


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](mailto: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	<div>West Sussex County Council Infrastructure Group</div> <div>County Hall, West Street Chichester West Sussex PO19 1RH (01243) 642105</div> <div> <b>west sussex county council</b></div>	Project Name Section 278/38 Highway Agreement Standard Details			
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		Original Drawing Size : A3	
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Chkd:			For tender						
Appd:			For construction						
Date: 28.02.2013			As constructed						
File ref:						Drawing No. S278/38/00		Rev H	
IWP Ref:									

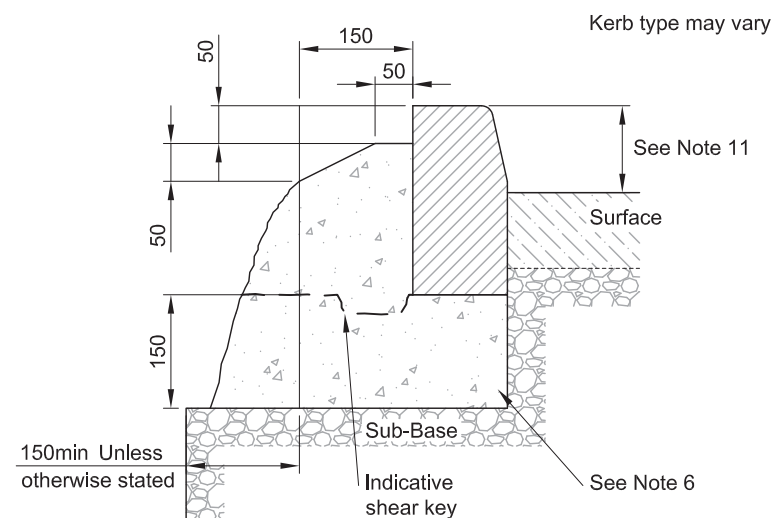
CDM HAZARD ASSESSMENT				
No:	Title	Rev:	Comment Date:	Potential Hazards:
S278/38/01	Alternative Methods of Laying Kerbs	C	15.11.2017	Strain injury due to repetitive lifting. Kerbs to be lifted mechanically.
S278/38/02	Approved Kerb Type Selection Sheet 1	B	15.11.2017	Strain injury due to repetitive 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:

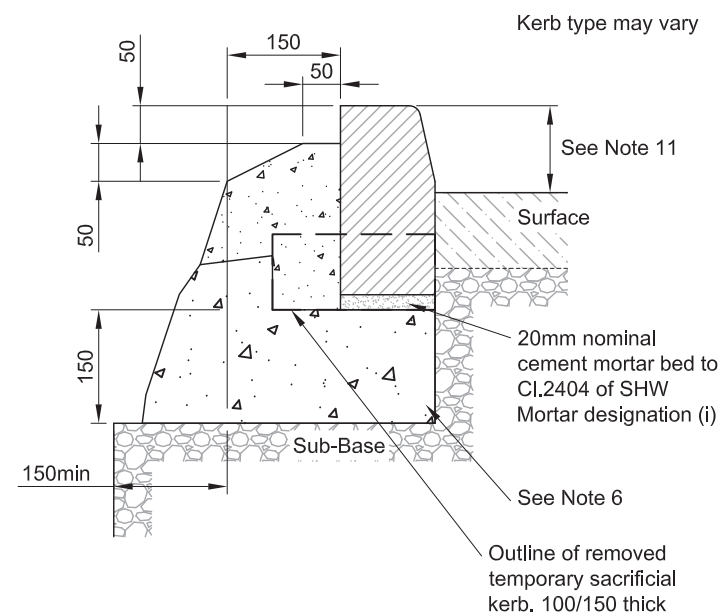
1. In preparing the following drawings West Sussex County Council would fall under the scope of a Designer as defined by the CDM regulation 2015. However, as these drawings are not project specific it is not possible for West Sussex County Council to list all hazards that may occur because of the implementation of the details.
2. The Project team must determine any hazards associated with their project due to the implementation of these details.
3. 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.
4. West Sussex County Council must be informed of the Dutyholders and be provided with the project teams hazard assessment.
5. 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 Initial Issue	MJA -	MJA -	15.03.19 -	<div>West Sussex County Council Infrastructure Group</div> <div>County Hall, West Street Chichester</div> <div>West Sussex PO19 1RH (01243) 642105</div> <div></div> <div><b>west sussex county council</b></div>	Project Name		<div></div>			
Rev	Revision details	Chkd	Appd	Date		Section 278/38 Highway Agreement Standard Details					
Drawn: MJA			For comment			Drawing Title  CDM		Original Drawing Size : A3			
Chkd:			For tender					Scale : N/A		Dimensions :	
Appd:			For construction					Drawing No. S278/38/CDM		Rev A	
Date: 07.11.2017			As constructed								
File ref:											
IWP Ref:											





## GREEN BED METHOD



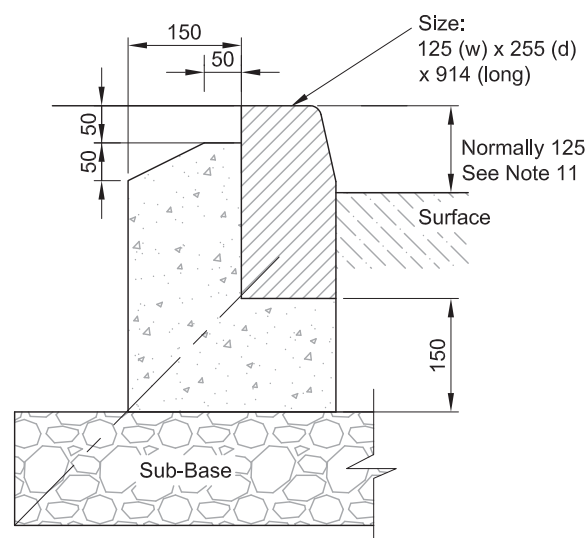
## FORMED BASE METHOD

- NOTES

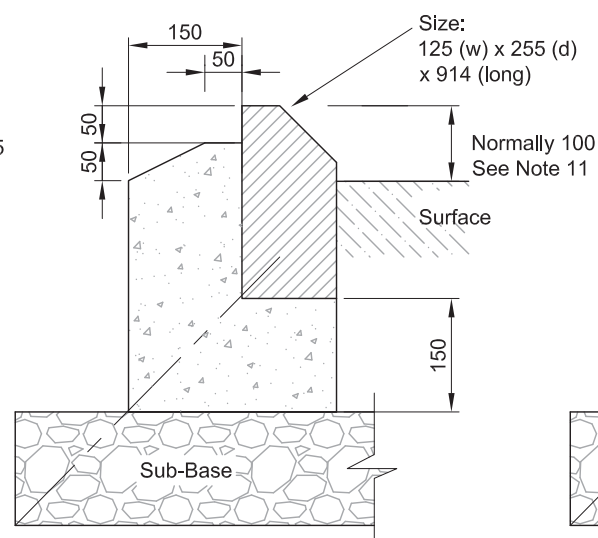
1. Do not scale from this drawing.
2. Kerbs to be butt jointed. Where kerb alignments incur 'minor open joint tapers' in excess of 5mm between formed surfaces mortar jointing shall be used as directed by Highway Inspector.
3. All full length PCC kerbs are to be mechanically handled.
4. All precast concrete Kerbs & Edgings shall be to BS EN 1340 & laid to BS 7533-6.
5. All setts of natural stone shall be to BS EN 1342 & laid to BS 7533-7.
6. All Kerbs & Edgings bed & backing to be Concrete Class ST1 (C6/8), well compacted. Unless otherwise stated this shall be a minimum bed thickness of 150mm.
7. The minimum length of any cut kerb shall be 450mm (Half kerb).
8. The correct radius kerbs shall be used for all radii of 12m or less. For radii between 12m and 20m 600mm long straight units shall be used. Radius kerbs shall be used to form corners of laybys.
9. The correct transition kerbs shall be used for all drop kerb and upstand variation locations.
10. The correct quadrant kerbs shall be used to form corners of square areas and refuge islands. Cut quadrants are permissible.
11. Full height kerb upstand shall be 125mm unless otherwise agreed by WSCC under a formal request.
12. Drop kerb upstand shall be 0-6mm for pedestrian crossings, 25mm for vehicular crossings.
13. Carriageway reinstatements shall be made using material that matches the adjacent carriageway surface.

<div>C B A</div>	Note 13 100mm Temp Kerb shown Formed Base Temp Kerb added		DJL DJL DJL	HM GM GM	25/04/17 09/09/13 30/11/12	<div>West Sussex County Council Infrastructure Group</div> <div>County Hall, West Street Chichester West Sussex PO19 1RH (01243) 642105</div> <div><div>west sussex county council</div></div>	Project Name		<div></div>
					Section 278/38 Highway Agreement				
					Standard Details				
					Drawing Title				
					Alternative Methods of Laying Kerbs				
Rev	Revision details		Chkd	Appd	Date		Original Drawing Size :            A3		
Drawn: MJA				For comment			Scale :    As Shown		Dimensions :
Chkd: DJL				For tender			Drawing No.		Rev
Appd: APH				For construction			S278/38/01		C
Date:				As constructed					
File ref: IWP Ref:									

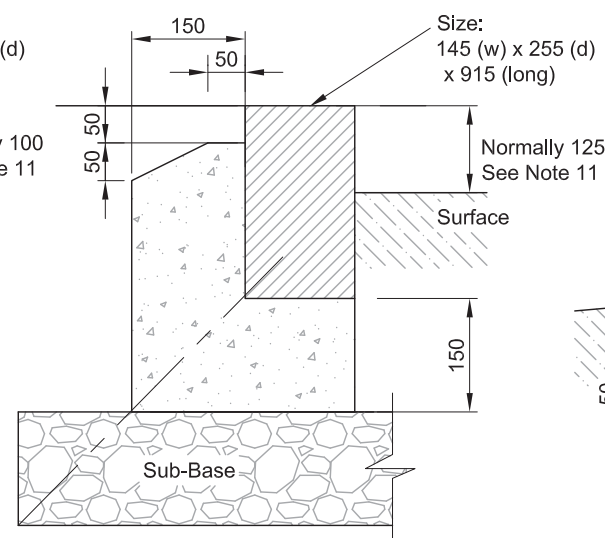




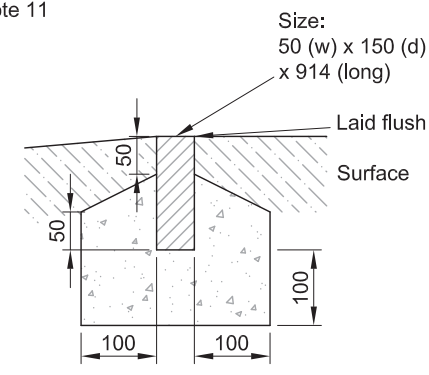
**FULL HEIGHT KERB  
TYPE HB2**  
(1:10)



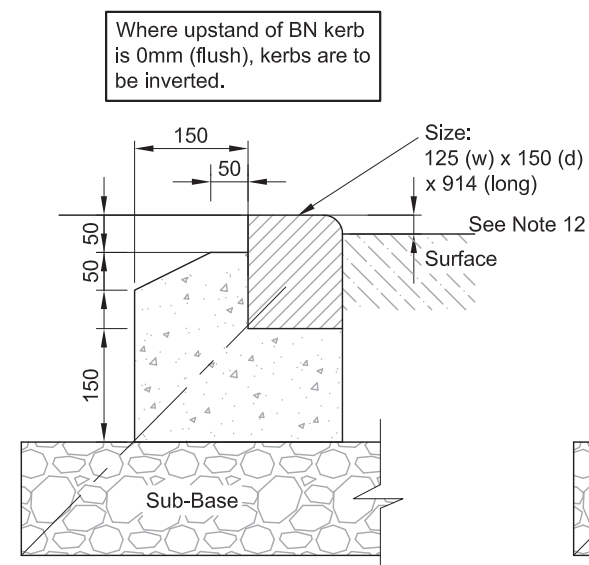
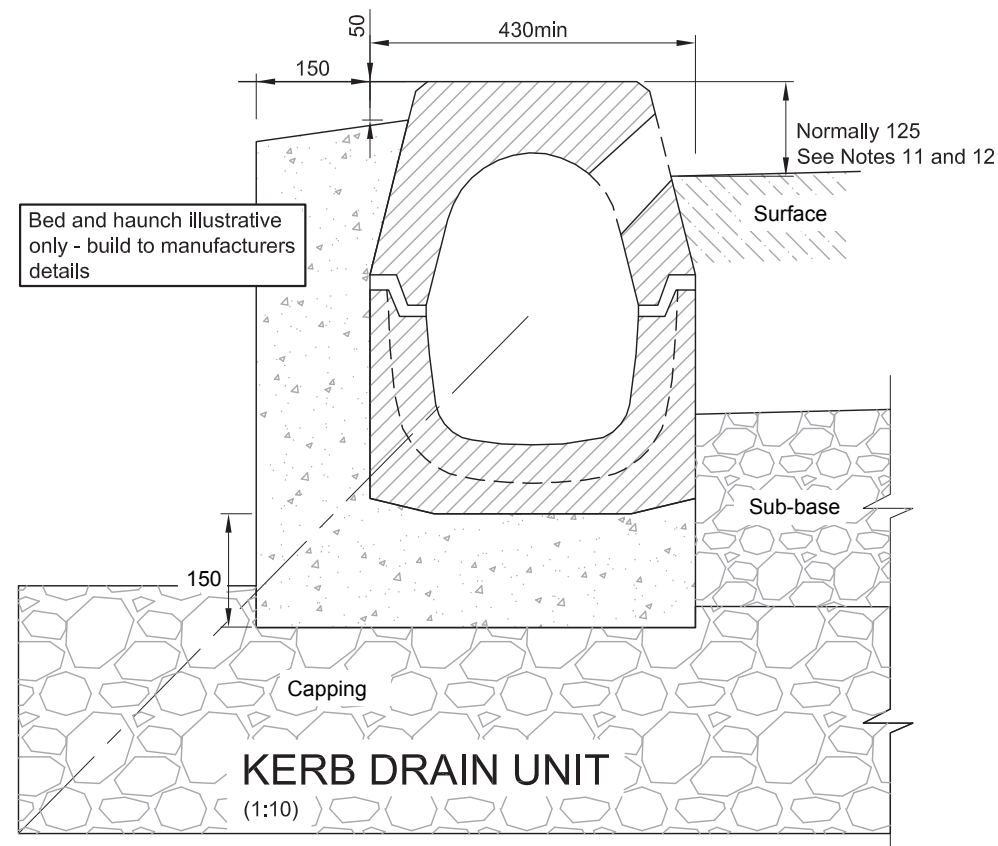
**SPLAY KERB  
TYPE SP**  
(1:10)



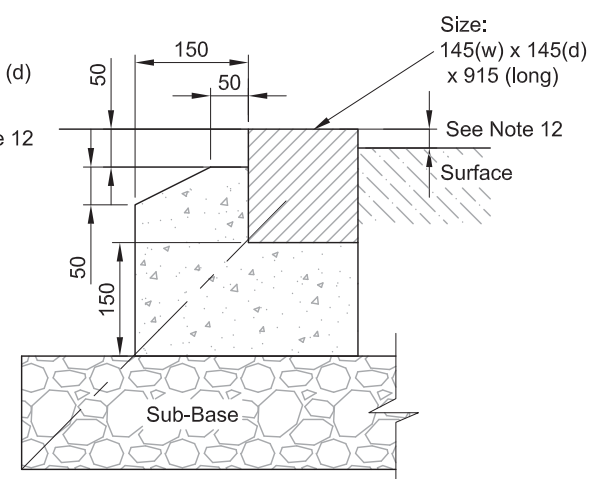
**FULL HEIGHT KERB  
TYPE CONSERVATION**  
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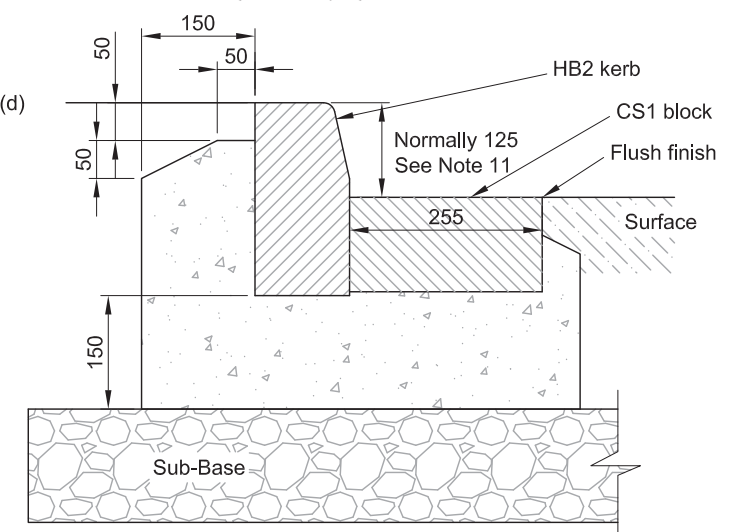
**EDGING  
TYPE EF FLAT TOP**  
(1:10)



**DROP KERB  
TYPE BN**  
(1:10)



**DROP KERB  
TYPE: CONSERVATION**  
(1:10)



**COMBINATION KERB  
TYPE HB2+CS1**  
(1:10)

**NOTES**

1. Do not scale from this drawing.
2. Kerbs to be butt jointed. Where kerb alignments incur 'minor open joint tapers' between formed surfaces mortar jointing shall be used as directed by Highway Inspector.
3. All full length PCC kerbs are to be mechanically handled.
4. All precast concrete Kerbs & Edgings shall be to BS EN 1340 & laid to BS 7533-6.
5. All setts of natural stone shall be to BS EN 1342 & laid to BS 7533-7.
6. All Kerbs & Edgings bed & backing to be Concrete Class ST1 (C6/8), well compacted. Unless otherwise stated this shall be a minimum bed thickness of 150mm.
7. The minimum length of any cut kerb shall be 450mm (Half kerb).
8. The correct radius kerbs shall be used for all radii of 12m or less. For radii between 12m and 20m 600mm long straight units shall be used. Radius kerbs shall be used to form corners of laybys and tapers.
9. Suitable transition kerbs shall be used for all drop kerb and upstand variation locations.
10. Suitable quadrant kerbs shall be used to form corners of square areas and refuge islands.
11. Full height kerb upstand shall be as shown unless otherwise agreed by WSCC under a formal request.
12. Drop kerb upstand shall be 0-6mm for pedestrian crossings, 25mm for vehicular crossings.
13. Refer to drawing 01 for laying methods.

B	Kerb Drain added	DJL	MA	25/04/17
A	Splay kerb re-named	DJL	GM	30/11/12
Rev	Revision details	Chkd	Appd	Date
Drawn:	MJA		For comment	
Chkd:			For tender	
Appd:			For construction	
Date:			As constructed	
File ref:				
IWP Ref:				

West Sussex County Council  
Infrastructure Group  
County Hall,  
West Street  
Chichester  
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PO19 1RH  
(01243) 642105



**west  
sussex  
county  
council**

Project Name

Section 278/38 Highway Agreement  
Standard Details

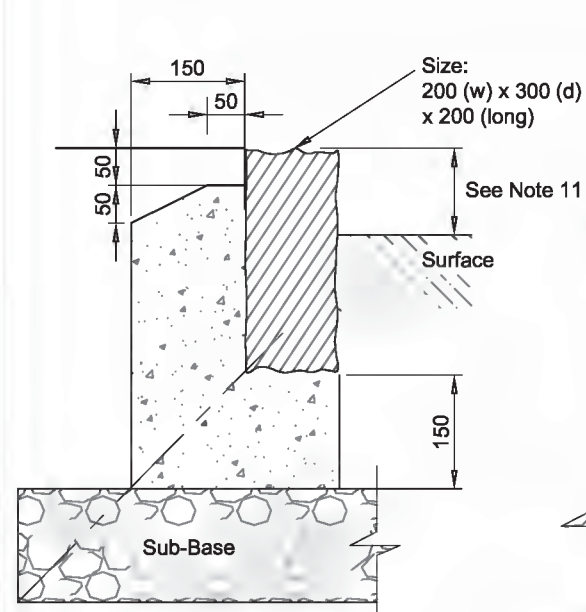
Drawing Title

Approved Kerb Type Selection  
Sheet 1

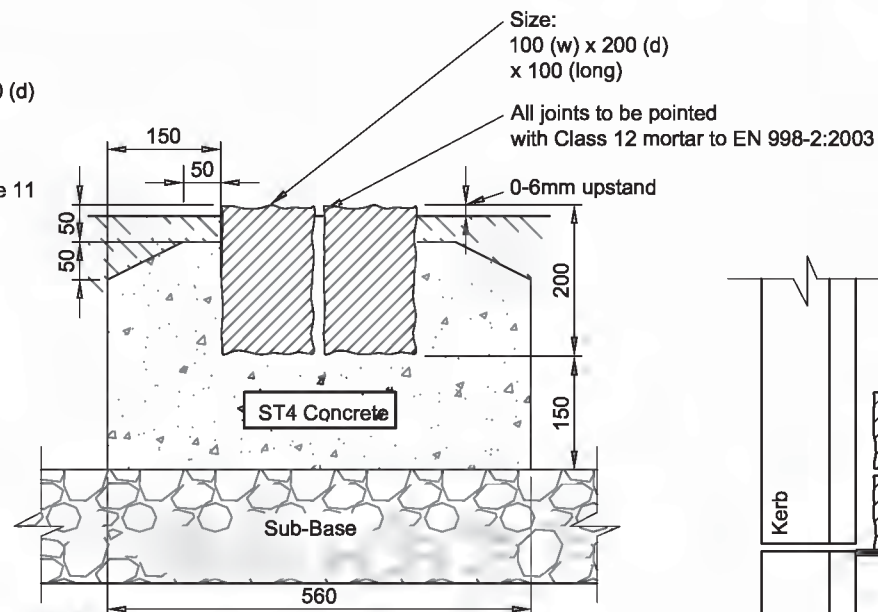


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Scale :	As Shown
Dimensions :	
Drawing No.	S278/38/02
Rev	B

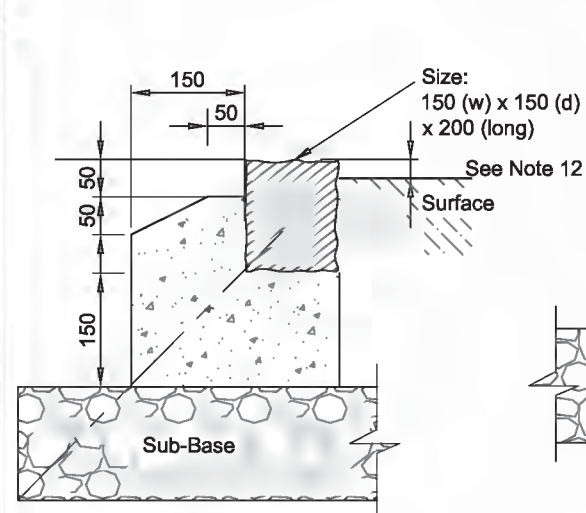




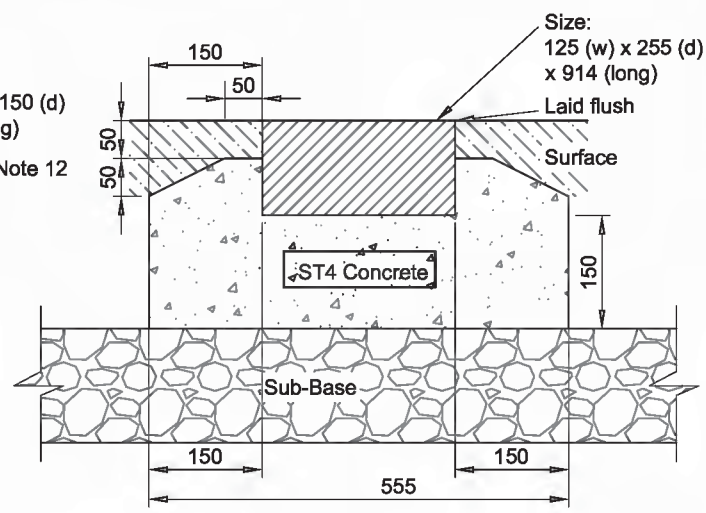
**FULL HEIGHT KERB  
TYPE GRANITE SETT  
(1:10)**



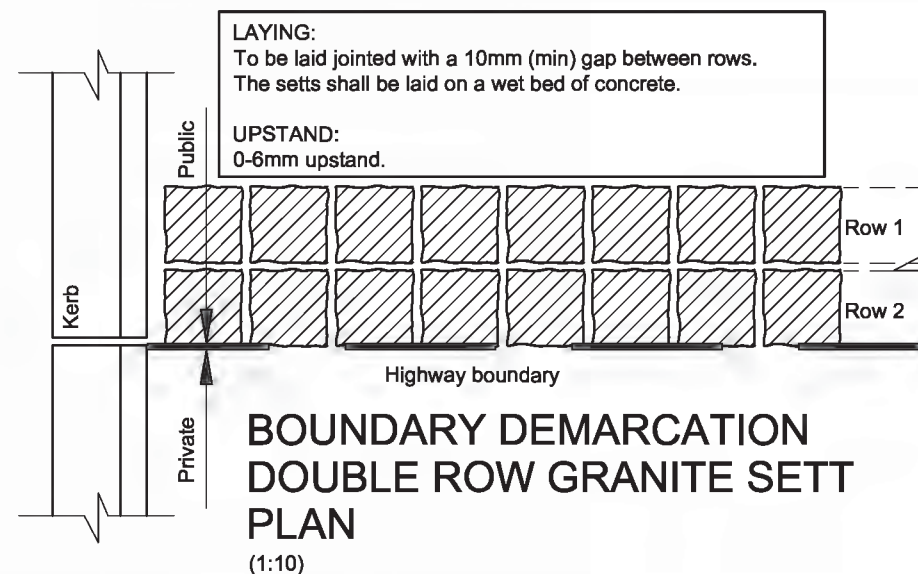
BOUNDARY DEMARCATION  
DOUBLE ROW GRANITE SETT  
SECTION  
(1:10)



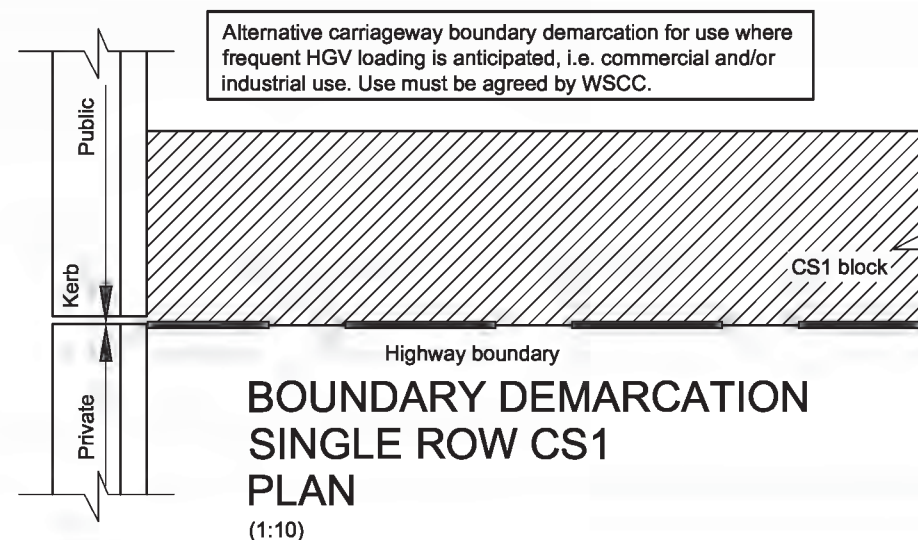
DROP KERB  
TYPE GRANITE SETT  
(1:10)



BOUNDARY DEMARCATION  
TYPE CS1  
SECTION  
(1:10)



**BOUNDARY DEMARCATION  
DOUBLE ROW GRANITE SETT  
PLAN**  
(1:10)



BOUNDARY DEMARCATION  
SINGLE ROW CS1  
PLAN  
(1:10)

- ### NOTES
1. Do not scale from this drawing.
  2. Kerbs to be butt jointed. Where kerb alignments incur 'minor open joint tapers' between formed surfaces mortar jointing shall be used as directed by Highway Inspector.
  3. All full length PCC kerbs are to be mechanically handled.
  4. All precast concrete Kerbs & Edgings shall be to BS EN 1340 & laid to BS 7533-6.
  5. All setts of natural stone shall be to BS EN 1342 & laid to BS 7533-7.
  6. All Kerbs & Edgings bed & backing to be Concrete Class ST1 (C6/8), well compacted. Unless otherwise stated this shall be a minimum bed thickness of 150mm. Carriageway demarcation CS1/Granite setts to be ST4 (C16/20).
  7. The minimum length of any cut kerb shall be 450mm (Half kerb).
  8. The correct radius kerbs shall be used for all radii of 12m or less. For radii between 12m and 20m 600mm long straight units shall be used. Radius kerbs shall be used to form corners of laybys and tapers.
  9. The correct transition kerbs shall be used for all drop kerb and upstand variation locations.
  10. The correct quadrant kerbs shall be used to form corners of square areas and refuge islands.
  11. Full height kerb upstand shall be 125mm unless otherwise agreed by WSCC under a formal request.
  12. Drop kerb upstand shall be 0-6mm for pedestrian crossings, 25mm for vehicular crossings.
  13. Refer to drawing 01 for laying methods.

