitted and will be subject to hydraulic assessment of flow rates.

-	-	-	-	-	West Sussex County Council Infrastructure Group County Hall, West Street Chichester West Sussex PO19 1RH (01243) 642105 	Project Name					
Rev	Revision details	Chkd	Appd	Date		Section 278/38 Highway Agreement Standard Details					
Drawn: MJA			For comment			Drawing Title Drainage Highway Swale Check Dam		Original Drawing Size : A3			
Chkd: DJL			For tender					Scale : As Shown		Dimensions :	
Appd: DJL			For construction					Drawing No.		Rev	
Date: 14/12/2015			As constructed					S278/38/27		-	
File ref: IWP Ref:											



SECTION A-A
(Scale 1:20)

SECTION B-B
(Scale 1:20)

Observation access points to be provided at terminal ends.

Additional observations access points shall be provided to suit site circumstances.

PLAN
(Scale 1:20)

NOTES

- Do not scale from this drawing.
- Cover Grade shall be minimum D400 unless otherwise agreed with the Highway Inspector. 300mm x 300mm clear opening.
- Manhole cover and frames shall comply with the relevant provisions of BS EN 124, BS 7903 and Highway Agency Guidance Document HA 104/02. They shall be of a non-rocking design which does not rely on the use of cushion inserts. All manhole covers shall be the non-ventilating type and shall have closed keyways.
- Frames shall be bedded on a gauged Class 1 (3:1) sand/cement mortar to CI.2402 of SHW Mortar Designation (i), and between 2 and 4 courses of Engineering Brickwork Class 'B' to BS EN 771-1:2011.
- The design criteria shall be agreed with WSCC. Drainage strategy and flood risk reports shall be provided. In the absence of this

information the designer shall ensure compliance as follows:

- Site Investigation Report.
 - Infiltration Test Results.
 - Design Calculations in accordance with BRE365 or CIRIA 156.
 - Design for 1:100yr Return Period and include an allowance for climate change.
 - Environment Agency consent.
- Soakaways to be sited clear of the footways and service margins in order to avoid obstructing the route of public utilities.
 - Locations within verges only.
 - Ground water monitoring may be necessary to establish highest seasonal variation. Where 1m of unsaturated ground below base of soakaway cannot be achieved, seek advice from WSCC.
 - Easement will be required where soakaways are located outside of Public Highway.

Example Soakaway Schedule (to be included on design drawings)

Trench Soakaway No.	Catchment Area (m ²)	Soakaway Cover Level (m)	Soakaway Base Level (m)	Trench Length (m)	Trench Width (m)	Incoming Pipe Invert (m)	Effective Depth (m)	Total Depth (m)
TRENCH #	###	###	###	###	###	###	###	###

ALL LEVELS SHOULD BE RELATED TO ORDNANCE SURVEY DATUM.

A	General update	MJA	MJA	15.03.19
-	Initial Issue	DLS	MJA	07.11.17
Rev	Revision details	Chkd	Appd	Date
Drawn:	MJA		For comment	
Chkd:			For tender	
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Infrastructure Group
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West Street
Chichester
West Sussex
PO19 1RH
(01243) 642105



