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Project – S38 Works, Parcel 4E & 4G Llanwern

Highways Details Booklet

on

Parcel 4E & 4G Llanwern

for

St Modwen Homes

Date

March '25

Document ref no. 24519-R-600-Details Booklet-0

Directors
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Steve McCarthy BEng(Hons) MSc CEng MICE MCIHT



SSIP SAFETY Schemes IN PROCUREMENT



QuadConsult Limited registered in England and Wales reg.no. 06880193
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Cardiff, CF15 7NE

Project 24519 – S38, Parcel 4E & 4G Llanwern.

S38 Highways Details Booklet

Document Control

Responsible for	Job Title	Name	Date	Signature
Content	Project Engineer	Rhys Pugh	March '25	
Checked				
Approval				
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Revision History

Revision	Date	Purpose/Status	Approved
0			
A			
B			
C			
D			
E			
F			

Distribution

	Function Title	Company	Name
1			
2			
3			

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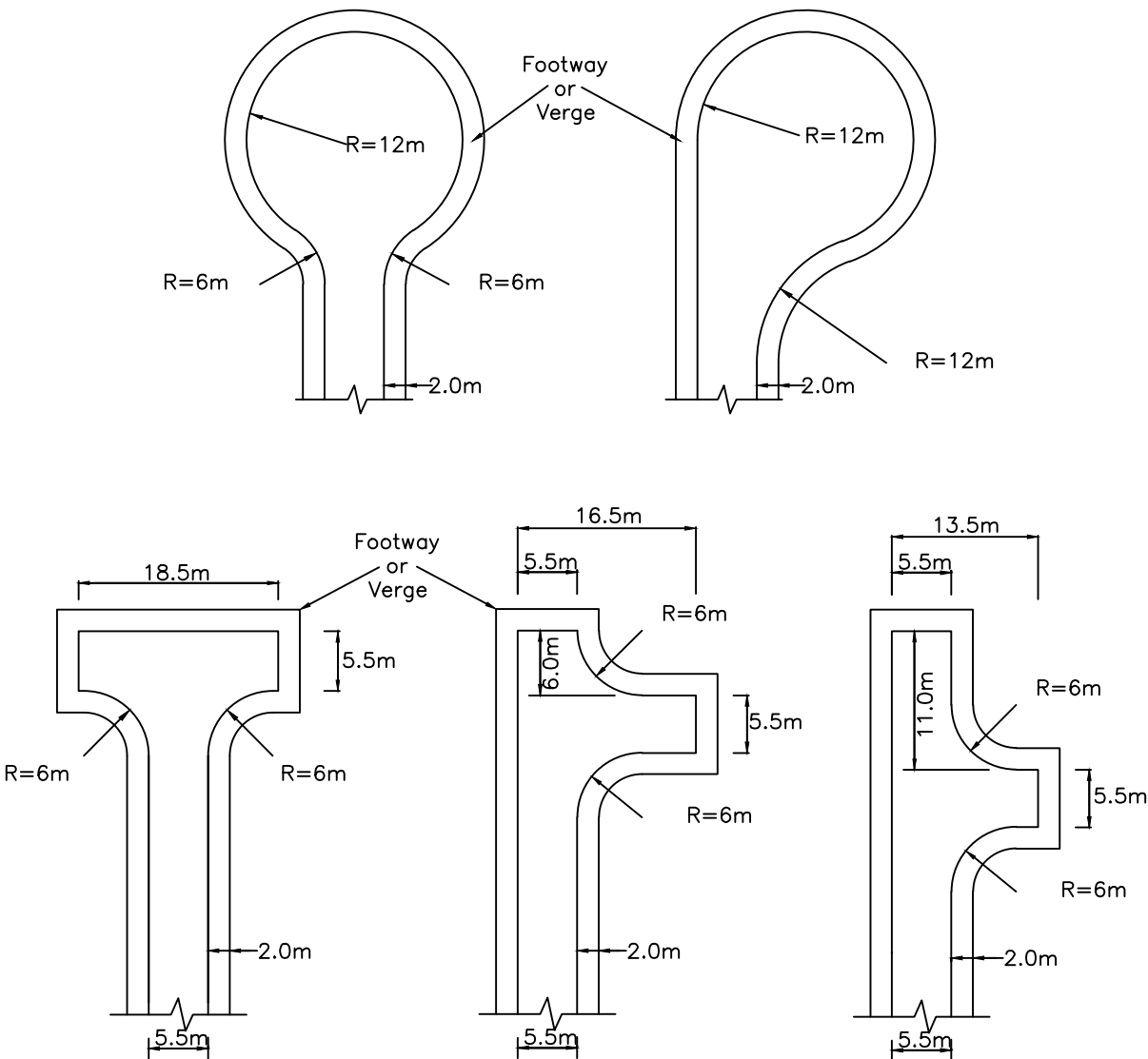
Details	101, 102, 104, 106, 108, 109, 111, 112, 115, 116, 117, 120, 121, 201, 202, 203, 204,
From All	205, 206, 207, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 220, 301, 302, 404,
Wales	405, 408, 409, 410, 415, 416, 501, 502, 503, 504, 505, 507, 510, 512.
Standards	

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Rev.	Amendments	Date	Made By	Chk'd By



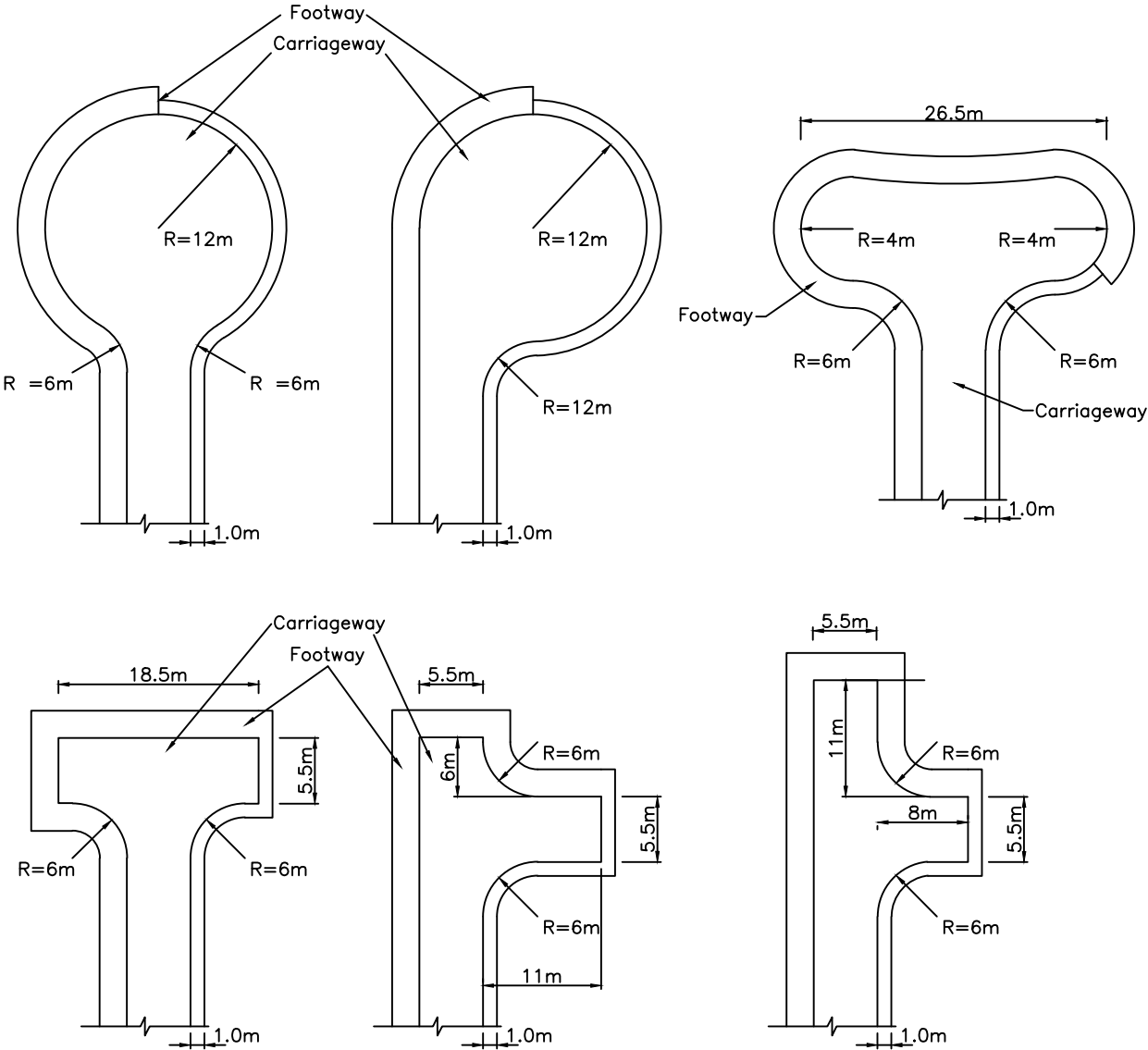
- NOTES**
- Where no footway or verge adjoins the turning head a 1m margin must be provided to allow for the overhang of turning vehicles.
 - Drives and accesses must be carefully planned to discourage parking in the turning area reducing its availability.
 - Variations may be proposed as long as a swept path analysis is provided to ensure service and delivery vehicles can turn.

TURNING AREAS – RESIDENTIAL STREETS

COMMON STANDARDS FOR WALES
HIGHWAY DESIGN GUIDE

Drawn	MT
Checked	SZ
Date	Feb '20
Scale	N.T.S.
Drg. No.	101
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NOTES

1. Termination point of footway will be determined in relation to position of street lighting columns and vehicular access.
2. Footway can be located on either side of the carriageway.
3. Appropriate Standard junction road marking to be provided by developer.
4. Where footway is not provided alongside the carriageway, a hard paved margin strip 1.0m wide shall be provided. Variations may be proposed as long as a swept path analysis is provided to ensure service and delivery vehicles can turn.
5. Variations may be proposed as long as a swept path analysis is provided to ensure service and delivery vehicles can turn.

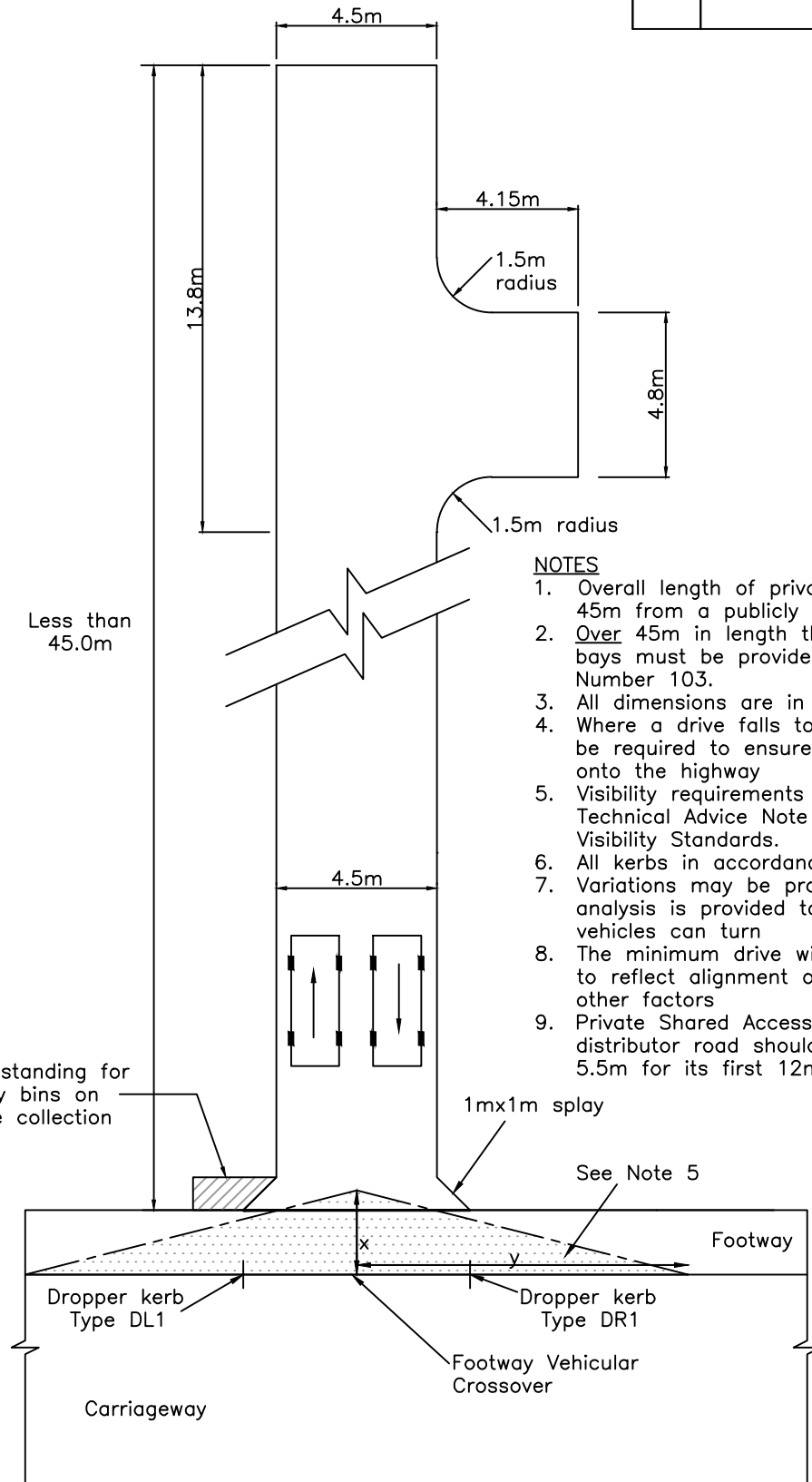
TURNING AREAS – MEWS COURT

COMMON STANDARDS FOR WALES

HIGHWAY DESIGN GUIDE

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Drg. No.	102
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NOTES

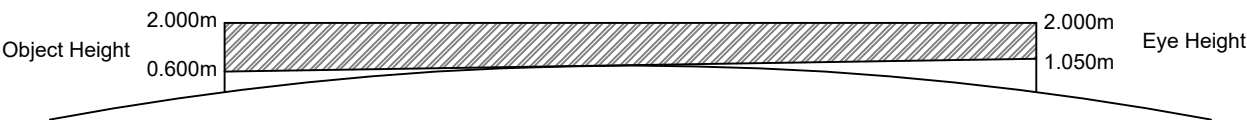
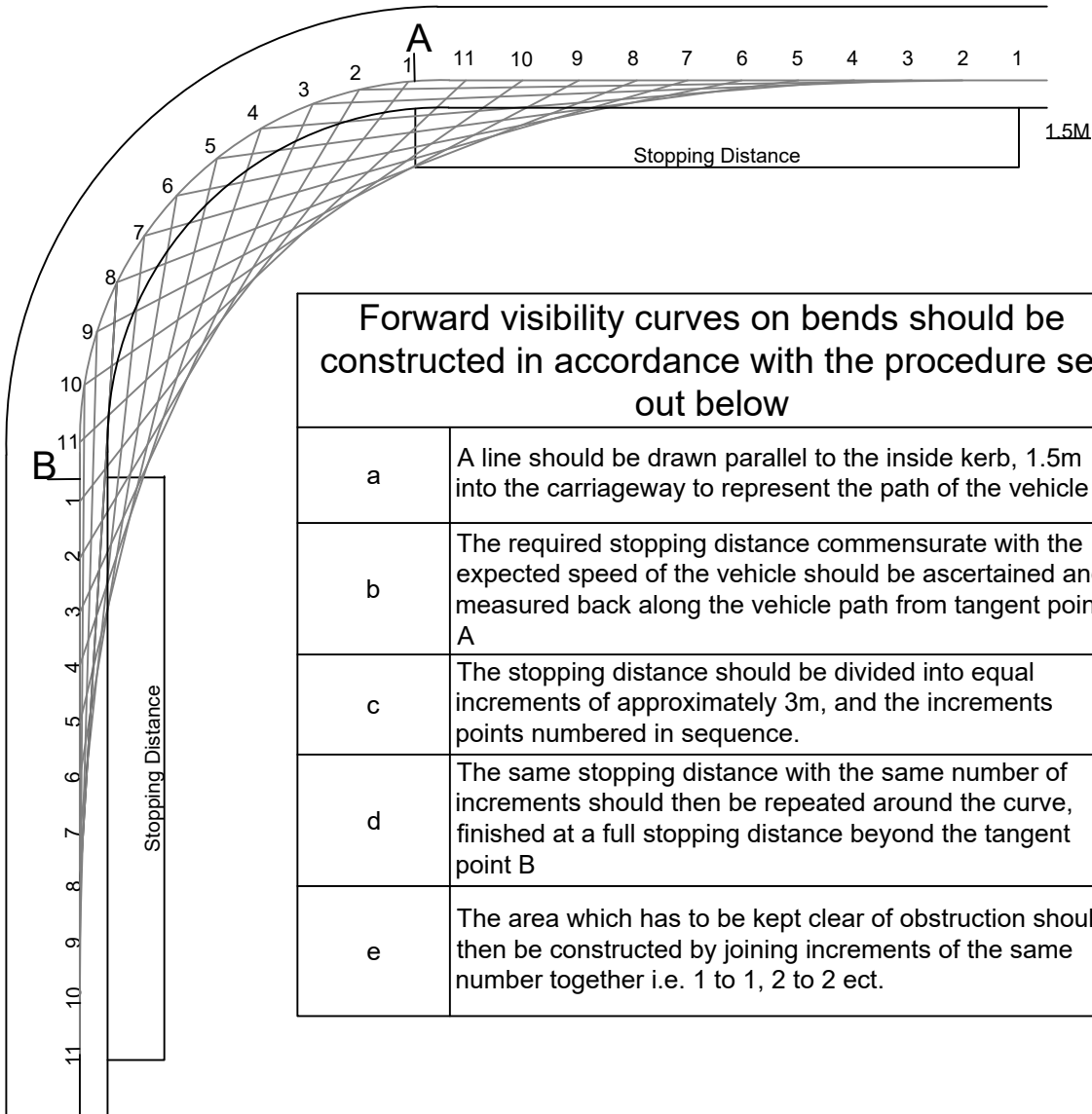
1. Overall length of private drive should not exceed 45m from a publicly maintained highway.
2. Over 45m in length the turning head and passing bays must be provided in accordance with drawing Number 103.
3. All dimensions are in metres unless otherwise stated.
4. Where a drive falls towards the highway, drainage will be required to ensure surface water does not drain onto the highway
5. Visibility requirements shall be in compliance with Technical Advice Note 18: Transport; Annex B: Visibility Standards.
6. All kerbs in accordance with BS EN 1340.
7. Variations may be proposed as long as a swept path analysis is provided to ensure service and delivery vehicles can turn
8. The minimum drive width of 4.5m may be increased to reflect alignment of private drive, site location and other factors
9. Private Shared Access off a classified road or distributor road should have a minimum width of 5.5m for its first 12m.