A	Corrected ref to CS1	DJL	GM	30/11/12
Rev	Revision details	Chkd	Appd	Date
Drawn: MJA			For comment	
Chkd:			For tender	
Appd:			For construction	
Date:			As constructed	
File ref:				
IWP Ref:				

**West Sussex County Council**  
**Infrastructure Group**  
County Hall,  
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Chichester  
West Sussex  
PO19 1RH  
(01243) 642105



Project Name <b>Section 278/30 Highway Agreement</b> <b>Standard Details</b>
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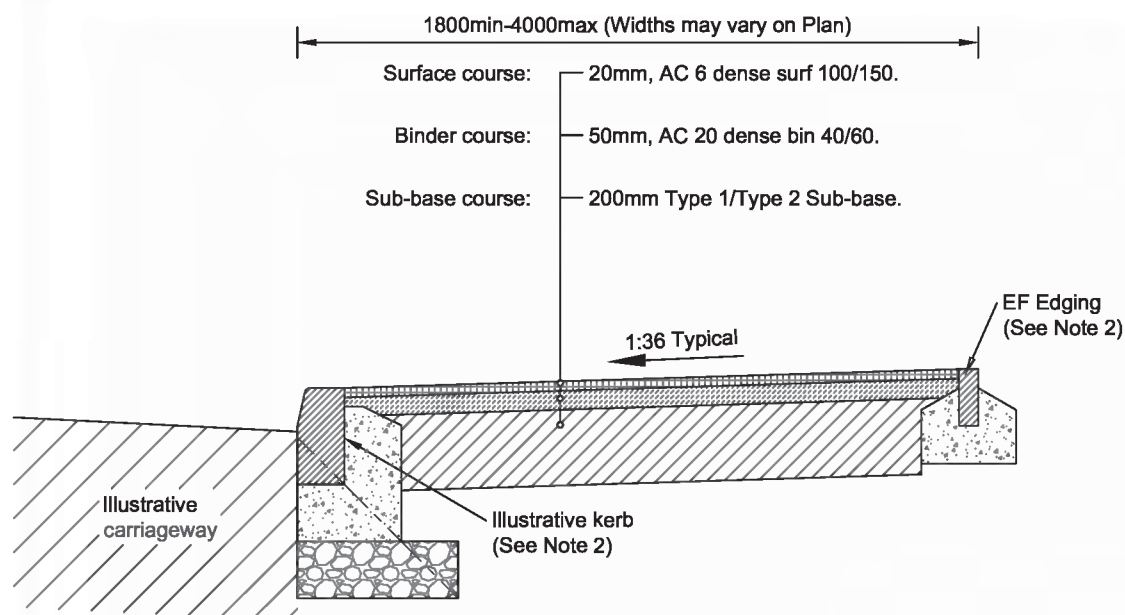
Drawing Title

Approved Kerb Type Selection

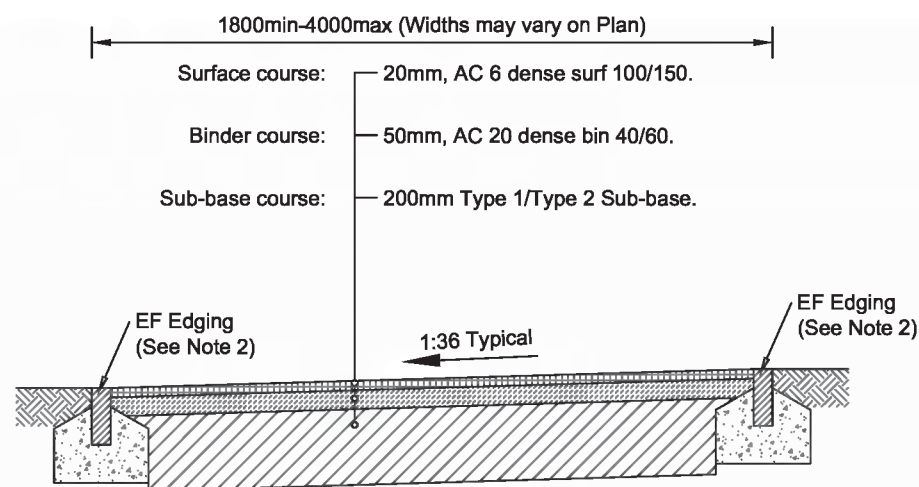
Sheet 2



Original Drawing Size : A3	
Scale : As Shown	Dimensions :
Drawing No. S278/38/03	Rev A

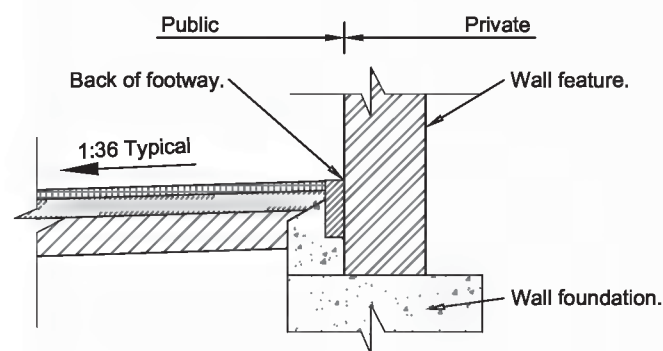


**TYPE 1**  
**FLEXIBLE FOOTWAY CONSTRUCTION**  
**(Adjacent Carriageway)**  
(Scale 1:20)



**TYPE 2**  
**FLEXIBLE FOOTPATH CONSTRUCTION**  
**(Separate from Carriageway)**  
(Scale 1:20)

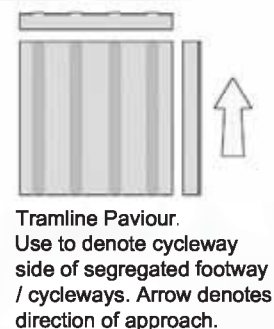
- NOTES**
- Do not scale from this drawing.
  - Refer to drawings 02 & 03 for Approved Kerb Type Selection.
  - Refer to drawing 01 for laying methods.
  - Prior to the commencement of laying the formation shall be treated with an approved residual weedkiller.
  - The Highway Inspector may request inclusion of a non-woven separation membrane to mitigate weed/root intrusion.
  - The Highway Inspector may increase the Sub-base depth or include a geotextile or geogrid on formation where site ground conditions are considered to be sub-standard.
  - Where there are footways without vehicle crossovers sub-base may be reduced to 100mm.
  - None of the details on this drawing are suitable where 'no-dig' construction is required.
  - Where a footpath is proposed between walls, private land or other features then positive drainage will be necessary in order to prevent run off of highway surface water.
  - Tactile paving to be specified and installed in accordance with DETR guidance on the Installation of Tactile Paving 1998



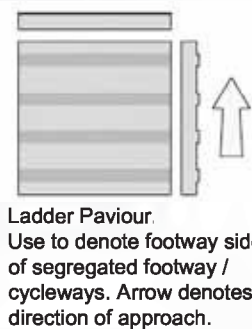
**FLEXIBLE CONSTRUCTION ADJACENT WALL**  
(Scale 1:20)

**PROPOSED WALL SCENARIO**  
The back of footway shall be formed with an EF Edging.

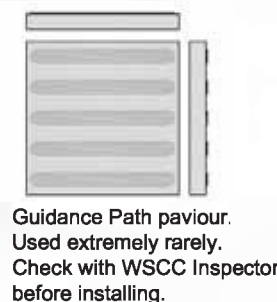
**HISTORIC WALL SCENARIO**  
Where works are proposed directly adjacent an existing wall feature the Highway Inspector shall review the edging requirement on a case by case basis.



**Tramline Paviour.**  
Use to denote cycleway side of segregated footway / cycleways. Arrow denotes direction of approach.



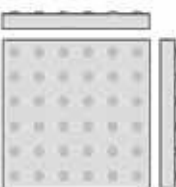
**Ladder Paviour.**  
Use to denote footway side of segregated footway / cycleways. Arrow denotes direction of approach.



**Guidance Path paviour.**  
Used extremely rarely. Check with WSCC Inspector before installing.



**Corduroy Warning Paviour.**  
Use at pedestrian entry onto cycle paths or shared surfaces, and at top and bottom of steps. Arrow denotes direction of approach.



**Blister Paviour.**  
Buff at uncontrolled pedestrian crossing points. Red at Zebra and Signalised crossing points. See Drawing 18

Small element tactile paviments to be used where vehicular overrun is likely to break slabs

**TACTILE PAVING**  
(Scale 1:20) - See note 10

FOOTWAY - FLEXIBLE CONSTRUCTION TABLE SELECTOR			
	FOOTWAY	CROSSOVER TYPE 1 (STANDARD)	CROSSOVER TYPE 2 (INDUSTRIAL)
SUB-BASE			
Type 1 / Type 2 (Clause 803)	200 (See Note 7)	200	270
BASE			
32mm Dense Asphalt Concrete Base 40/60 PEN	-	-	100
BINDER COURSE			
20mm Dense Asphalt Concrete Binder 40/60 PEN (Not required with block paviers)	50	50	50
SURFACE COURSE			
Heavy Traffic Option: HRA 30/10 F Surf 40/60	25	25	25
HRA 45/6 Surf 160/220			
6mm Dense Graded Asphalt Concrete Surface Course 100/150	20	20	-
10mm Close Graded Asphalt Concrete Surface Course 100/150	-	-	30
Blocks on 30mm sand Bed	60	60	60

B	Tactile Paving added	DJL	GM	09.09.13
A	Notes amended	DLS	MJA	28.02.13
Rev	Revision details	Chkd	Appd	Date
Drawn:	MJA		For comment	
Chkd:			For tender	
Appd:			For construction	
Date:			As constructed	
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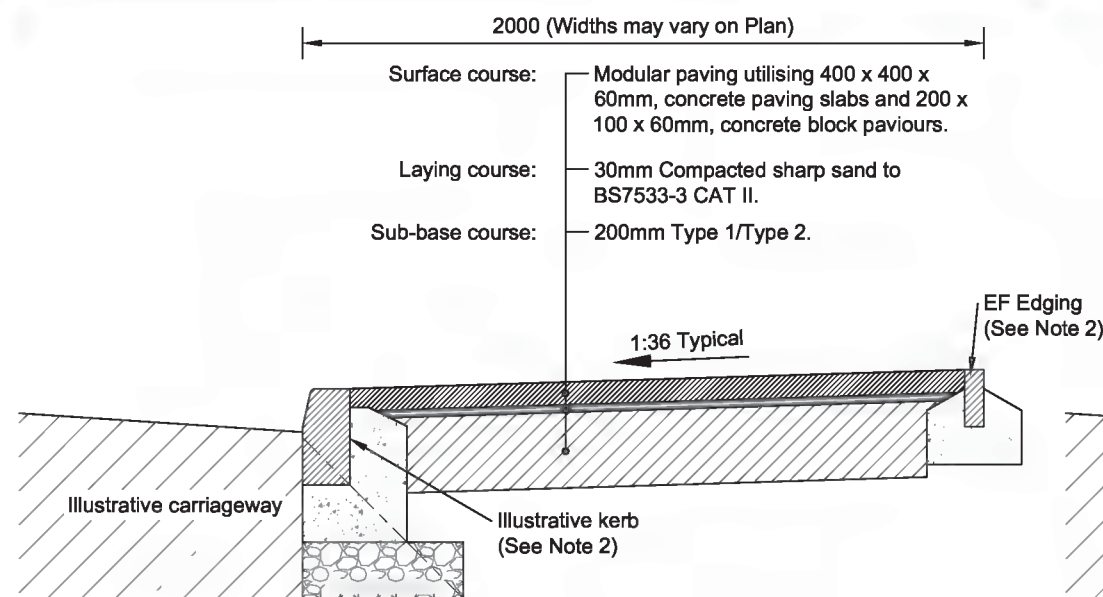
Project Name  
Section 278/38 Highway Agreement  
Standard Details

Drawing Title  
Footway/Cycleway  
Type 1 & 2

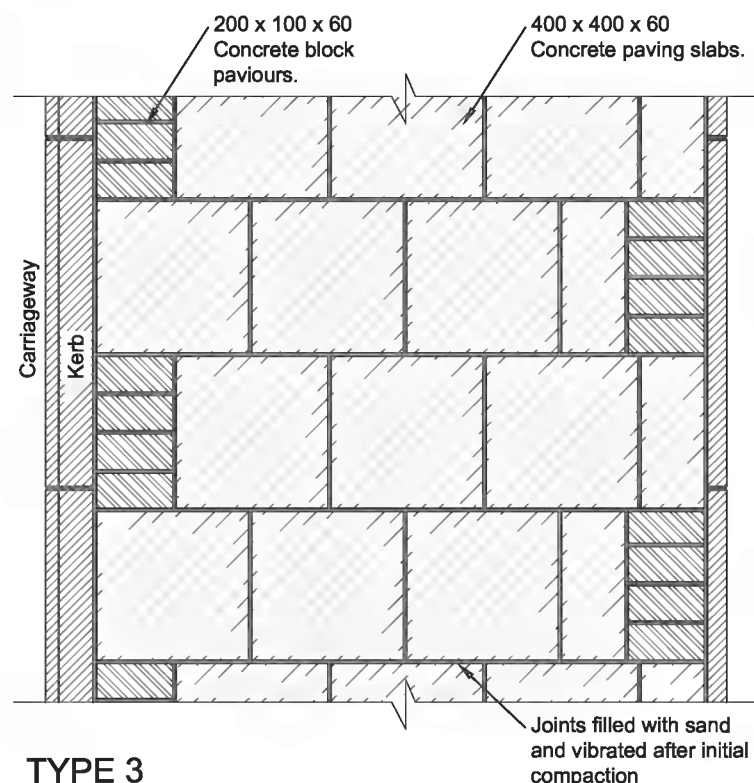


Original Drawing Size :	A3
Scale :	As Shown
Dimensions :	
Drawing No.	Rev
S278/38/04	B

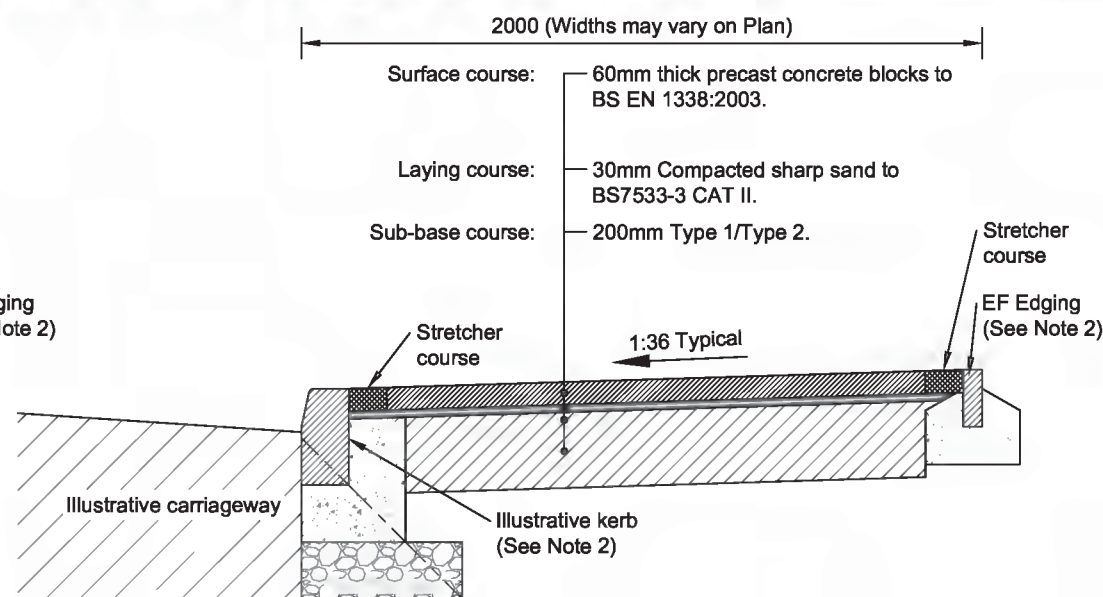




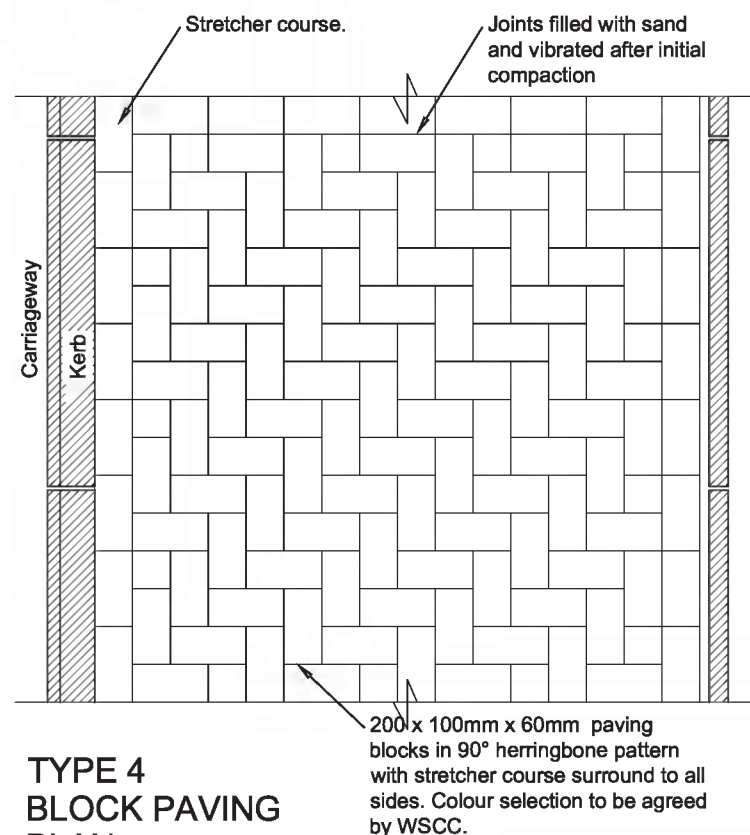
**TYPE 3  
MODULAR PAVING  
SECTION**  
(Scale 1:20)



**TYPE 3  
MODULAR PAVING  
PLAN**  
(Scale 1:20)



**TYPE 4  
BLOCK PAVING  
SECTION**  
(Scale 1:20)



**TYPE 4  
BLOCK PAVING  
PLAN**  
(Scale 1:20)

- 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. The Highway Inspector may increase the Sub-base depth or include a geotextile or geogrid on formation where site ground conditions are considered to be sub-standard.
  7. Where there are footways without vehicle crossovers, sub-base may be reduced to 100mm.
  8. The minimum length of any cut kerb shall be 450mm (Half kerb)
  9. None of the details on this drawing are suitable where 'no-dig' construction is required.
  10. Where a footpath is proposed between walls, private land or other features then positive drainage infrastructure must be provided in order to prevent run off of highway surface water.
  11. Refer to drawings 04 & 06 for Footway Surfacing Options.

- PAVING NOTES:**
- A. All thicknesses in mm.
  - B. A single row stretcher course shall be applied around all ironwork service covers.
  - C. Where recessed covers are installed the laying pattern must match.
  - D. Gaps/joints must be sealed with a proprietary sealing system.
  - E. Type 1/2 Sub-base to be in accordance with Specification for Highway Works Clause 803 (See drg. 04).
  - F. All paving shall be sealed on completion of the works with a proprietary sand stabilisation material.

C	Footway width now 2m	DJL	DJL	13.05.14
B	Binder course omitted	DJL	GM	09.09.13
A	Notes amended	DLS	MJA	28.02.13
Rev	Revision details	Chkd	Appd	Date
Drawn:	MJA		For comment	
Chkd:			For tender	
Appd:			For construction	
Date:			As constructed	
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Project Name  
Section 278/38 Highway Agreement  
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Drawing Title  
Footway/Cycleway  
Type 3 & 4



Original Drawing Size :		A3
Scale :	As Shown	Dimensions :
Drawing No.		Rev
S278/38/05		C





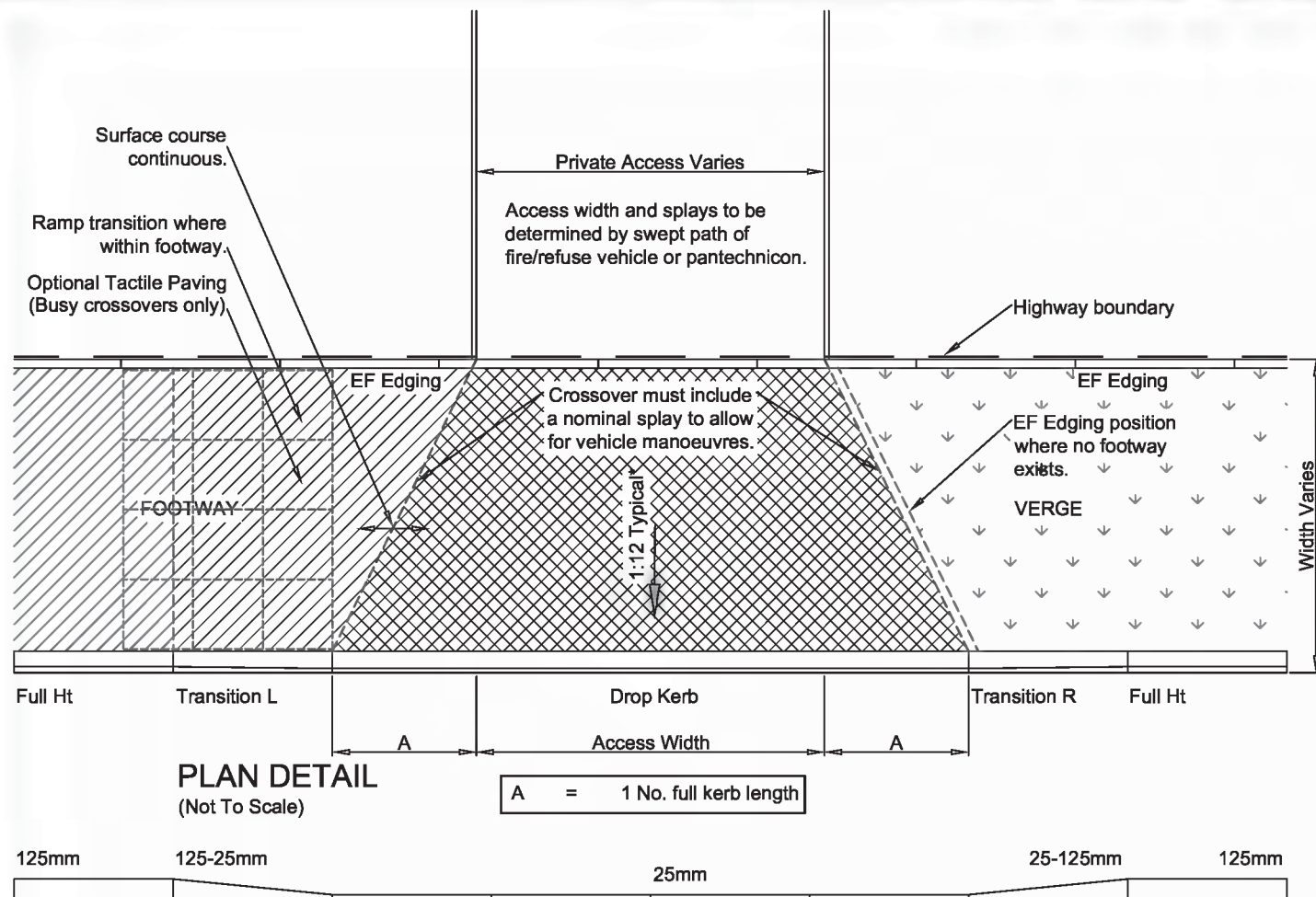
Cellweb (or similar approved) may be used, in accordance with manufacturer's specifications.



FOOTPATH - ALTERNATIVE CONSTRUCTION SELECTOR			
	RURAL TYPE A	RURAL TYPE B	RURAL TYPE C
SUB-BASE			
Type 1 (Clause 803) rolled in 2 No. layers	175	175	175
SURFACE/DRESSING COURSE			
Fittleworth Stone Screened Rubble	75	-	-
Eco-Mix supplied by Dudmans or equivalent approved by WSCC	-	75	-
Limestone Dust	-	-	25

Size :	A3
Scale : As Shown	Dimensions :
Drawing No.	
S278/38/06	

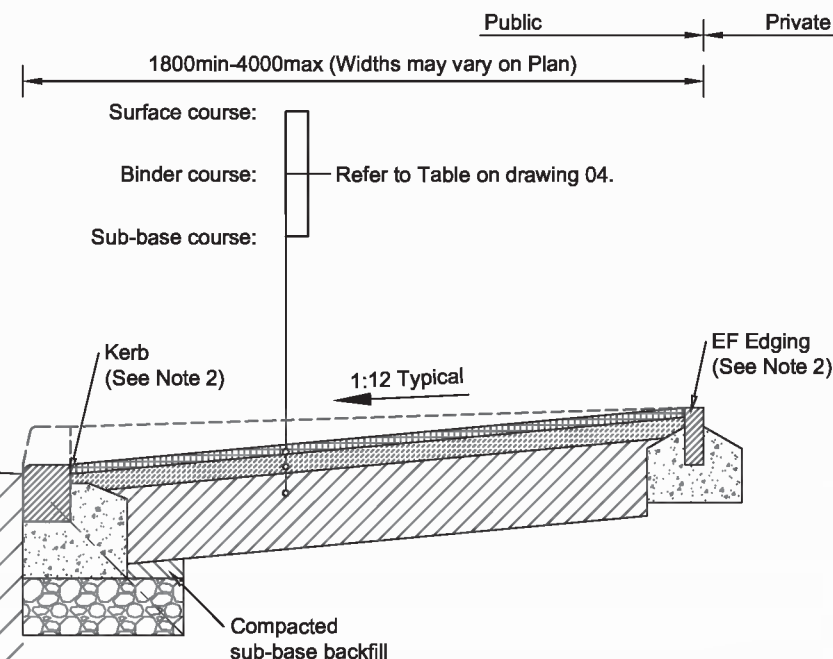




PLAN DETAIL  
(Not To Scale)

ELEVATION DETAIL  
(Not To Scale)

\*Where crossover widths are >9m, or where multiple crossovers are close together footway crossfall shall be reduced to 1 in 40



SECTION DETAIL  
(Scale 1:20)

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. The Highway Inspector may increase the Sub-base depth or include a geotextile or geogrid on formation where site ground conditions are considered to be sub-standard.
7. None of the details on this drawing are suitable where 'no-dig' construction is required.
8. The access width shall be constructed using a whole number of uncut dropper & transition kerbs.
9. Where the gradient of the access centreline exceeds a 1:12 WSCC shall review the suitability.
10. Where the vertical alignment of a private access falls towards the highway boundary, positive drainage infrastructure must be provided in order to prevent run off of on to the Public Highway.
11. Refer to drawing 04 for Footway Surfacing Options.

C	Limit to crossfall at * added	DJL	DJL	13.05.14
B	Tactile and width note added	DJL	GM	09.09.13
A	Notes amended	DLS	MJA	28.02.13
Rev	Revision details	Chkd	Appd	Date
Drawn:	MJA		For comment	
Chkd:			For tender	
Appd:			For construction	
Date:			As constructed	
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Project Name

Section 278/38 Highway Agreement  
Standard Details

Drawing Title

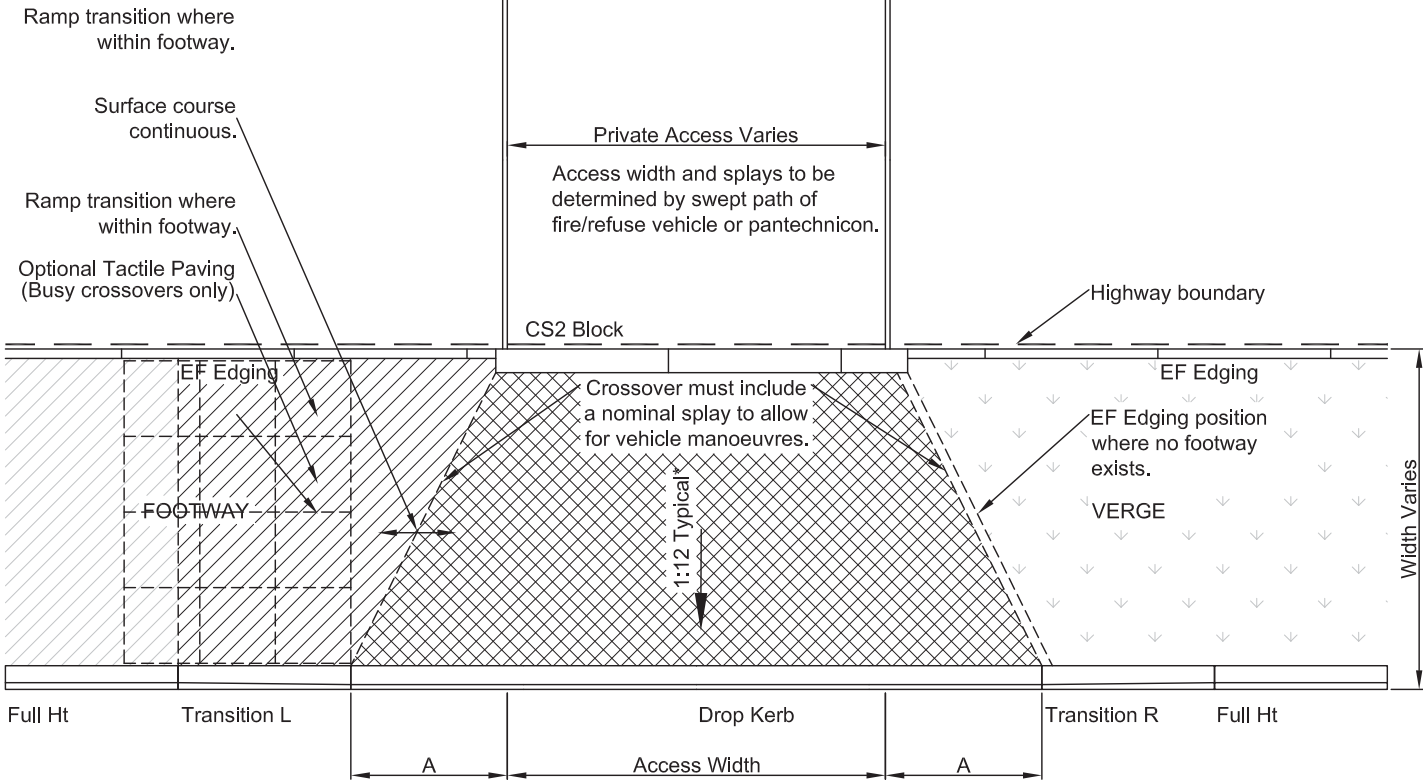
Footway Crossover  
Type 1 - Residential



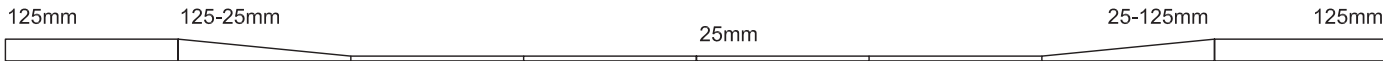
Size : A3  
Scale : As Shown Dimensions :

Drawing No.  
S278/38/07

Rev  
C



PLAN DETAIL  
(Not To Scale)

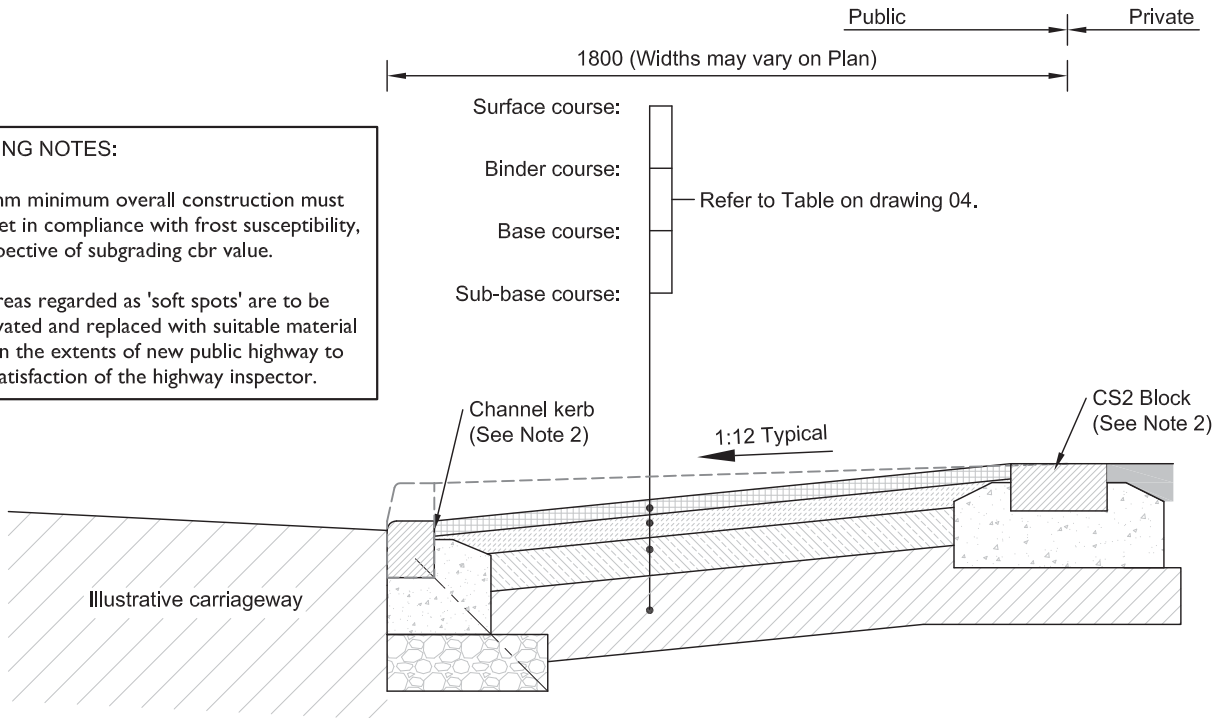


ELEVATION DETAIL  
(Not To Scale)

\*Where crossover widths are >9m, or where multiple crossovers are close together footway crossfall shall be reduced to 1 in 40

- SURFACING NOTES:**
- 450mm minimum overall construction must be met in compliance with frost susceptibility, irrespective of subgrading cbr value.
  - All areas regarded as 'soft spots' are to be excavated and replaced with suitable material within the extents of new public highway to the satisfaction of the highway inspector.

- 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 weed killer.
  - The Highway Inspector may request inclusion of a non-woven separation membrane to mitigate weed/root intrusion.
  - The Highway Inspector may increase the Sub-base depth, or include a geotextile or geogrid on formation where site ground conditions are considered to be sub-standard.
  - None of the details on this drawing are suitable where 'no-dig' construction is required.
  - The access width shall be constructed using a whole number of uncut dropper & transition kerbs.
  - Where the longitudinal vertical alignment of the access centreline exceeds a gradient of 1:12, WSCC shall review the suitability.
  - Where the vertical alignment of a private access falls towards the highway boundary, positive drainage infrastructure must be provided in order to prevent run off of on to the Public Highway.
  - Refer to drawing 04 for Footway Surfacing Options.