Project Name

Section 278/38 Highway Agreement
Standard Details

Drawing Title

Drainage
Trench Soakaway



Original Drawing Size : A3

Scale : As Shown

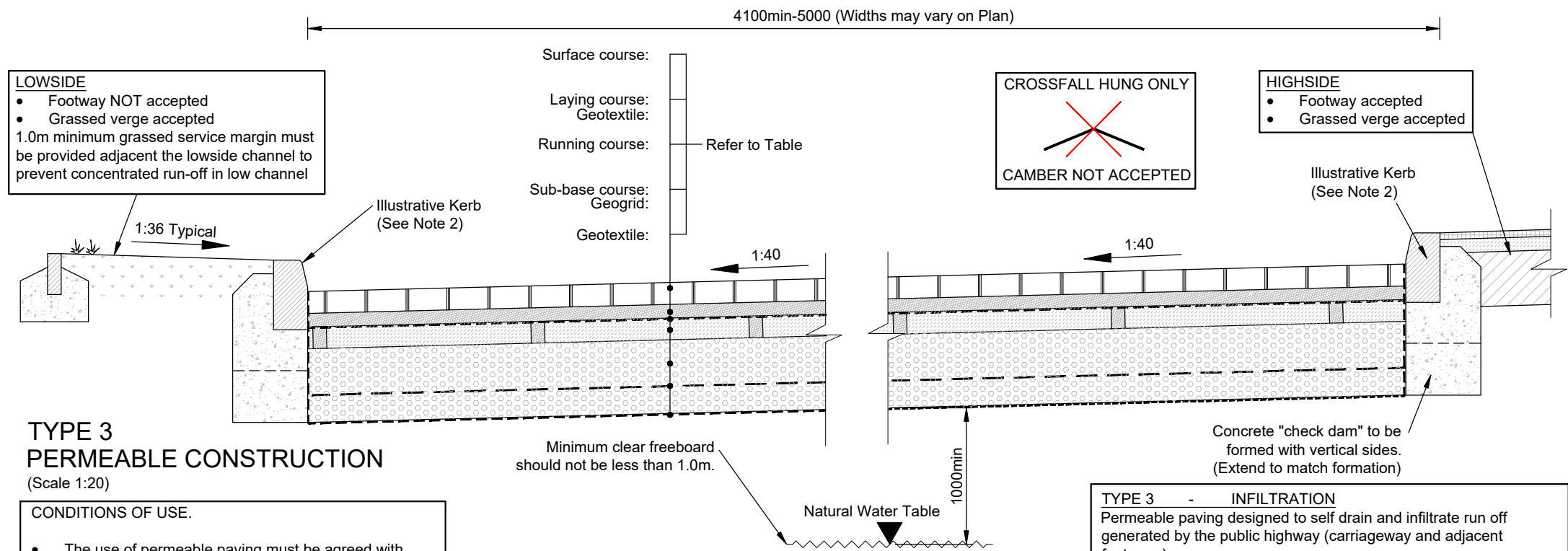
Dimensions :

Drawing No.

S278/38/28

Rev

A



**TYPE 3
PERMEABLE CONSTRUCTION**
(Scale 1:20)

CONDITIONS OF USE.

- The use of permeable paving must be agreed with West Sussex County Council by early consultation and is subject to site suitability including but not limited to the following:-
- Surface material to be BLOCK PAVING only.
- Tanked permeable paving will not be permitted.
- Permeable paving can be selected for cul-de-sac's, low speed road (20-30mph) and shared surfaces.
- Permeable paving will not be accepted on A and B Class roads, bus routes, industrial roads, 'through roads', roads subject to excessive leaf litter or roads serving more than 50 dwellings.
- A relevant geotechnical assessment must be provided including infiltration testing at a depth commensurate with formation level and in subsoil and ground water level monitoring during the wet winter period (October to March).
- The soil infiltration rate must be better than 1x10-7m/s.
- It is unlikely that permeable paving will be permitted if the design CBR is less than 4%.
- Minimum 1m freeboard to base from formation to highest groundwater level.
- Environment Agency approval to the use of permeable paving will be required if the groundwater is sensitive to pollution.

CARRIAGEWAY CONSTRUCTION THICKNESSES ALL CONSTRUCTION LAYER THICKNESSES TO BE FULLY SPECIFIED BY THE DESIGNER PRIOR TO TECHNICAL APPROVAL	
Layer/Material	Layer thickness
Geotextile - Inbitex	
Sub base Type 3 (Clause 803)	Min 270 subject to storage (based on a CBR of 4% or more)
Geogrid SC Intergrid 100mm above formation	
Running surface 80mm thick AC20 Dense Bin (cleaned and perforated with 20 - 50mm diameter holes at 800mm centres and at all low points prior to installing laying course and blocks, holes filled with laying course material)	115
Geotextile - Inbitex	
Laying course 2-6mm clean stone	50
Surface Course Permeable Blocks	80

TYPE 3 - INFILTRATION

Permeable paving designed to self drain and infiltrate run off generated by the public highway (carriageway and adjacent footways).