PRIVATE SHARED ACCESS SERVING UP TO 5 DWELLINGS
(LESS THAN 45M IN LENGTH)

COMMON STANDARDS FOR WALES
HIGHWAY DESIGN GUIDE

Drawn	MT
Checked	SZ
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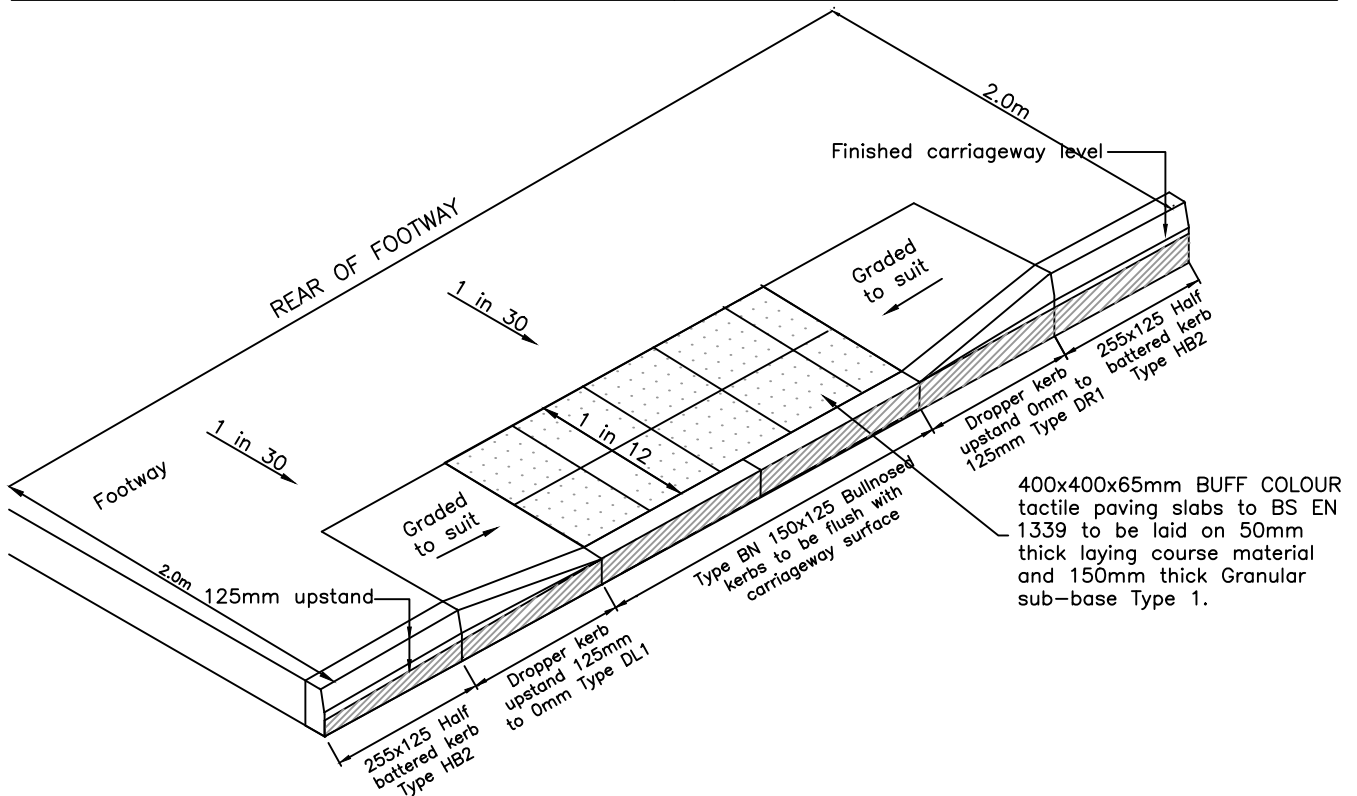
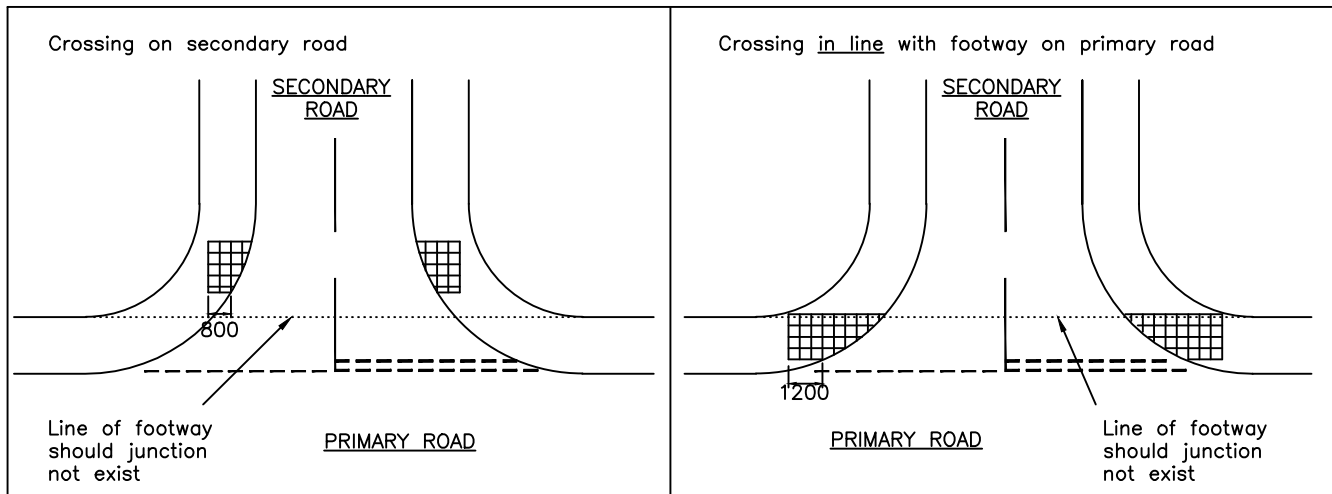
Vertical Plane - Also See Figure 7.17 of MfS

TYPICAL FORWARD VISIBILITY ENVELOPE ON HORIZONTAL
AND VERTICAL PLANE

COMMON STANDARDS FOR WALES
HIGHWAY DESIGN GUIDE

Drawn	MT
Checked	SZ
Date	Feb '20
Scale	N.T.S.
Drg. No.	106
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Rev.	Amendments	Date	Made By	Chk'd By



NOTES

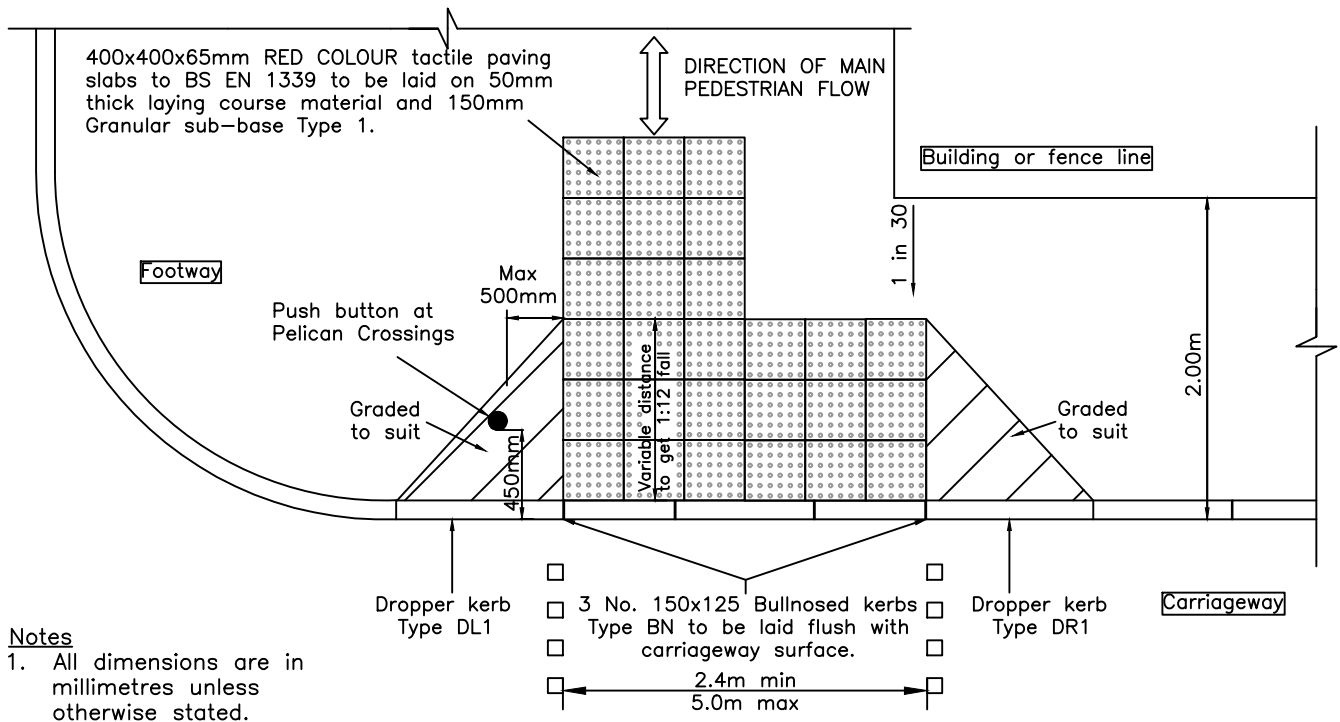
1. All dimensions are in millimetres unless otherwise stated
2. Kerbing may be radius kerbing in which case the minimum depth of tactiles shall be 800mm
3. Tactiles must cover the full extent of dropped kerb.
4. Raised domes must be lined up directly with those on the opposite side of the road.
5. Where tactiles will be in line with the footway on the primary road the minimum depth of tactiles shall be 1200mm
6. For further guidance refer to "Guidance on the Use of Tactile Paving Surfaces" by DETR 1998.

UNCONTROLLED PEDESTIAN CROSSING

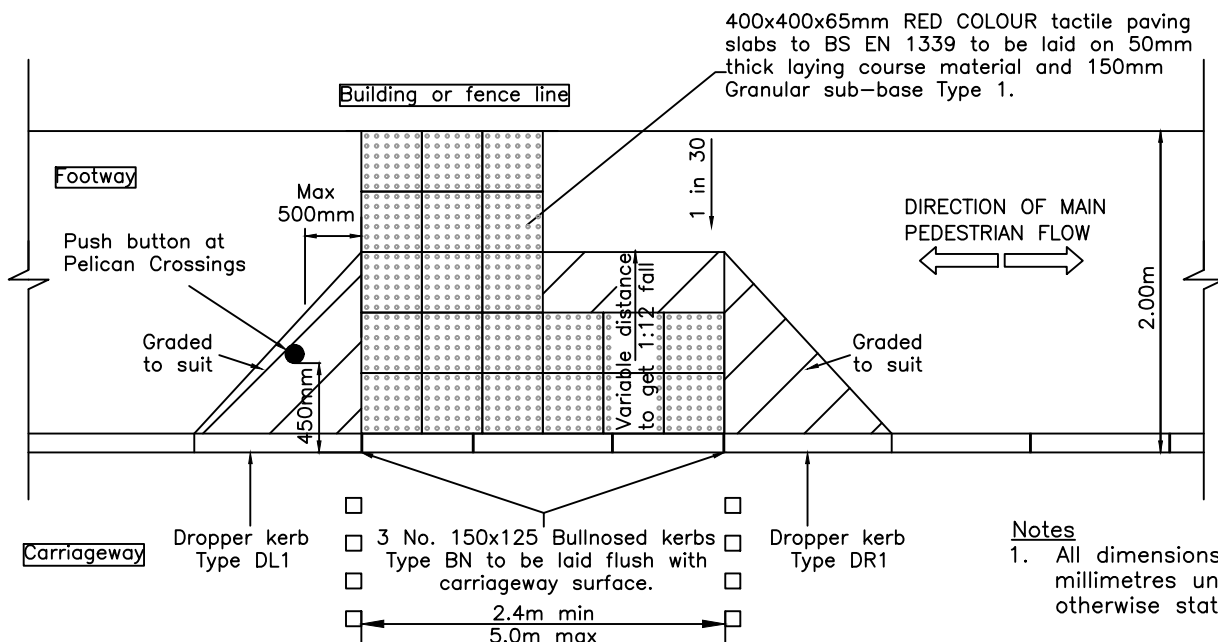
COMMON STANDARDS FOR WALES HIGHWAY DESIGN GUIDE

Drawn	MT
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Drg. No.	108
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IN-LINE CONTROLLED CROSSING



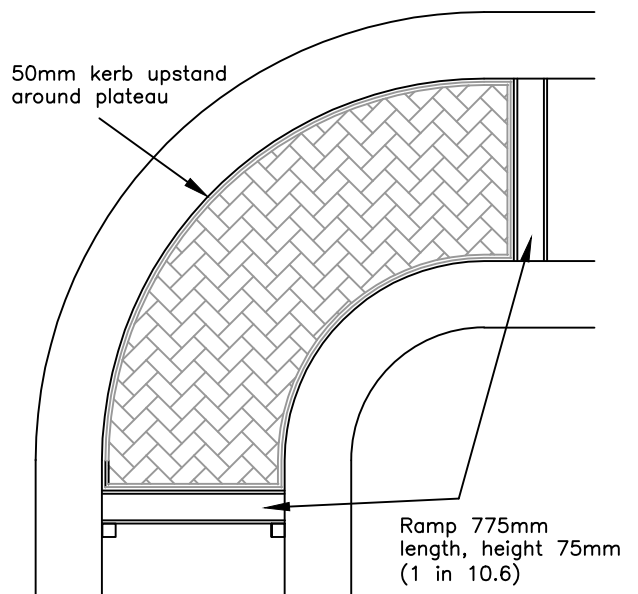
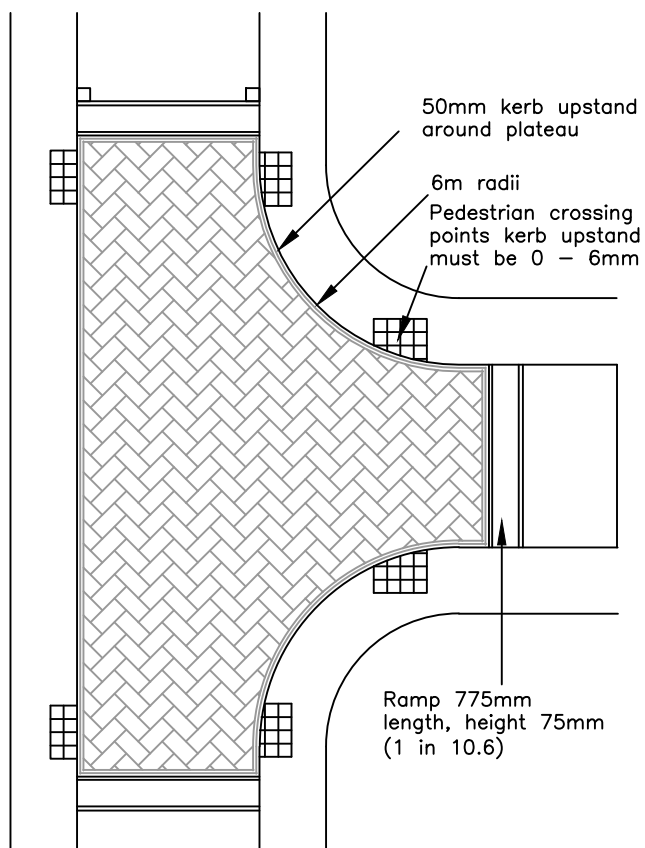
INSET CONTROLLED CROSSING

CONTROLLED PEDESTRIAN CROSSINGS

COMMON STANDARDS FOR WALES HIGHWAY DESIGN GUIDE

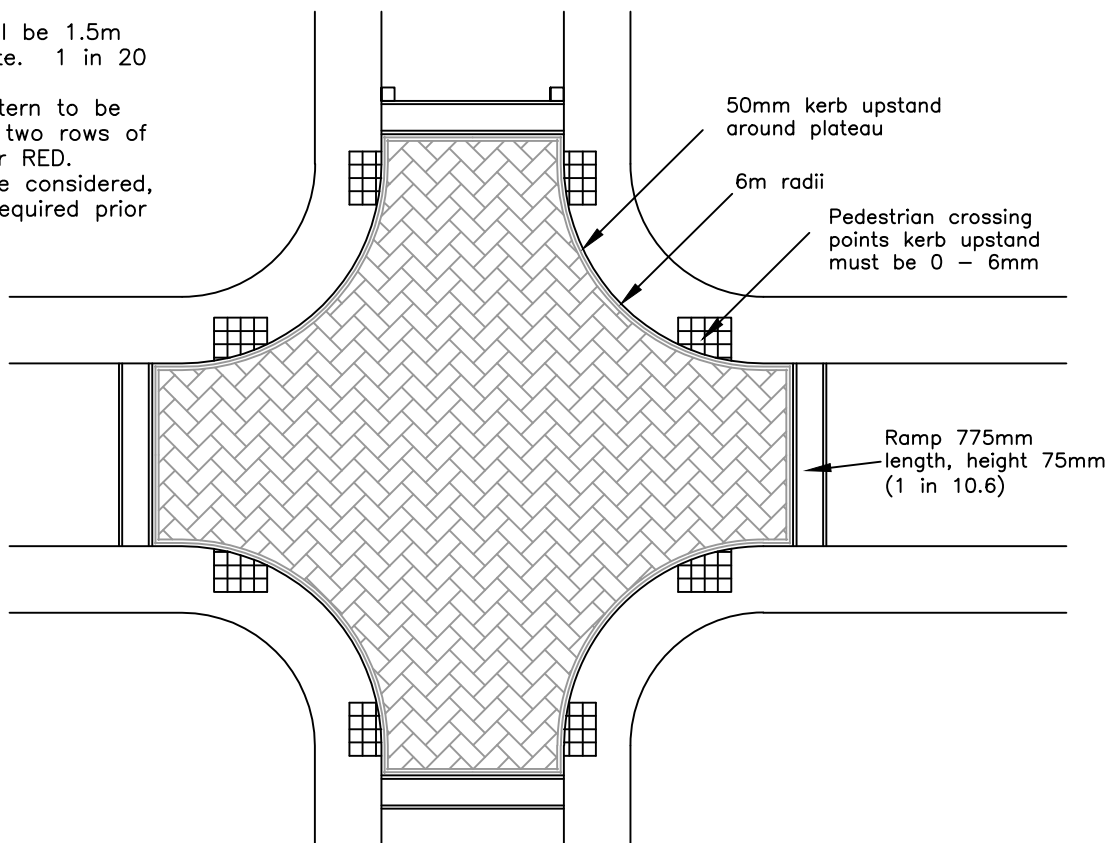
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Date	Feb '20
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Rev.	Amendments	Date	Made By	Chk'd By



NOTES

1. Ramp lengths will be 1.5m long on bus route. 1 in 20 gradient.
2. Block paving pattern to be herringbone with two rows of stretchers. Colour RED.
3. Drainage must be considered, gullies may be required prior to ramps.