SECTION DETAIL  
(Scale 1:20)

C	Crossfall note at * added	DJL	DJL	13.05.14
B	Tactile and width note added	DJL	GM	09.09.13
A	Notes amended	DLS	MJA	28.02.13
Rev	Revision details	Chkd	Appd	Date
Drawn: MJA			For comment	
Chkd:			For tender	
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Date:			As constructed	
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Drawing Title

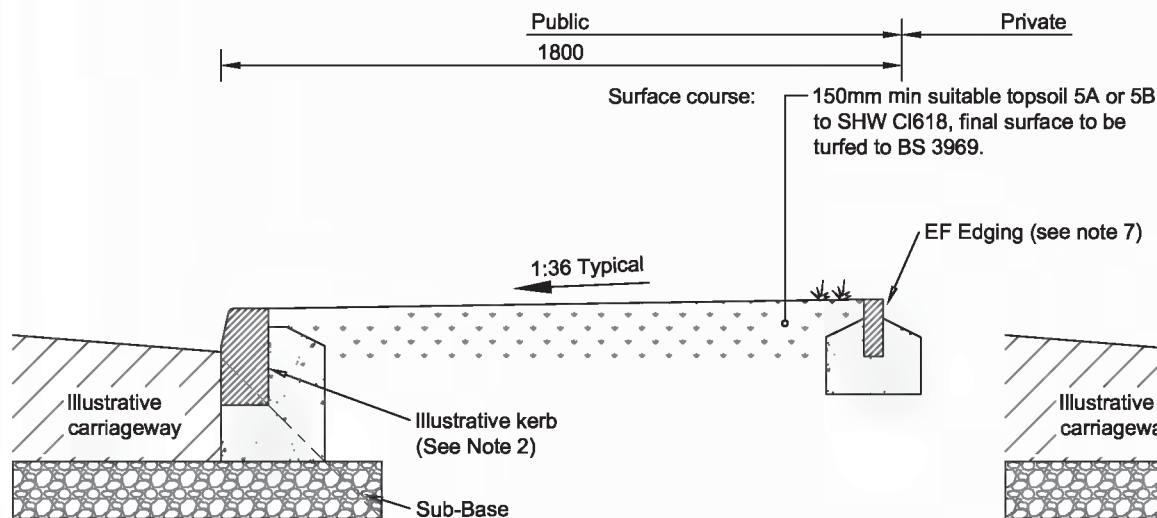
Footway Crossover  
Type 2 - Industrial



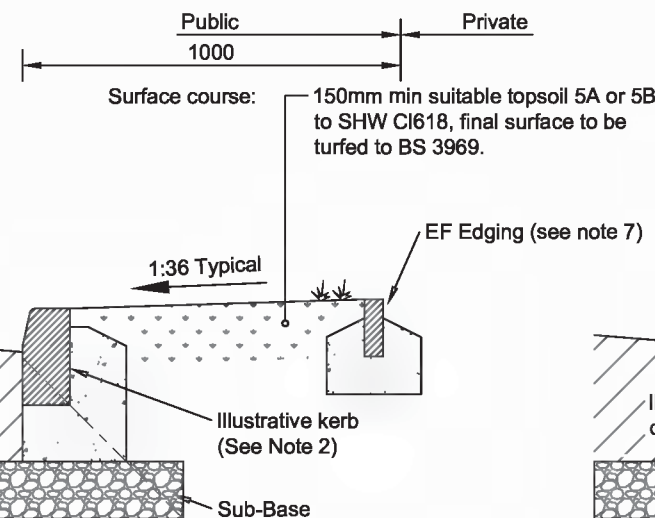
Original Drawing Size : A3	
Scale : As Shown	Dimensions :
Drawing No. S278/38/08	Rev C



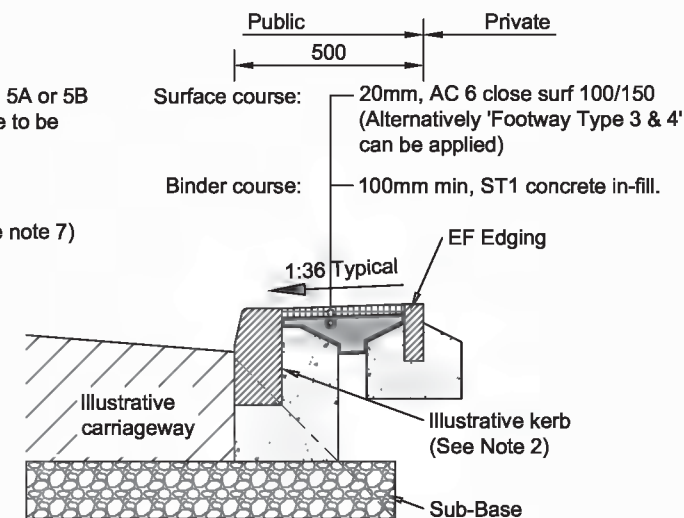
- NOTES
1. Do not scale from this drawing.
  2. Refer to drawings 02 & 03 for Approved Kerb Type Selection.
  3. Refer to drawing 01 for laying methods.
  4. Refer to drawing 10 for service corridor arrangements.
  5. Prior to the commencement of laying the formation shall be treated with an approved residual weedkiller.
  6. Should alternative aesthetic arrangements for highway boundary demarcation be proposed these must be agreed on a site by site basis by WSCC.
  7. EF edge to be omitted where margin is grassed/planted and bounded by a wall.



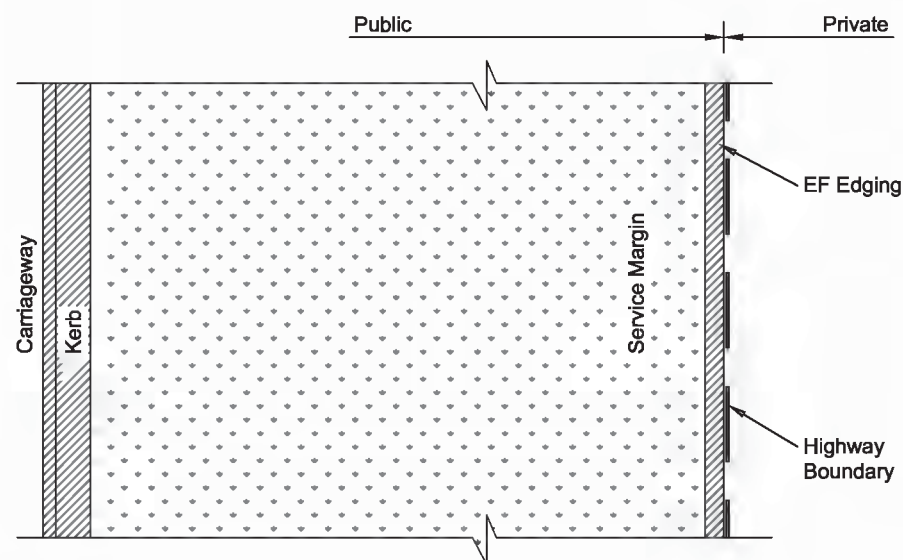
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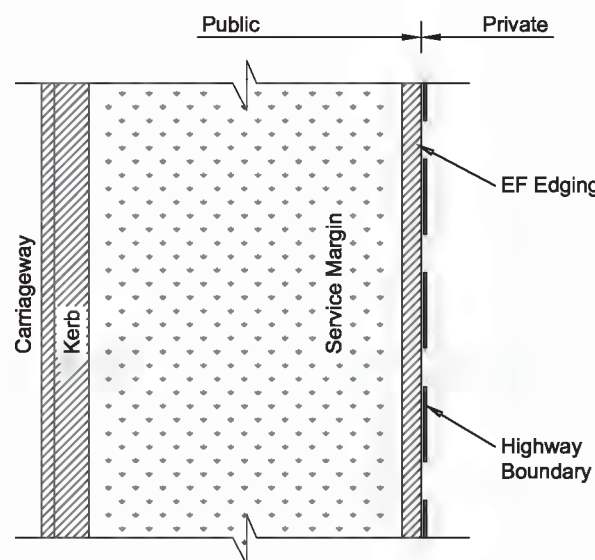
1.0m WIDTH  
(Scale 1:20)



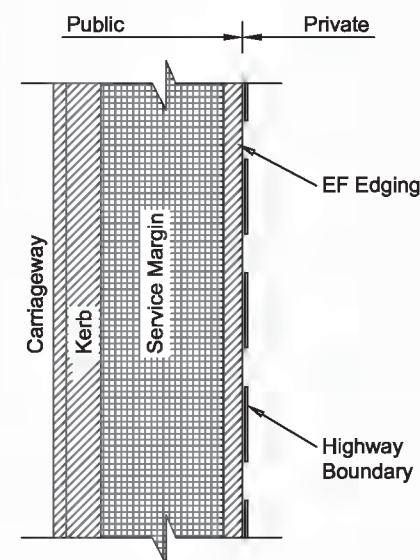
0.5m WIDTH  
(Scale 1:20)



1.8m WIDTH  
DEMARICATION PLAN  
(Scale 1:20)



1.0m WIDTH  
DEMARICATION PLAN  
(Scale 1:20)



0.5m WIDTH  
DEMARICATION PLAN  
(Scale 1:20)

B	Note 7 added	DJL	GM	09.09.13
A	Notes amended	DLS	MJA	28.02.13
Rev	Revision details	Chkd	Appd	Date
Drawn:	MJA		For comment	
Chkd:			For tender	
Appd:			For construction	
Date:			As constructed	
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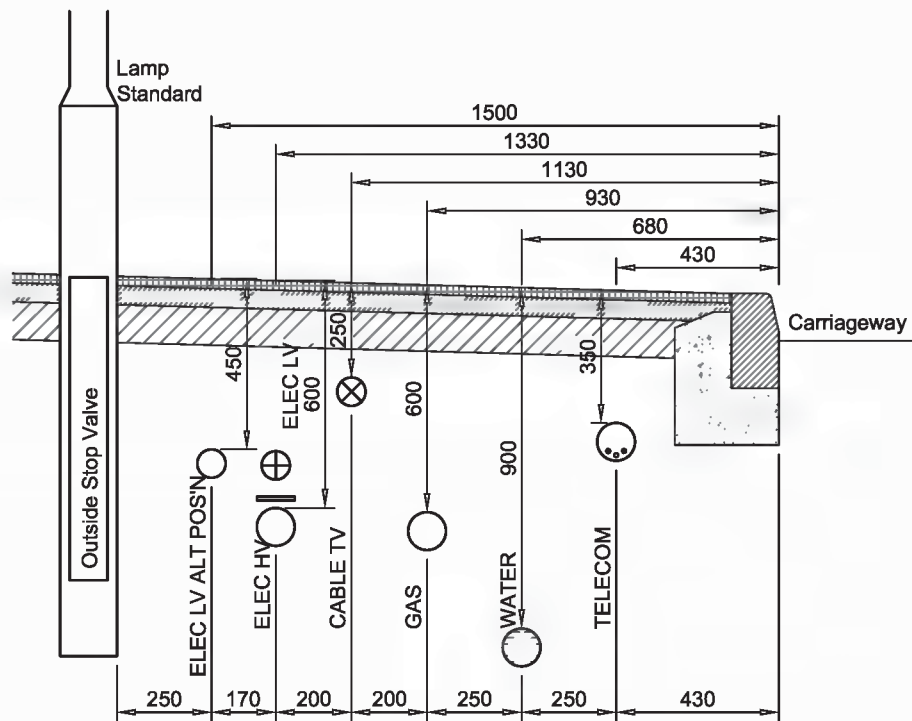
Drawing Title

Service Margins

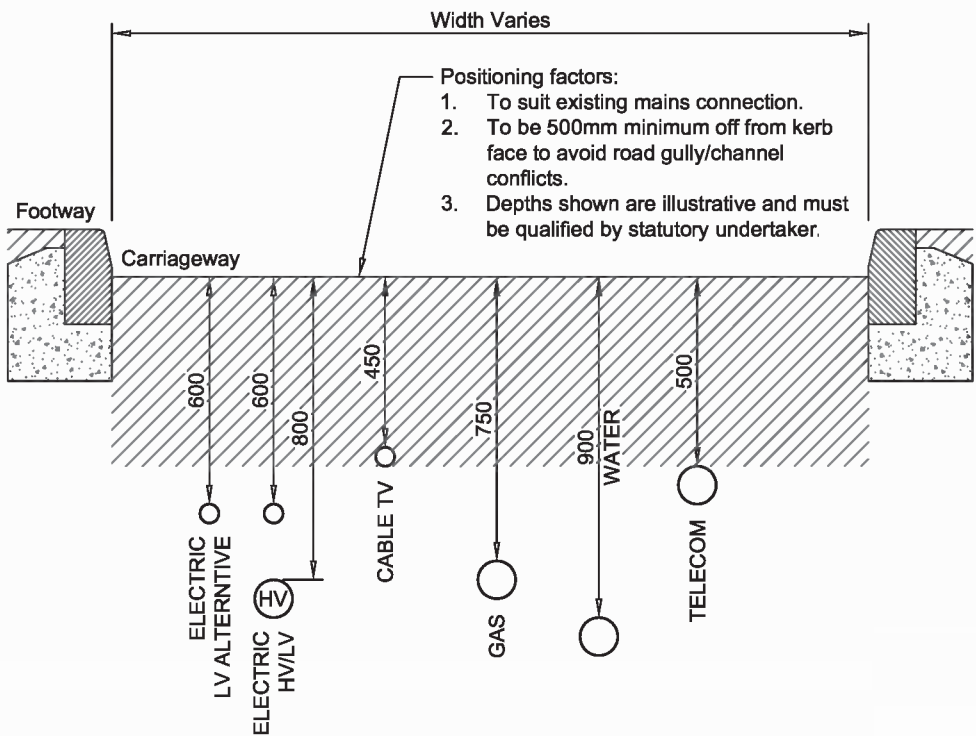


Original Drawing Size :		A3	
Scale : As Shown		Dimensions :	
Drawing No.		Rev	
S278/38/09		B	

- 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. Refer to drawing 09 for service margin arrangements.
  5. All consultant and/or contractor planning and installation of underground utilities apparatus to be in accordance with NJUG (The National Joint Utilities Group) Guidelines, Volumes 1-5.
  6. Any variations to the typical depths shown must be qualified by correspondence evidence obtained from the relevant statutory authority.
  7. Shallow apparatus proposals must be qualified by correspondence evidence obtained from the relevant statutory authority as to the acceptable 'protective measures'. For technical approval a supporting drawing and loading calculations may be required.
  8. With the exception of existing and/or proposed sewers, no services shall be permitted to be routed within or below (includes crossings) a SUDS permeable pavement. Where this is deemed unavoidable WSCC shall review each location on a case by case basis.



RECOMMENDED ARRANGEMENT OF SERVICE MAINS WITHIN FOOTWAY  
(Scale 1:20)



ALTERNATIVE ARRANGEMENT OF SERVICE MAINS WITHIN CARRIAGEWAY  
(Scale 1:20)

SERVICE NOTES:

If services cannot be accommodated within the footway and/or service margin areas then WSCC will consider an alternative arrangement within the carriageway on a case by case basis subject to the following criteria:

- A. Statutory Undertaker Consent. (Streetworks Team)
- B. Maintenance Access.
- C. Likely Road Closures.
- D. Damage due to poor reinstatement works.

A	Notes amended	DLS	MJA	28.02.13
Rev	Revision details	Chkd	Appd	Date
Drawn:	MJA		For comment	
Chkd:			For tender	
Appd:			For construction	
Date:			As constructed	
File ref:				
IWP Ref:				

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Project Name  
Section 278/38 Highway Agreement  
Standard Details

Drawing Title  
Preferred Arrangement of  
Services within Public Highway

APPROVED

APRIL 2017

CONTRACTOR TO ENSURE LATEST DETAILS ARE USED

Drawing Size : A3

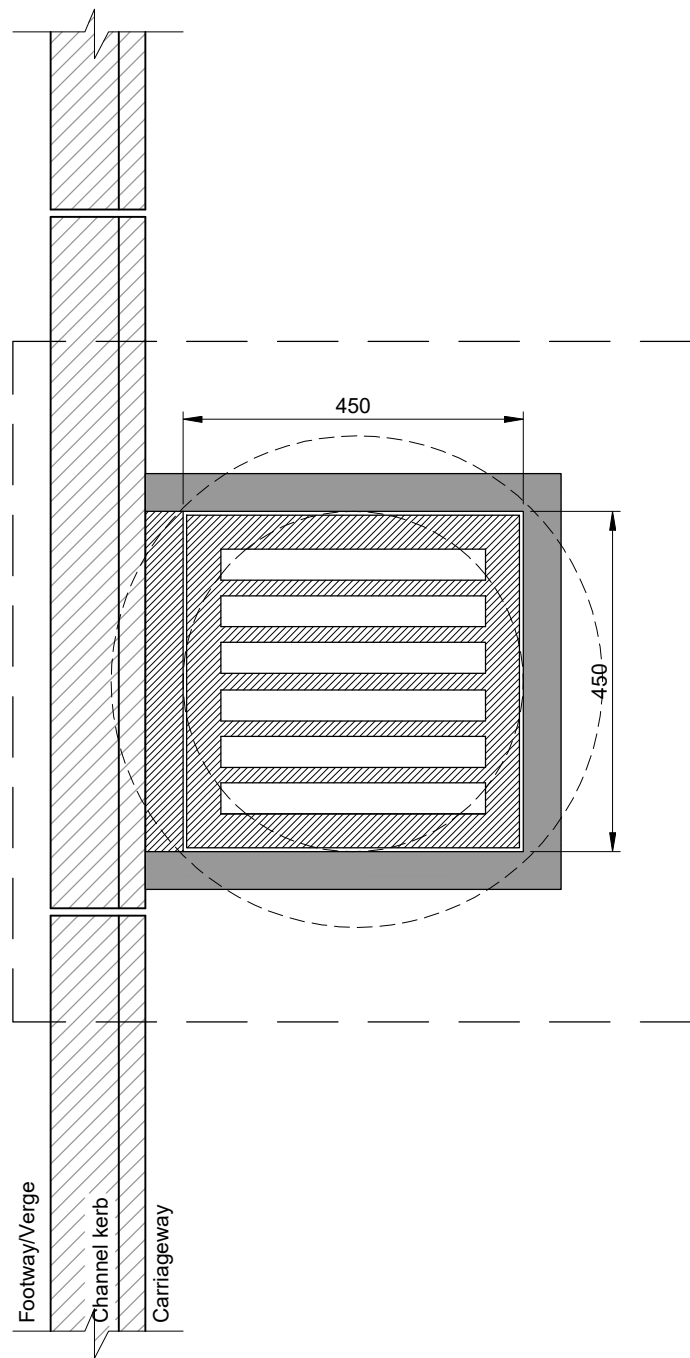
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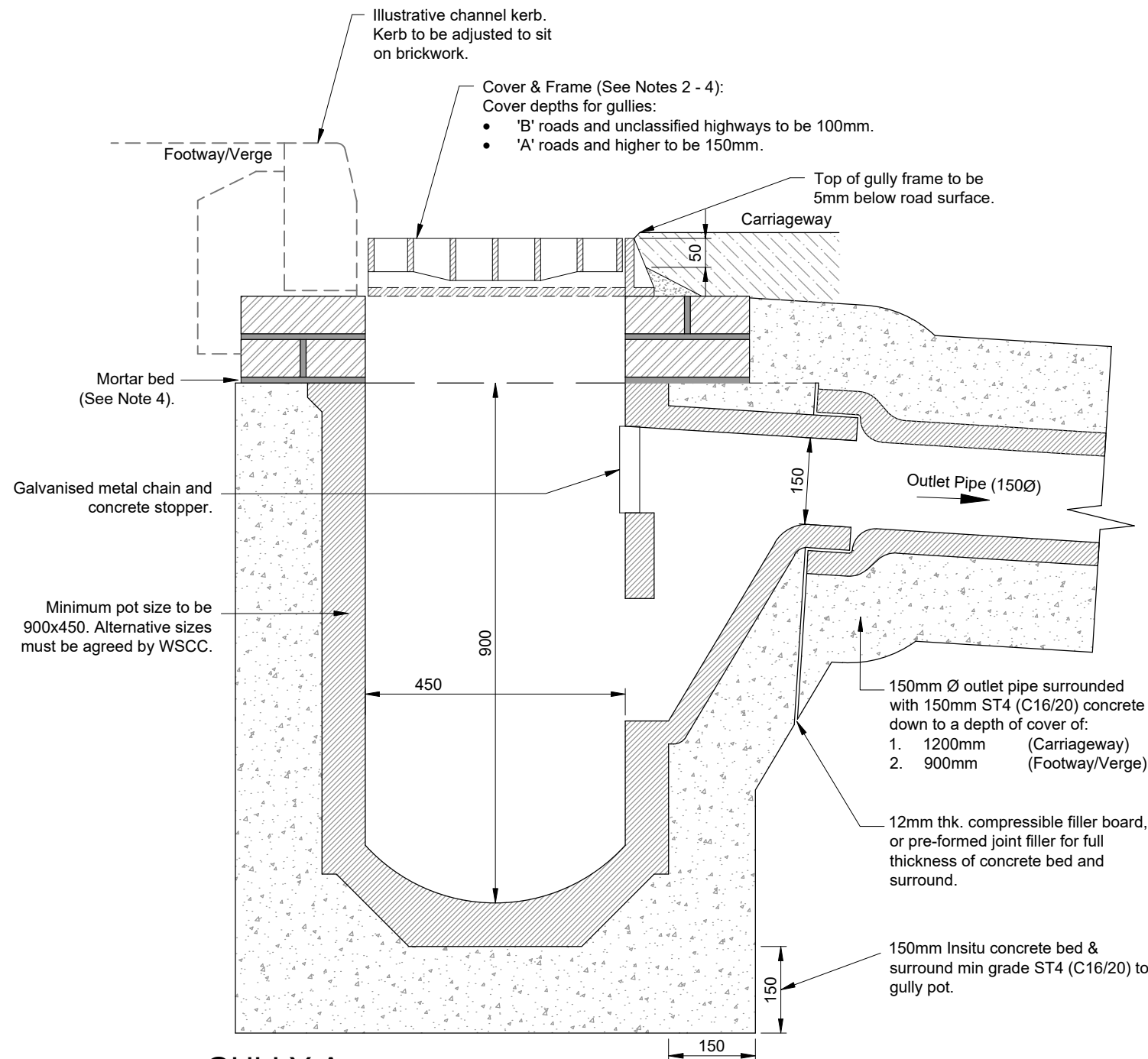
Drawing No. S278/38/10

Rev A





GULLY A  
TYPE: PRECAST CONCRETE  
PLAN  
(1:10)



GULLY A  
TYPE: PRECAST CONCRETE  
SECTION  
(1:10)

- NOTES
- Do not scale from this drawing.
  - All gully grating and frames to be 'hinged' heavy duty ductile iron minimum grade D400 in accordance with BS EN124:1994 & Section 508 of the Specification of Highway Works.
  - All ironwork shall carry a BSI kite mark.
  - Frames shall be bedded on a gauged Class 1 (3:1) sand/cement mortar to Cl.2402 of SHW Mortar Designation (i), and either 2 or 3 courses of Engineering Brickwork Class 'B' to BS EN 771-1:2011.
  - Gully spacing is to be determined from the requirements of HA 102/17, Design Manual for Roads and Bridges, however, maximum area to be drained by one gully: 180 m<sup>2</sup>
  - Gully pots used for carriageway gullies shall be of precast concrete using Sulphate Resisting Cement (SRC) in accordance with BS 5911, part 230, 2004.
  - All gullies to be trapped. Any variations to this i.e. 'non-trapped', 'gully chute' or 'grip' must be qualified and WSCC shall review each location on an individual basis.
  - Selection of gully grating type shall be to suit the application area i.e carriageway, footway/cycleway and to the satisfaction of the highway inspector.
  - Refer to drawing 33 for pipe bedding selection.

**SURFACE WATER PIPES**

Permitted Types as follows:

CLAY: (150Ømin-300Ømax)  
All pipe shall be Vitrified Clayware to BS EN 295-1:1991.

UPVC: (150Ømin-900Ømax) (\*)  
All pipes shall be to BS EN 1401-1:1998.  
All pipes shall be ribbed 'twin wall' to provide a suitable network (pipes & couplings).

CONCRETE: (300Ømin-900Ømax) (\*)  
All pipes shall be made with Sulphate resistant Cement to BS 5911-1:2002.

- ALL jointing and installation shall be undertaken to manufacturers specification.
- ALL materials shall be BBA certified.
- ALL materials shall comply with the Specification for Highway Works.

**STRUCTURES (\*)**

Pipes with a diameter of 0.9m or greater are classified as a structure and will be subject to review by the WSCC structures team.

D	General update	MJA	MJA	15.03.19
C	General update	-	-	07.11.17
B	Plastic gully pots removed	DJL	HM	25.04.17
Rev	Revision details	Chkd	Appd	Date
Drawn:	MJA		For comment	
Chkd:			For tender	
Appd:			For construction	
Date:			As constructed	
File ref:				
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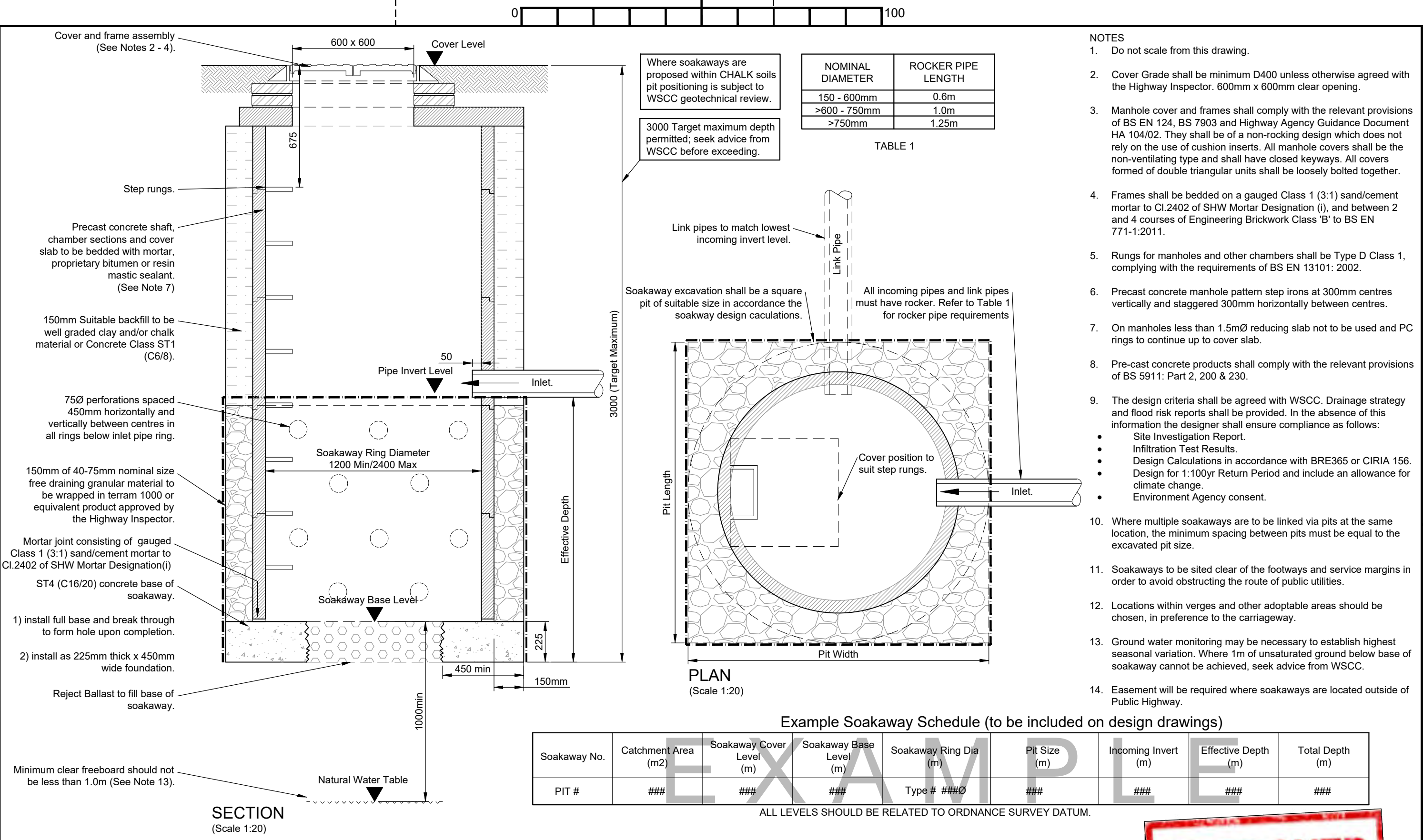
Project Name  
Section 278/38 Highway Agreement  
Standard Details

Drawing Title  
Drainage  
Gully A - Pre-Cast Concrete



Original Drawing Size :	A3
Scale :	As Shown
Dimensions :	
Drawing No.	S278/38/11
Rev	D





E	General update	MJA	MJA	15.03.19
D	General update	-	-	07.11.17
C	Text removed from sample table	DJL	DJL	25.11.14
Rev	Revision details	Chkd	Appd	Date
Drawn:	MJA		For comment	
Chkd:			For tender	
Appd:			For construction	
Date:			As constructed	
File ref:				
IWP Ref:				

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Project Name

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Drawing Title

Drainage  
Precast Concrete Ring Soakaway



Original Drawing Size : A3

Scale : As Shown

Dimensions :

Drawing No.

S278/38/12

Rev

E

CLEAR OPENING	
Chamber Depth <900mm	600mm x 1200mm
Chamber Depth >900mm	600mm x 600mm

TABLE 3.

DIAMETER OF LARGEST PIPE	INTERNAL DIA. OF MANHOLE
<375mm	1200mm
375 - 700mm	1500mm
750 - 900mm	1800mm

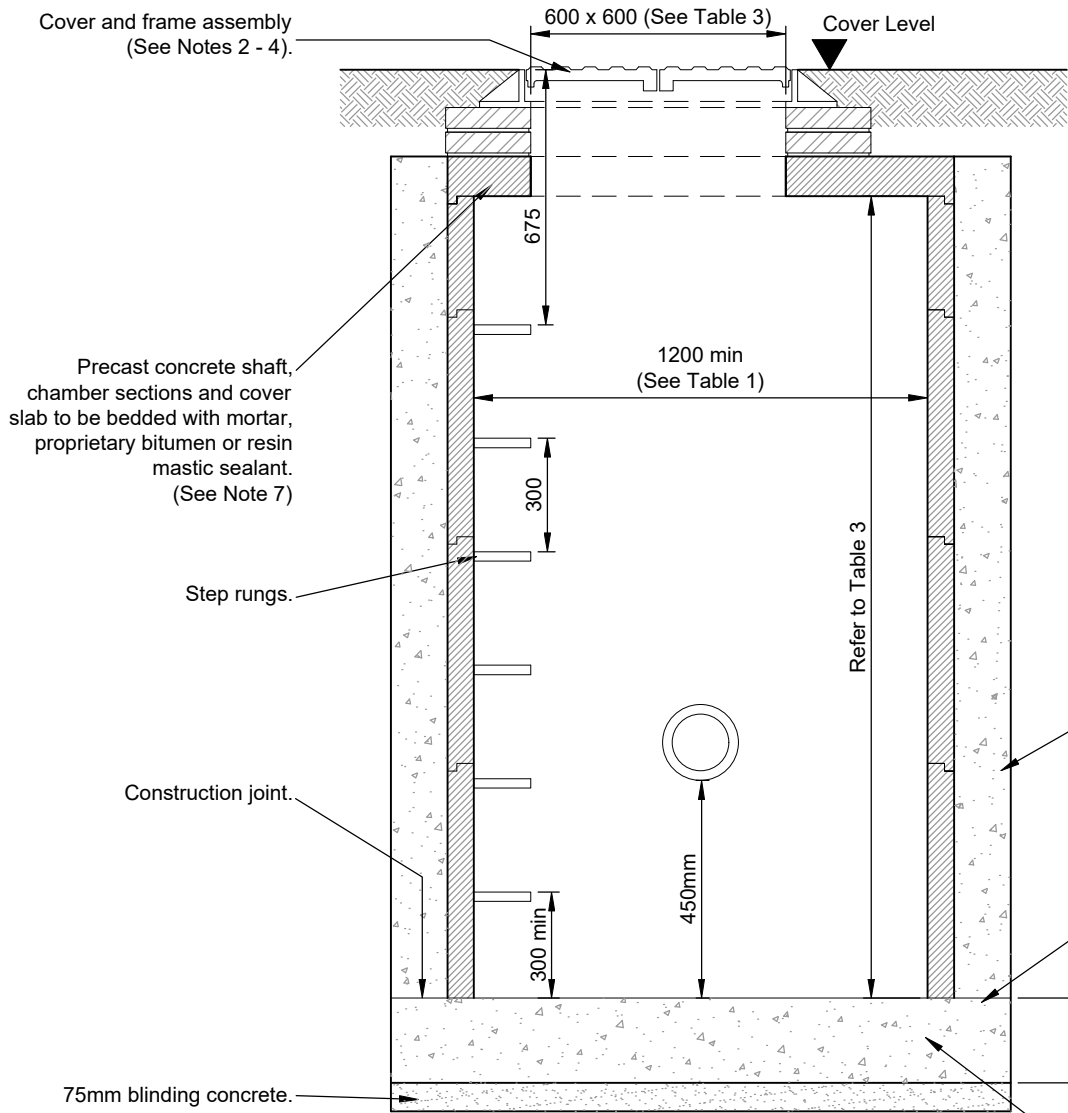
TABLE 1.