Criteria:	
Crossfall (hung roads only)	- 2.5% (1:40)
Minimum infiltration rate	- 1x10-7m/s
Half Drain time	- 24 hours
Rainfall criteria	- 100yr + climate change
Minimum sub base depth	- 270mm
Minimum groundwater freeboard	- 1m
Maximum Longitudinal grade	- 4% (1:25)
Minimum Longitudinal grade	- 1.67% (1:60)
Laying pattern	- 90° herringbone
Minimum block size	- 100mmx50mm

Design in accordance with WSCC Highway Drainage Criteria document.

Stretcher course adjacent to all kerbs and ironwork.

Floor levels of dwellings must be a minimum of 300mm above lowest permeable road level.

Plans showing design exceedance/failure flood/flow routes to be provided demonstrating no flood risk to dwellings.

Permeable paving system to be installed in strict accordance with manufacturers guidance and recommendations.

Observation chamber to be provided at all low points.

3rd Party service apparatus is not permitted within permeable pavement. Where services need to cross the permeable pavement a 2m wide Service Crossing shall be provided across the carriageway, constructed using traditional methods (Refer to section).

NOTES

- Do not scale from this drawing.
- Refer to drawings 02 & 03 for Approved Kerb Type Selection.
- Refer to drawing 01 for laying methods.
- Prior to the commencement of laying the formation shall be treated with an approved residual weedkiller.
- The Highway Inspector may request inclusion of a non-woven separation membrane to mitigate weed/root intrusion.
- Not suitable where 'no-dig' construction is required.
- Asphalt Concrete to be in accordance with BS EN 13108-01 and BS 594987.
- Type 3 Sub-base to be in accordance with Specification for Highway Works clause 803.
- Block Pavements to be in accordance with BS EN 1338 and BS 7533-3:2005 (A1:2009).
- Total Carriageway construction depth must be greater than 450mm to negate susceptibility to frost penetration, irrespective of CBR value.
- CBR values to be obtained from site investigation report and laboratory testing only. In-situ testing shall not be used to determine or amend the design CBR. The WSCC Inspector may request additional tests. In situ CBR tests shall only be used to confirm that the design CBR is met and to identify 'soft spots' in the construction.
- WSCC does not permit lime/cement stabilised material in capping or sub base layers.
- Block pavements shall be laid in herringbone pattern at 90° to the direction of travel.

Developer to ensure the permeable pavement is compatible with other undertaker requirements.
i.e. Local Water Authorities & Statutory Undertakers.

A	General update	MJA	MJA	15.03.19
Rev	Revision details	Chkd	Appd	Date
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Date:			As constructed	
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IWP Ref:				

West Sussex County Council
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Project Name

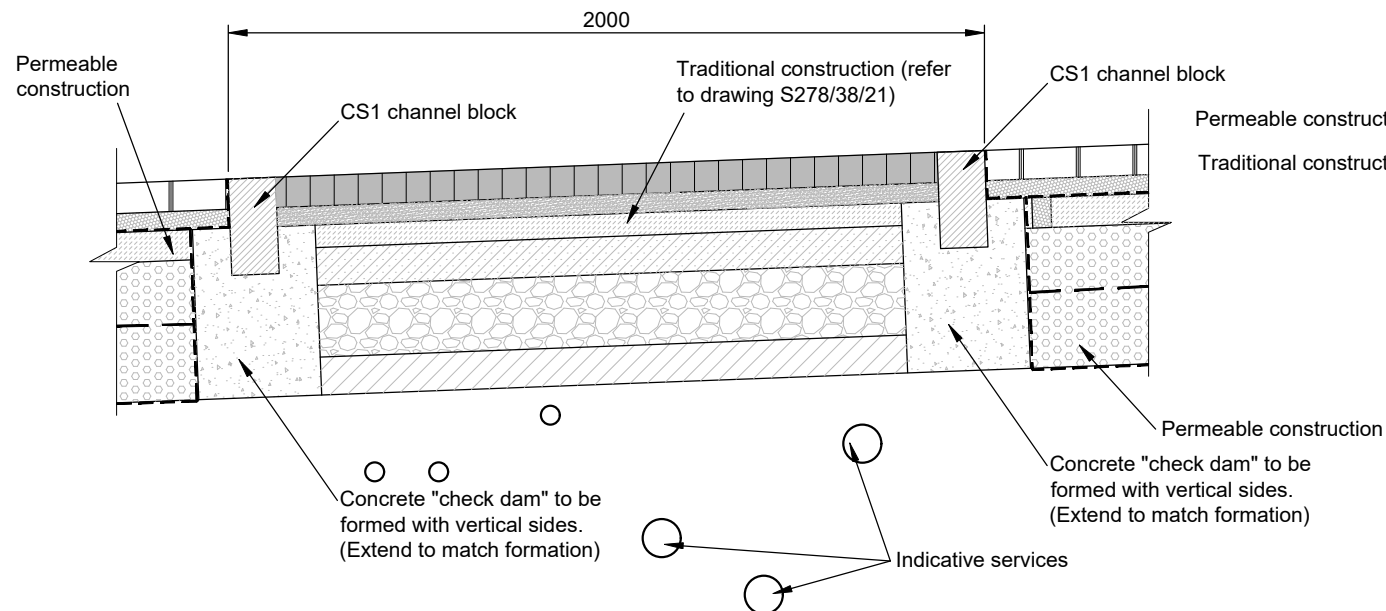
Section 278/38 Highway Agreement
Standard Details