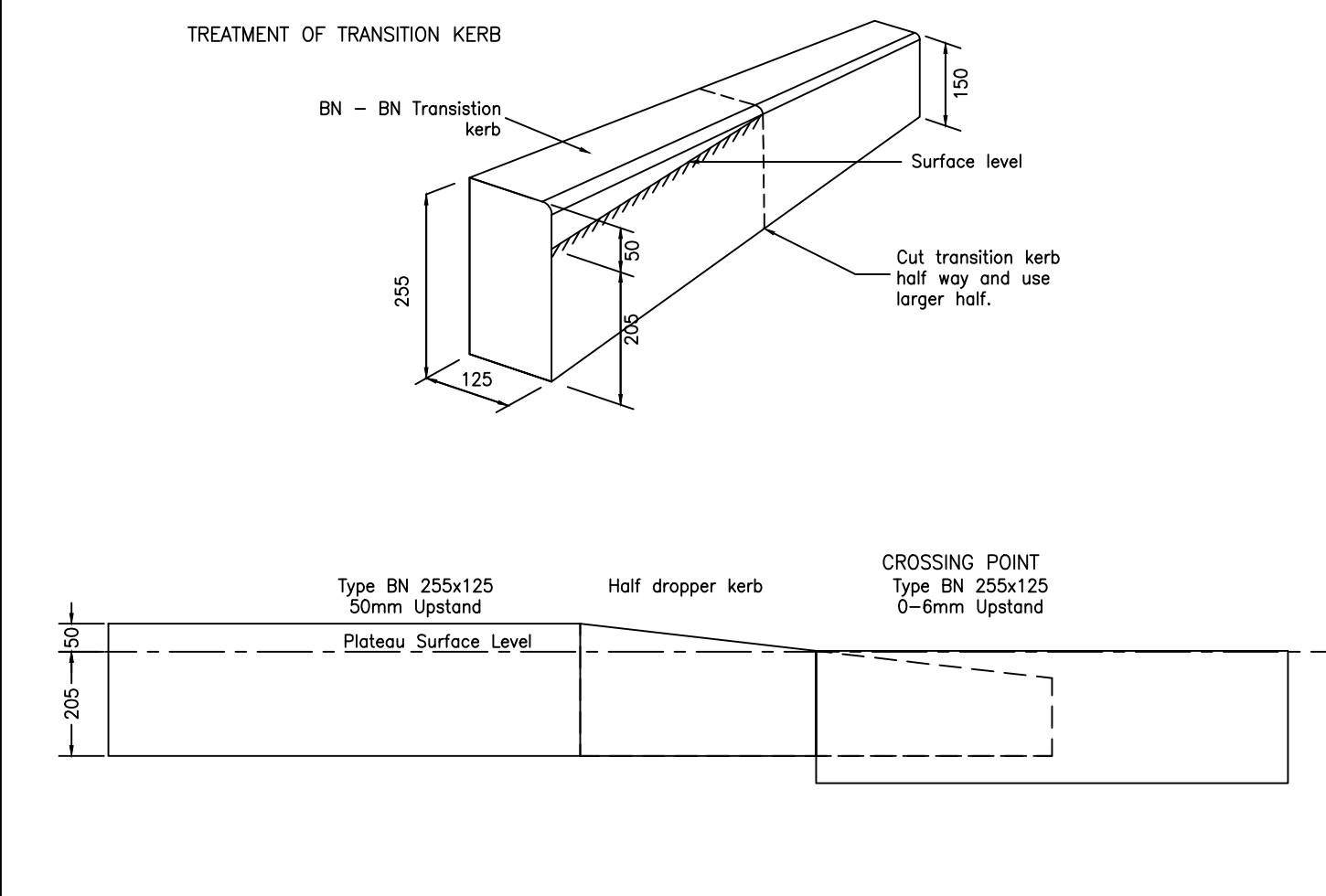
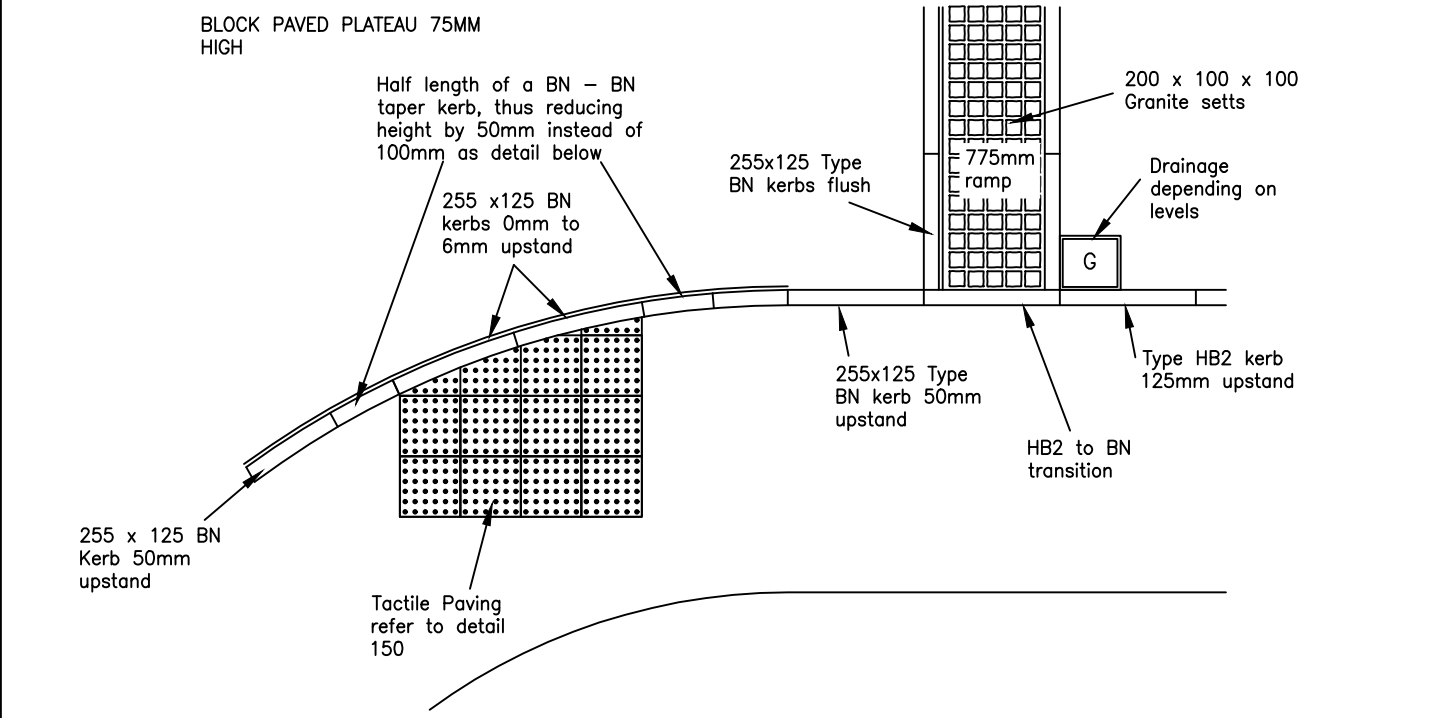


JUNCTION PLATEAU / RAISED CARRIAGEWAY LAYOUT

COMMON STANDARDS FOR WALES HIGHWAY DESIGN GUIDE

Drawn	MT
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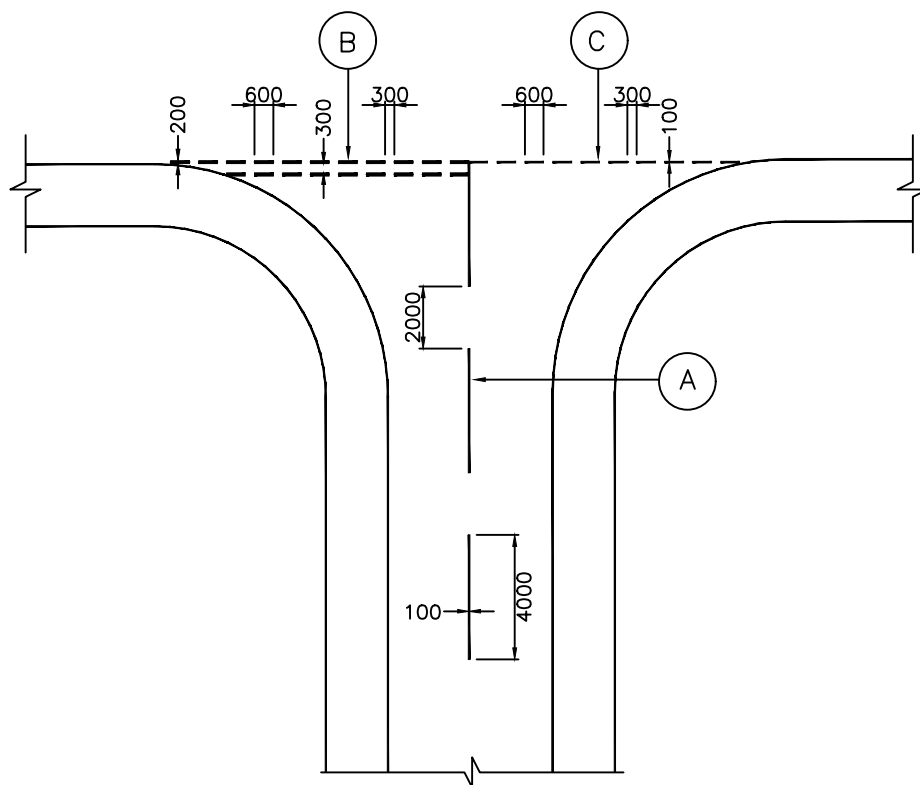
Rev.	Amendments	Date	Made By	Chk'd By



JUNCTION PLATEAU KERBING

COMMON STANDARDS FOR WALES HIGHWAY DESIGN GUIDE	Drawn	MT
	Checked	SZ
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KEY

- A. Minimum of 3 number markings or as specified by the Highway Authority.
White 4m mark, 2m gap, 100mm wide. TSRGD Diag. No. 1004.
- B. White 600mm mark, 300mm gap, 200mm wide TSRGD Diag. No. 1003A.
- C. White 600mm mark, 300mm gap, 100mm wide TSRGD Diag. No. 1009A.

NOTES

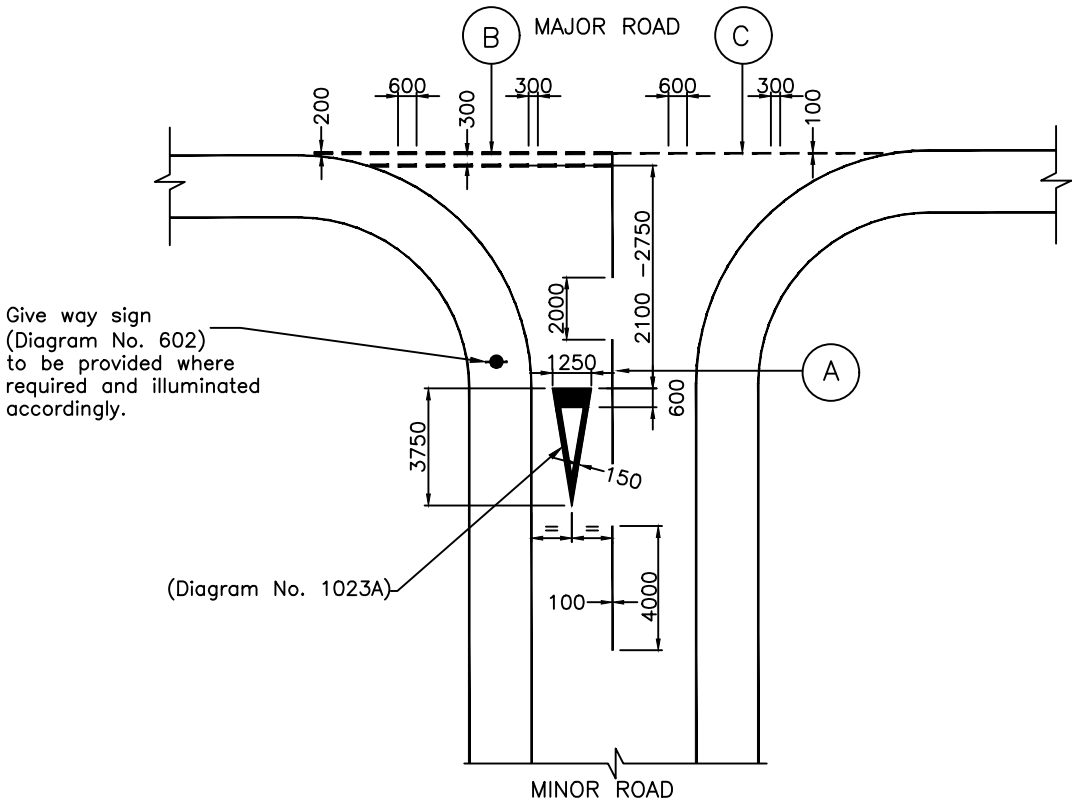
1. All markings to be of thermoplastic spray or screed with applied solid glass beads and designed in accordance with Chapter 5 of the Traffic Signs Manual (H.M.S.O.) and approved by Rhondda Cynon Taff County Borough Council.
2. All dimensions are in millimetres unless otherwise stated

JUNCTION ROAD MARKINGS

COMMON STANDARDS FOR WALES HIGHWAY DESIGN GUIDE

Drawn	MT
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- KEY
- A. Minimum of 3 number markings or as specified by the Highway Authority. White 4m mark, 2m gap, 100mm wide. TSRGD Diag. No. 1004.
 - B. White 600mm mark, 300mm gap, 200mm wide TSRGD Diag. No. 1003A.
 - C. White 600mm mark, 300mm gap, 100mm wide TSRGD Diag. No. 1009A.

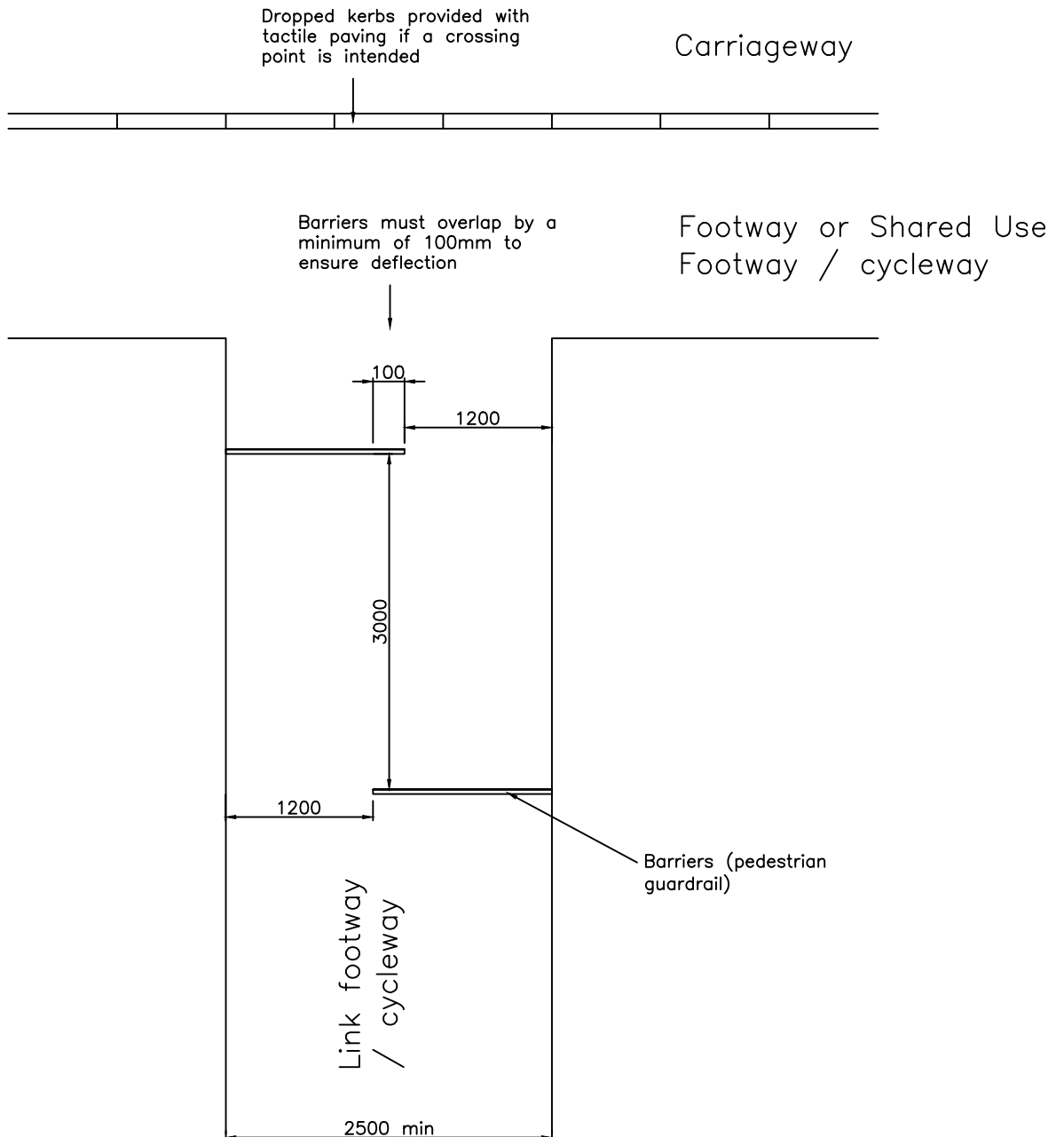
- NOTES
- All markings to be of thermoplastic spray or screed with applied solid glass beads and designed in accordance with Chapter 5 of the Traffic Signs Manual (H.M.S.O.). and approved by Rhondda Cynon Taff County Borough Council.
 - Each "GIVE WAY" marking should normally incorporate a minimum of three 4m longitudinal warning lines separated by a 2m gaps. Where the MINOR ROAD average traffic volume is likely to exceed 100 vehicles Per hour then four 4m longitudinal lines with 2m gaps should be provided.
 - All dimensions are in millimetres unless otherwise stated