NOMINAL DIAMETER	ROCKER PIPE LENGTH
150 - 600mm	0.6m
>600 - 750mm	1.0m
>750mm	1.25m

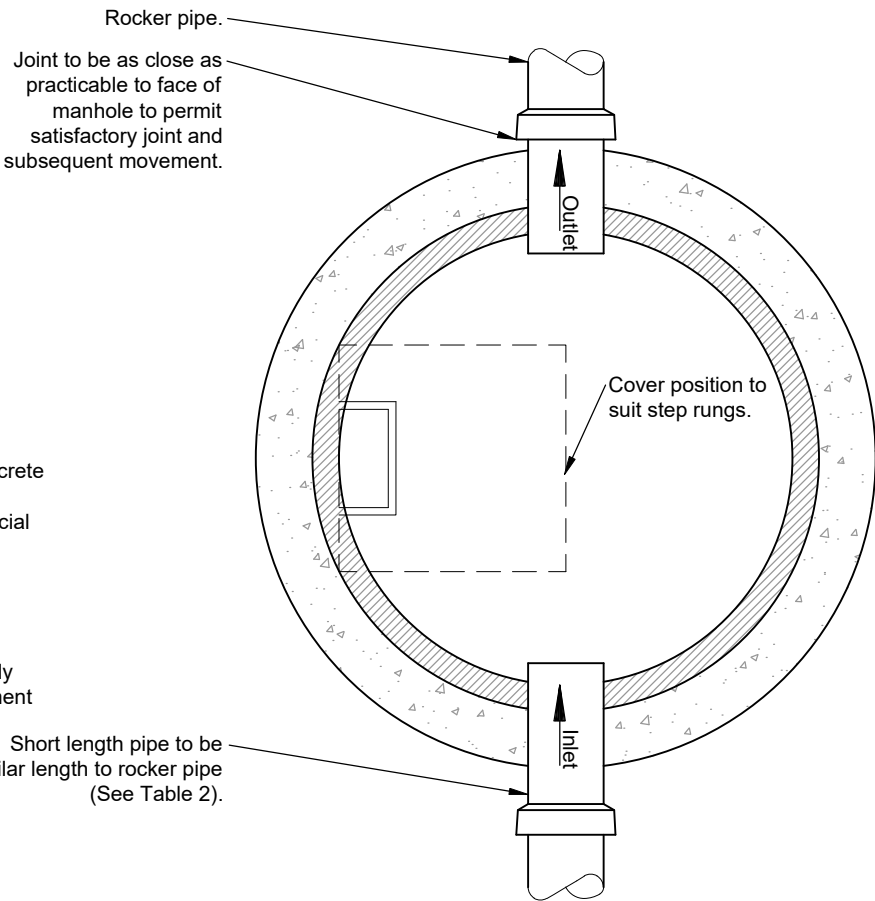
TABLE 2

Note: Opening to be offset from centre by approximately 200mm for 1200mm diameter shaft with rungs/ladder.

Minimum depth from cover level to base 1.3m.  
Maximum depth from cover level to soffit of pipe 3.0m.



SECTION  
(Scale 1:20)



PLAN  
(Scale 1:20)

NOTES

- Do not scale from this drawing.
- Cover Grade shall be minimum D400 unless otherwise agreed with the Highway Inspector. 600mm x 600mm clear opening (Refer to Table 3).
- 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. All covers formed of double triangular units shall be loosely bolted together.
- Frames shall be bedded on a gauged Class 1 (3:1) sand/cement mortar to Cl.2402 of SHW Mortar Designation (i), and between 2 and 4 courses of Engineering Brickwork Class 'B' to BS EN 771-1:2011.
- Rungs for manholes and other chambers shall be Type D Class 1, complying with the requirements of BS EN 13101: 2002.
- Precast concrete manhole pattern step irons at 300mm centres vertically and staggered 300mm horizontally between centres.
- On manholes less than 1.5mØ reducing slab not to be used and PC rings to continue up to cover slab.
- Pre-cast concrete products shall comply with the relevant provisions of BS 5911: Part 2, 200 & 230.
- The number of incoming branches and invert levels may vary.
- Cover and frame may be installed as a 'gully top' where appropriate.
- Min pipe diameter for carrier pipes to be 225mm.
- Min pipe diameter for gully laterals to be 150mm.

E	General update	MJA	MJA	15.03.19
D	General update	MJA	HM	07.11.17
C	Min pipe diameters added	DJL	HM	25.04.17
Rev	Revision details	Chkd	Appd	Date
Drawn:	MJA		For comment	
Chkd:			For tender	
Appd:			For construction	
Date:			As constructed	
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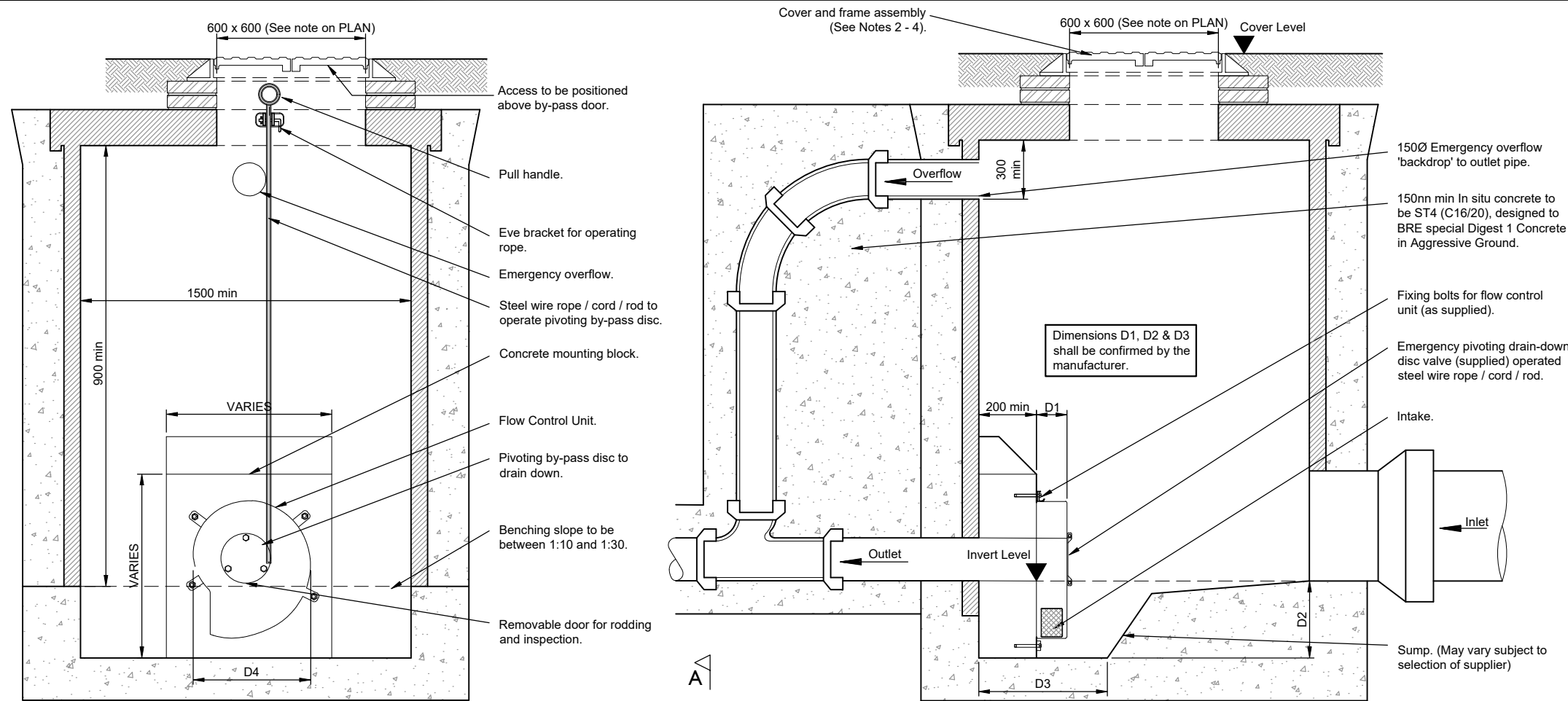
Drawing Title

Drainage  
Type B Catchpit



Original Drawing Size : A3	
Scale : As Shown	Dimensions :
Drawing No. S278/38/13	Rev E





- NOTES
- Do not scale from this drawing.
  - Cover Grade shall be minimum D400 unless otherwise agreed with the Highway Inspector. 600mm x 600mm clear opening (See note on PLAN).
  - 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. All covers formed of double triangular units shall be loosely bolted together.
  - 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.
  - Precast concrete manhole pattern step irons at 300mm centres vertically and staggered 300mm horizontally between centres.
  - On manholes less than 1.5mØ reducing slab not to be used and PC rings to continue up to cover slab.
  - Pre-cast concrete products shall comply with the relevant provisions of BS 5911: Part 2, 200 & 230.
  - The flow control quotation and specification, and chamber details shall be supplied to WSCC in order that the 'commuted sum' can be calculated.
  - The chamber shall be of suitable size, type and construction relative to the flow control unit dimensions. The chamber must be installed in strict accordance with the supplier recommendations. Any variations shall be reported to WSCC.

- CONDITIONS OF USE:
- The applicant must obtain an approval in principle with WSCC for use of such flow control. The design 'performance' shall be agreed with WSCC (head/flow). Drainage strategy and flood risk reports shall be provided. In the absence of this information evidence shall be provided to demonstrate historic and/or Greenfield flows.
  - All flow control manholes shall include an emergency overflow located just under the biscuit. This shall be a minimum 150Ø. The overflow is only permitted to operate during exceedance events in excess of 1:30yr+30% climate change.
  - Flow control to have a minimum of 75mm solid handling.
  - Opening size minimum shall be 600mm x 600mm. Size must be designed to suit the selected flow control apparatus and future maintenance requirements for removal/replacement.

C	General update	MJA	MJA	15.03.19
B	Notes amended	MJA	MJA	07.11.17
A	Notes amended	DLS	MJA	28.02.13
Rev	Revision details	Chkd	Appd	Date
Drawn:	MJA		For comment	
Chkd:			For tender	
Appd:			For construction	
Date:			As constructed	
File ref:				
IWP Ref:				

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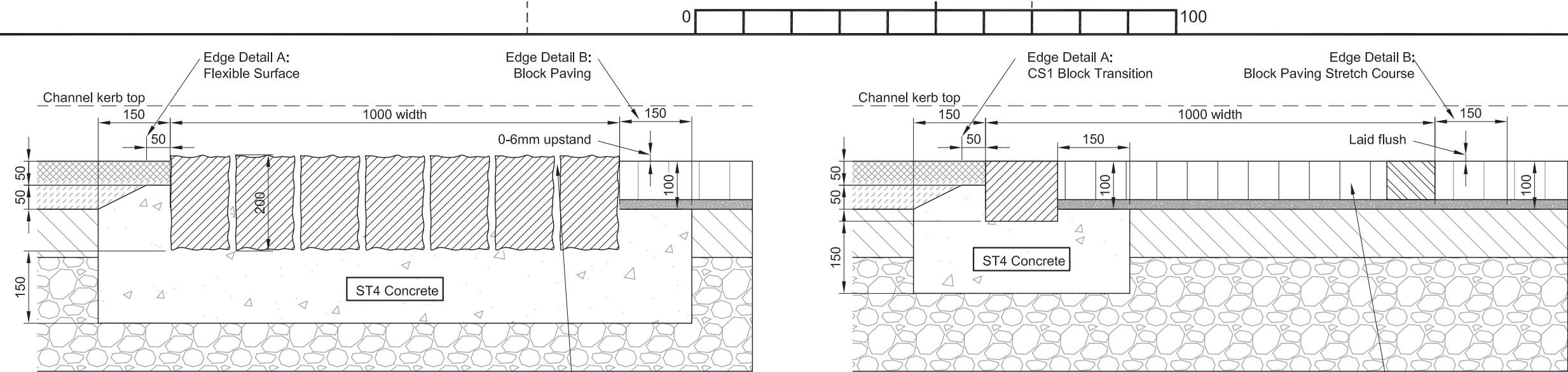
Project Name  
Section 278/38 Highway Agreement  
Standard Details

Drawing Title  
Vortex Flow Control  
Type B Manhole



Original Drawing Size :	A3
Scale :	As Shown
Dimensions :	
Drawing No.	Rev
S278/38/14	C

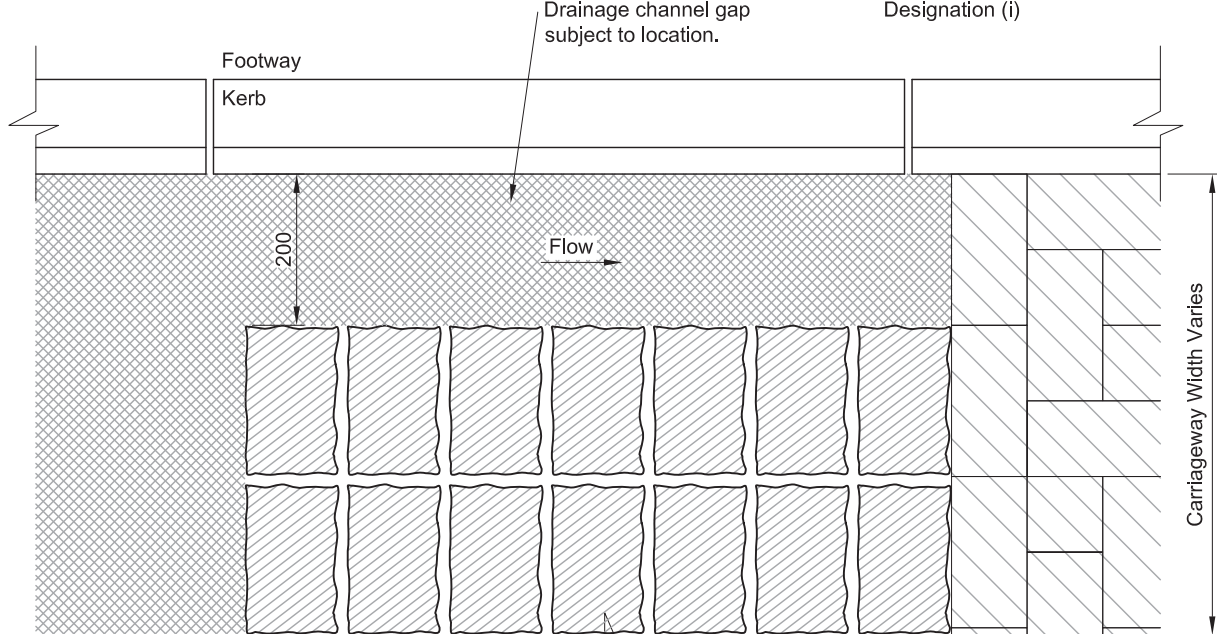




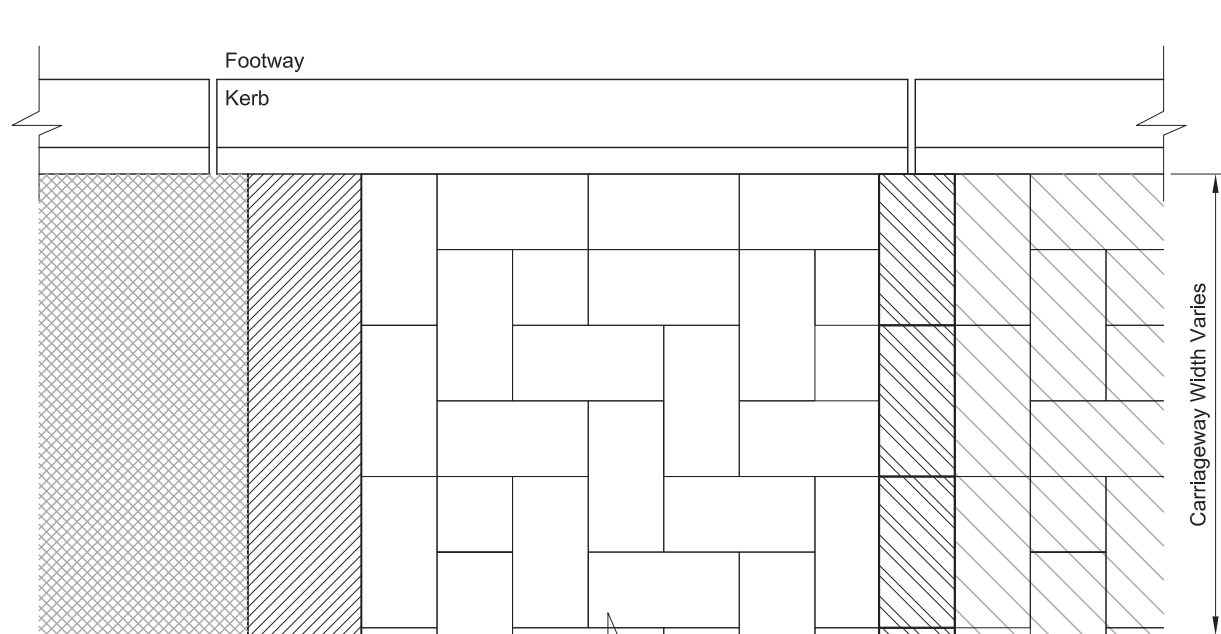
GRANITE SETT RUMBLE STRIP  
SECTION  
(1:10)

BLOCK PAVED RUMBLE STRIP  
SECTION  
(1:10)

- NOTES
- Do not scale from this drawing.
  - Kerbs to be butt jointed. Where kerb alignments incur 'minor open joint tapers' between formed surfaces mortar jointing shall be used as directed by Highway Inspector.
  - All full length PCC kerbs are to be mechanically handled.
  - All precast concrete Kerbs & Edgings shall be to BS EN 1340 & laid to BS 7533-6.
  - All setts of natural stone shall be to BS EN 1342 & laid to BS 7533-7.
  - All Kerbs & Edgings bed & backing forming rumble strip to be Concrete Class ST4 (C16/20), well compacted. Unless otherwise stated this shall be a minimum bed thickness of 150mm.
  - The minimum length of any cut kerb shall be 450mm (Half kerb).
  - The correct radius kerbs shall be used for all radii of 12m or less. For radii between 12m and 20m 600mm long straight units shall be used. Radius kerbs shall be used to form corners of laybys and tapers.
  - The correct transition kerbs shall be used for all drop kerb and upstand variation locations.
  - The correct quadrant kerbs shall be used to form corners of square areas and refuge islands. Cut quadrants are permissible.
  - Full height kerb upstand shall be 125mm unless otherwise agreed by WSCC under a formal request.
  - Drop kerb upstand shall be 0-6mm for pedestrian crossings, 25mm for vehicular crossings.



GRANITE SETT RUMBLE STRIP  
PLAN  
(1:10)



BLOCK PAVED RUMBLE STRIP  
PLAN  
(1:10)

**LAYING:**  
To be laid jointed with a 10mm (min) gap between rows. The setts shall be laid on a wet bed of concrete.

**UPSTAND:**  
0-6mm upstand.

**DRAINAGE:**  
Setts shall be laid leaving a 200mm gap from the kerb face where necessary to maintain surface water conveyance.

**LAYING:**  
Paviours shall be butt jointed and laid on a wet bed of concrete.

C	Block paviour joint removed	DJL	HM	25.04.17
B	Mortar designation updated	DJL	DJL	14.12.15
A	Notes amended	DLS	MJA	28.02.13
Rev	Revision details	Chkd	Appd	Date
Drawn: MJA			For comment	
Chkd:			For tender	
Appd:			For construction	
Date:			As constructed	
File ref:				
IWP Ref:				

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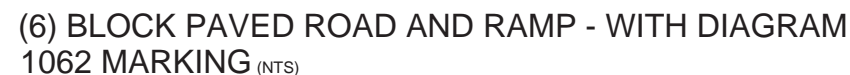
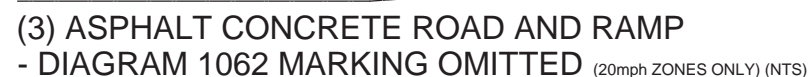
Project Name  
Section 278/38 Highway Agreement  
Standard Details

Drawing Title  
Street Furniture  
Rumble Strips



Original Drawing Size :	A3
Scale : As Shown	Dimensions :
Drawing No. S278/38/15	Rev C





1. Do not scale from this drawing.
2. Kerbs to be butt jointed. Where kerb alignments incur 'minor open joint tapers' between formed surfaces mortar jointing shall be used as directed by Highway Inspector.
3. All full length PCC kerbs are to be mechanically handled.
4. All precast concrete Kerbs & Edgings shall be to BS EN 1340 & laid to BS 7533-6.
5. All setts of natural stone shall be to BS EN 1342 & laid to BS 7533-7.
6. All Kerbs & Edgings bed & backing forming rumble strip to be Concrete Class ST4 (C16/20), well compacted. Unless otherwise stated this shall be a minimum bed thickness of 150mm.
7. The minimum length of any cut kerb shall be 450mm (Half kerb).
8. The correct radius kerbs shall be used for all radii of 12m or less. For radii between 12m and 20m 600mm long straight units shall be used. Radius kerbs shall be used to form corners of laybys and tapers.
9. The correct transition kerbs shall be used for all drop kerb and upstand variation locations.
10. Markings to diagram 1062 may be omitted within 20mph Zones subject to Safety Audit. Ramps shall be designed to be conspicuous to approaching drivers, particularly where markings to diag 1062 are omitted. - This may be achieved through the use of colour contrasting materials
11. Block paved ramped sections are only permissible in 20mph Zones where markings to diag 1062 are omitted.
12. Plateau sections of speed tables shall be a minimum of 4m in length, and on through routes, bus routes and spine roads they shall be at least 6m in length.
13. Speedcheck (or similar) block may be replaced by an inverted 255 x 125 kerb (laid flush) except at tops of ramps where both ramp face and plateau are block paved.
14. Road centre-line markings to diagram 1004 shall be provided over the ramp wherever triangle hump markings to diag 1062 are installed except where there is a controlled pedestrian crossing on the ramp, or when the width of the hump is less than 5m.
15. Edge of road markings to diagram 1012.1 shall be placed alongside the ramp wherever triangle hump markings to diag 1062 are installed to indicate the edge of a road hump which does not extend across the full width of the carriageway but ends within 300mm of the kerb-line, except where single or double yellow line markings to diag 1017 or 1018.1 are installed.
16. Tables/humps on cambered roads shall match the profile of the underlying road surface

D	Note 16	DL	DL	14/12/2015
C	Ramp height now 65mm	DL	DL	13/05/2014
B	Notes 14 and 15	DL	GM	09/09/2013
	Extensive reworking			
Rev	Revision details	Chkd	Appd	Date
Drawn: MJA			For comment	
Chkd:			For tender	
Appd:			For construction	
Date:			As constructed	
File ref:				
IWP Ref:				

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## Section 278/38 Highway Agreement Standard Details

## Street Furniture Ramp Feature

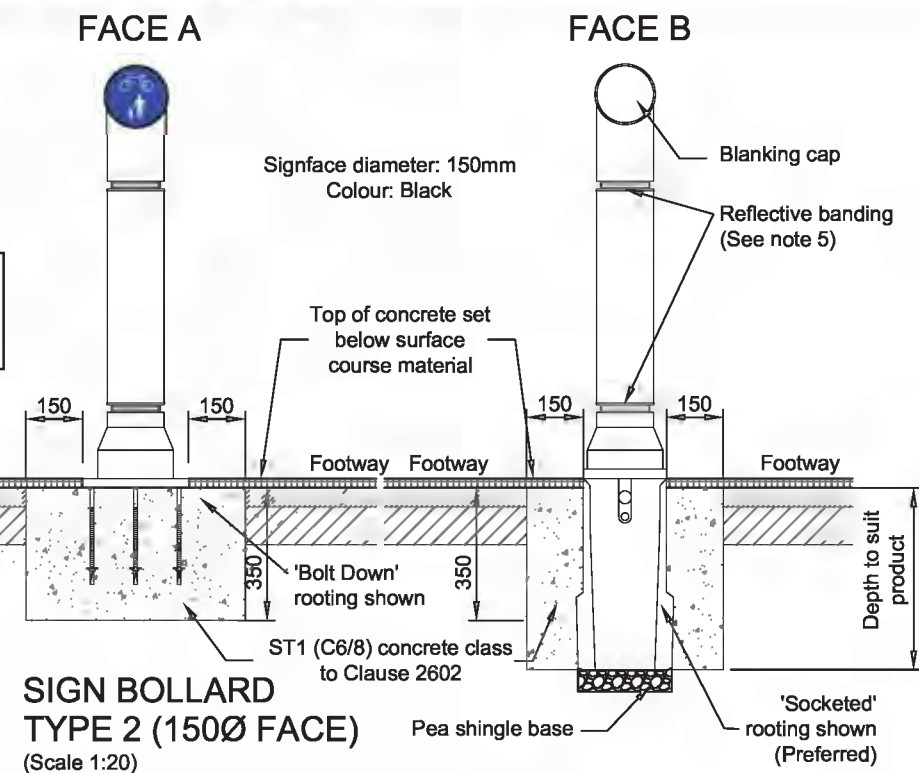
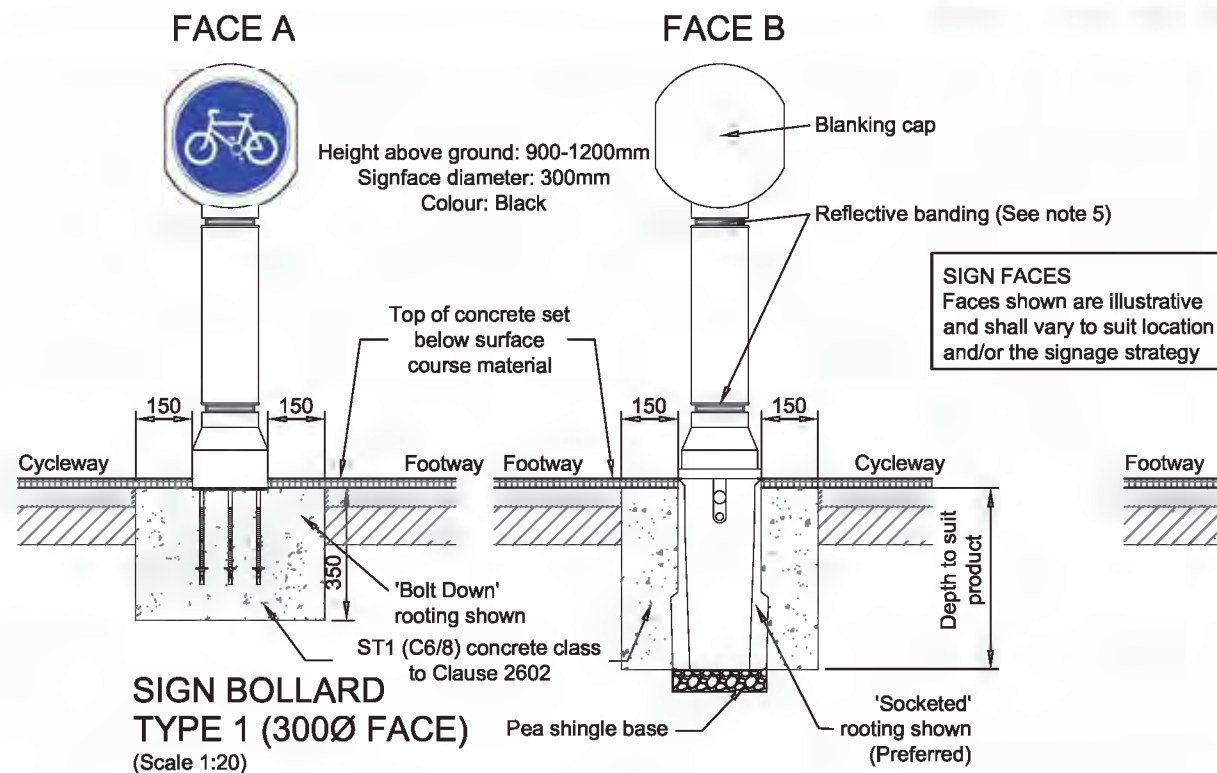


Scale : NTS	Dimensions : mm
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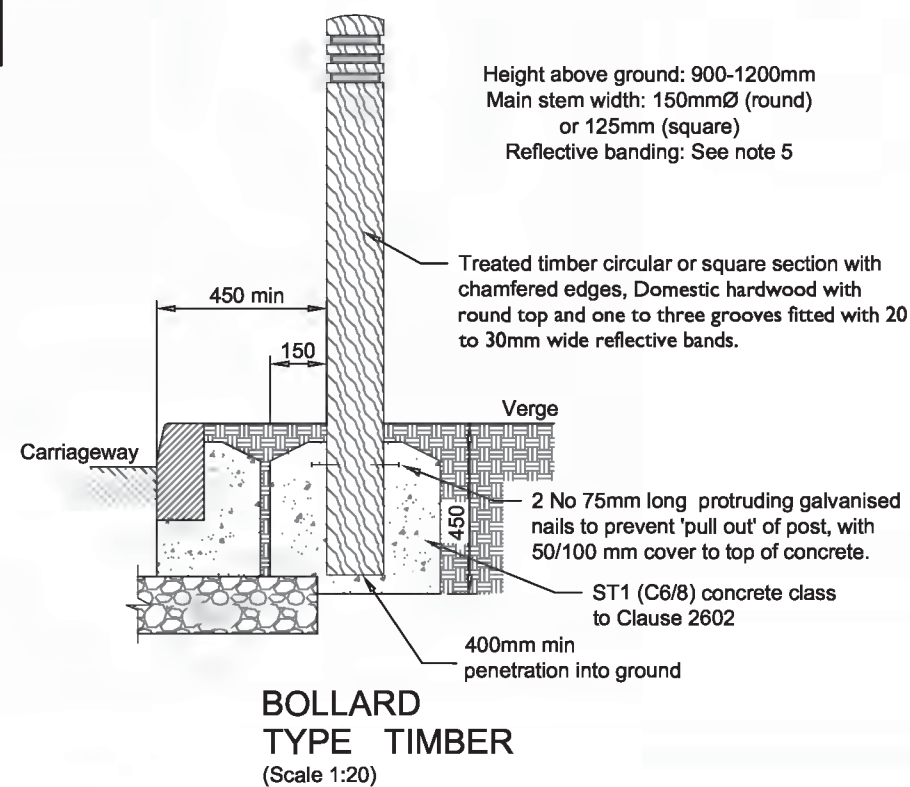
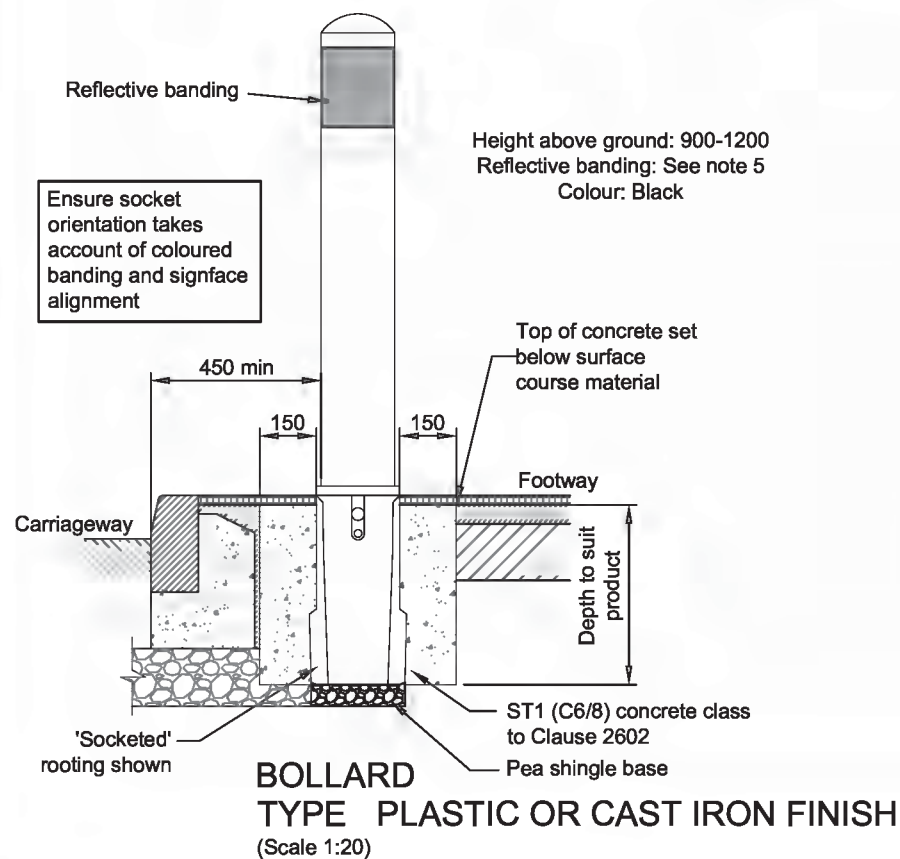
Drawing No.  
S278/38/16

Rev





- NOTES**
- Do not scale from this drawing.
  - This drawing must be used in conjunction with engineers sign/bollard location plan and sign face schedule.
  - All bollards must be installed with reflective banding.
  - All unused faces must be installed with a blanking cap.
  - Reflective banding shall be reflective to class ref 2 requirements and be coloured red on the left hand edge of the carriageway as viewed by the drivers of approaching vehicles, and coloured white on the right hand edge of the carriageway when so viewed, except where the edge is the edge of a dual carriageway or one way road whereupon the colour shall be amber.