Drawing Title

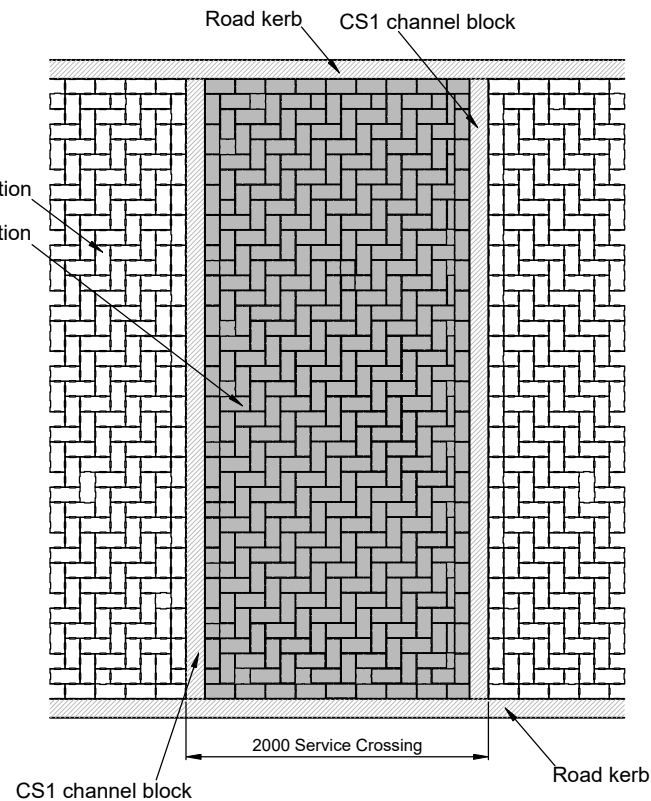
Carriageway
Permeable Specification (Sheet 1 of 2)



Original Drawing Size : A3	
Scale : As Shown	Dimensions :
Drawing No. S278/38/30	Rev A



SERVICE CROSSING SECTION
(Scale 1:20)