JUNCTION ROAD MARKINGS
JUNCTIONS WITH PRIMARY ROADS

COMMON STANDARDS FOR WALES
HIGHWAY DESIGN GUIDE

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NOTES

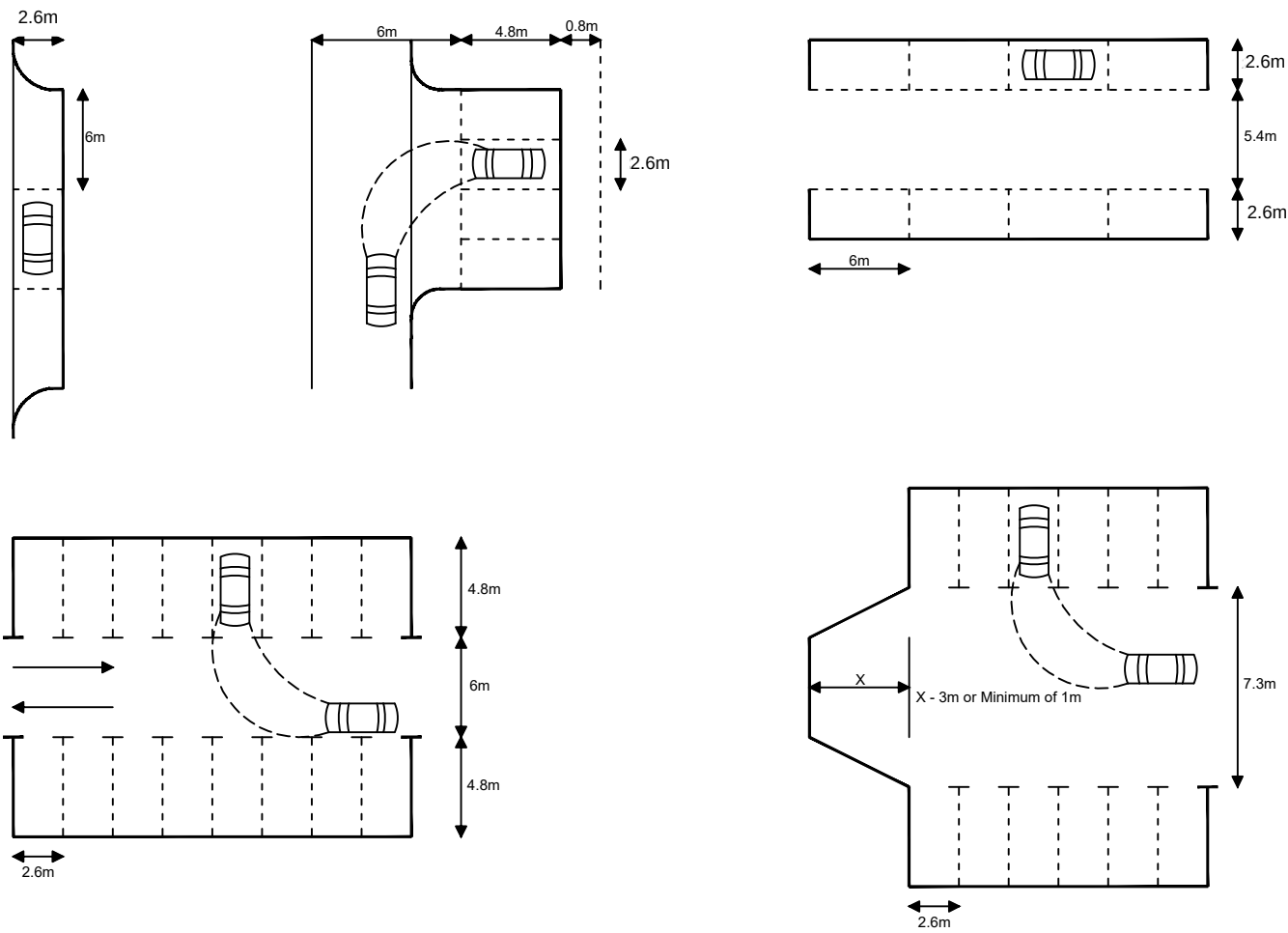
1. All dimensions are in millimetres unless otherwise stated.
2. If the areas each side of the barriers are open, fencing may be required to ensure cyclists don't bypass the staggered barriers.

PEDESTRIAN AND CYCLE STAGGERED BARRIERS

COMMON STANDARDS FOR WALES HIGHWAY DESIGN GUIDE

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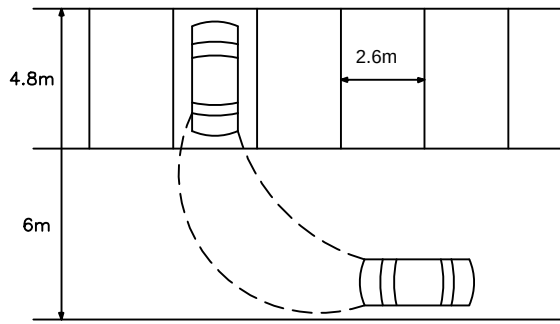


PARKING ARRANGEMENTS – CAR PARKS

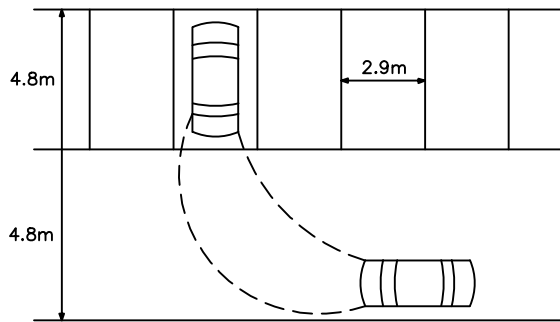
COMMON STANDARDS FOR WALES
HIGHWAY DESIGN GUIDE

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MINIMUM DIMENSIONS FOR STANDARD ARRANGMENT



DIMENSIONS FOR MINIMUM TWO WAY AISLE

LAYOUT AND AISLE WIDTH OF A STANDARD RIGHT ANGLE PARKING BAY

Aisle/Road Width M	Bay Width M	Driveway M
6	2.600	3.600
5.500	2.600	3.600
5.300	2.750	N/A
5.000	2.800	3.600
4.800	2.900	N/A
4.500	2.950	3.600
4.000	3.100	N/A
3.500	3.200	N/A

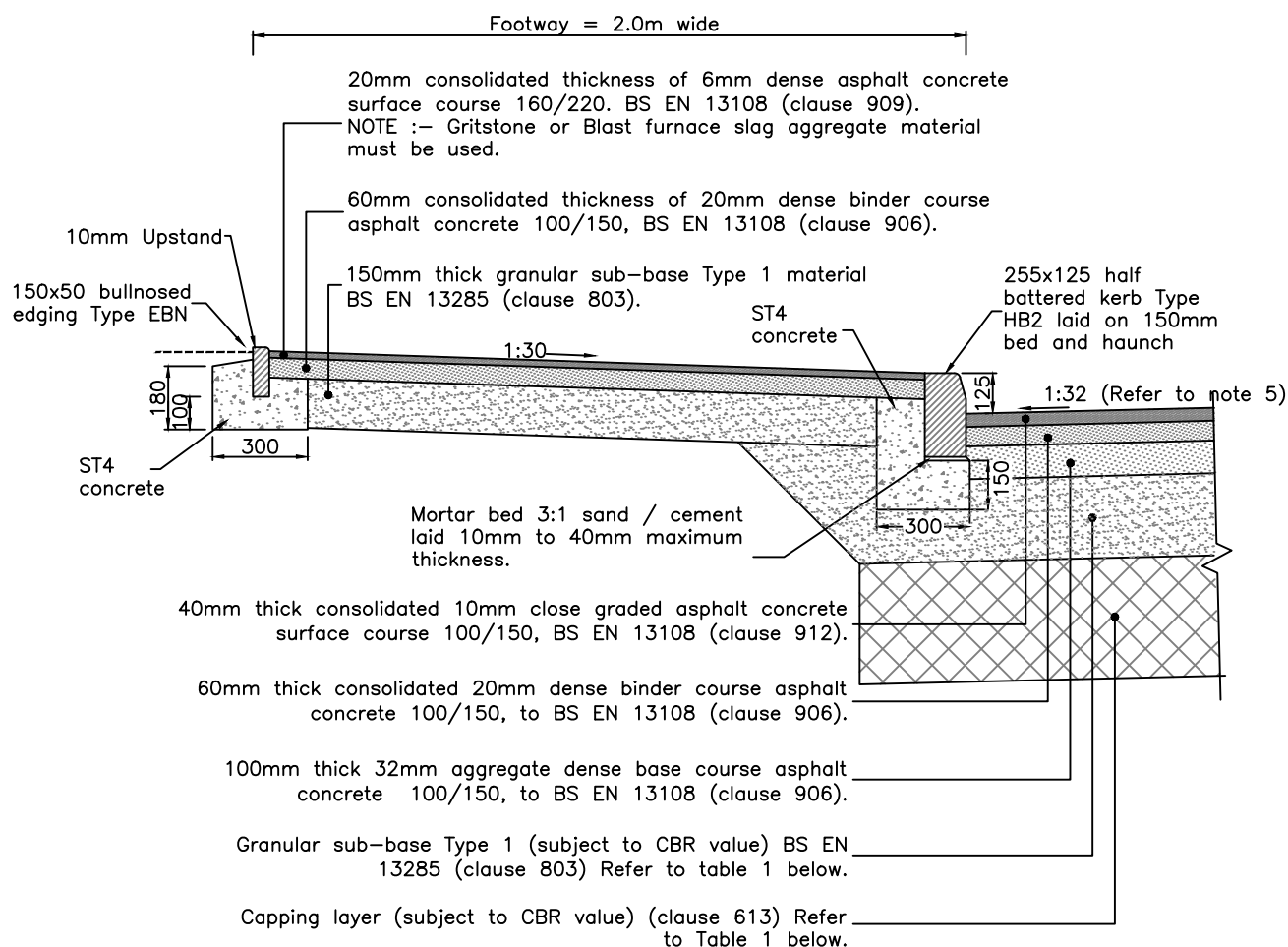
Aisle Width and Driveway Dimensions

PARKING STANDARDS

COMMON STANDARDS FOR WALES HIGHWAY DESIGN GUIDE

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NOTES

- When bituminous mixture is laid as base course and is not covered immediately with the binder course or binder course is laid and not immediately covered with surface course, then apply tack coat bituminous spray Class C40B4 cationic emulsion (BS EN 13808) at a rate of spread of 0.5 litres/m². (clause 920)
- Production / laying / compaction requirements, sub-base – clause 802, capping layer – clause 612, asphalt concrete base course / binder course / surface course – clause 901 and 903.
- Table below is given for guidance only. Specialist geo-technical advice should be taken particularly where the CBR value is below 5%. Consideration should also be given for the provision of geo-grid and geo-textile membranes depending on the site conditions.
- The use of recycled material will require prior agreement and the provision sample test certificates indicating suitable grading characteristics and the absence of contamination. When permitted it may only be used as capping material or as sub-base in non-carriageway areas.
- The minimum overall construction thickness of carriageway shall be 450mm.
- Apart for those lengths requiring superelevation by design need, the cross section of the new carriageway should be crowned to provide a balanced camber. This will ensure that surface water from higher ground will not drain across the carriageway to the lower side.
- Weed killer to be applied at formation level or top of the sub-base to the approval of the Highway Engineer.
- All dimensions are in millimetres unless otherwise stated.

TABLE 1

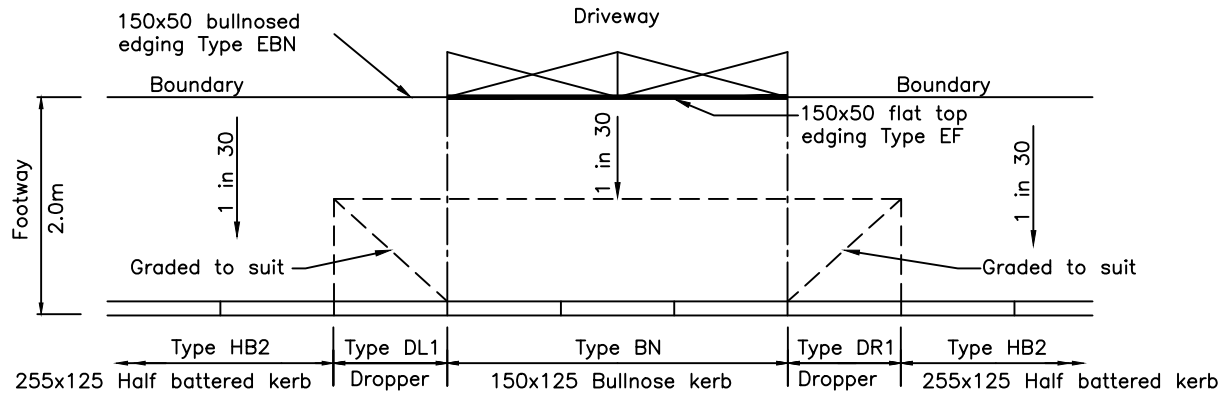
CBR Value	Below 2%	2% – 5%	Above 5%
Sub-base	150mm	150mm	255mm
Capping Layer	600mm	350mm	0mm

FOOTWAY AND CARRIAGEWAY CONSTRUCTION – RESIDENTIAL STREETS

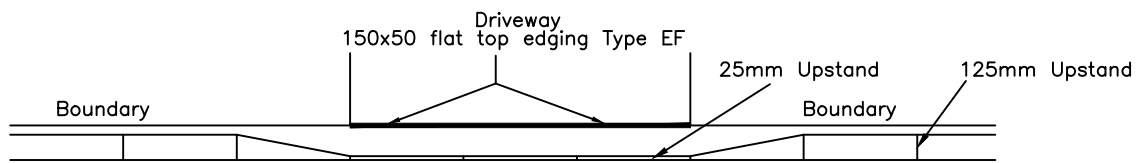
COMMON STANDARDS FOR WALES HIGHWAY DESIGN GUIDE

Drawn	MT
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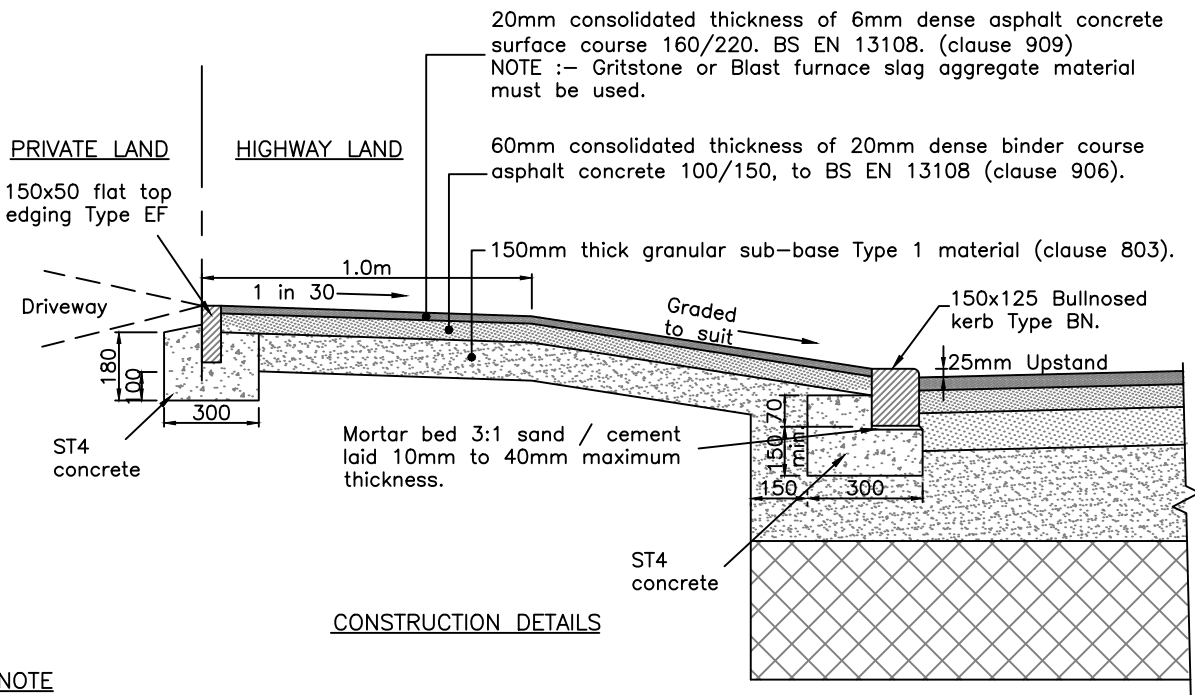
Rev.	Amendments	Date	Made By	Chk'd By