- BOLLARD REQUIREMENTS:**
- Bollards are to be installed in strict accordance with manufacturers specification.
  - Sign face bollards shall be in accordance with The Traffic Signs Regulations and General Directions document.
  - Bollards may be installed as either 'socketed' (preferred) or 'bolt down'.
  - Selection of bollard type may be dependant on planning requirements and location and shall be agreed by WSCC.
  - For plastic or cast iron bollards the standard colour shall be black, unless otherwise agreed by WSCC.
  - Fixed and/or removable bollard types must be clearly annotated on the plan drawings.

B	Note 5 & Timber foundation	DLS	MJA	28.02.13
A	Notes amended	DLS	MJA	28.02.13
Rev	Revision details	Chkd	Appd	Date
Drawn: MJA			For comment	
Chkd:			For tender	
Appd:			For construction	
Date:			As constructed	
File ref:				
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Project Name  
Section 278/38 Highway Agreement  
Standard Details

Drawing Title  
Street Furniture  
Bollards



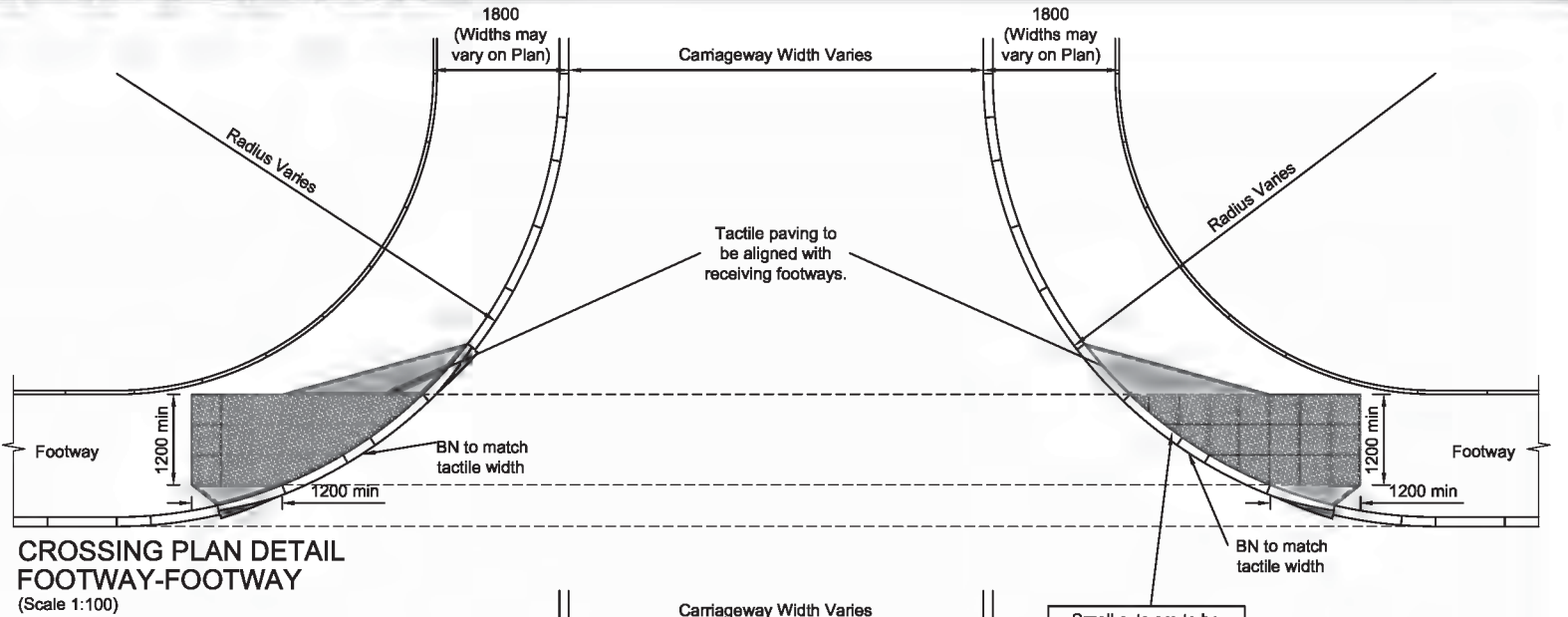
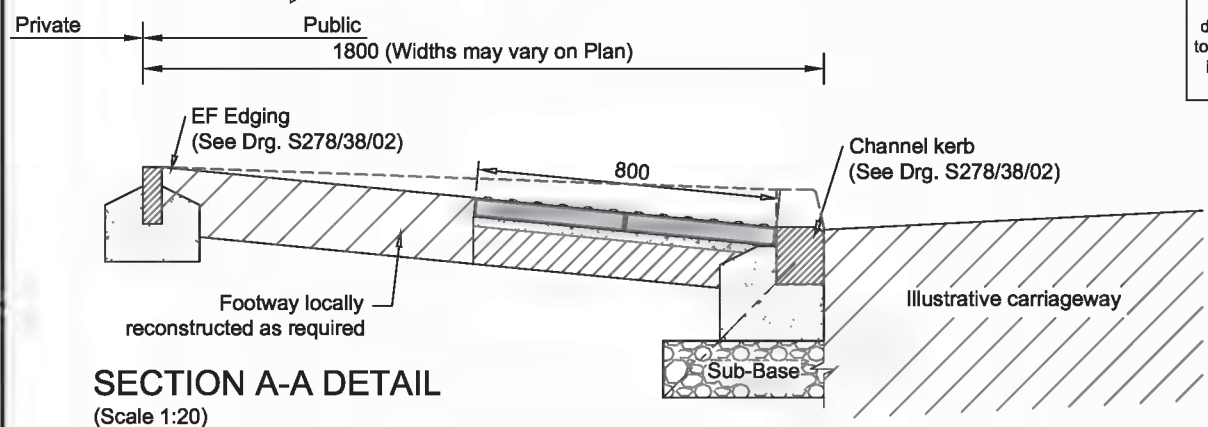
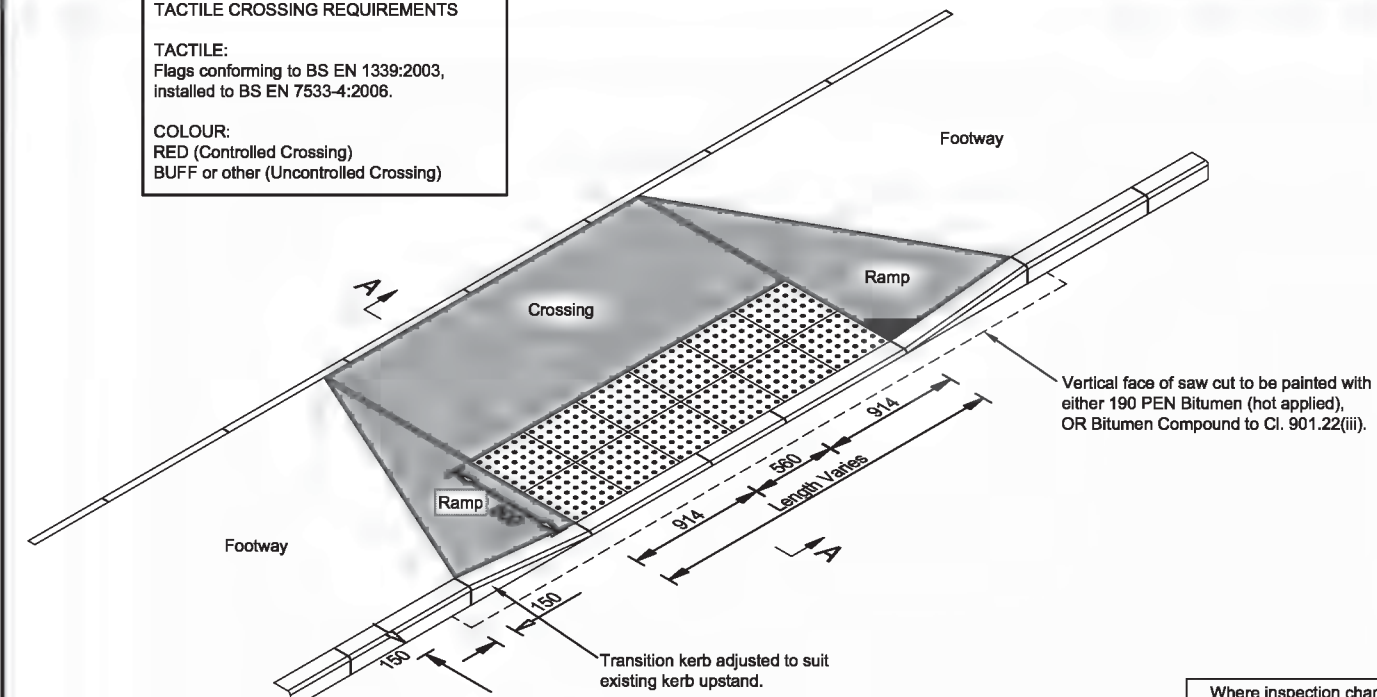
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Scale : As Shown Dimensions :  
Drawing No. S278/38/17  
Rev B



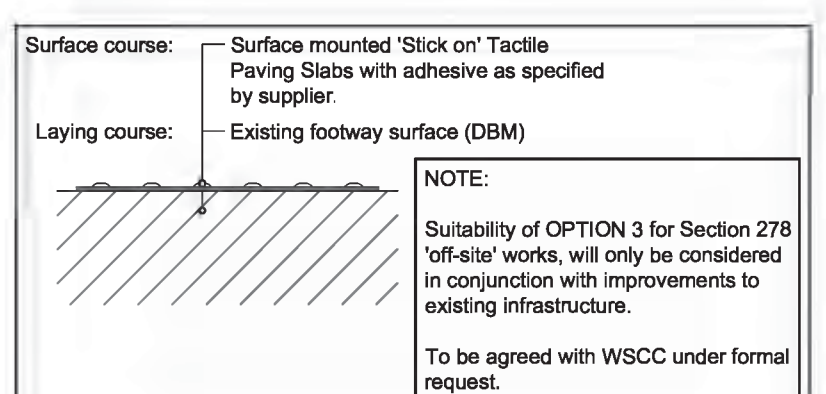
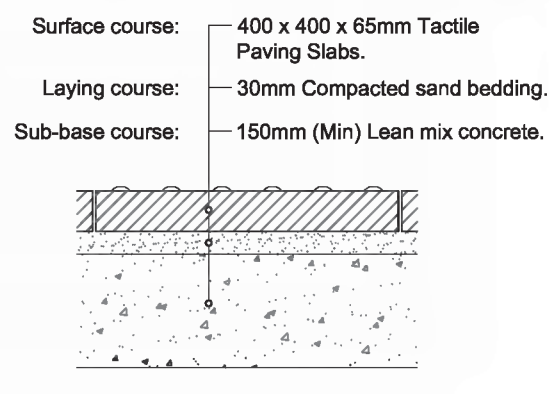
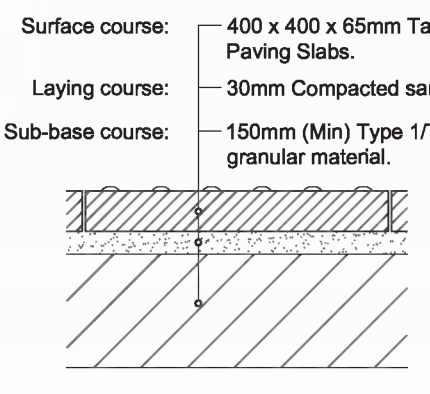
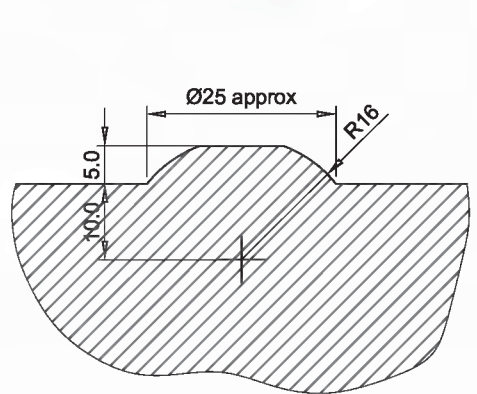
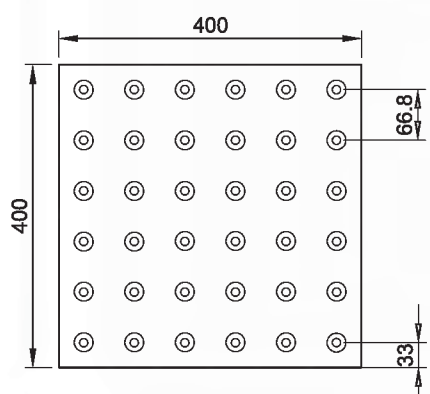
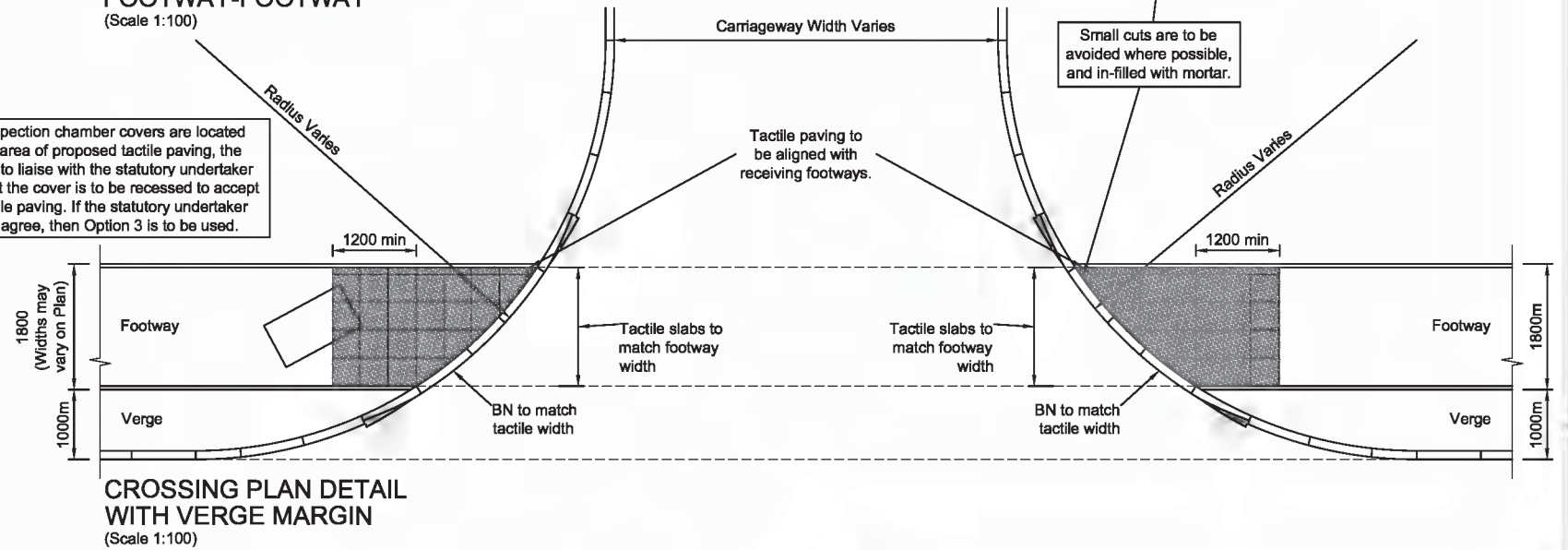
**TACTILE CROSSING REQUIREMENTS**

**TACTILE:**  
Flags conforming to BS EN 1339:2003,  
installed to BS EN 7533-4:2006.

**COLOUR:**  
RED (Controlled Crossing)  
BUFF or other (Uncontrolled Crossing)



Where inspection chamber covers are located within an area of proposed tactile paving, the designer is to liaise with the statutory undertaker to agree that the cover is to be recessed to accept in-laid tactile paving. If the statutory undertaker does not agree, then Option 3 is to be used.



**NOTE:**

Suitability of OPTION 3 for Section 278 'off-site' works, will only be considered in conjunction with improvements to existing infrastructure.

To be agreed with WSCC under formal request.

A	Notes amended	DLS	MJA	28.02.13
Rev	Revision details	Chkd	Appd	Date
Drawn:	MJA		For comment	
Chkd:			For tender	
Appd:			For construction	
Date:			As constructed	
File ref:				
IWP Ref:				

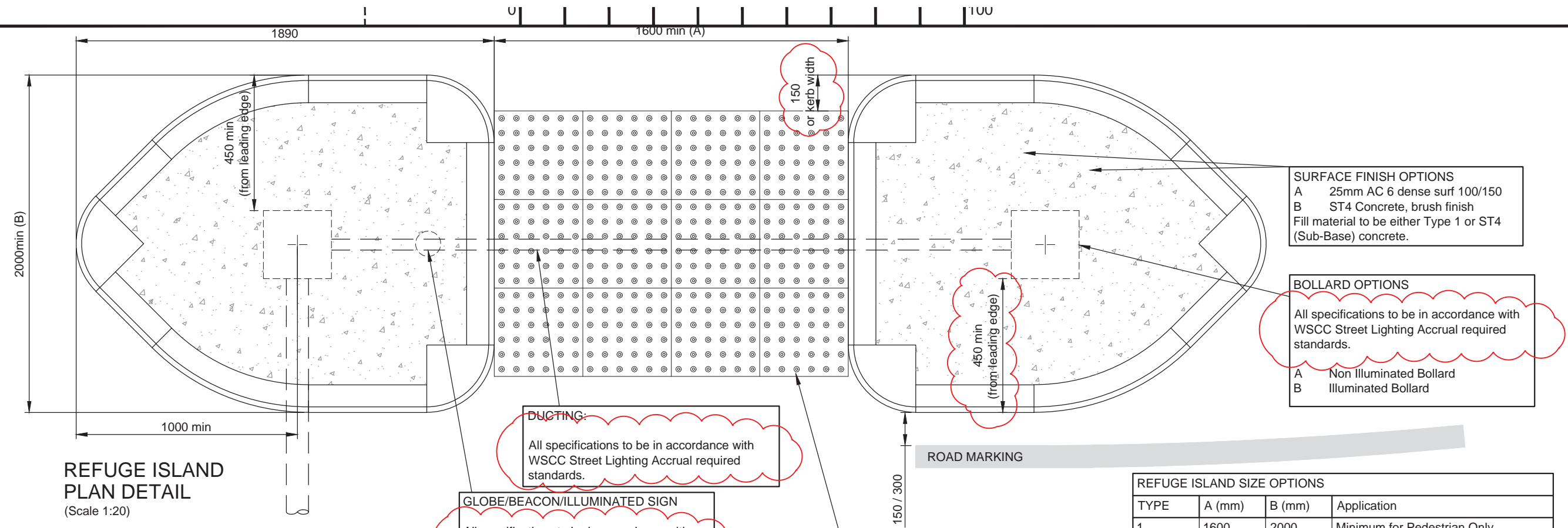
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Project Name	Section 278/38 Highway Agreement Standard Details
Drawing Title	Street Furniture Tactile Crossings

<b>APPROVED</b> APRIL 2017 CONTRACTOR TO ENSURE LATEST DETAILS ARE USED	
Original Drawing Size :	A3
Scale :	As Shown
Dimensions :	
Drawing No.	S278/38/18
Rev	A





**SURFACE FINISH OPTIONS**  
A 25mm AC 6 dense surf 100/150  
B ST4 Concrete, brush finish  
Fill material to be either Type 1 or ST4 (Sub-Base) concrete.

**BOLLARD OPTIONS**  
All specifications to be in accordance with WSCC Street Lighting Accrual required standards.  
A Non Illuminated Bollard  
B Illuminated Bollard

**DUCTING:**  
All specifications to be in accordance with WSCC Street Lighting Accrual required standards.

**GLOBE/BEACON/ILLUMINATED SIGN**  
All specifications to be in accordance with WSCC Street Lighting Accrual required standards.  
Demountable equipment may be required on wide load routes

**TACTILE PAVING ARRANGEMENT**

1. Tactile shall not protrude beyond the 'back of kerb' to the island.
2. Refuge Island dimension (A) shall be sized to suit the required number of tactile pavours for the crossing
3. Where refuge island width is greater than 2000, tactile pavours shall be installed to 800mm depth both sides



Design shall take into account the need for access by snow ploughs (Kerb to Kerb widths shall be 3500 min) on all WSCC gritting routes. These include A and B roads, bus routes, and roads serving Schools, Hospitals, Emergency Services, Public Transport Hubs and WSCC Highways Depots.

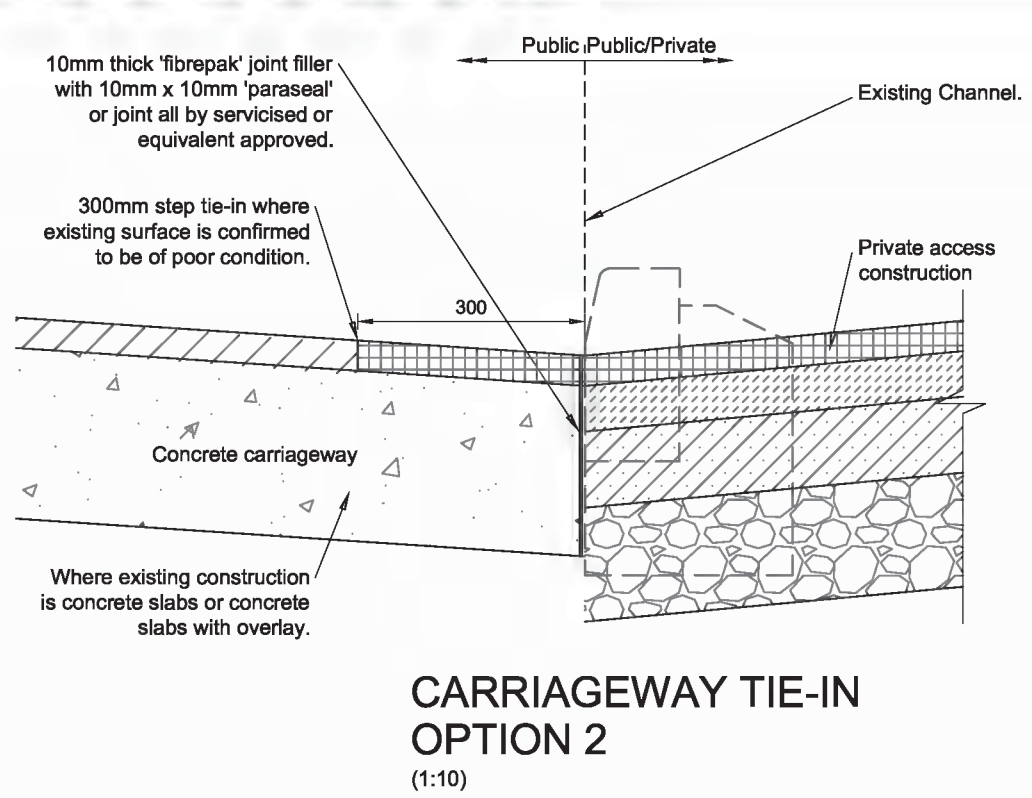
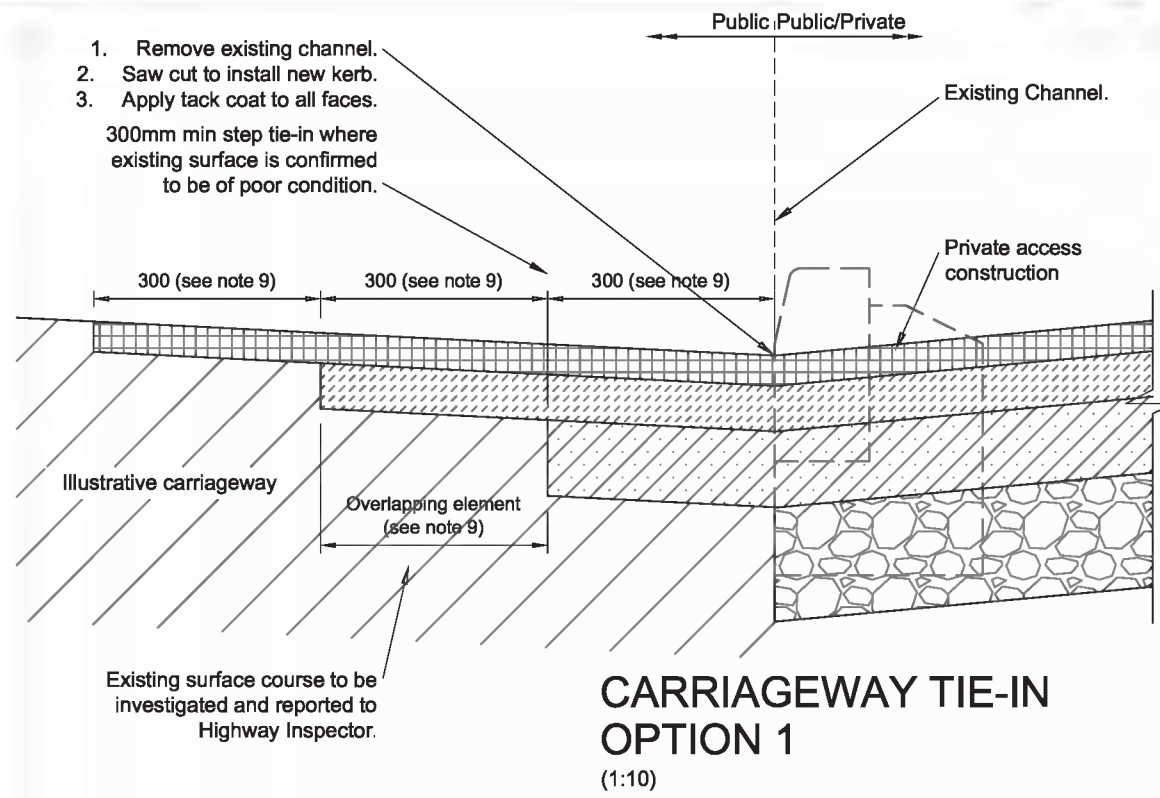
REFUGE ISLAND SIZE OPTIONS			
TYPE	A (mm)	B (mm)	Application
1	1600	2000	Minimum for Pedestrian Only
2	2400	2500	Minimum for Pedestrian & Cyclist

- DESIGN CONSIDERATIONS**
- The minimum lane width shall be 3.2m.
  - Absolute minimum lane width 3.0m (less than 5% HGV) lightly trafficked. Minimum kerb to kerb width for snow plough 3.5m
  - Avoid lane widths between 3.2m - 4.0m.
  - Road markings warning line offset to be 300mm. This may be reduced to a minimum of 150mm where speed limit is 40mph or less
  - Future maintenance requirements.
  - Kerb heights should not normally exceed 75mm.
  - Departures from Standard approval will be required for speed limits in excess of 40mph.
  - Swept path analysis shall be provided.
  - Consultation with local residents i.e. impacts to private accesses.
  - Islands should be surfaced in a material that contrasts with the existing road surface.

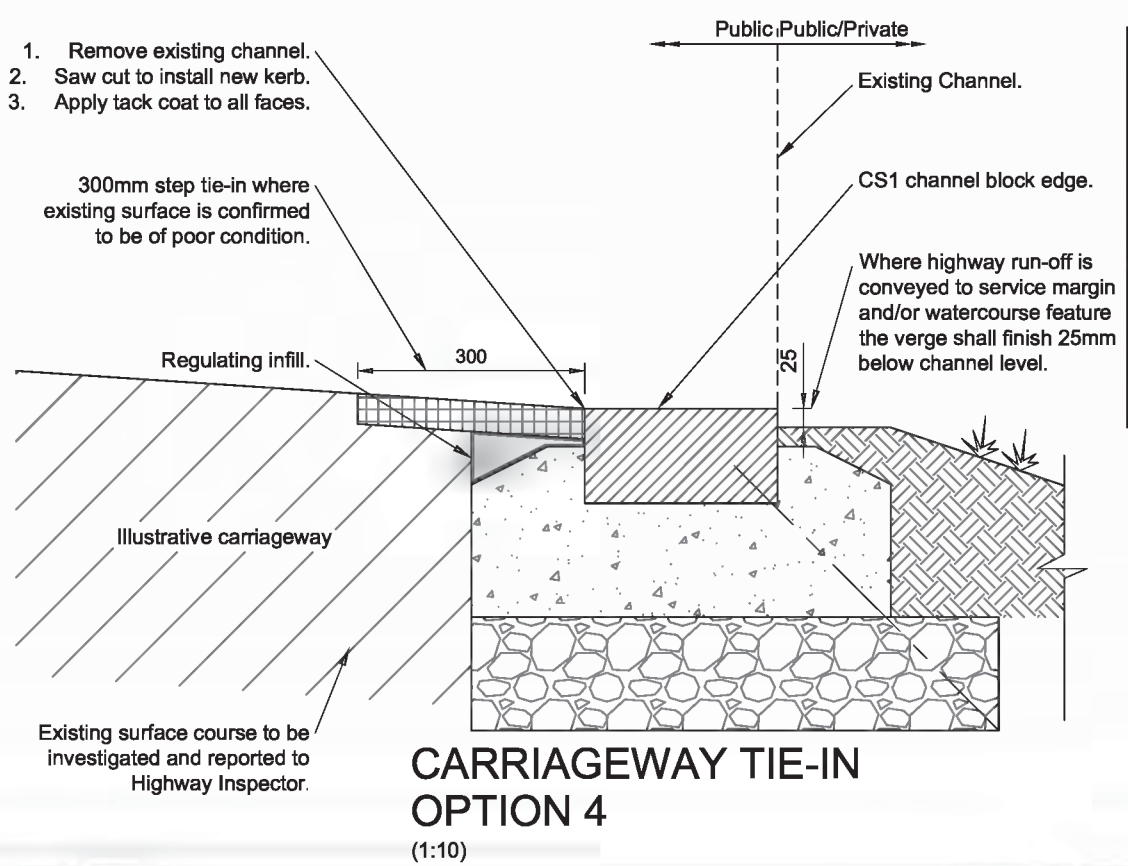
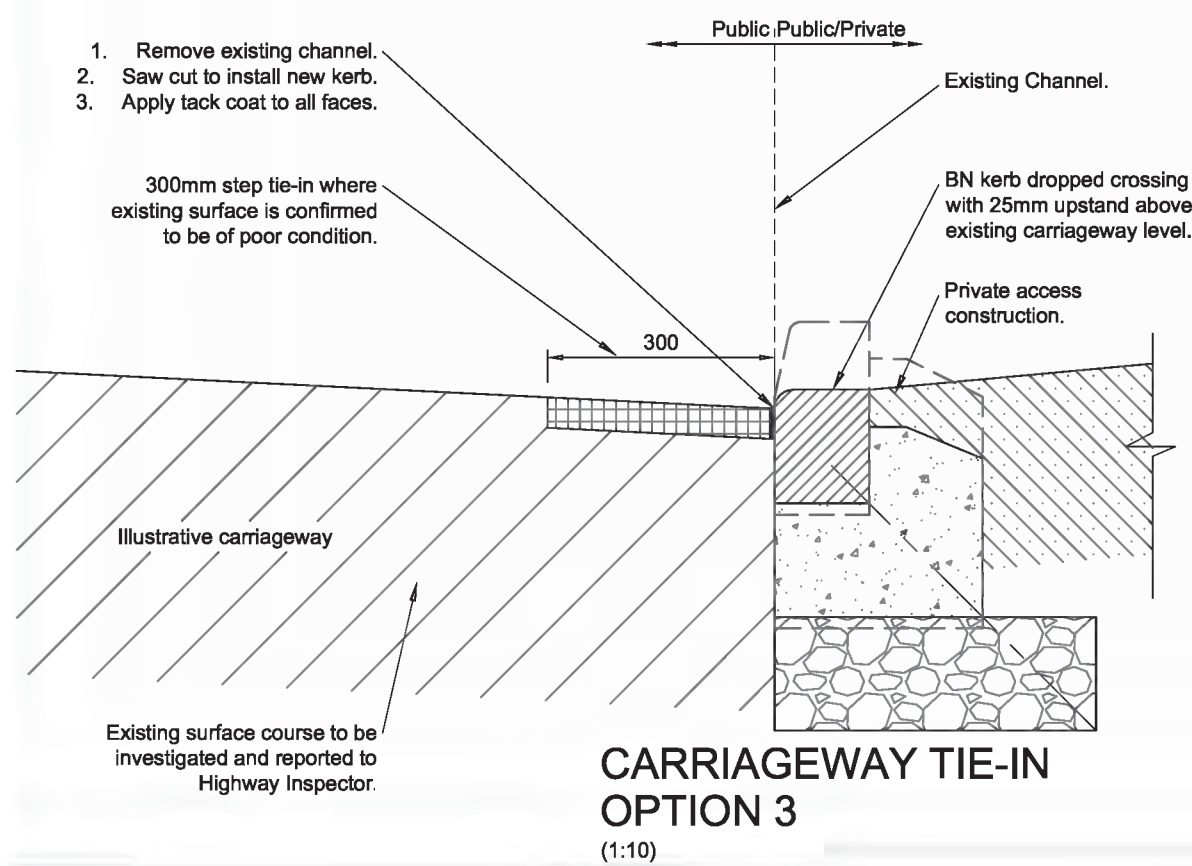
Islands not conforming with WSCC refuge island size options will only be accepted with supporting designers risk assessment and may require an independent Road Safety Audit.