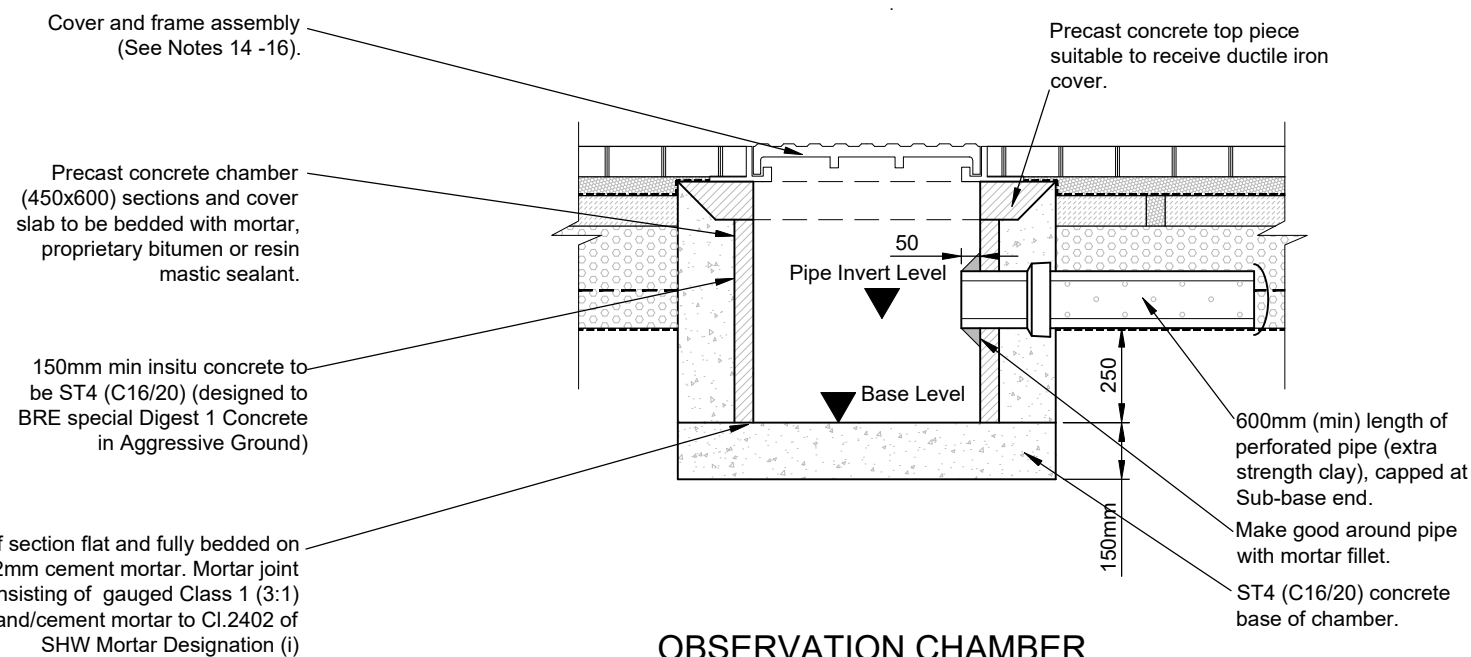


SERVICE CROSSING
Plan (Scale 1:50)