PLAN OF VEHICULAR CROSSOVER



ELEVATION OF VEHICULAR CROSSOVER



NOTE

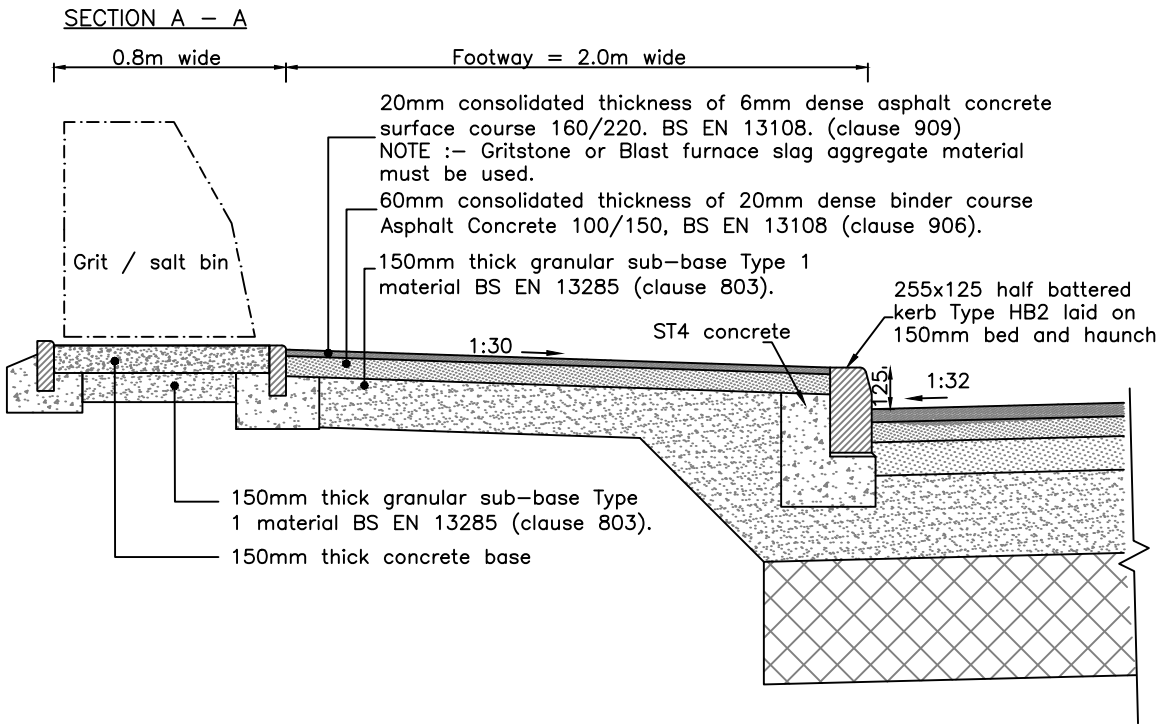
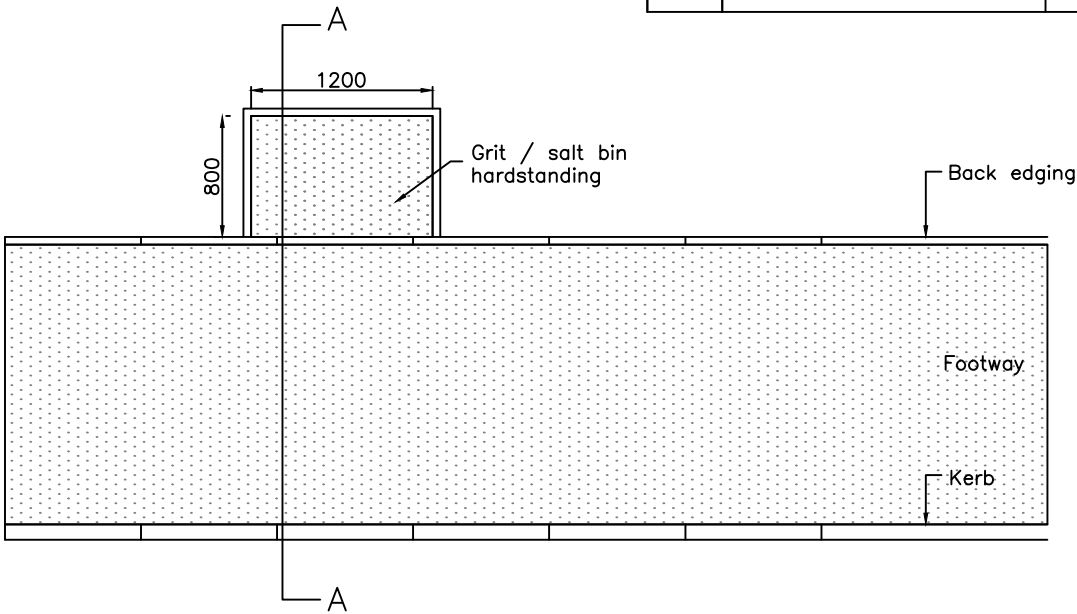
1. Where the driveway falls away from the footway, it is the developer's responsibility to ensure the vehicles do not ground on the crossover.
2. Where the driveway falls towards the footway, surface water shall not be allowed to drain across the footway.
3. All dimensions are in millimetres unless otherwise stated.

VEHICULAR CROSSOVER – RESIDENTIAL STREETS

COMMON STANDARDS FOR WALES HIGHWAY DESIGN GUIDE

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NOTES

1. Vertical alignments should be no steeper than 1 in 12 (8%)
2. Where topography results in vertical alignments to be greater than 1 in 12 and up to a maximum of 1 in 8, grit bins will be required in strategic locations on a hardstanding behind the footway so as not to obstruct the footway
3. Hardstanding to be between level and a 1 in 32 gradient away from the footway.

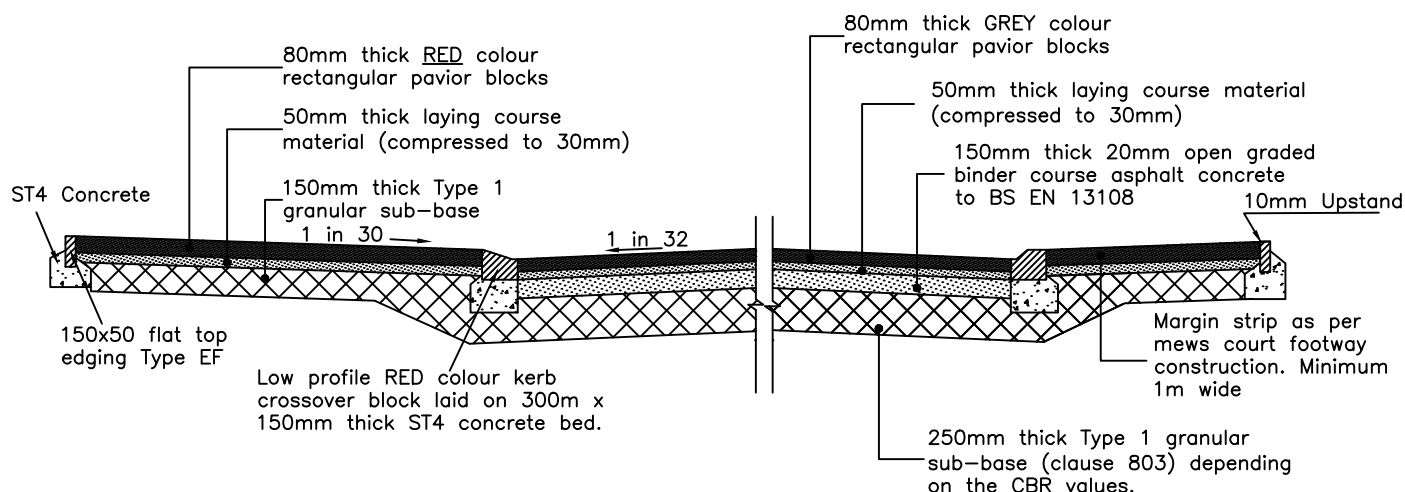
GRIT / SALT BIN HARDSTANDING

COMMON STANDARDS FOR WALES

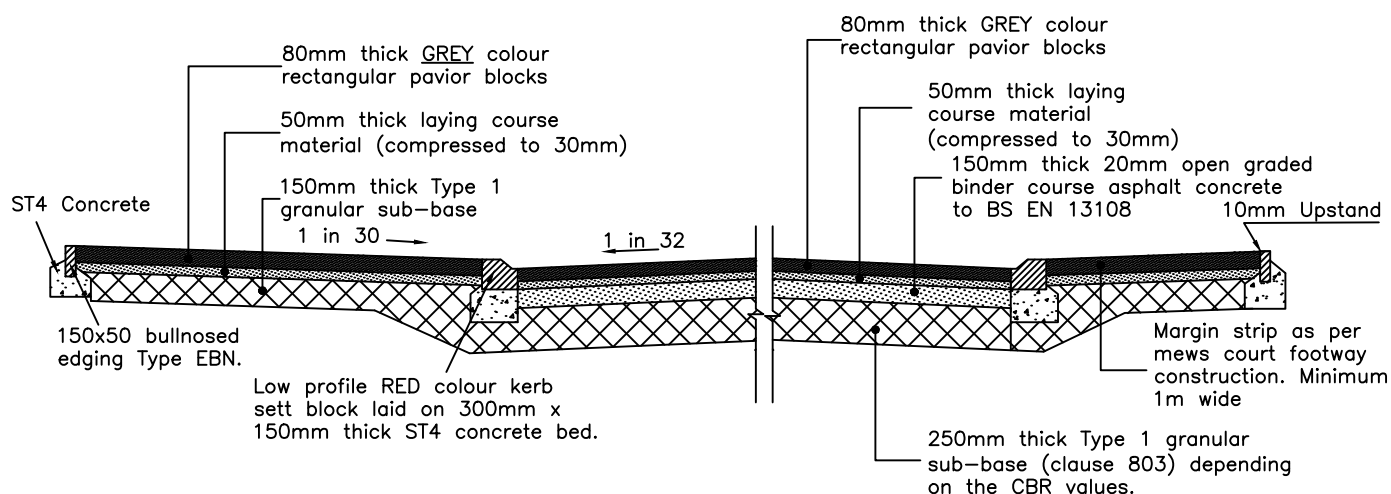
HIGHWAY DESIGN GUIDE

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VEHICULAR CROSSOVER AND CARRIAGEWAY CONSTRUCTION



FOOTWAY AND CARRIAGEWAY CONSTRUCTION

NOTES

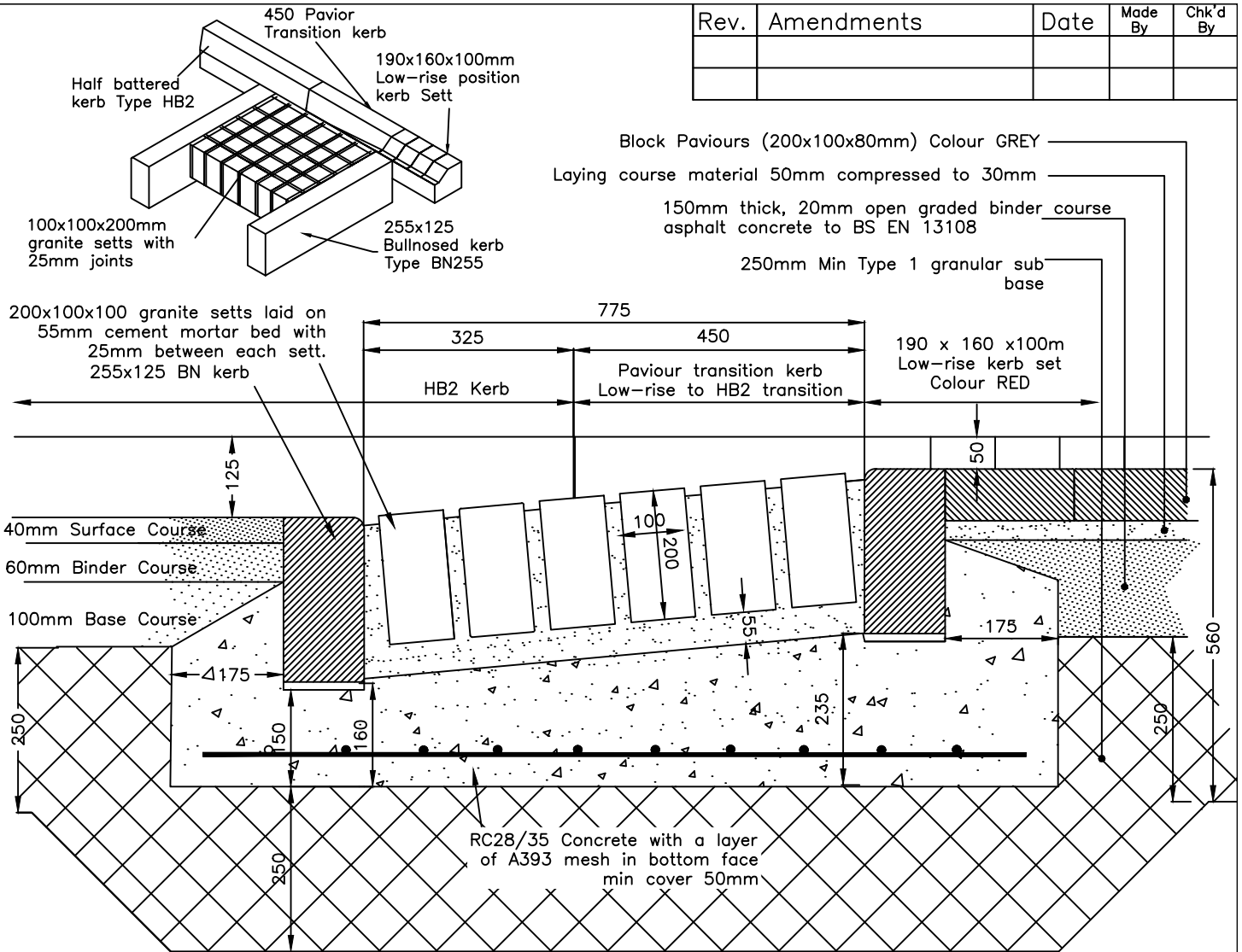
1. Minimum carriageway construction thickness to be 450mm.
2. All dimensions are in millimetres unless otherwise stated
3. Fine dry sand to BS 7533-3 (Annex D) to be vibrated into joints until joints are full.
4. Laying course material to BS 7533-3 (Annex D)

MEWS COURT – CARRIAGEWAY, FOOTWAY AND VEHICULAR CROSSOVER CONSTRUCTION

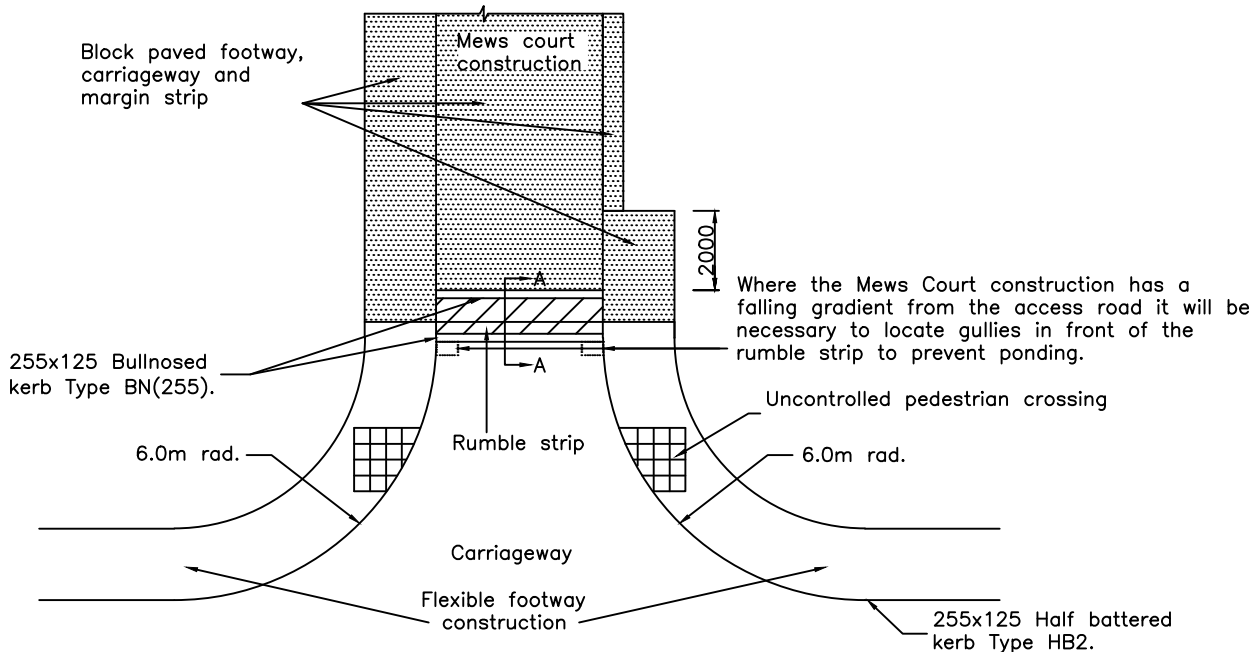
COMMON STANDARDS FOR WALES HIGHWAY DESIGN GUIDE

Drawn	MT
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Date	Feb '20
Scale	N.T.S.
Drg. No.	204
Rev.	