- NOTES**
1. Do not scale from this drawing.
  2. Refer to drawing 18 for Tactile Paving specification.
  3. WSCC illuminated equipment is subject to PFI requirements.
  4. Dimensions in mm except where otherwise stated

D C B	Clouded revisions 'SSE' replaced by 'TVL' Snow plough + wide load notes	DJL	DJL	14.12.15	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	
		CD	DJL	10.10.14						
Rev	Revision details	Chkd	Appd	Date			Drawing Title Street Furniture Refuge Islands		Scale : As Shown	
Drawn: MJA				For comment					Dimensions :	
Chkd:				For tender					Drawing No.	
Appd:				For construction					S278/38/19	
Date:				As constructed					Rev	
File ref:									D	
IWP Ref:										



- 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. The Highway Inspector may increase the Sub-base depth or include a geotextile or geogrid on formation where site ground conditions are considered to be sub-standard.
  7. Not suitable where 'no-dig' construction is required.
  8. Refer to drawing 21 for Carriageway Surfacing Options.
  9. Overlapping elements of stepped joints shall normally be 300mm except where this places the joint in the wheel track, whereupon on C class and unclassified roads the overlap may be reduced to 150mm, and on A and B class roads the overlapping elements shall be extended in accordance with IAN 154/12. Any overlapping elements less than 300mm shall be agreed with the WSCC Engineer and/or WSCC Inspector.



**EXTRACT FROM IAN 154/12:**  
For new pavement construction, all longitudinal joints in all layers shall be situated outside wheel-track zones. Where an existing road pavement is resurfaced, joints in the surface course shall coincide with either the lane edge, the lane marking, or the middle of a traffic lane, whichever is appropriate. Joints shall not coincide with the wheel path. **The wheel-track zones shall be taken to be between 500mm and 1100mm and between 2550mm and 3150mm from the centre of the nearside lane markings for each traffic lane (or, in the absence of lane markings, lane edges).** All joints shall be offset at least 300mm from parallel joints in the layer beneath.

B	IAN 154/12 extract corrected	CD	DJL	05.09.13
A	Notes amended	DLS	MJA	28.02.13
Rev	Revision details	Chkd	Appd	Date
Drawn:	MJA		For comment	
Chkd:			For tender	
Appd:			For construction	
Date:			As constructed	
File ref:				
IWP Ref:				

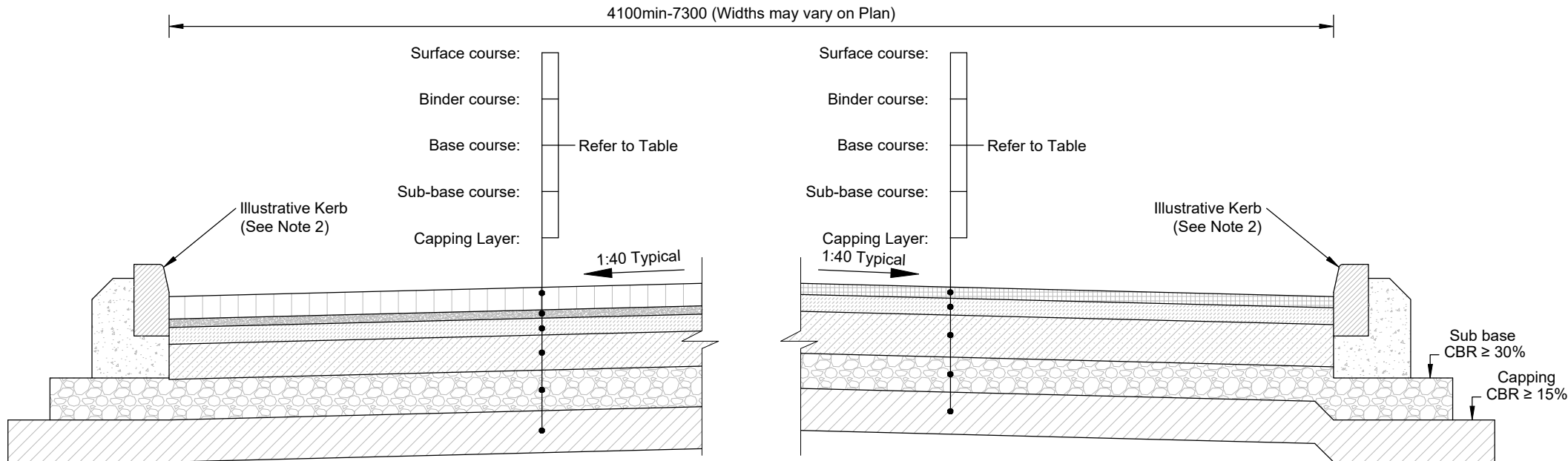
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Project Name	Section 278/38 Highway Agreement
Drawing Title	Carriageway Tie-In Options

**APPROVED**  
APRIL 2017  
CONTRACTOR TO ENSURE LATEST DETAILS ARE USED

Size : A3  
Scale : As Shown Dimensions :  
Drawing No. S278/38/20  
Rev B





TYPE 1  
FLEXIBLE CONSTRUCTION

(Scale 1:20)

**HRA Surface Course Binder Spec:**  
35/14 Hot Rolled Asphalt (Performance Related Design Mix) to cl. 943 in accordance with BS EN 13108-4, PD 6691, BS 594987  
HRA 35/14F surf des Course  
Aggregate Percentage: 35% Coarse Aggregate to be crushed rock or slag, excluding limestone.  
Minimum PSV = 50  
Aggregate Grading [BS EN 13108-4 Table 4] Column No.:35/14F  
Test temperature for wheel-tracking to BS 598-110: 45 °C  
Maximum Wheel-tracking rate: 2 mm  
Maximum Wheel-tracking rut depth: 4 mm  
Site classification: 1  
Minimum target Binder Content Bact = 7.0%

**HRA Chipping spec:**  
14/20mm precoated chippings (PSV as per table 3.1a of IAN 156/12\*) with a spread rate achieving a texture depth in accordance with Series 900 table 9/3\* in accordance with BS EN 13108-4, PD 6691, BS 594987 Coarse Aggregate to be crushed rock or slag, excluding limestone and gravel. Coated Chippings Nominal Size: 14/20. Aggregate Grading to PD 6691 Table C.5 Column No.: 14/20 size. Flakiness Index: F120. Maximum AAV: 12. Minimum Target Binder Content Bact = 1.5%

**\*DESIGNER TO FULLY SPECIFY MATERIALS WITH APPROPRIATE VALUES FOR TEXTURE DEPTH AND PSV INCLUDED ON CONSTRUCTION DRAWINGS.**

CARRIAGEWAY - FLEXIBLE CONSTRUCTION TABLE SELECTOR			
ALL CONSTRUCTION LAYER THICKNESSES TO BE FULLY SPECIFIED BY THE DESIGNER PRIOR TO TECHNICAL APPROVAL			
	LOCAL DISTRIBUTOR See note 14	COLLECTOR 200-300 dwellings	ACCESS ROAD <200 dwellings
CAPPING LAYER (For Design CBRs ≤ 5% capping shall be class 6F1/6F2 (site won), or 6F4/ 6F5 (imported) material.			
Design CBR <2%	Bespoke design required in accordance with IAN 73/06		
Design CBR 2-2.5%	600	600	600
Design CBR >2.5-5%	350	350	350
Design CBR >5% (Type 1 to Clause 803)	100	100	100
Requirements for determination of the Design CBR are located on our website: <a href="http://www.westsussex.gov.uk/roadagreements">www.westsussex.gov.uk/roadagreements</a>			
SUB-BASE			
Type 1 (Clause 803)	150	150	150
BASE			
Either: 32mm Dense Asphalt Concrete Base 40/60 PEN to cl.906	150	125	100
Or: Lean Mix Concrete	-	150	150
BINDER			
20mm Dense Asphalt Concrete Binder 40/60 PEN to cl. 906 (Not required with block pavements)	60	60	60
SURFACE COURSE			
HRA 35/14 F Surf des course to cl.943 with 14/20mm pre-coated chippings. See specification (left)	50	-	-
10mm Close Graded Asphalt Concrete Surface Course 100/150 to cl.912. Designer to specify PSV and AAV	-	30	30
Blocks on 30mm sand Bed	-	80	80

ALTERNATIVE DESIGN:  
WSCC will accept permanent foundation designs in accordance with the latest revision of Interim Advice Note 73/06

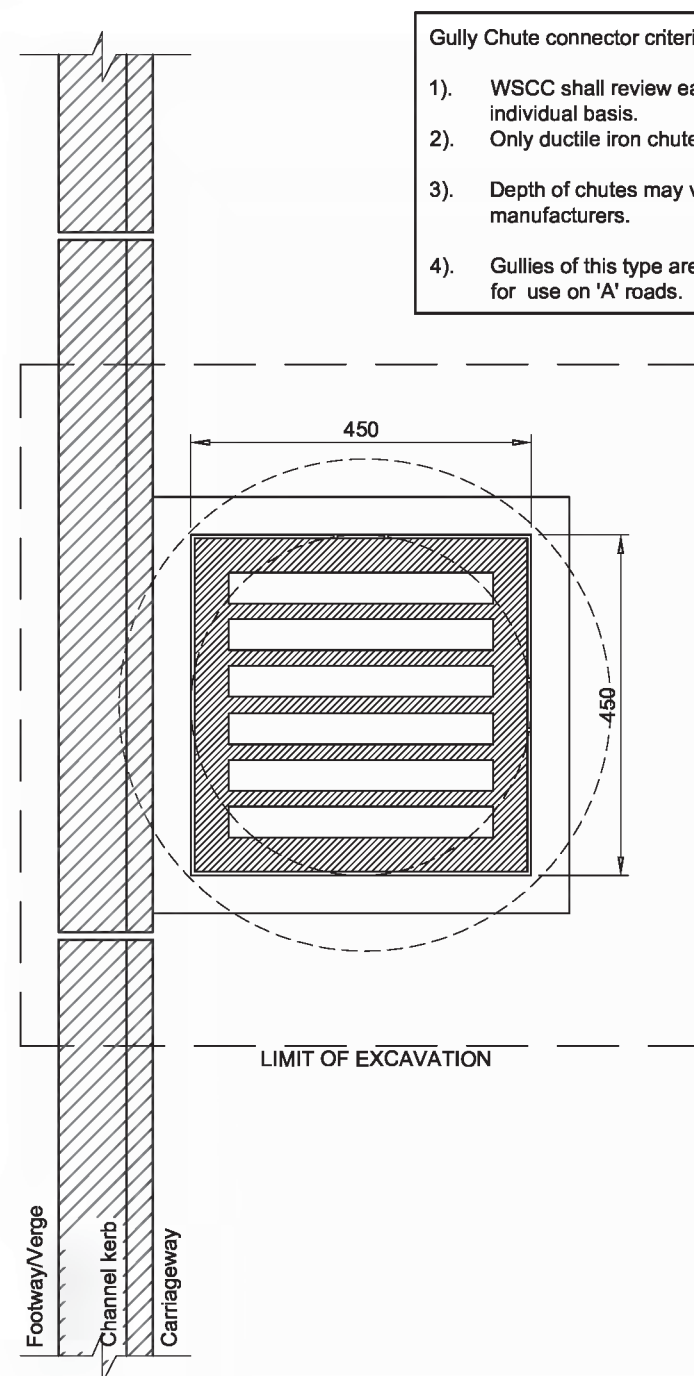
- NOTES
- Do not scale from this drawing.
  - Refer to drawings 02 & 03 for Approved Kerb Type Selection.
  - Refer to drawing 01 for laying methods.
  - Prior to the commencement of laying the formation shall be treated with an approved residual weedkiller.
  - The Highway Inspector may request inclusion of a non-woven separation membrane to mitigate weed/root intrusion.
  - The Highway Inspector may increase the Sub-base depth or include a geotextile or geogrid on formation where site ground conditions are considered to be sub-standard.
  - Not suitable where 'no-dig' construction is required.
  - Asphalt Concrete to be in accordance with BS EN 13108-01 and BS 594987.
  - Type 1 Sub-base to be in accordance with Specification for Highway Works clause 803.
  - Hot Rolled Asphalt to be in accordance with BS EN 13108-04 and BS 594987.
  - 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.
  - Where block paved construction is proposed the binder course may be omitted.
  - More major roads (A or B class roads) shall have a bespoke pavement design in accordance with DMRB standards.
  - Carriageway widening to widths of less than 1m; Base and sub-base to be replaced with ST1 concrete with the same overall construction depth as the standard construction.
  - Under some circumstances, WSCC may accept 40mm of Bardon Superflex 50 with 10mm Aggregate (65 PSV) as a surface course, provided there is a 10 year guarantee on the skid resistance value (SRV).
  - WSCC may accept 45 +/- 5mm of Bardon Superflex 72 with 10mm Aggregate as a surface course in lieu of a standard surface course with HFS subject to site specific approval.
  - PSV shall be declared in accordance with IAN 156/12 table 3.1a.
  - 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.
  - Capping shall be class 6F1/6F2 (site won) or 6F4/6F5 (Imported)
  - WSCC does not permit lime/cement stabilised material in capping or sub base layers.
  - Block pavements shall, where the chosen brick shape is suitable, be laid in herringbone pattern at 45° to the direction of travel, except where the WSCC Inspector has granted approval in writing to deviate from this requirement.
  - High Friction Surfacing shall be HAPAS approved Type 1 (cold applied) with MMA binder. See also note 17.

F	Note 23+HRA/Binder Thickness	DJL	DJL	16.11.17
E	HRA spec, CBR notes	DJL	HM	13.03.17
D	Note 20+21, Capping thickness	NA	DJL	26.05.16
C	Various revisions	DJL	DJL	14.12.15
Rev	Revision details	Chkd	Appd	Date
Drawn:	MJA		For comment	
Chkd:			For tender	
Appd:			For construction	
Date:			As constructed	
File ref:				
IWP Ref:				

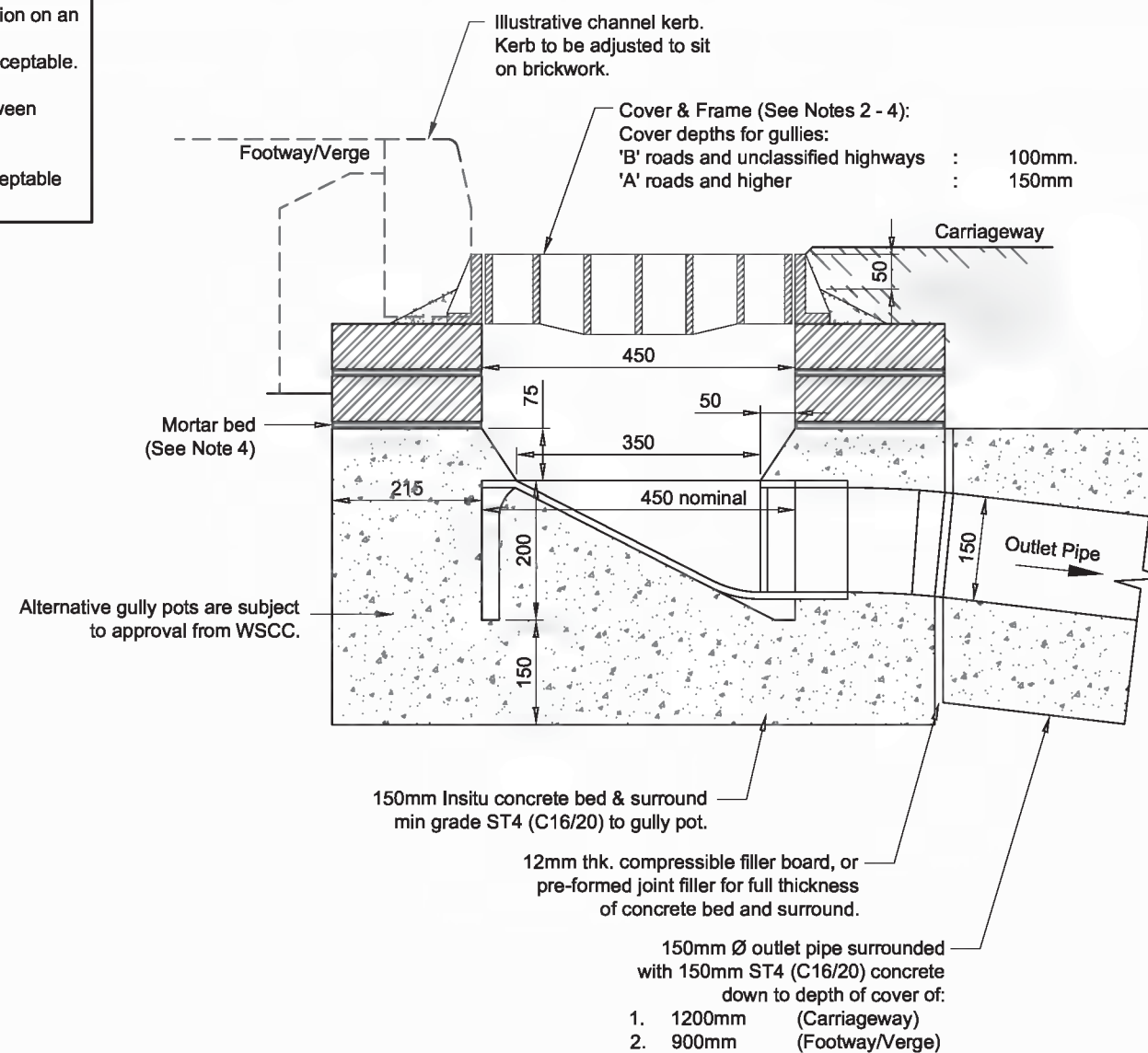
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Project Name	Section 278/38 Highway Agreement Standard Details
Drawing Title	Carriageway Flexible Specification

Original Drawing Size :	A3	
Scale :	As Shown	Dimensions :
Drawing No.	S278/38/21	Rev
		F



GULLY C  
TYPE: CHUTE (SUMPLESS)  
PLAN  
(1:10)



GULLY C  
TYPE: CHUTE (SUMPLESS)  
SECTION  
(1:10)

- ### NOTES
1. Do not scale from this drawing.
  2. All gully grating and frames to be 'hinged' heavy duty ductile iron minimum grade D400 in accordance with BS EN124:1994 & Section 508 of the Specification of Highway Works.
  3. All ironwork shall carry a BSI kite mark.
  4. Frames shall be bedded on a gauged Class 1 (3:1) sand/cement mortar to CI.2402 of SHW Mortar Designation (i), and either 2 or 3 courses of Engineering Brickwork Class 'B' to BS EN 771-1:2011.
  5. Gully spacing is to be determined from the requirements of HA 102/00, Design Manual for Roads and Bridges, however, maximum area to be drained by one gully: 180 m<sup>2</sup>
  6. Gully pots used for carriageway gullies shall be of precast concrete using Sulphate Resisting Cement (SRC) in accordance with BS 5911, part 230, 2004.
  7. Selection of gully grating type shall be to suit the application area i.e carriageway, footway/cycleway and to the satisfaction of the highway inspector.
  8. Pipe bedding to highway drainage to be Type Z when located under carriageway, and Type T at all other times, as detailed on Specification of Highway Works HCD no. F1.
  9. For surface water pipe specifications, refer to Drg. No. S278/38/11.

Rev	Revision details	Chkd	Appd	Date
Drawn: DLS			For comment	
Chkd:			For tender	
Appd:			For construction	
Date:			As constructed	
File ref:				
IWP Ref:				

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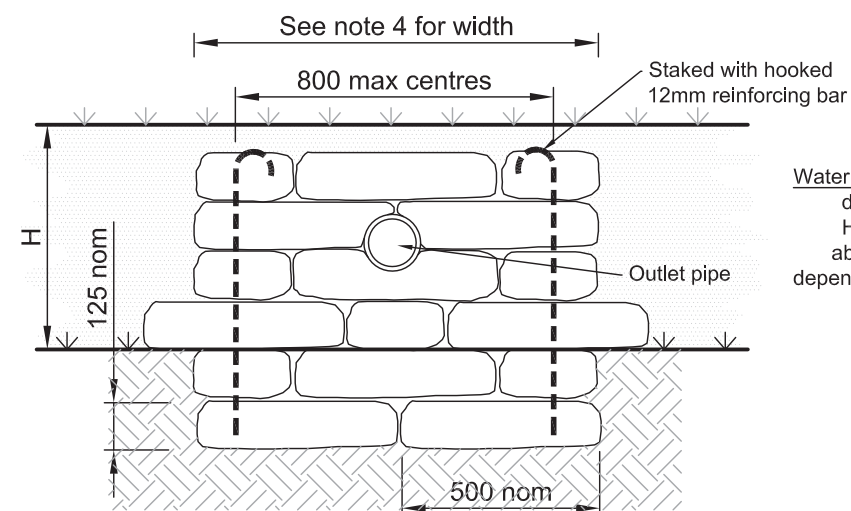
Project Name <b>Section 278/38 Highway Agreement</b> <b>Standard Details</b>
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Drawing Title
Drainage
Gully C - Chute Gully (Sumpless)

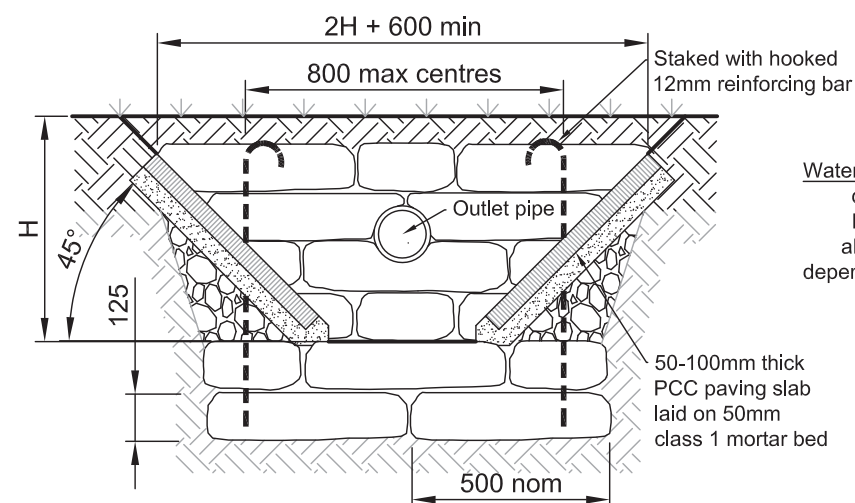


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Scale : As Shown	Dimensions :
Drawing No. S278/38/22	Rev

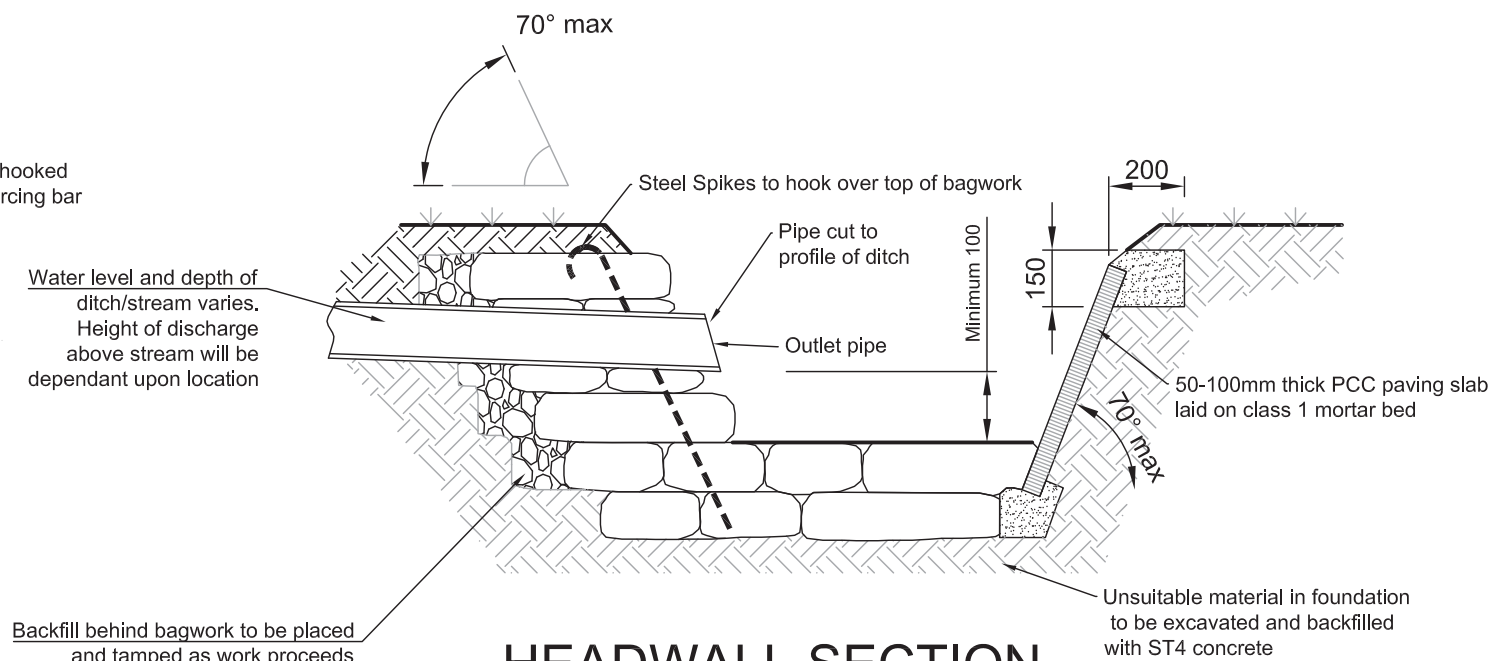




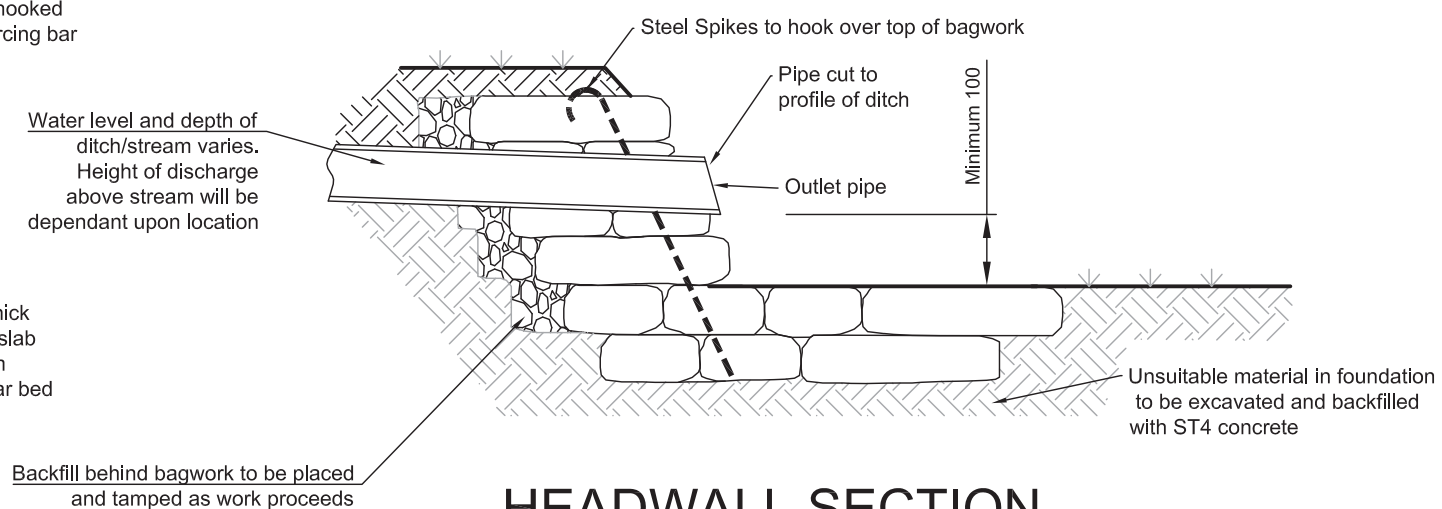
# ELEVATION OF HEADWALL OUTFALL TO POND / SIDE OF DITCH



## 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

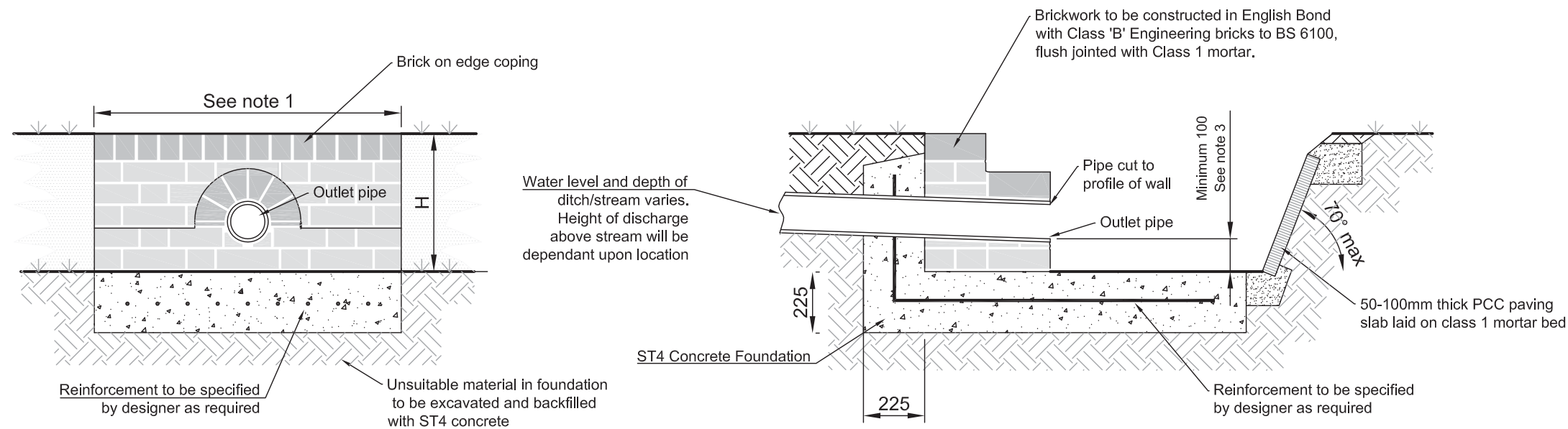
Dimensions : mm
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Drawing No.