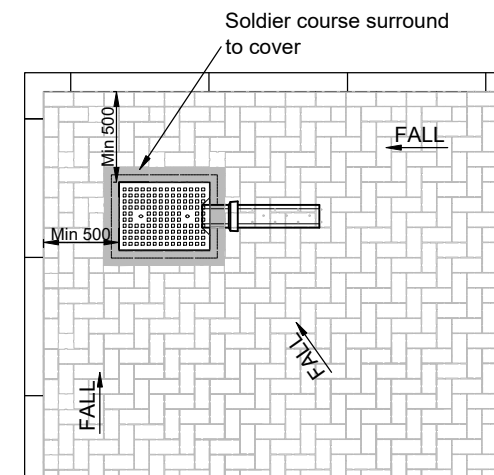
NOTES

1. Do not scale from this drawing.
2. Refer to drawings 02 & 03 for Approved Kerb Type Selection.
3. Refer to drawing 01 for laying methods.
4. Prior to the commencement of laying the formation shall be treated with an approved residual weedkiller.
5. The Highway Inspector may request inclusion of a non-woven separation membrane to mitigate weed/root intrusion.
6. Not suitable where 'no-dig' construction is required.
7. Asphalt Concrete to be in accordance with BS EN 13108-01 and BS 594987.
8. Type 3 Sub-base to be in accordance with Specification for Highway Works clause 803.
9. Block Paviours to be in accordance with BS EN 1338 and BS 7533-3:2005 (A1:2009).
10. Total Carriageway construction depth must be greater than 450mm to negate susceptibility to frost penetration, irrespective of CBR value.
11. CBR values to be obtained from site investigation report and laboratory testing only. In-situ testing shall not be used to determine or amend the design CBR. The WSCC Inspector may request additional tests. In situ CBR tests shall only be used to confirm that the design CBR is met and to identify 'soft spots' in the construction.
12. WSCC does not permit lime/cement stabilised material in capping or sub base layers.
13. Block paviours shall be laid in herringbone pattern at 90° to the direction of travel, except where the WSCC Inspector has granted approval in writing to deviate from this requirement.
14. Cover Grade shall be minimum D400 unless otherwise agreed with the Highway Inspector.
15. Manhole cover and frames shall comply with the relevant provisions of BS EN 124, BS 7903 and Highway Agency Guidance Document HA 104/02. They shall be of a non-rocking design which does not rely on the use of cushion inserts. All manhole covers shall be the non-ventilating type and shall have closed keyways.
16. Frames shall be bedded on a gauged Class 1 (3:1) sand/cement mortar to CI.2402 of SHW Mortar Designation (i), and between 2 and 4 courses of Engineering Brickwork Class 'B' to BS EN 771-1:2011.

Developer to ensure the permeable pavement is compatible with other undertaker requirements. i.e. Local Water Authorities & Statutory Undertakers.



OBSERVATION CHAMBER SECTION
(Scale 1:20)



OBSERVATION CHAMBER
TYPICAL PLAN LOCATION
(Scale 1:50)

A	General update	MJA	MJA	15.03.19
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Project Name

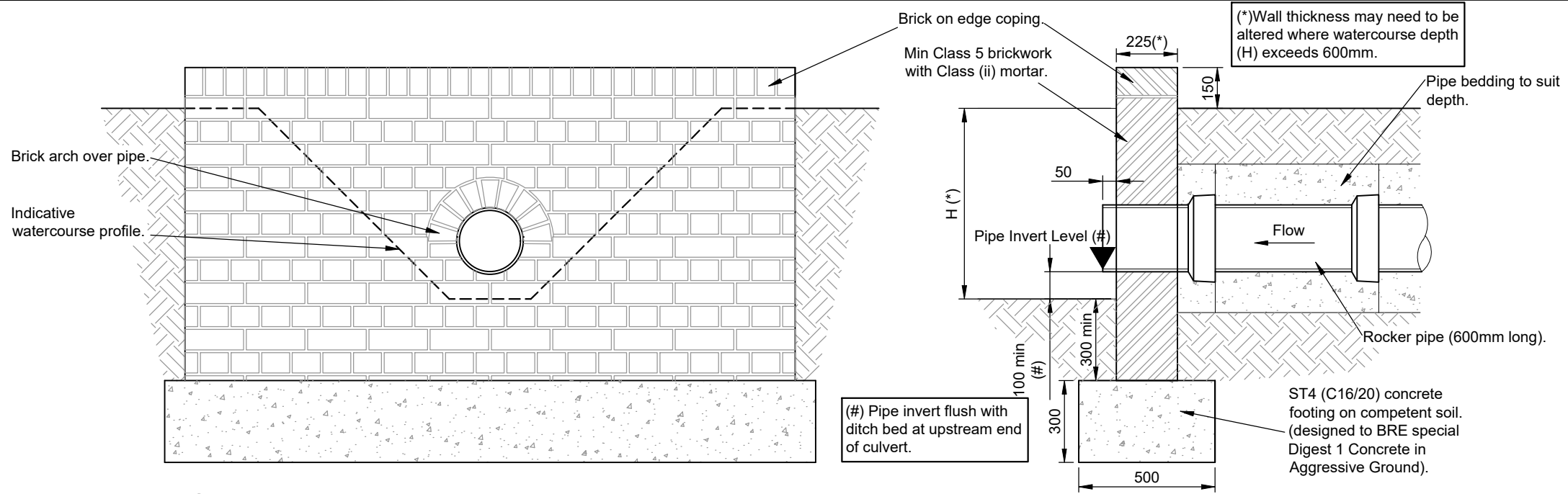
Section 278/38 Highway Agreement
Standard Details

Drawing Title

Carriageway
Permeable Specification (Sheet 2 of 2)