Rev.	Amendments	Date	Made By	Chk'd By



SECTION A-A

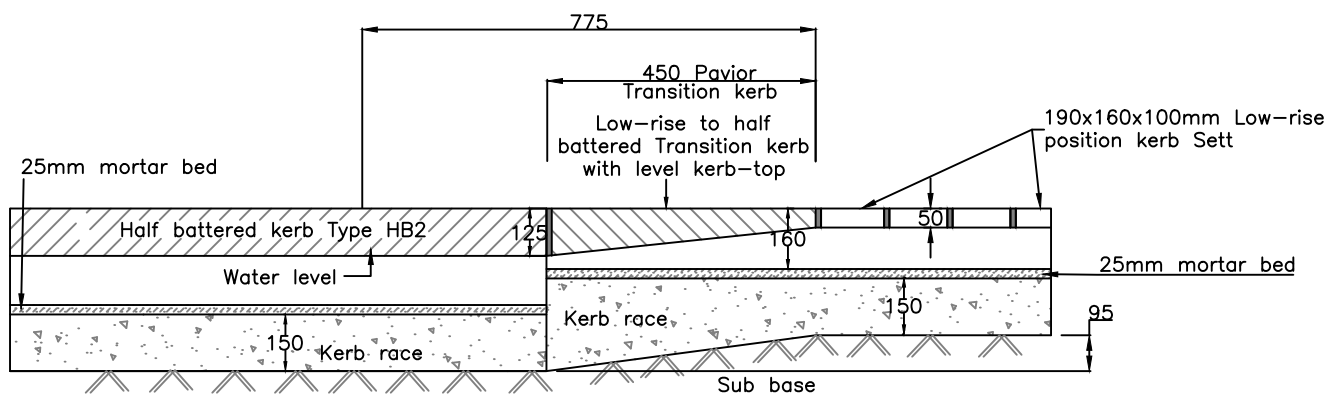
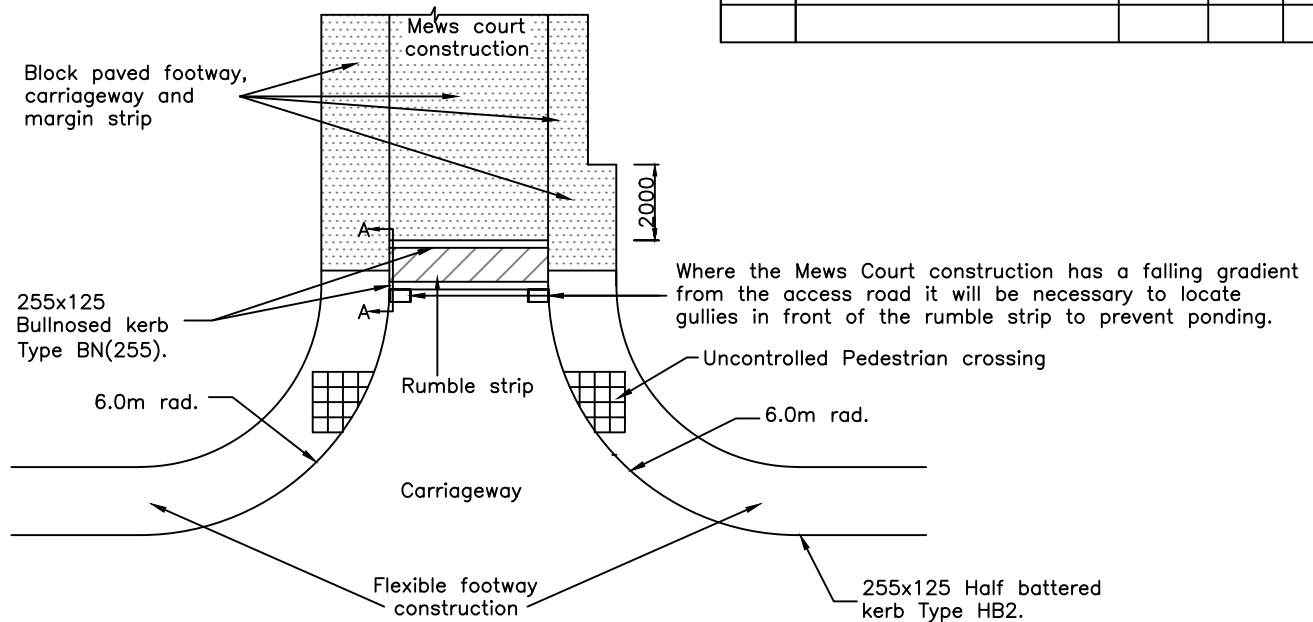


MEWS COURT – RUBMLE STRIP

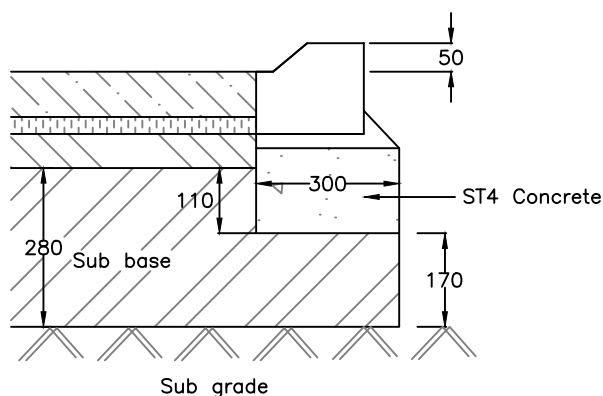
COMMON STANDARDS FOR WALES
HIGHWAY DESIGN GUIDE

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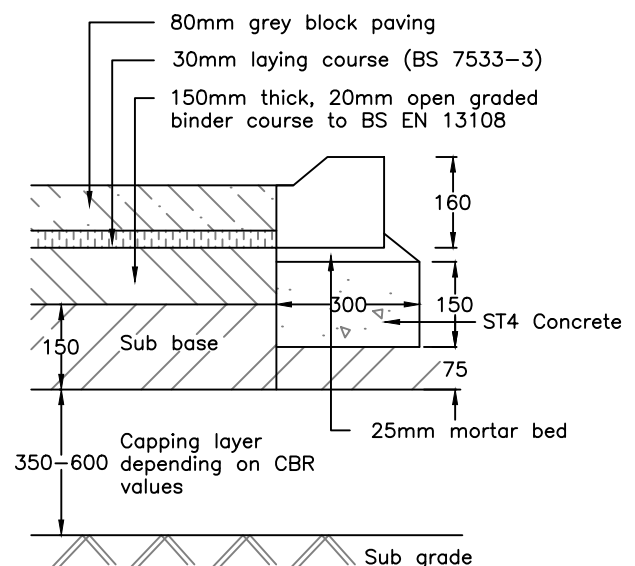
Rev.	Amendments	Date	Made By	Chk'd By



SECTION A-A



CONSTRUCTION WITH CBR > 5%



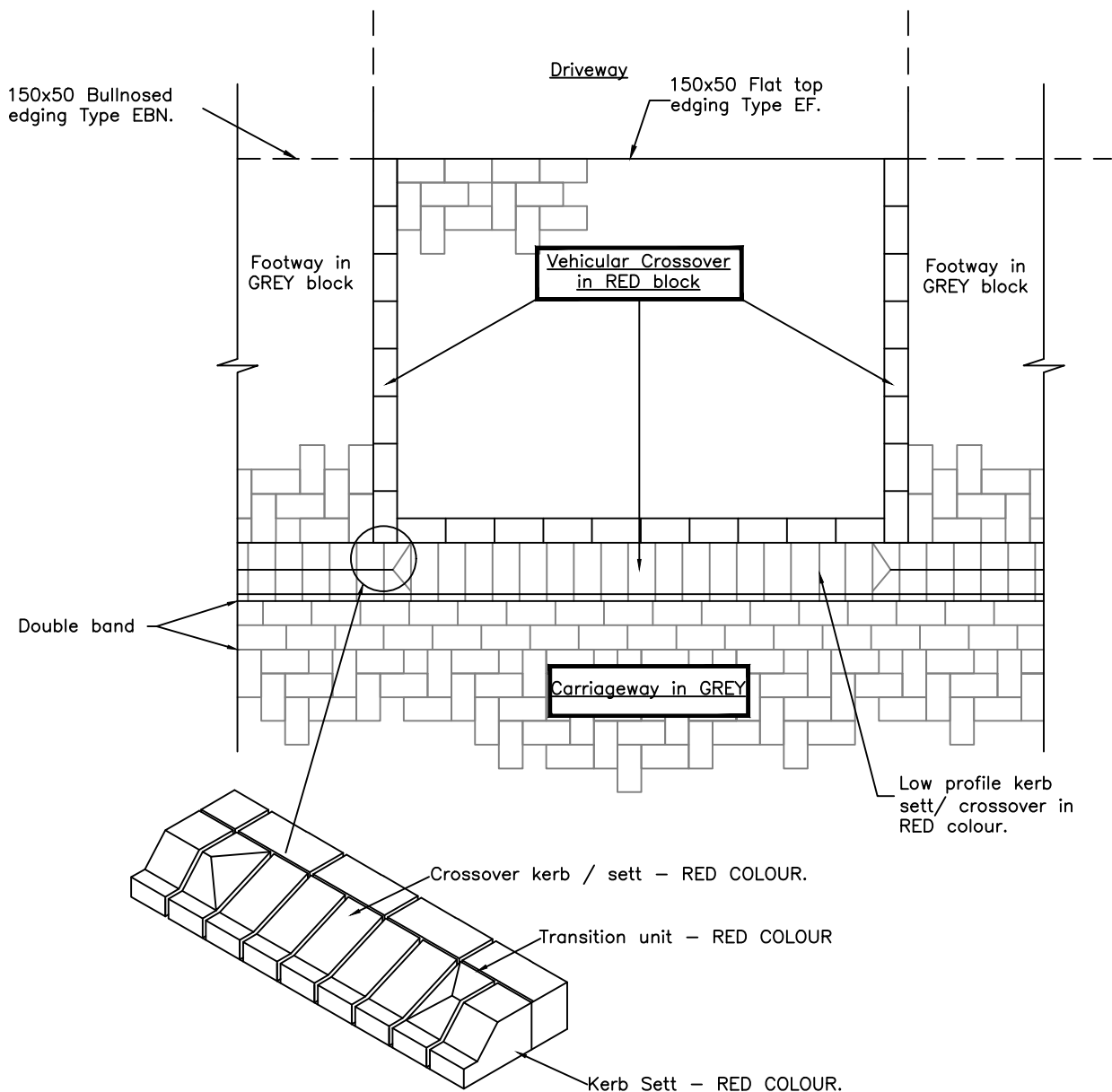
CONSTRUCTION WITH CBR < 5%

MEWS COURT – KERBS

COMMON STANDARDS FOR WALES
HIGHWAY DESIGN GUIDE

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Checked	SZ
Date	Feb '20
Scale	N.T.S.
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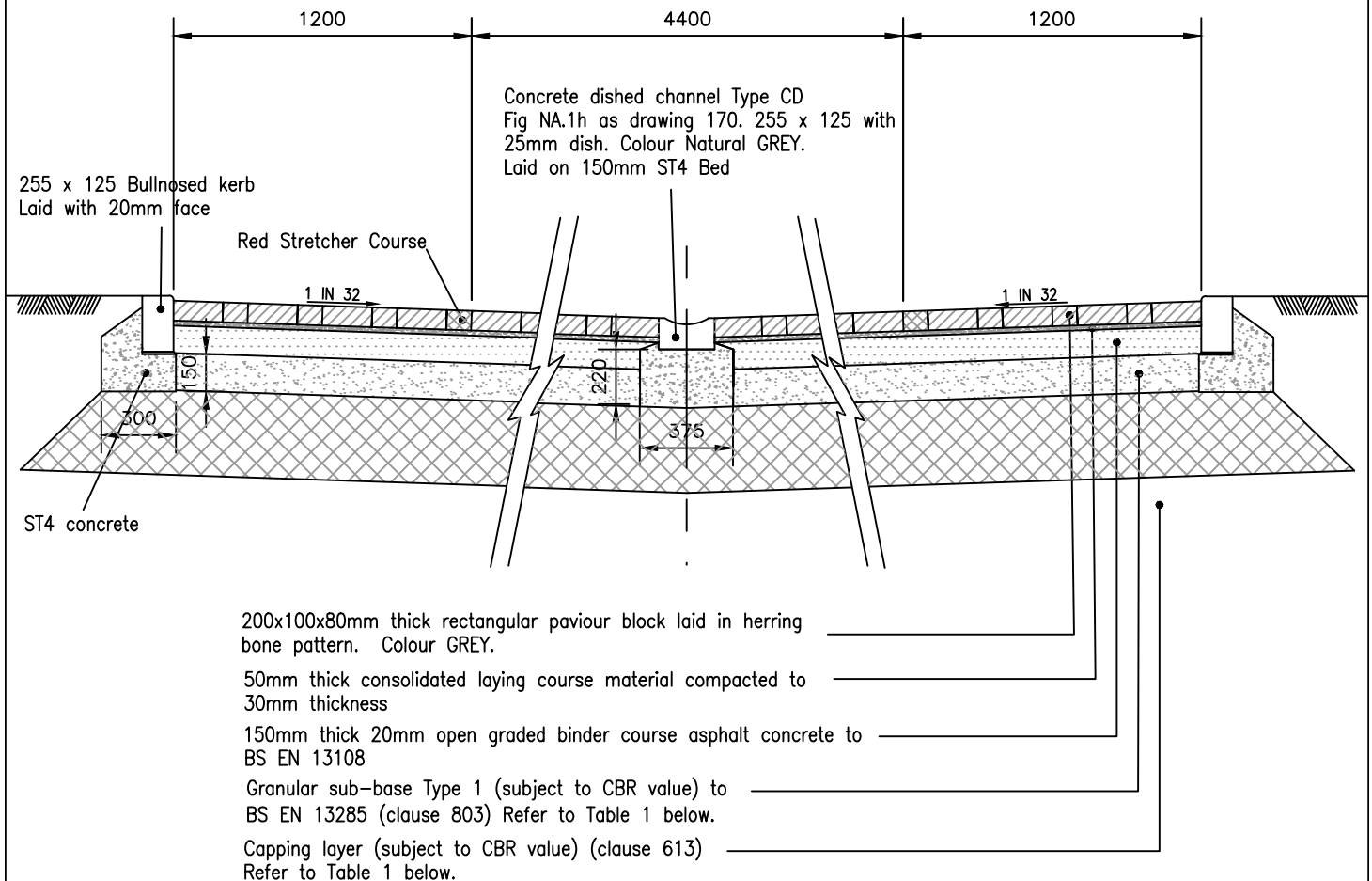
NOTES
 1. All dimensions are in millimetres unless otherwise stated.

MEWS COURT – BLOCK PAVING PATTERN AND COLOUR

COMMON STANDARDS FOR WALES
 HIGHWAY DESIGN GUIDE

Drawn	MT
Checked	SZ
Date	Feb '20
Scale	N.T.S.
Drg. No.	207
Rev.	

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NOTES

- Table 1 below is given for guidance only. Specialist geo-technical advice should be taken particularly where the CBR value is below 5%. Consideration should also be given for the provision of geo-grid and geo-textile membranes depending on the site conditions.
- The minimum overall construction thickness of carriageway shall be 450mm.
- Apart for those lengths requiring superelevation by design need, the cross section of the new carriageway should be crowned to provide a balanced camber. This will ensure that surface water from higher ground will not drain across the carriageway to the lower side.
- Weed killer to be applied at formation level or top of the sub-base to the approval of the Highway Engineer.
- All dimensions are in millimetres unless otherwise stated.

TABLE 1

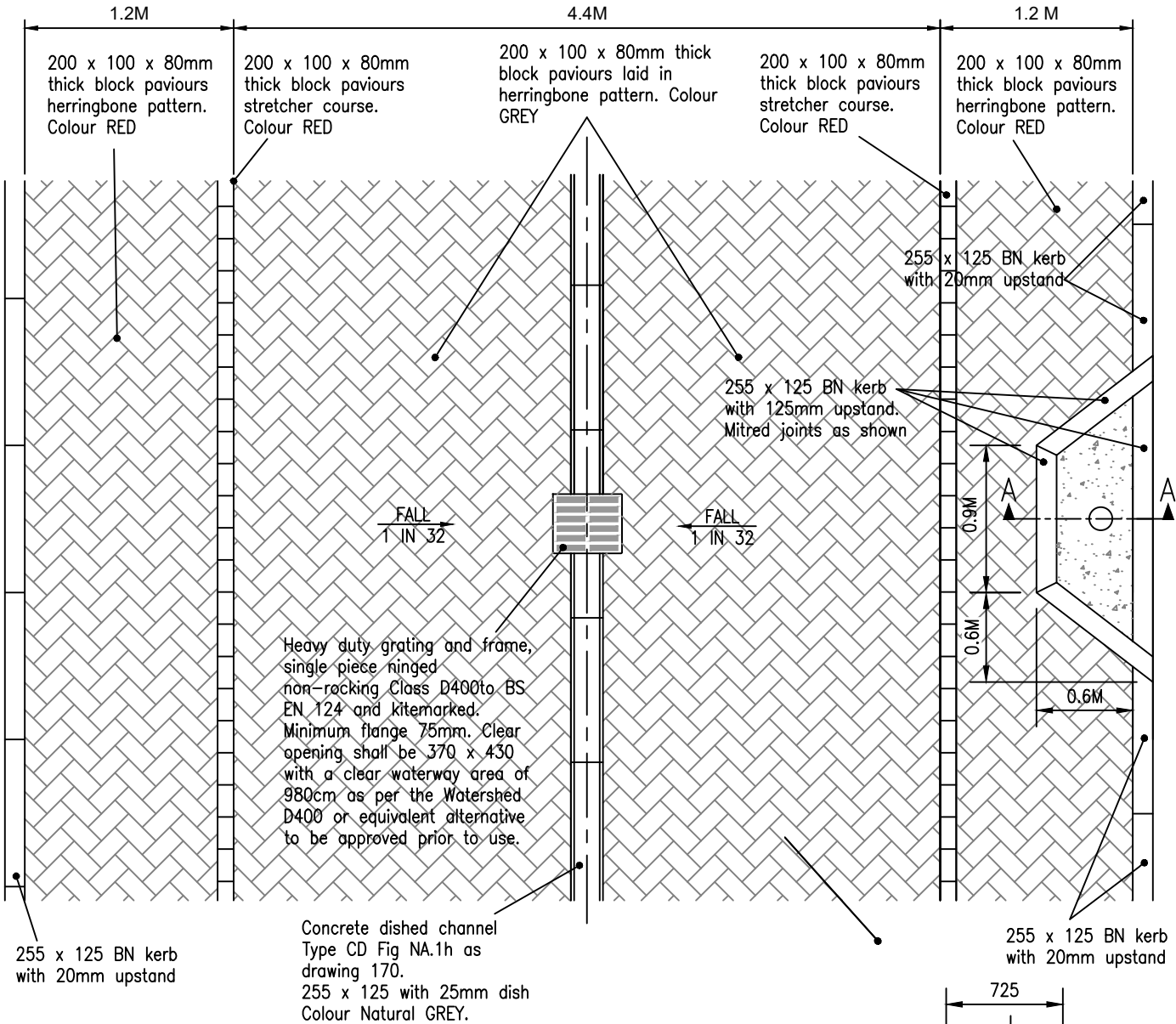
CBR Value	Below 2%	2% – 5%	Above 5%
Sub-base	150mm	150mm	255mm
Capping Layer	600mm	350mm	0mm

SHARED SURFACE CONSTRUCTION

COMMON STANDARDS FOR WALES HIGHWAY DESIGN GUIDE

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Scale	N.T.S.
Drg. No.	210
Rev.	