S278/38/23

Rev

A

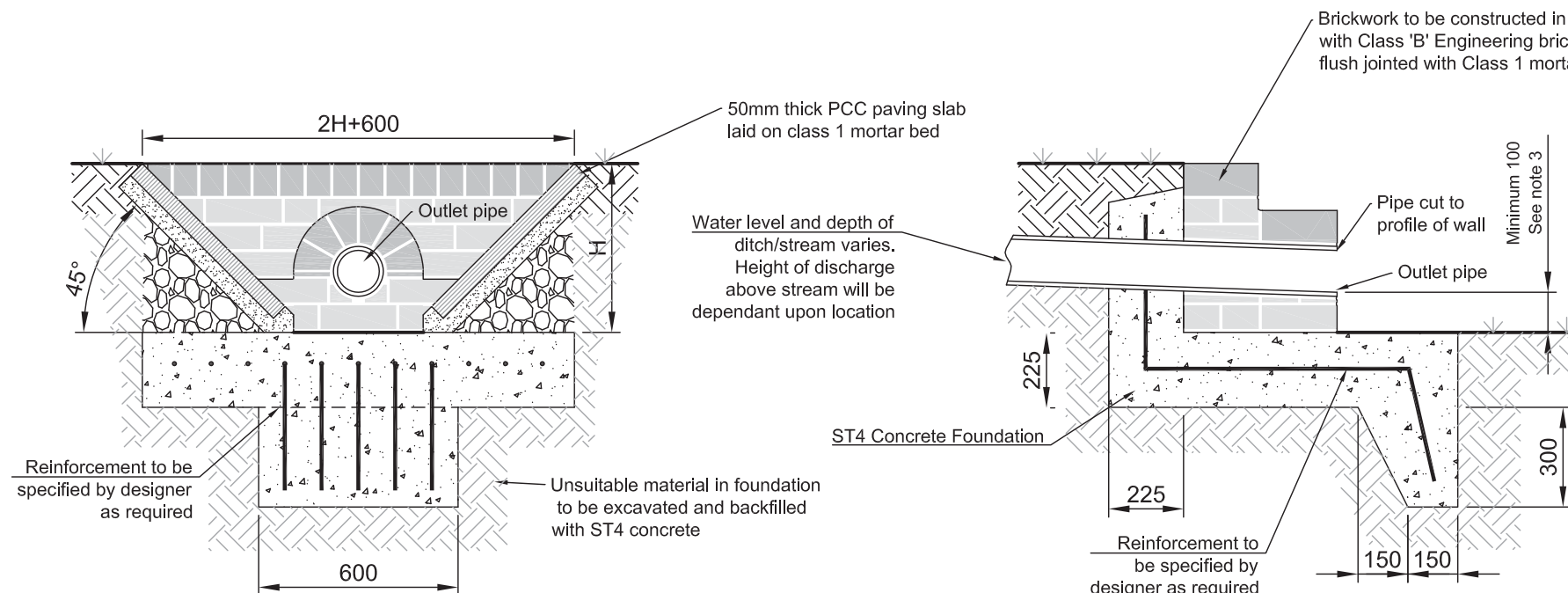


ELEVATION OF HEADWALL  
OUTFALL TO POND / SIDE OF DITCH

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



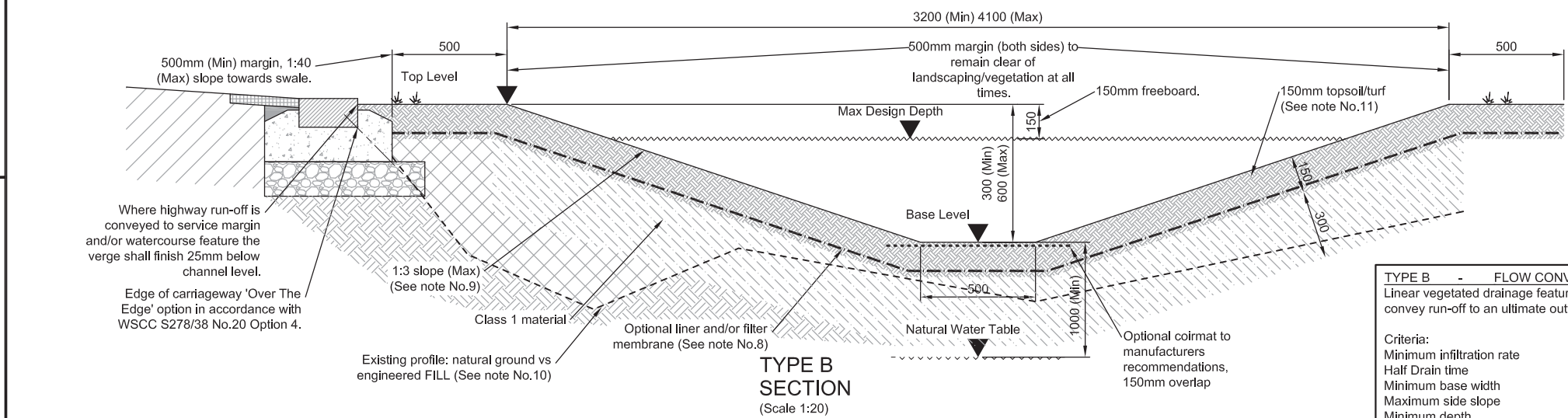
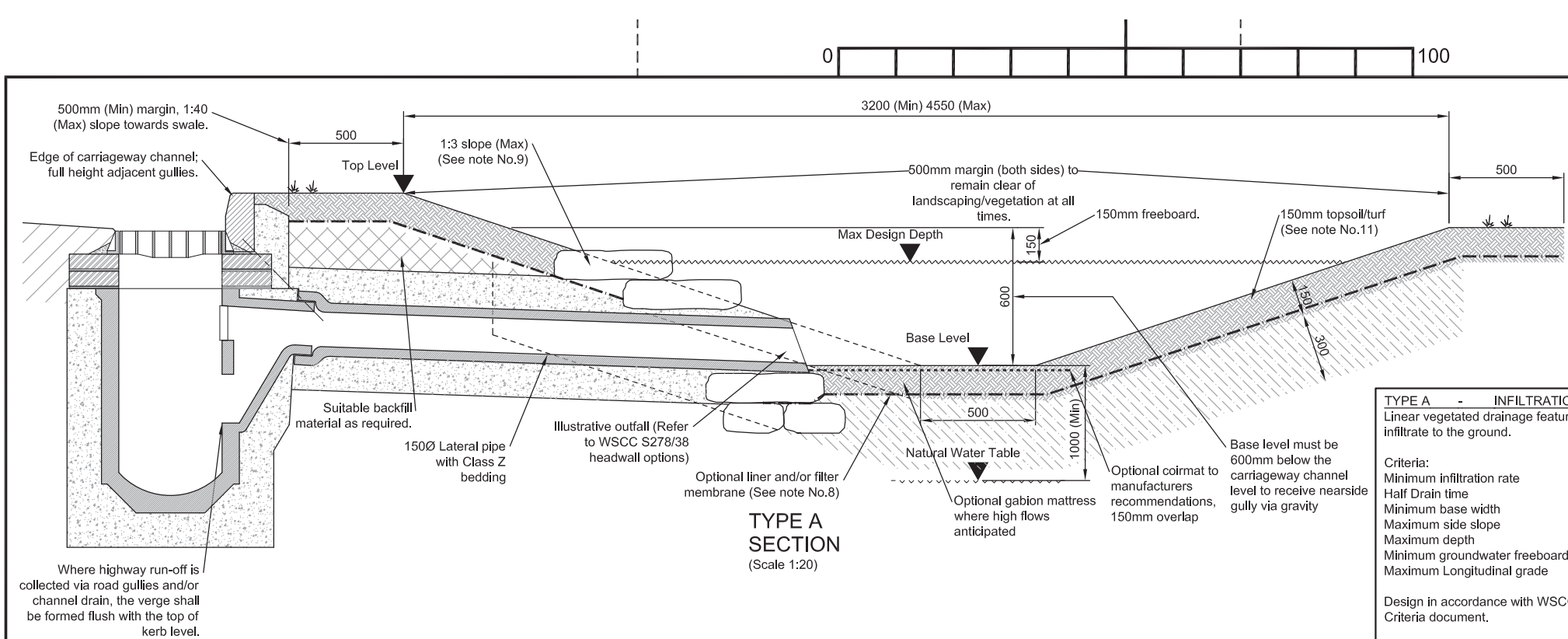
ELEVATION OF HEADWALL  
OUTFALL TO END OF DITCH

HEADWALL SECTION  
OUTFALL TO POND / END OF DITCH

A	Note 6	DJL	HM	25.04.17	<div>West Sussex County Council Infrastructure Group County Hall, West Street Chichester West Sussex PO19 1RH (01243) 642105</div> <div></div>	Project Name Section 278/38 Highway Agreement Standard Details		<div></div>	
Rev	Revision details	Chkd	Appd	Date		Drawing Title Headwall Detail for pipe sizes up to 600 diam Engineering Brickwork		Original Drawing Size : A3	
Drawn:	DJL		For comment					Scale : 1:20	
Chkd:	GM		For tender					Dimensions : mm	
Appd:	AH	X	For construction					Drawing No.	
Date:	SEPT 2013		As constructed					S278/38/24	
File ref: IWP Ref:								Rev A	



Original Drawing Size : A3	
Scale : As Shown	Dimensions :
Drawing No. S278/38/25	Rev A



#### 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 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.	

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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Project Name

Section 278/38 Highway Agreement  
Standard Details

Drawing Title

Drainage  
Highway Swale



Original Drawing Size : A3

Scale : As Shown

Dimensions :

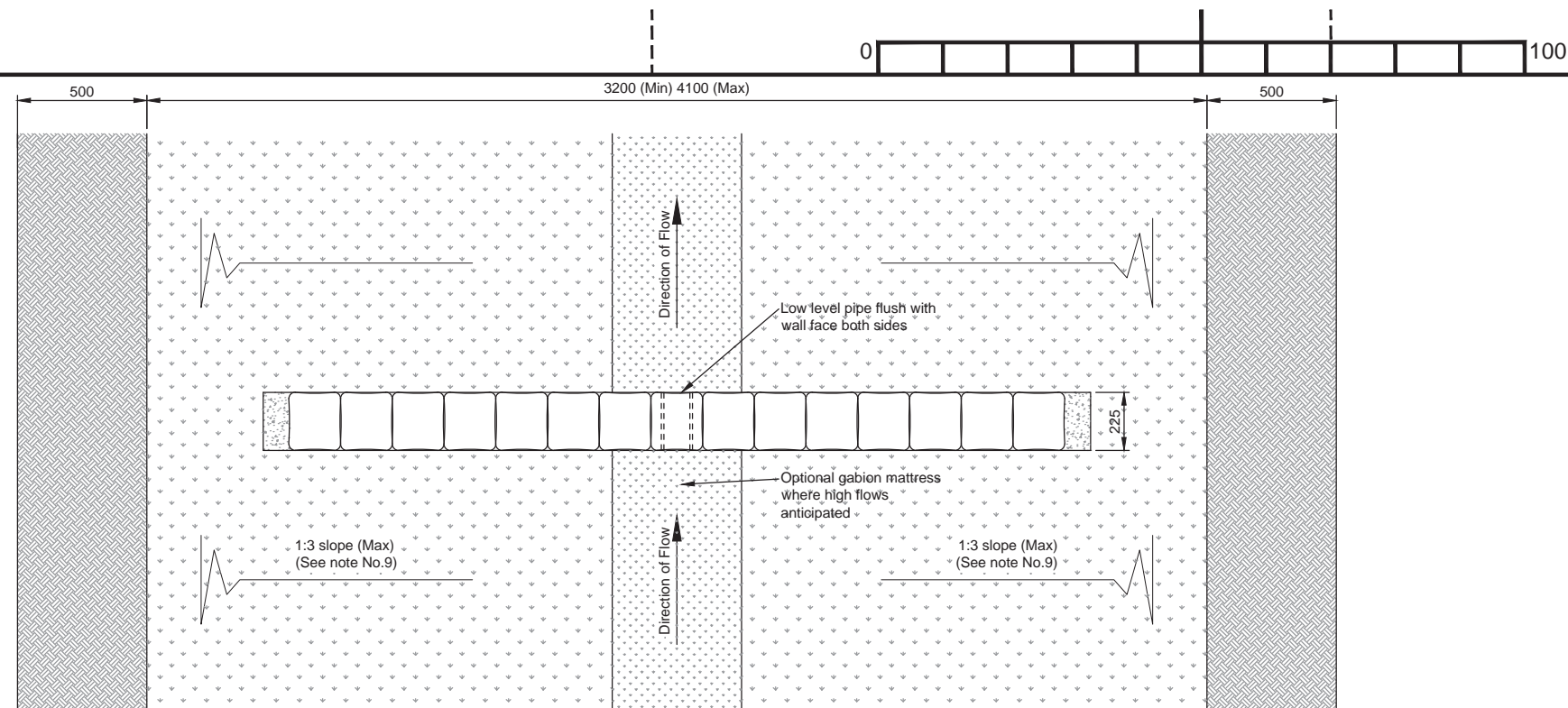
Drawing No.

S278/38/26

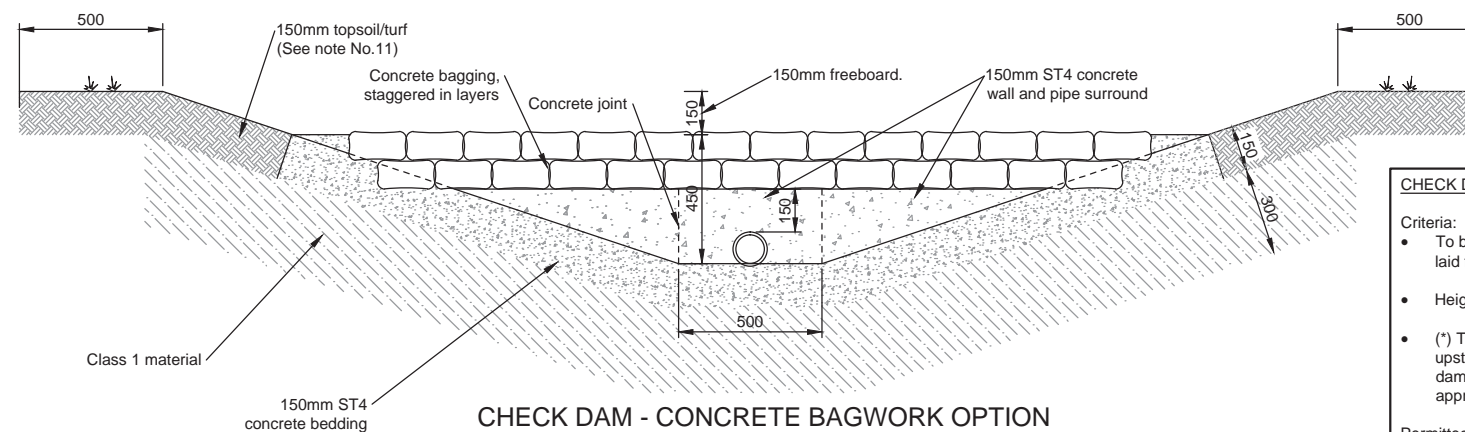
Rev

A





CHECK DAM - CONCRETE BAGWORK OPTION  
PLAN  
(Scale 1:25)



CHECK DAM - CONCRETE BAGWORK OPTION  
SECTION  
(Scale 1:25)

**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. WSCC may require a long section to demonstrate appropriate spacing.

Permitted Types:

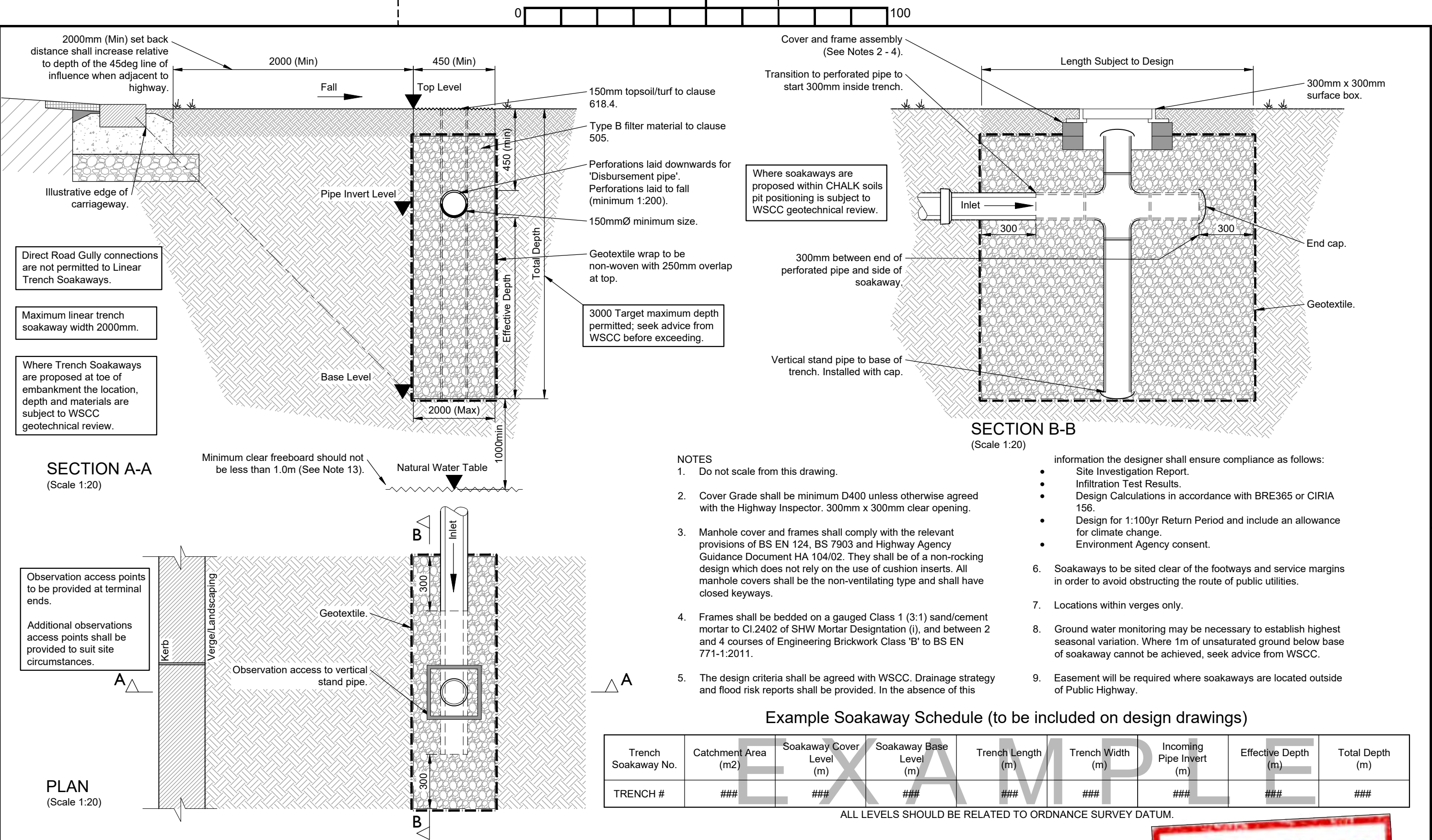
- Gabion Wall
- Concrete Bagwork
- Earth berm (CLAY Core)

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.

- NOTES
- Do not scale from this drawing.
  - Refer to drawing 26 for swale Type Selection and specifications.

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Rev	Revision details	Chkd	Appd	Date	Drawing Title		Original Drawing Size : A3	
Drawn:	MJA		For comment		<div>Drainage</div> <div>Highway Swale Check Dam</div>		Scale : As Shown	
Chkd:	DJL		For tender				Dimensions :	
Appd:	DJL		For construction				Drawing No.	
Date:	14/12/2015		As constructed				S278/38/27	
File ref:							Rev	
IWP Ref:							-	



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	
Appd:			For construction	
Date:			As constructed	
File ref:				
IWP Ref:				

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Project Name  
Section 278/38 Highway Agreement  
Standard Details

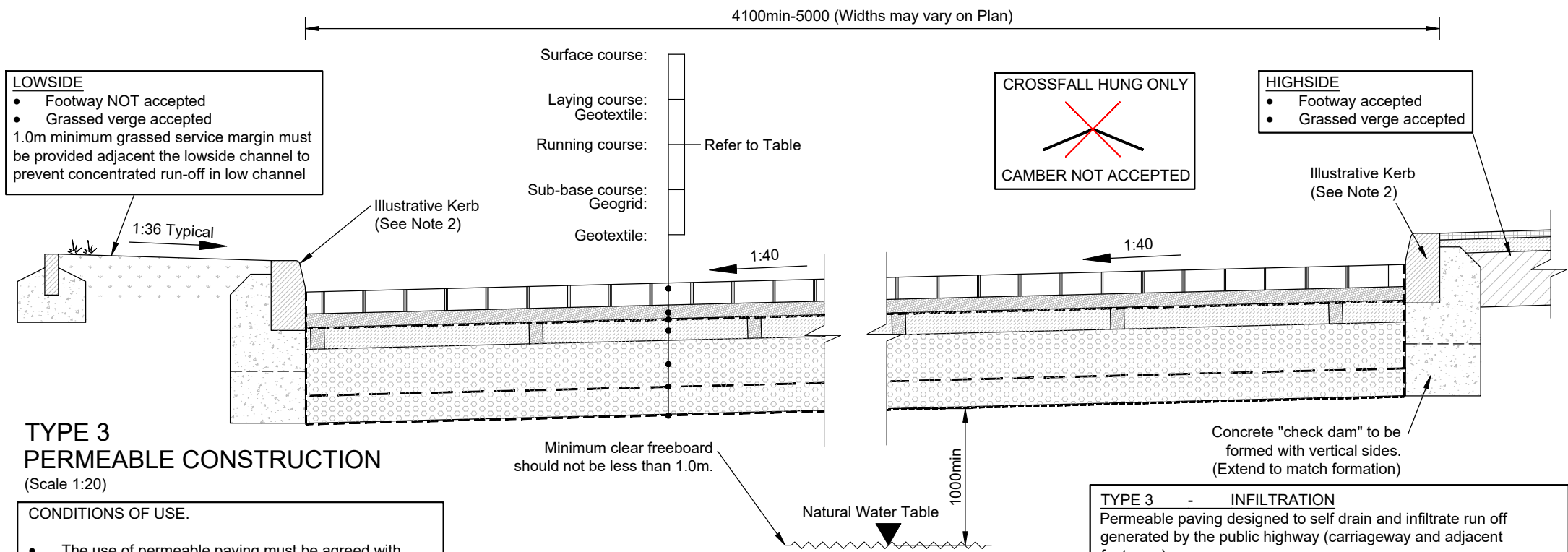
Drawing Title  
Drainage  
Trench Soakaway



Original Drawing Size :	A3
Scale :	As Shown
Dimensions :	
Drawing No.	Rev
S278/38/28	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
Drawn:	MJA		For comment	
Chkd:			For tender	
Appd:			For construction	
Date:			As constructed	
File ref:				
IWP Ref:				

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Project Name

Section 278/38 Highway Agreement  
Standard Details

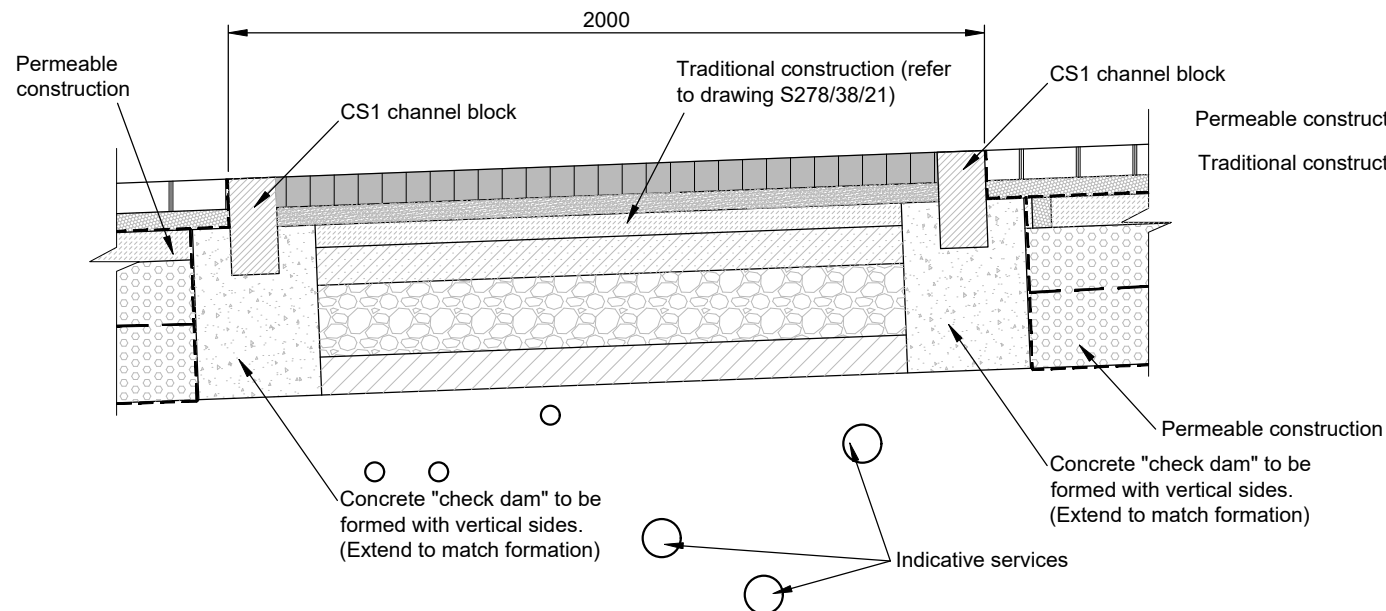
Drawing Title

Carriageway  
Permeable Specification (Sheet 1 of 2)

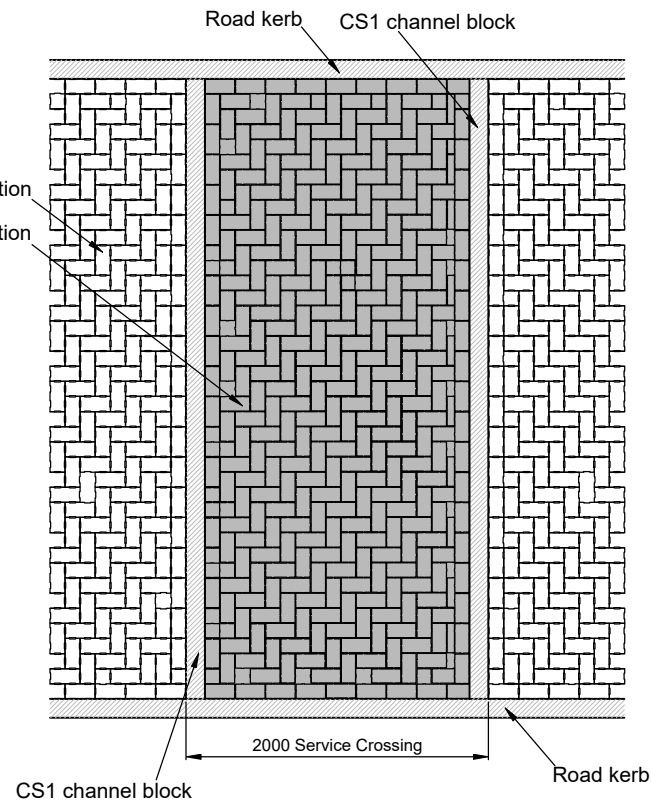


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Scale : As Shown	Dimensions :
Drawing No. S278/38/30	Rev A

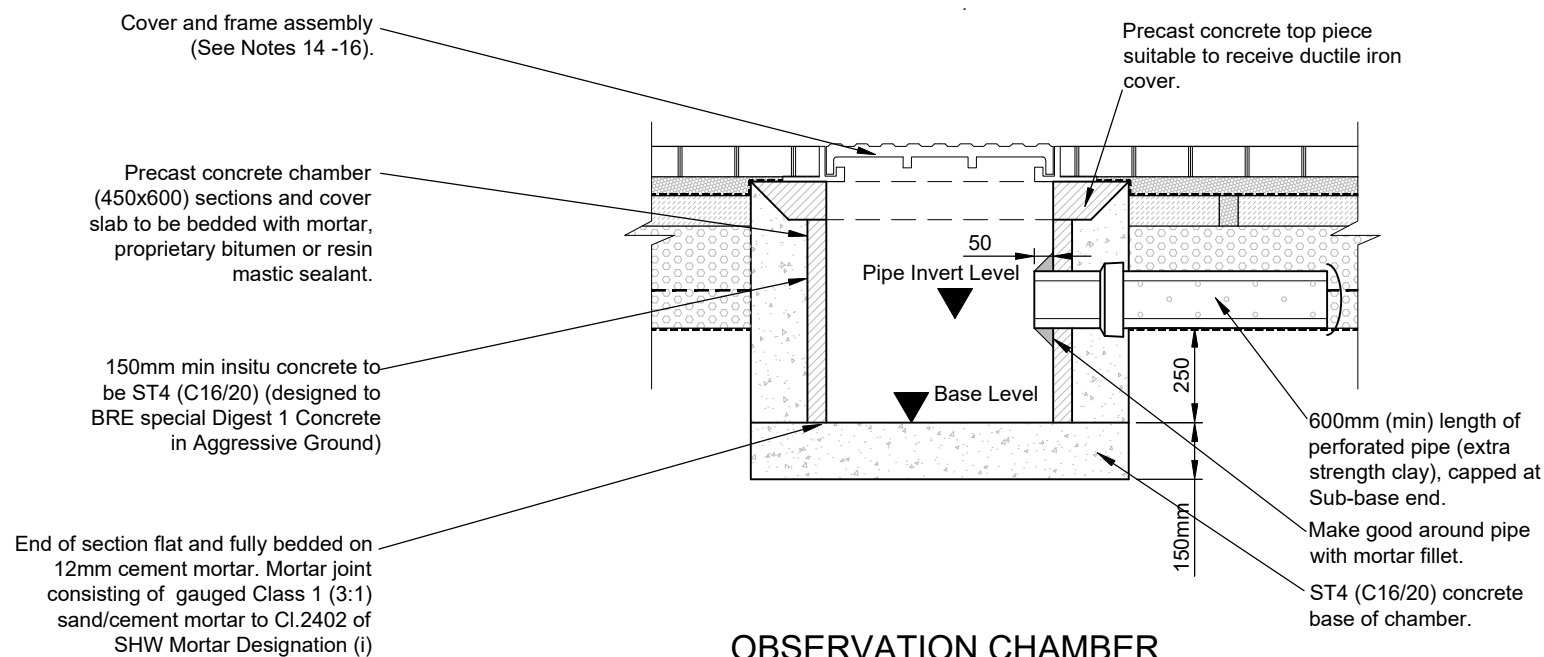




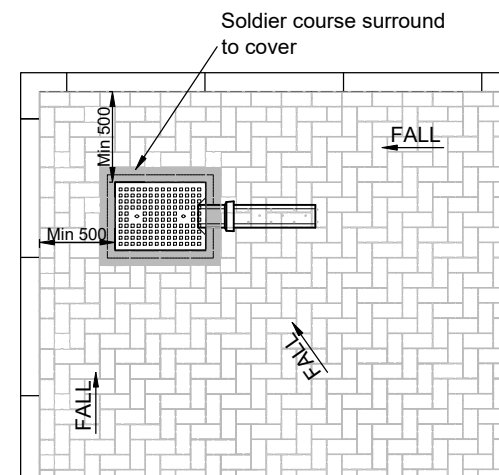
SERVICE CROSSING SECTION  
(Scale 1:20)



SERVICE CROSSING  
Plan (Scale 1:50)



OBSERVATION CHAMBER SECTION  
(Scale 1:20)



OBSERVATION CHAMBER  
TYPICAL PLAN LOCATION  
(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.