Original Drawing Size :	A3
Scale : As Shown	Dimensions :
Drawing No. S278/38/31	Rev A



SIMPLE HEADWALL ELEVATION
(Scale 1:20)

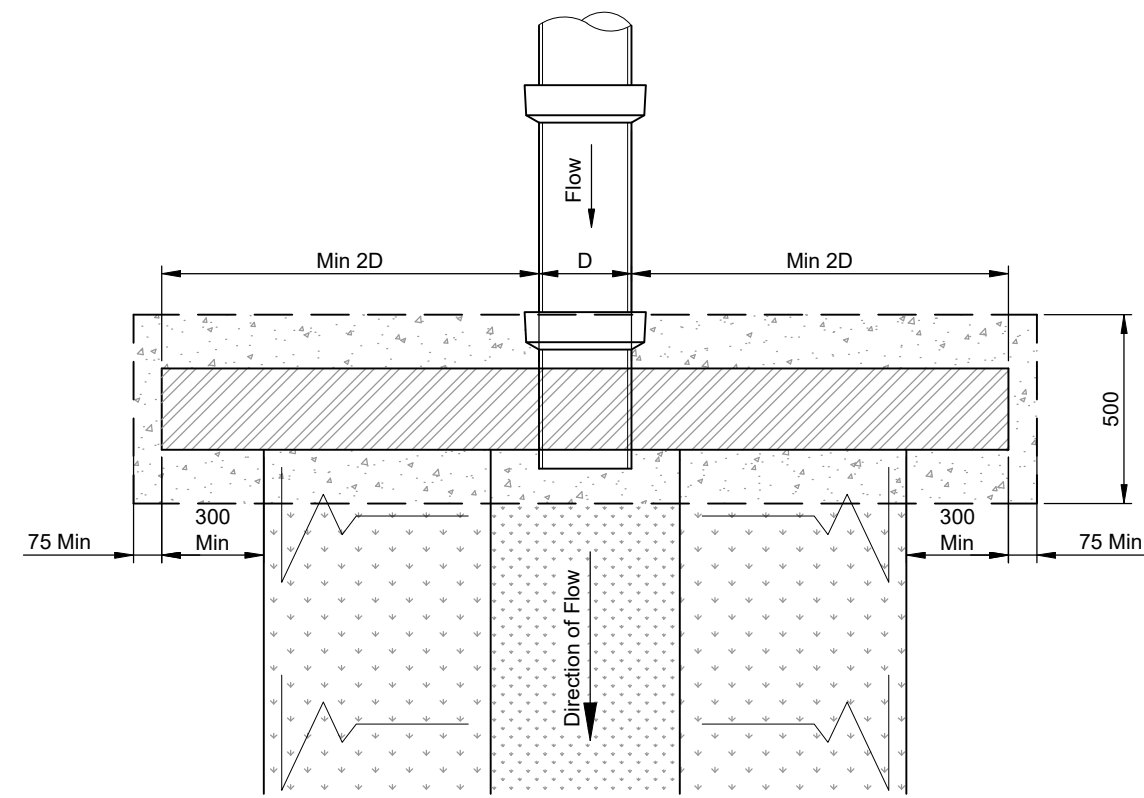
SIMPLE HEADWALL SECTION
(Scale 1:20)

NOTES

1. Headwall design may need to be adjusted to on site conditions following approval from WSCC Inspector.
2. For vehicular crossings of ditches pipes shall be min 450mm diam and be set to invert of ditch. Ditch to be regraded to achieve satisfactory falls.
3. For H>600 appropriate vehicular or pedestrian containment shall be installed.
6. All exposed pipework to be UV stable.