Rev.	Amendments	Date	Made By	Chk'd By



NOTES

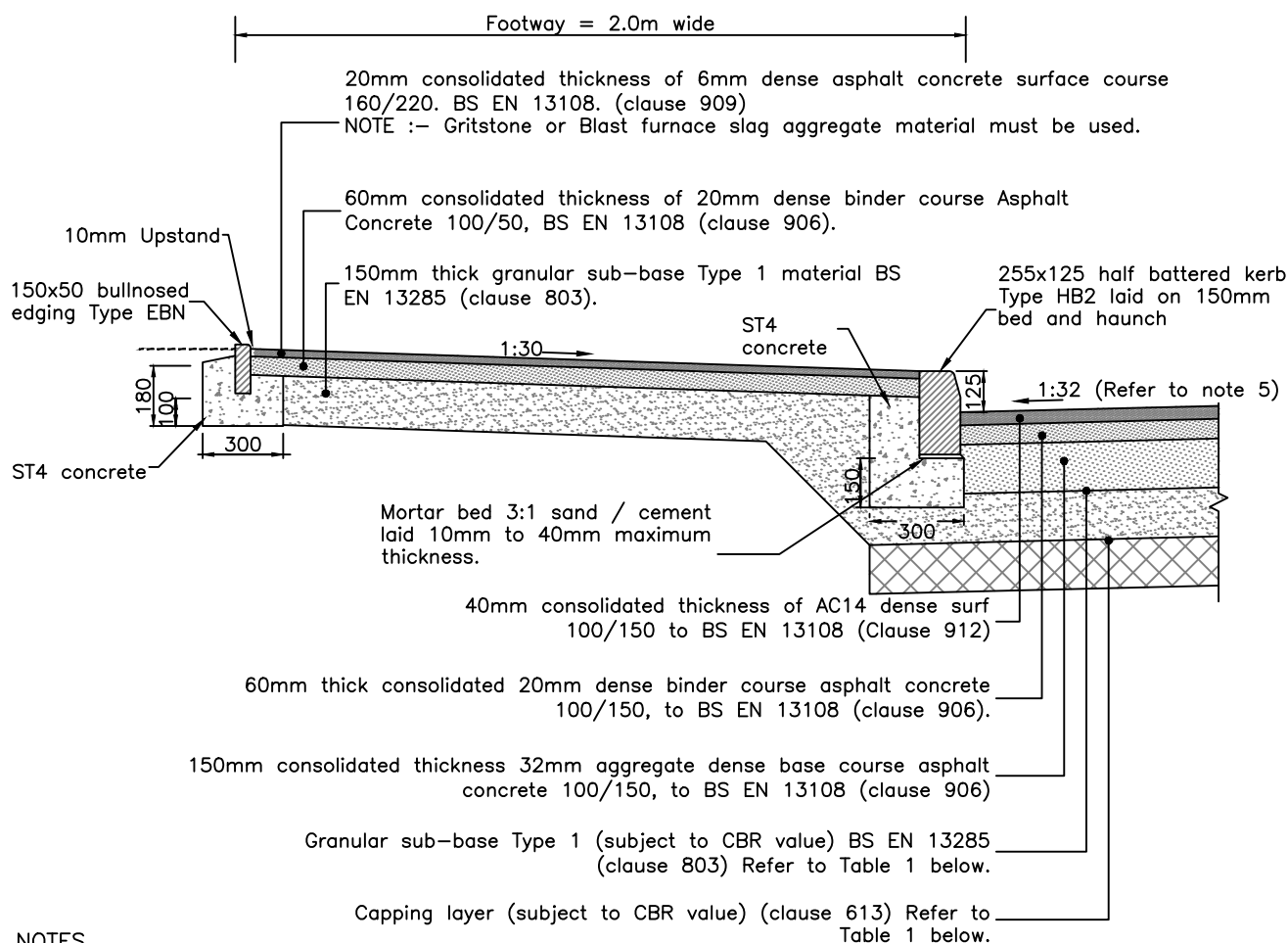
1. All dimensions are in millimetres unless otherwise stated.

SHARED SURFACE CONSTRUCTION
SURFACE AND DRAINAGE ARRANGEMENT

COMMON STANDARDS FOR WALES
HIGHWAY DESIGN GUIDE

Drawn	MT
Checked	SZ
Date	Feb '20
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Drg. No.	211
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Rev.	Amendments	Date	Made By	Chk'd By



NOTES

- When bituminous mixture is laid as base course and is not covered immediately with the binder course or binder course is laid and not immediately covered with surface course, then apply tack coat bituminous spray Class C40B4 cationic emulsion (BS EN 13808) at a rate of spread of 0.5 litres/m². (clause 920)
- Production/Laying/compaction requirements, sub-base – clause 802, capping layer – clause 612, asphalt concrete base course/binder course/surface course – clause 901 and 903.
- Table below is given for guidance only. Specialist geo-technical advice should be taken particularly where the CBR value is below 5%. Consideration should also be given for the provision of geo-grid and geo-textile membranes depending on the site conditions.
- The use of recycled material will require prior agreement and the provision sample test certificates indicating suitable grading characteristics and the absence of contamination. When permitted it may only be used as capping material or as sub-base in non-carriageway areas.
- The minimum overall construction thickness of carriageway shall be 450mm.
- Apart from those lengths requiring superelevation by design need, the cross section of the new carriageway should be crowned to provide a balanced camber. This will ensure that surface water from higher ground will not drain across the carriageway to the lower side.
- Weed killer to be applied at formation level or top of the sub-base to the approval of the Highway Engineer.
- All dimensions are in millimetres unless otherwise stated.

TABLE 1

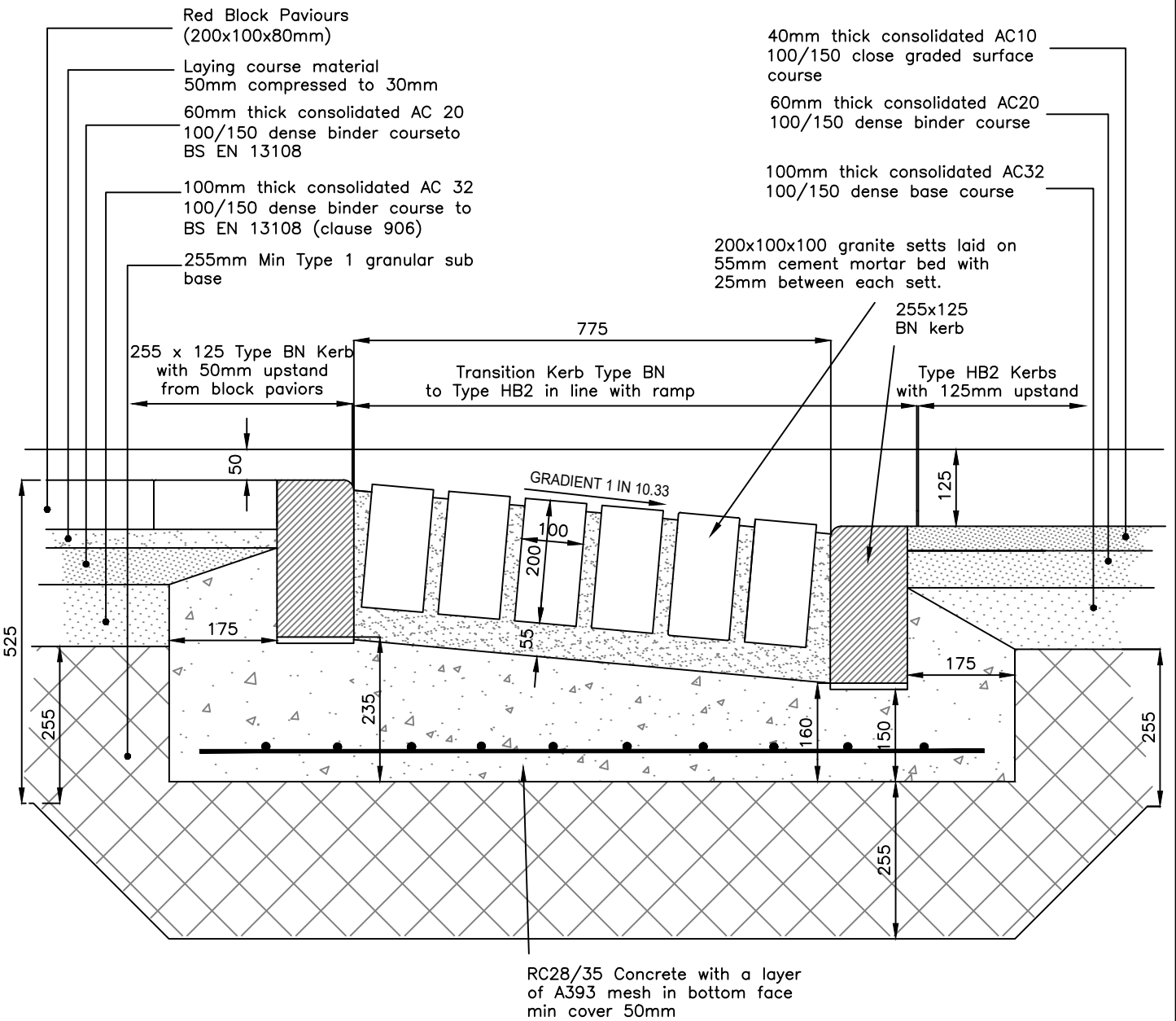
CBR Value	Below 2%	2% – 5%	Above 5%
Sub-base	150mm	150mm	250mm
Capping Layer	600mm	350mm	0mm

FOOTWAY AND CARRIAGEWAY CONSTRUCTION FOR RESIDENTIAL STREETS (BUS ROUTES)

COMMON STANDARDS FOR WALES HIGHWAY DESIGN GUIDE

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Checked	SZ
Date	Feb '20
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Drg. No.	212
Rev.	

Rev.	Amendments	Date	Made By	Chk'd By



NOTES

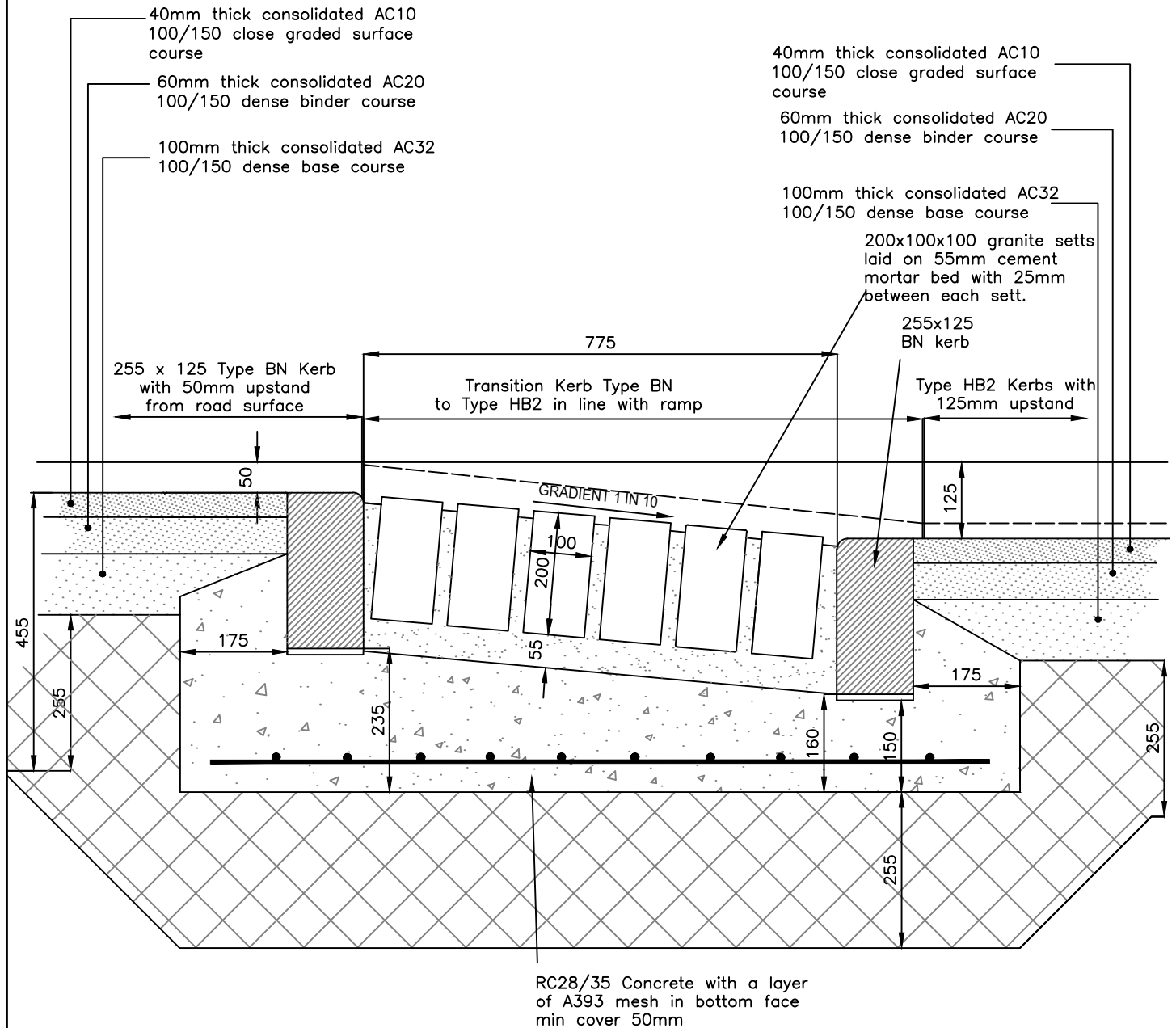
1. All dimensions are in millimetres unless otherwise stated
2. All blocks to be laid in accordance with BS 7533
3. No cut block shall be less than one third of block
4. Weed killer to be applied at formation level
5. Min 50mm cover to A393 reinforcing mesh

**RAMP DETAIL FOR RAISED CARRIAGEWAY
BLOCK PAVIOUR PLATEAU**

COMMON STANDARDS FOR WALES
HIGHWAY DESIGN GUIDE

Drawn	MT
Checked	SZ
Date	Feb '20
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Drg. No.	213
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Rev.	Amendments	Date	Made By	Chk'd By



NOTES

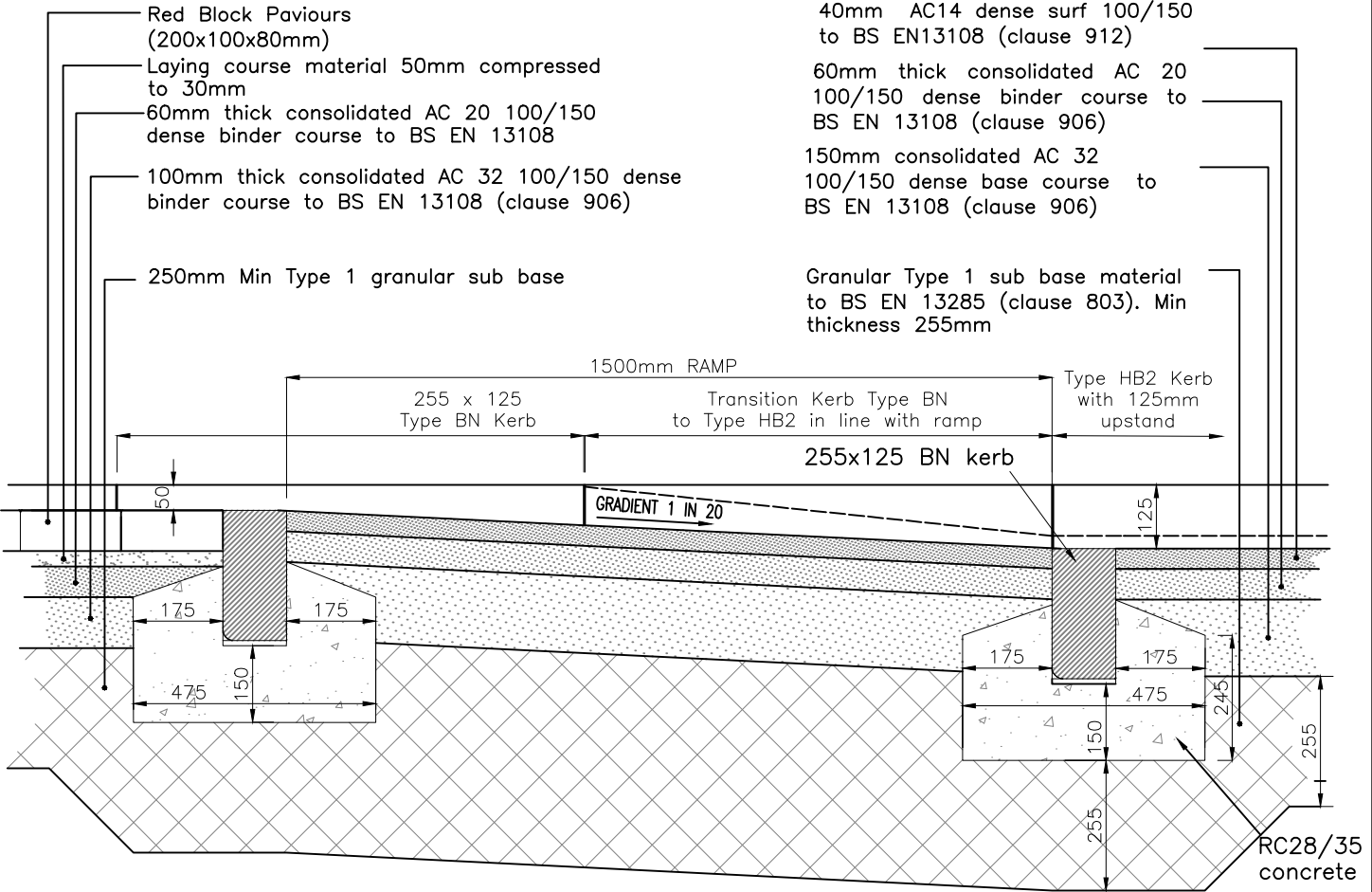
1. All dimensions are in millimetres unless otherwise stated
2. All blocks to be laid in accordance with BS 7533
3. No cut block shall be less than one third of block
4. Weed killer to be applied at formation level
5. Min 50mm cover to A393 reinforcing mesh