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

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Project Name

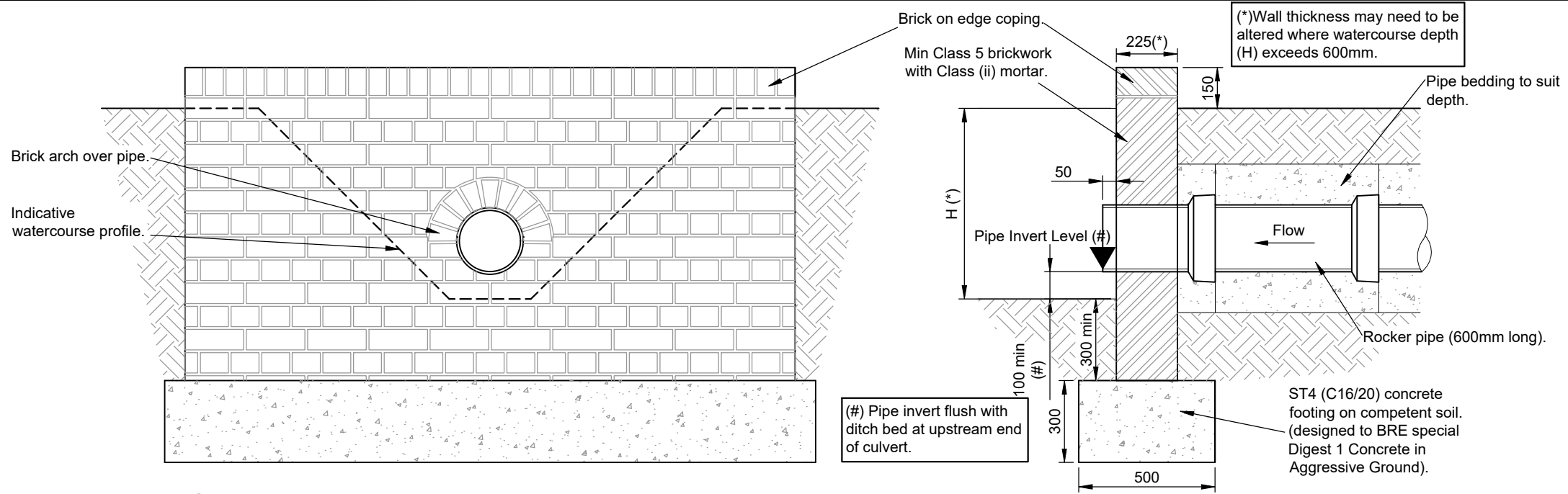
Section 278/38 Highway Agreement  
Standard Details

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)

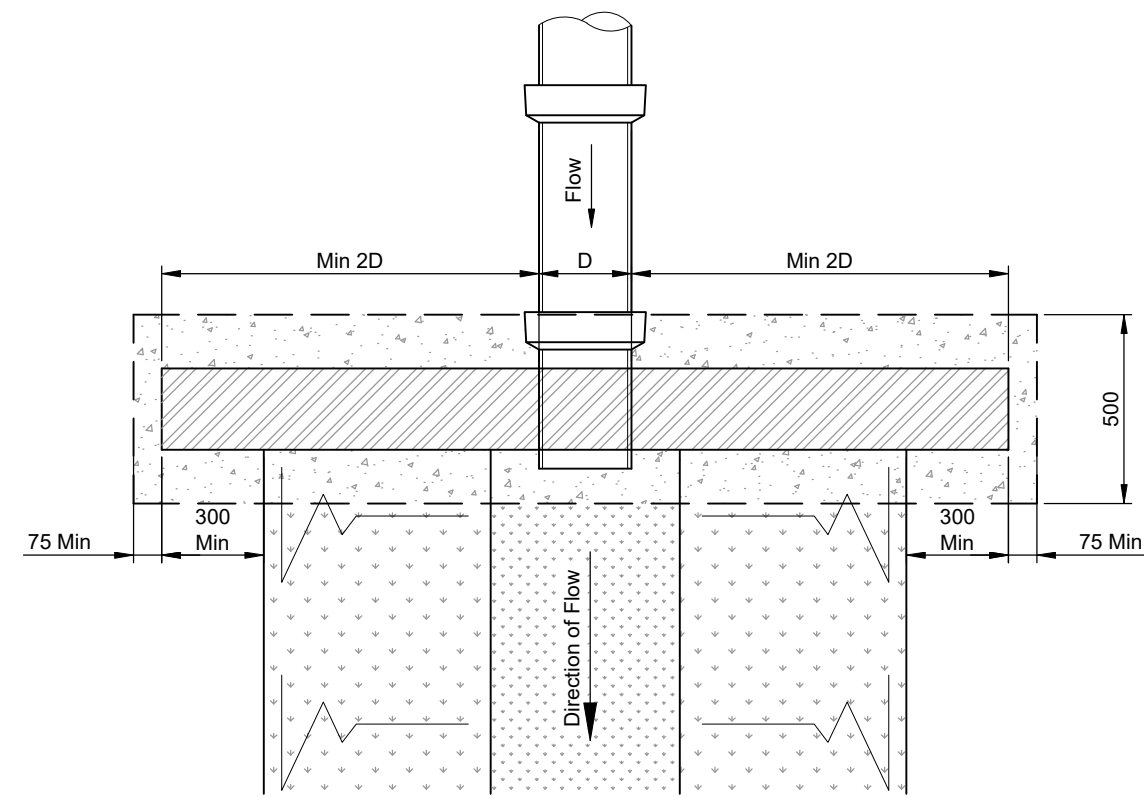
**SIMPLE HEADWALL SECTION**  
(Scale 1:20)

**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:

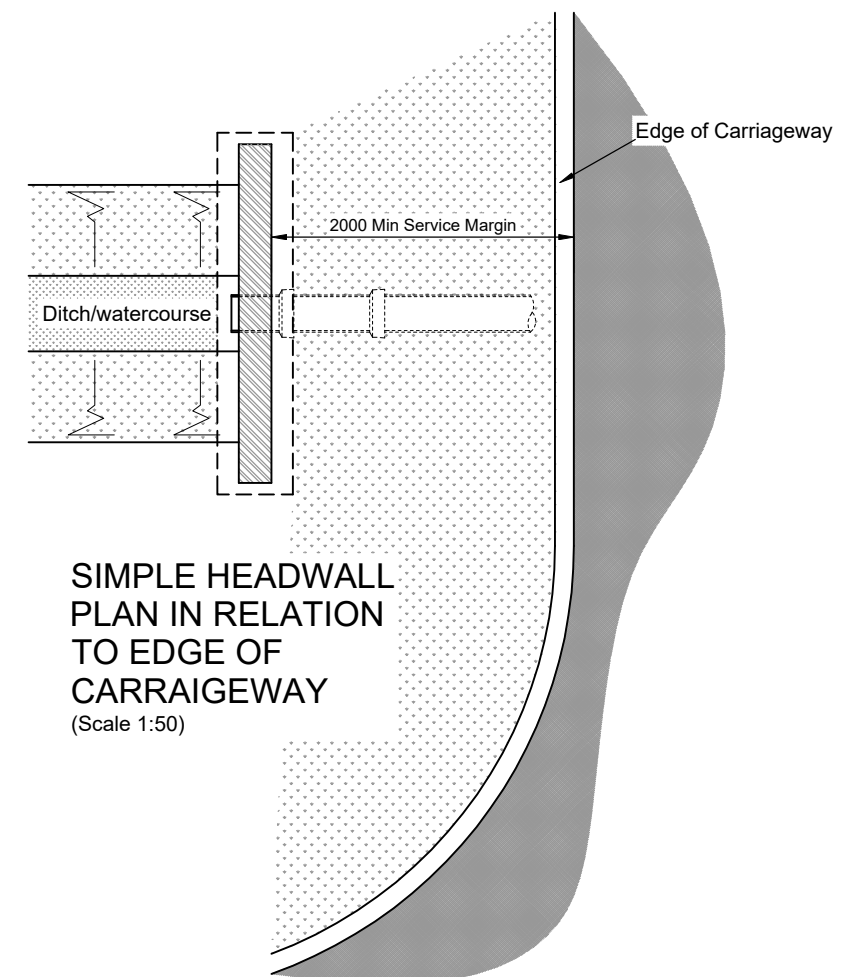
- Set back dimension relative to road speed
- Requirement for guarding vehicular/pedestrian
- RRRAP and/or other Designer Risk Assessment
- Ditch dimensions, depth and side slopes



**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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Date:	NOV 2017			As constructed
File ref:				
IWP Ref:				

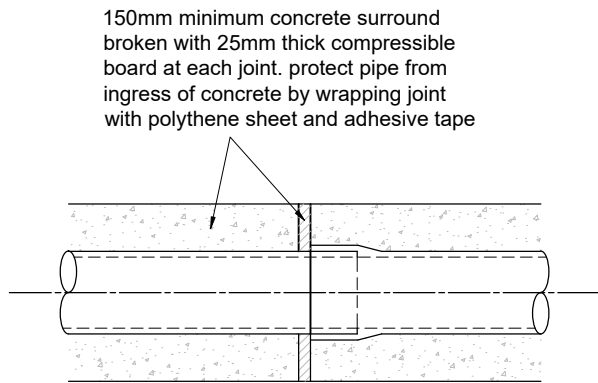
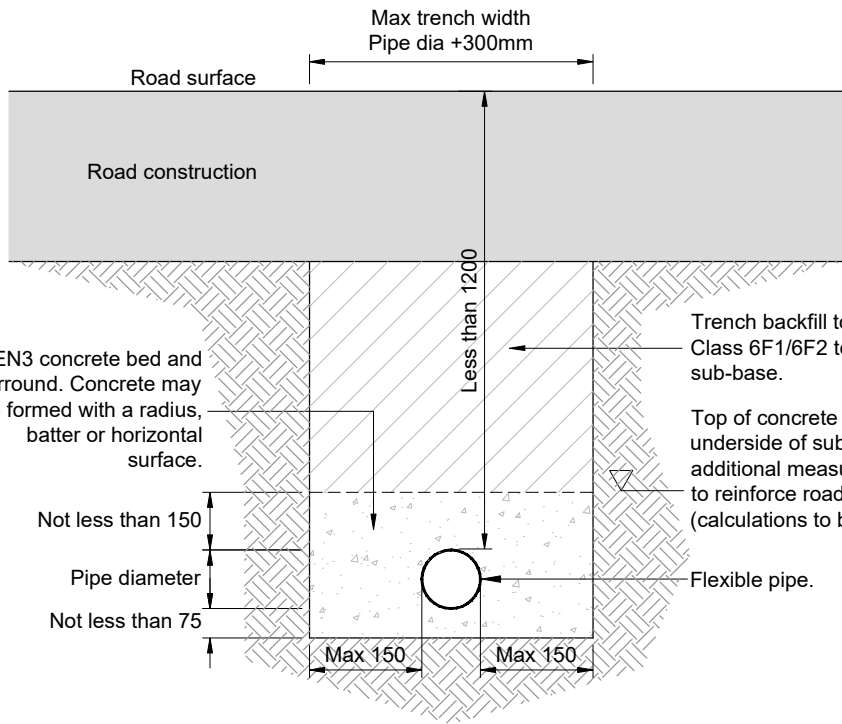
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Project Name	Section 278/38 Highway Agreement Standard Details
Drawing Title	Simple Headwall Detail for pipe sizes up to 450 diam Engineering Brickwork

**APPROVED**  
March 2019  
CONTRACTOR TO ENSURE LATEST DETAILS ARE USED

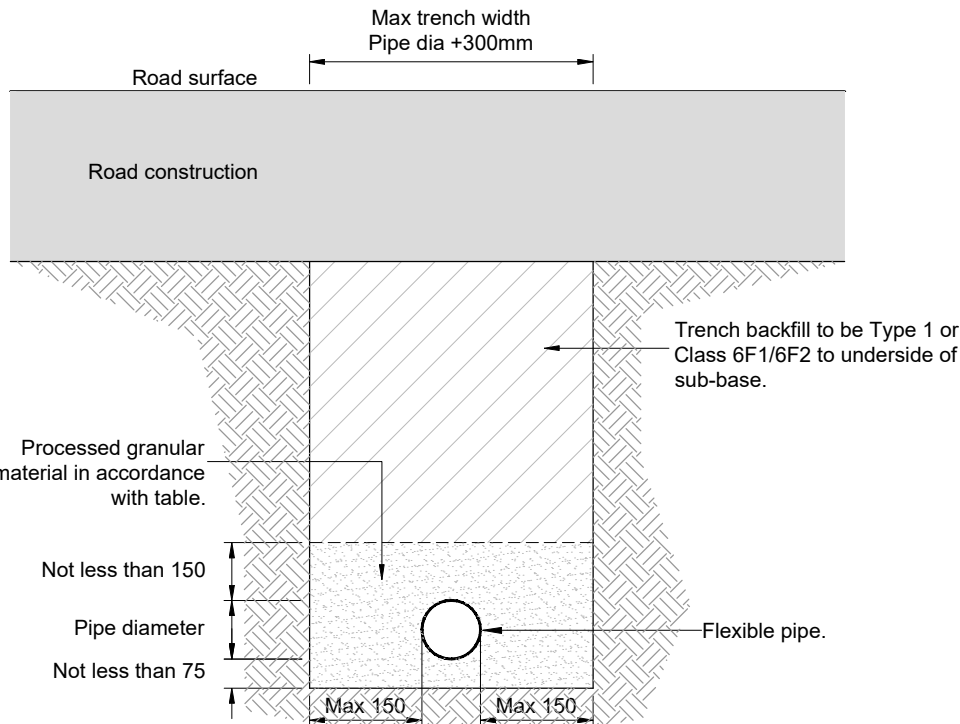
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Drawing No.	S278/38/32
Rev	A



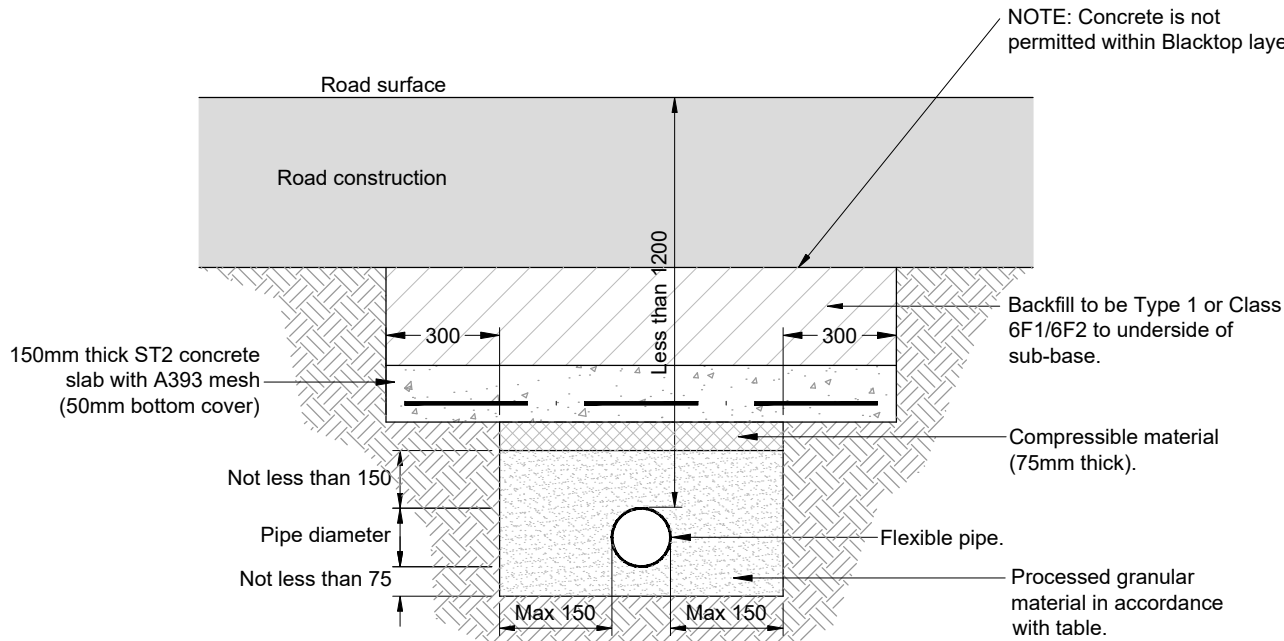


CONCRETE PIPE BEDDING AND SURROUND  
TYPE Z  
(Depth of cover to pipe less than 1.2m)

- NOTES
- Do not scale from this drawing.
  - Openings in existing highways shall be reinstated in accordance with the current version of Specification for Reinstatement of Openings in Highways published by HAUC.
  - Refer to drawing 11 for pipe selection.



GRANULAR PIPE BEDDING AND SURROUND  
TYPE S  
(Minimum depth of cover to pipe 1.2m)



CONCRETE SLAB PIPE PROTECTION  
(Depth of cover to pipe less than 1.2m and/or Where top of concrete would encroach into the road construction sub-base layer)

TABLE 1.

Internal pipe dia (mm)	Bedding Material Size (mm)
150	10 or 14 nominal single size or 14 to 5 graded
Over 150 to 300	10, 14 or 20 nominal single size or 14 to 5 graded or 20 to 5 graded
Over 300 to 550	14 or 20 nominal single size or 14 to 5 graded or 20 to 5 graded
550 to 900	14 , 20 or 40 nominal single size or 14 to 5 graded or 20 to 5 graded or 40 to 5 graded
Over 900	STRUCTURES  Pipes with a diameter of 0.9m or greater are classified as a structure and will be subject to review by the WSCC structures team.

To include aggregates to BS 882, air cooled blastfurnace slag, to BS1047 and lightweight aggregates to BS 3797 (Air cooled blastfurnace slag and lightweight aggregates not permitted for ductile iron pipes), recycled materials to BS8500-2.

Maximum CF value 0.15

For ferrous and cementitious pipeline materials sulphate content of bedding material must not be greater than 0.3% as sulphur trioxide.

Where drainage is installed in Filled ground the designer shall ensure measures are taken to control settlement.

Where drainage is installed in contaminated ground the designer shall provided specific details to be agreed with WSCC.

Where drainage is installed in soft ground the designer shall ensure measures are taken to prevent migration of pipe bedding material in to the surrounding soil and vice versa.

Refer to Manual for Contract Documents for Highways Volume 3 - Highway Construction Details for pipelines installed under A roads

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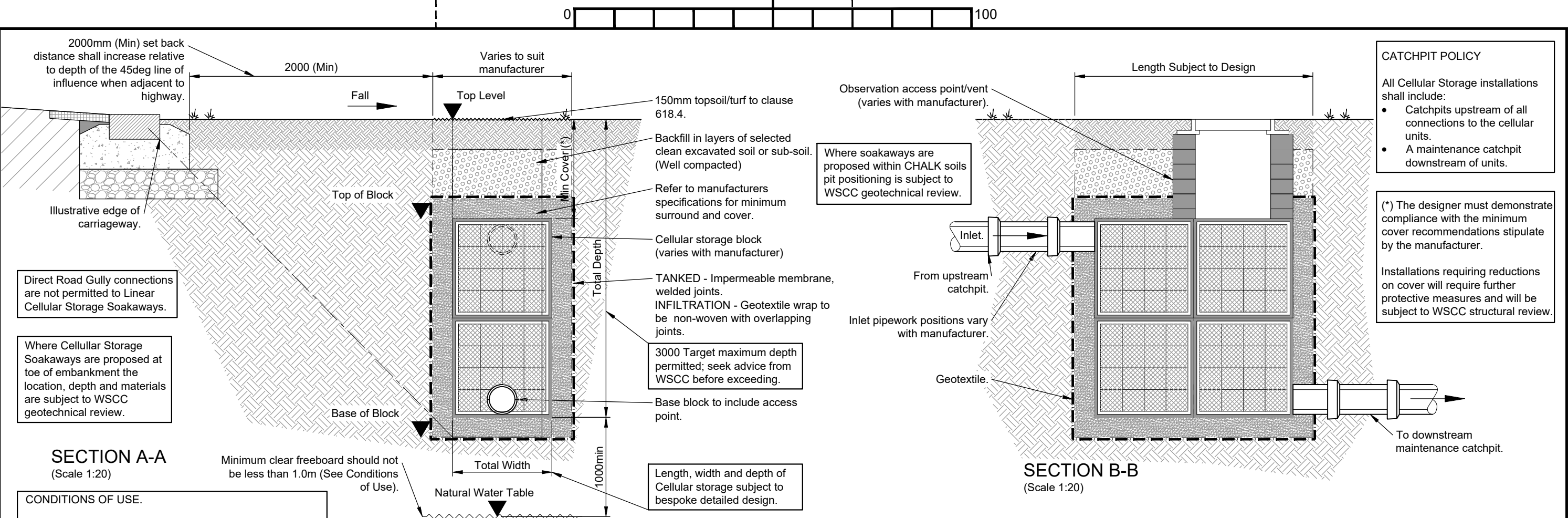


Project Name  
Section 278/38 Highway Agreement  
Standard Details

Drawing Title  
Drainage  
Pipe Bedding Details



Original Drawing Size :	A3
Scale : As Shown	Dimensions :
Drawing No. S278/38/33	Rev A



CONDITIONS OF USE.

- The use of Cellular Storage must be agreed with West Sussex County Council by early consultation and is subject to site suitability including but not limited to the following:-
- Cellular Storage is permitted as 'Tanked' or 'Infiltration' methods.
- A relevant geotechnical assessment must be provided including infiltration testing at a depth commensurate with formation level 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.
- Minimum 1m freeboard from formation to highest groundwater level.
- Soakaways to be positioned at least 5m from existing or proposed structures (greater distance may be required in CHALK soils, seek advice from geotechnical consultant).
- Locations within verges only.
- Units to be BBA and/or HAPAS approved.
- Unit strength calculations to be provided.

NOTES

1. Do not scale from this drawing.
2. 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.
6. Cellular Soakaways to be sited clear of the footways and 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 a Cellular soakaway cannot be achieved, seek advice from WSCC.
8. Easement will be required where Cellular soakaways are located outside of Public Highway.
9. Tanked Cellular storage shall be vented separately (not into catchpits).

Example Cellular Storage Schedule (to be included on design drawings)

Cellular Soakaway No.	Catchment Area (m2)	Soakaway Top Level (m)	Soakaway Base Level (m)	Length (m)	Width (m)	Incoming Pipe Invert (m)	Total Depth (m)
PIT #	###	###	###	###	###	###	###

ALL LEVELS SHOULD BE RELATED TO ORDNANCE SURVEY DATUM.

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Project Name

Section 278/38 Highway Agreement  
Standard Details

Drawing Title

Drainage  
Cellular Storage (Sheet 1 of 2)



Original Drawing Size : A3

Scale : As Shown

Dimensions :

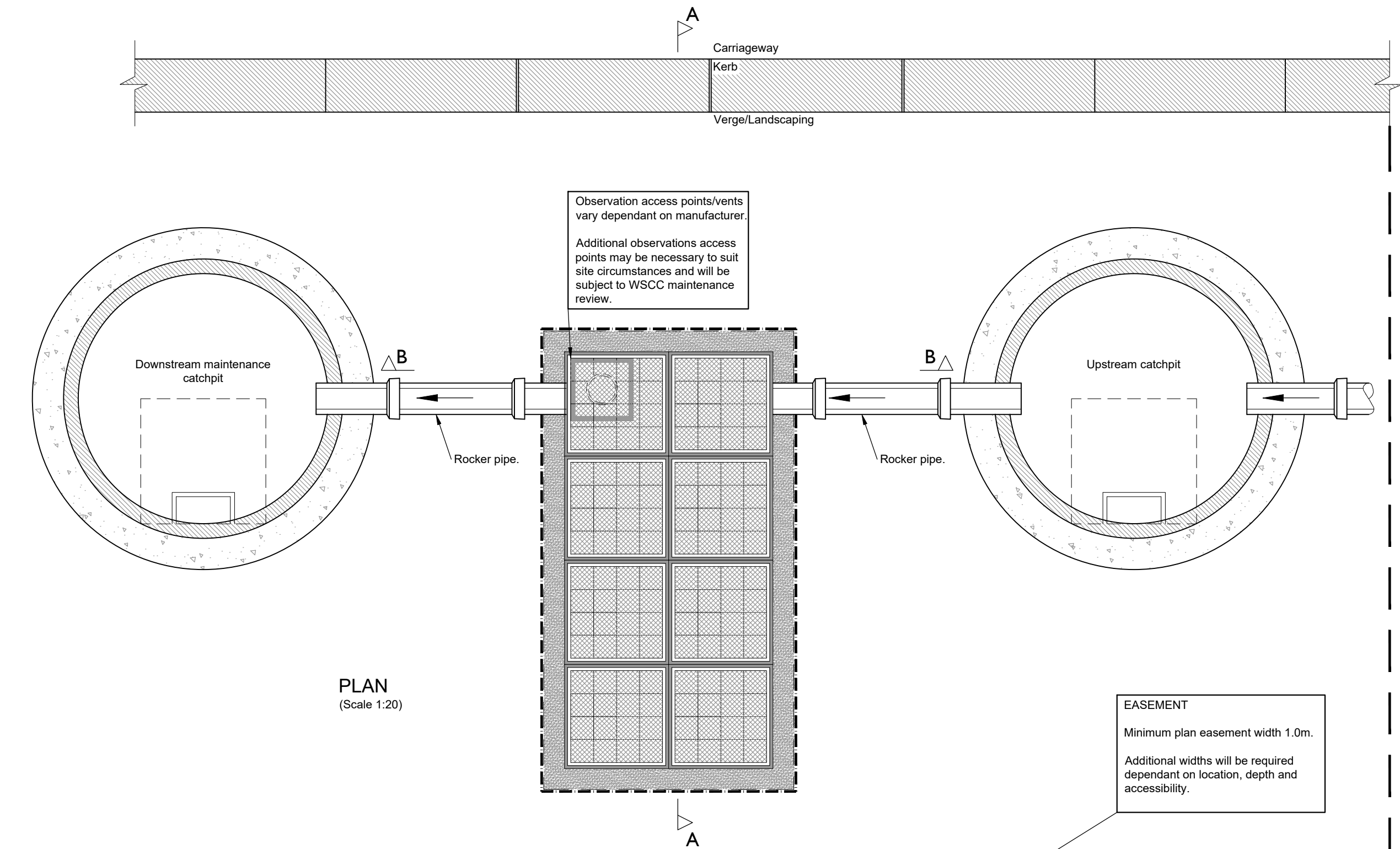
Drawing No.

S278/38/34

Rev

A





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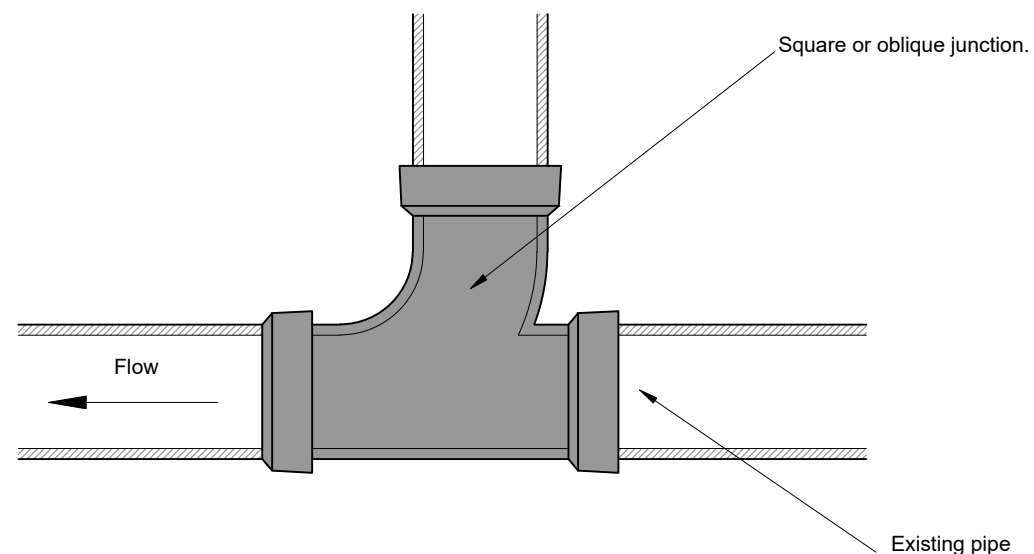


**west  
sussex  
county  
council**

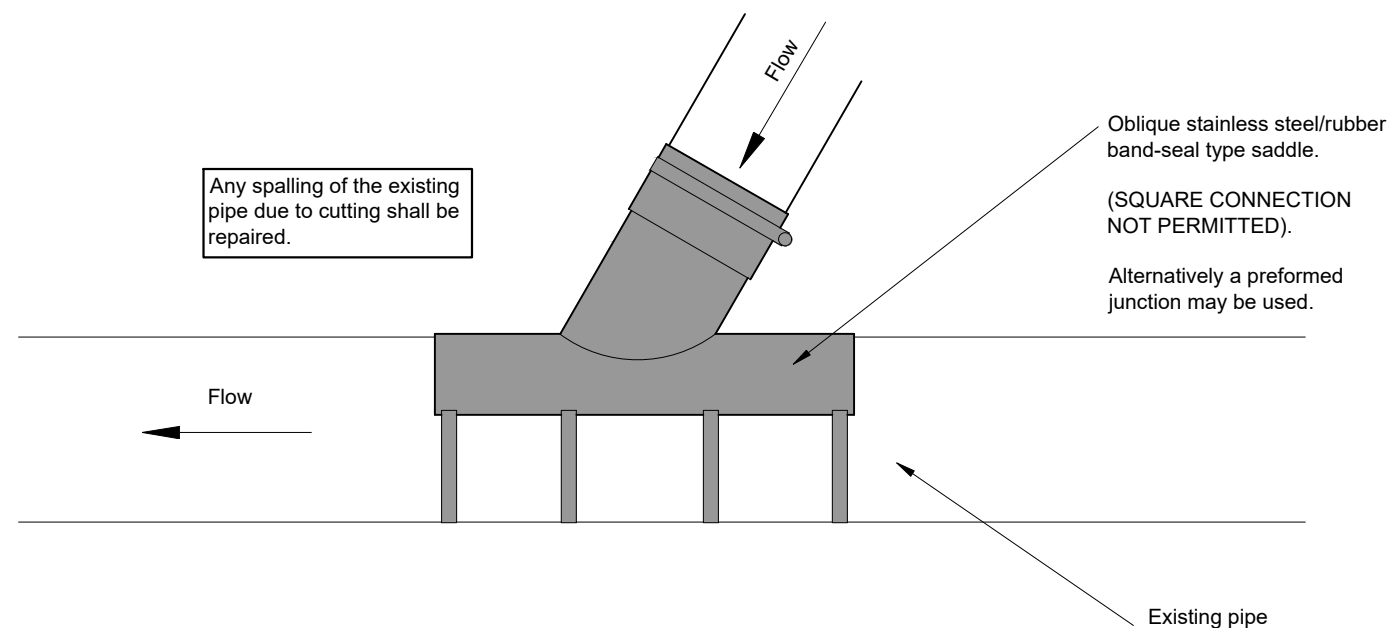
Project Name
Section 278/38 Highway Agreement Standard Details
Drawing Title
Drainage Cellular Storage (Sheet 2 of 2)



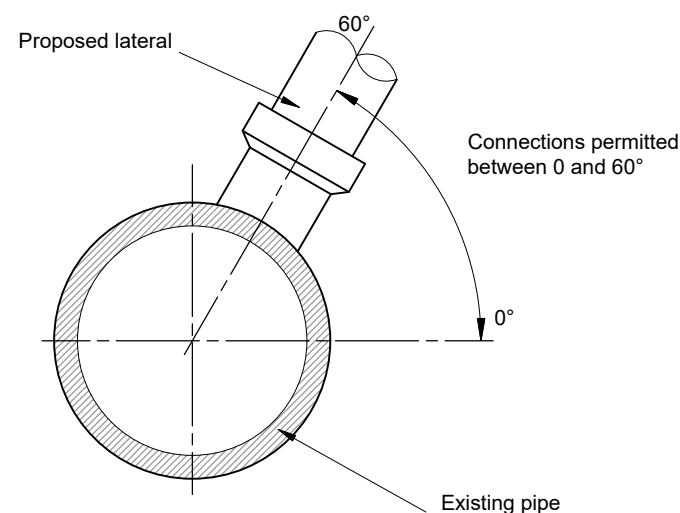
Original Drawing Size :	A3
Scale : As Shown	Dimensions :
Drawing No. S278/38/35	Rev A



CONNECTION TO SAME SIZE DIAMETER  
PIPE  
(PLAN)  
(1:10)



CONNECTION TO AN EXISTING LARGER  
DIAMETER SMOOTH WALL PIPE  
(PLAN)  
(1:10)



ACCEPTABLE CONNECTION LOCATION  
(SECTION)  
(1:10)

Saddles where the connecting lateral protrudes or has the potential to protrude in to the main pipe will not be permitted.

Connections of pipes of the same diameter must be made using preformed junctions at greater than 90 deg to the main flow.

Connections between new pipes shall be made using preformed junctions. Saddles will not be permitted to connect new laterals to new pipelines.

Condition of existing pipe to which the connection is proposed shall be assessed. If the existing pipe is damaged a sufficient length (as directed by the highway inspector) shall be replaced to ensure a satisfactory connection.

Where pipeline are installed in contaminated soil the designer shall ensure that material specified are resistant to any chemicals that may be present.

## NOTES

1. Do not scale from this drawing.
2. Openings in existing highways shall be reinstated in accordance with the current version of Specification for Reinstatement of Openings in Highways published by HAUC.

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Rev	Revision details	Chkd	Appd	Date
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Project Name

Section 278/38 Highway Agreement  
Standard Details

Drawing Title

## Drainage

### Lateral Connections



Original Drawing Size :	A3
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Scale : As Shown	Dimensions :
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Drawing No.  
**S278/38/36**

Rev	A
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