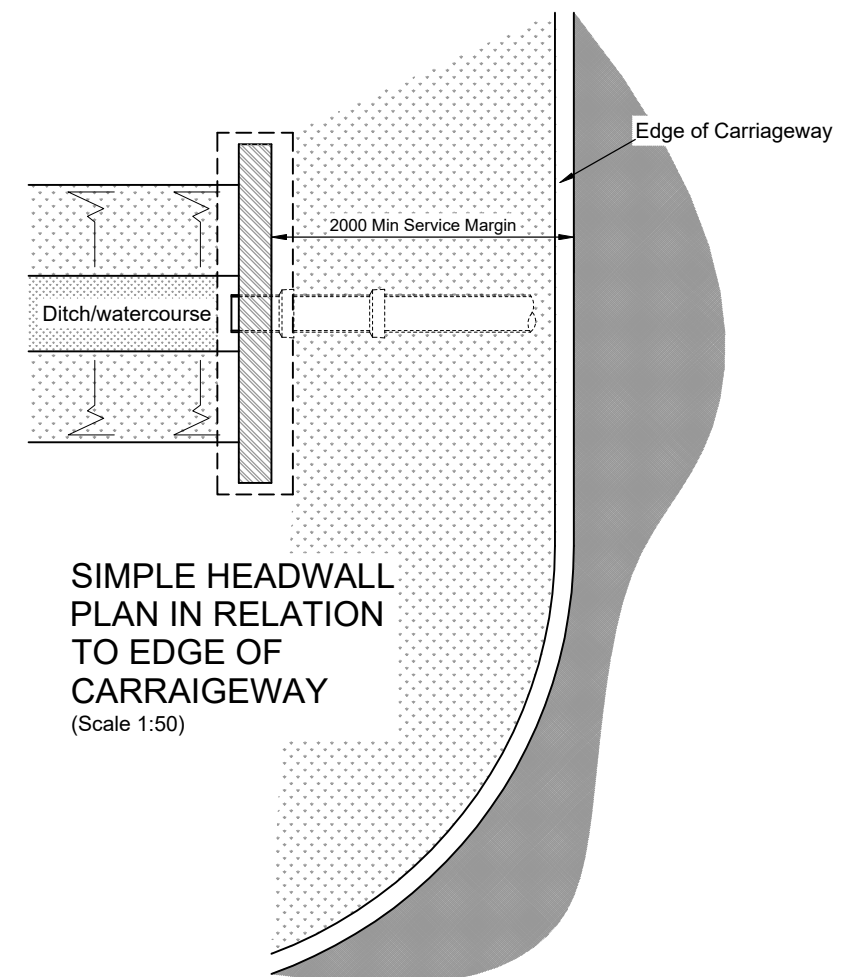
Set back distances shown are considered to be the minimum. Headwall position in relation to carriageway shall consider the following:

- Set back dimension relative to road speed
- Requirement for guarding vehicular/pedestrian
- RRRAP and/or other Designer Risk Assessment
- Ditch dimensions, depth and side slopes



SIMPLE HEADWALL PLAN
(Scale 1:20)

- CONDITIONS OF USE.**
- Low key driveway/road crossings with low traffic flows.
 - Watercourses with low flow rates/velocities.
 - Head of watercourses (not gully outlets).
 - Minimum pipe size 225mm.
 - Maximum pipe size 450mm.
 - Foundation dimensions are based on good ground conditions (bearing capacity >150KPa) without groundwater pressure. Headwalls to be installed in poor ground condition and/or high groundwater may require design by structural engineer.
 - Compliance with West Sussex LLFA Culvert Policy.
 - Land Drainage Consent to be obtained before any works to/in watercourses is carried out.
 - This detail may not be suitable for use in Main Rivers.
- PIPE GRILLES.**
- Designer shall consider the use of pipe grilles for pipes in excess of 350mm diameter.
- GUARDING.**
- Designer shall consider the need to provide pedestrian guarding and vehicular safety barriers (VRS).



SIMPLE HEADWALL PLAN IN RELATION TO EDGE OF CARRAIGEWAY
(Scale 1:50)

A	General update	MJA	MJA	15.03.19
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Drawn:	ldf		For comment	
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Project Name	Section 278/38 Highway Agreement Standard Details
Drawing Title	Simple Headwall Detail for pipe sizes up to 450 diam Engineering Brickwork

APPROVED
March 2019
CONTRACTOR TO ENSURE LATEST DETAILS ARE USED

Original Drawing Size :	A3
Scale :	1:20 / 1:50
Dimensions :	mm
Drawing No.	S278/38/32
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