RAMP DETAIL FOR RAISED CARRIAGEWAY MACADAM PLATEAU

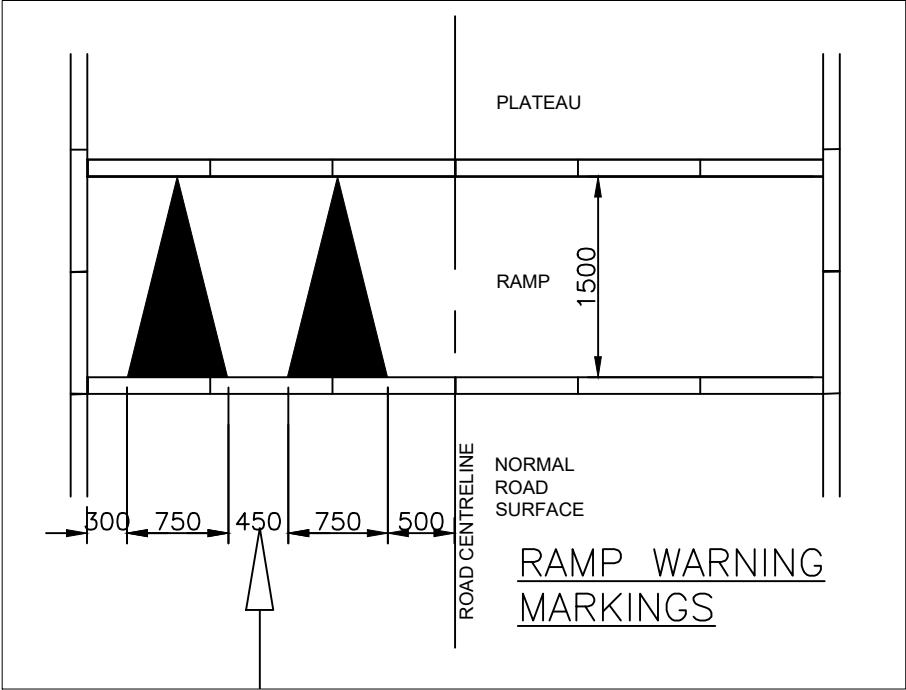
COMMON STANDARDS FOR WALES HIGHWAY DESIGN GUIDE

Drawn	MT
Checked	SZ
Date	Feb '20
Scale	N.T.S.
Drg. No.	214
Rev.	

Rev.	Amendments	Date	Made By	Chk'd By



- NOTES**
1. All dimensions are in millimetres unless otherwise stated
 2. All blocks to be laid in accordance with BS 7533
 3. No cut block shall be less than one third of block
 4. Weed killer to be applied at formation level
 5. Ramps to be marked with ramp warning triangle marking to TSRGD Diag 1062 as shown on inset detail.
 6. All road markings to be of thermoplastic spray or screed with solid glass beads and designed and set out in accordance with Chapter 5 of the Traffic Signs Manual and the Traffic Signs and General Regulations.
 7. Road markings shall be applied immediately on completion of surfacing operations.

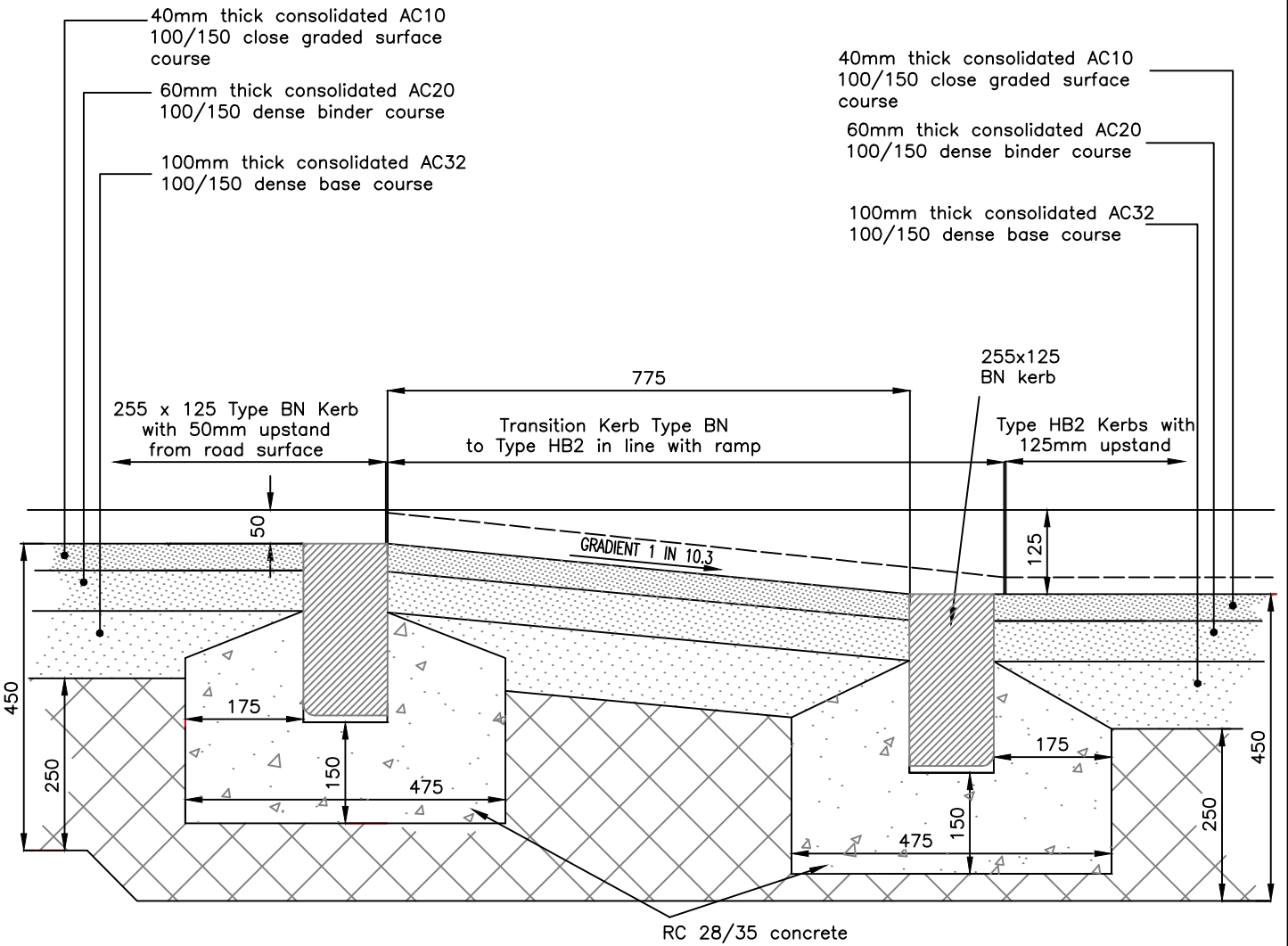


RAMP DETAIL FOR RAISED CARRIAGEWAY – BUS ROUTE

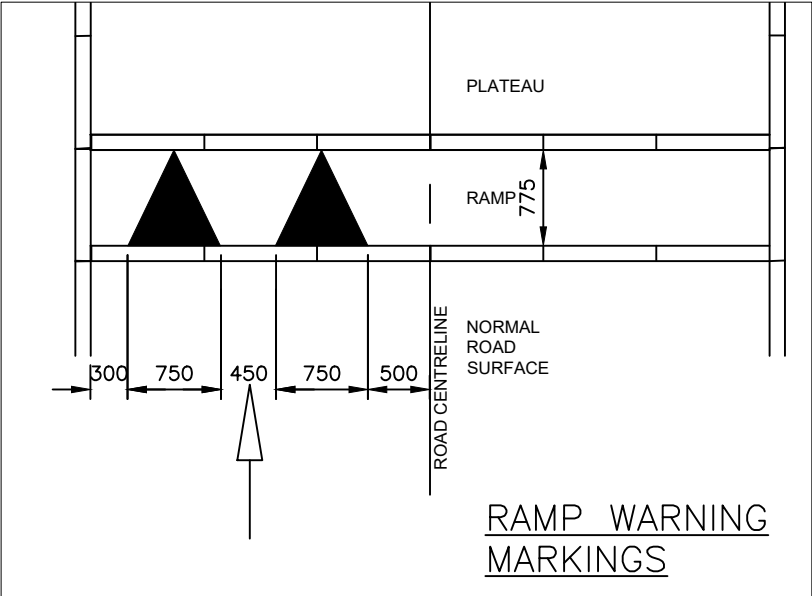
COMMON STANDARDS FOR WALES HIGHWAY DESIGN GUIDE

Drawn	MT
Checked	SZ
Date	Feb '20
Scale	N.T.S.
Drg. No.	215
Rev.	

Rev.	Amendments	Date	Made By	Chk'd By



- NOTES**
1. All dimensions are in millimeters unless otherwise stated
 2. Ramps to be marked with ramp warning triangle marking to TSRGD Diag 1062 as shown on inset detail.
 3. All road markings to be of thermoplastic spray or screed with solid glass beads and designed and set out in accordance with Chapter 5 of the Traffic Signs Manual and the Traffic Signs and General Regulations.
 4. Road markings shall be applied immediately on completion of surfacing operations.

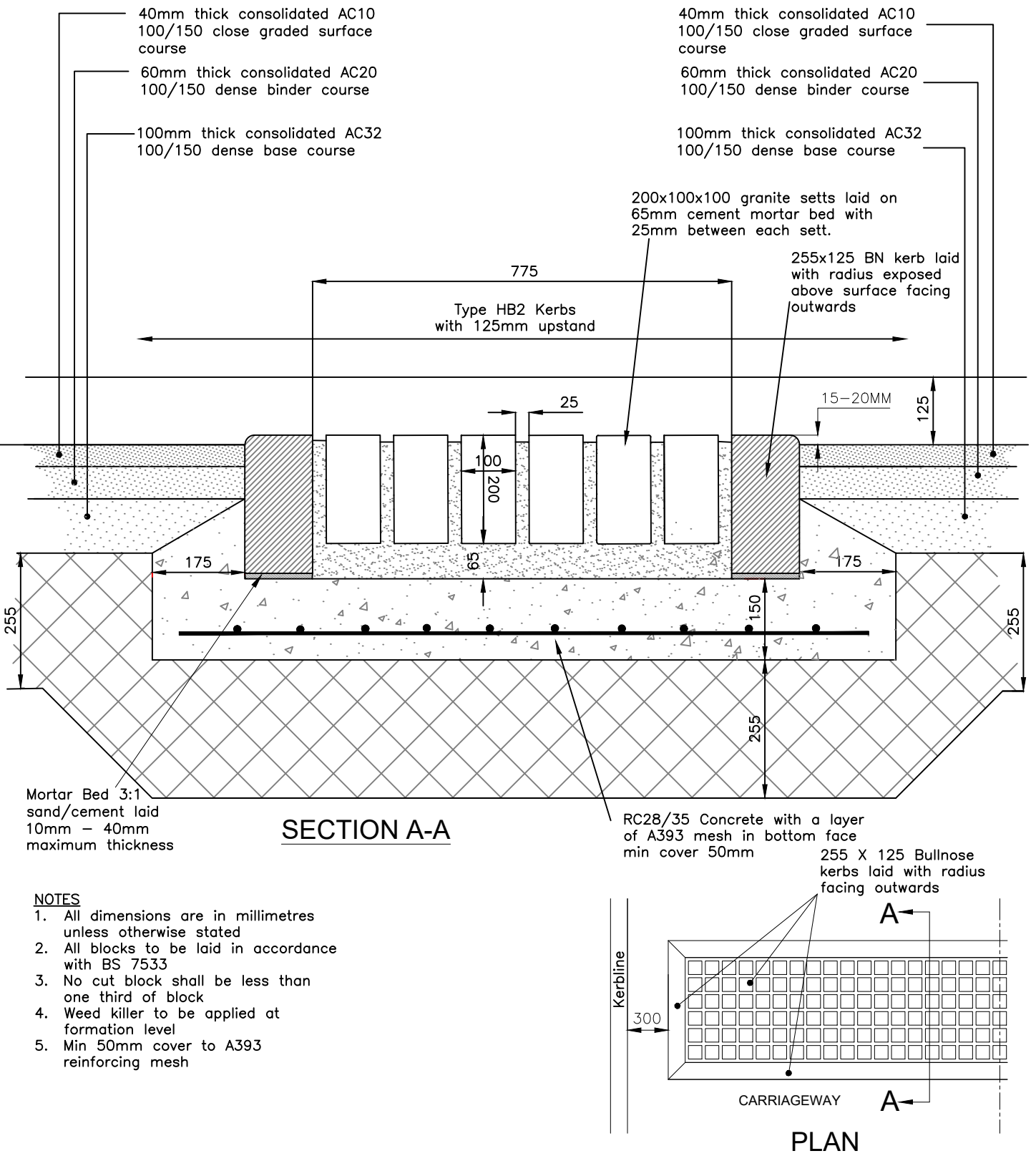


RAMP DETAIL FOR RAISED CARRIAGEWAY MACADAM PLATEAU & RAMP

COMMON STANDARDS FOR WALES
HIGHWAY DESIGN GUIDE

Drawn	MT
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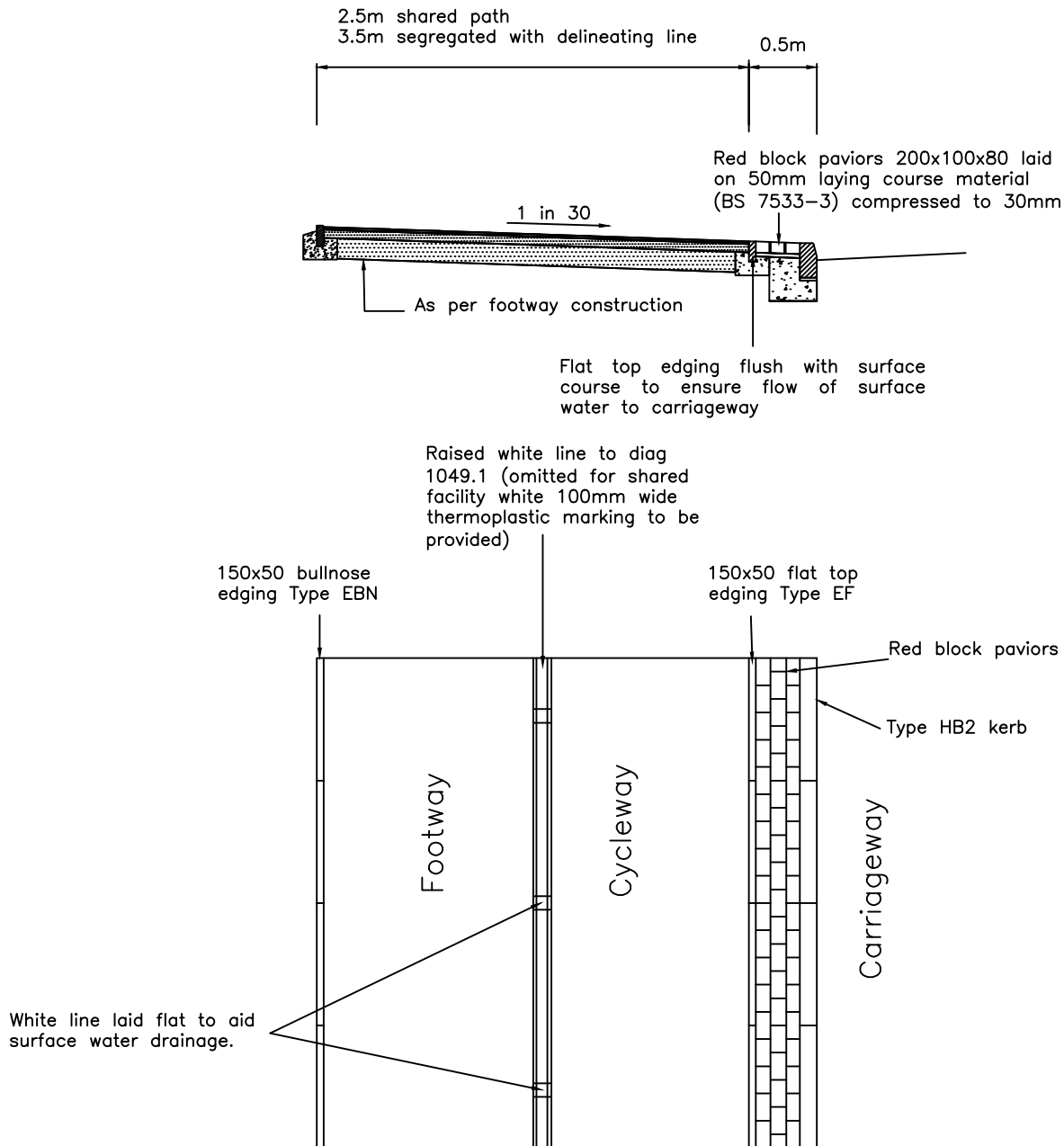
Rev.	Amendments	Date	Made By	Chk'd By



RUMBLE STRIP

Drawn	MT
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NOTES

1. Shared and segregated footway / cycleway facilities shall benefit from corduroy tactile paving and the appropriate signage as prescribed in the current TSRGD.
2. A shared footway and cyclepath shall be 3.0m wide consisting of a 2.5m path and a 0.5m margin strip.
3. If a segregated footway and cyclepath is used the overall width shall be increased to 4.0m to include a 1.75m footway, 1.75m cycleway and a 0.5m margin strip.
4. Construction details shall be as per footway construction.
5. Obstructions such as signs and lighting columns shall where possible be located outside of the cycleway.
6. Where solid lines or raised markings are provided small gaps must be provided at regular intervals to assist surface drainage.

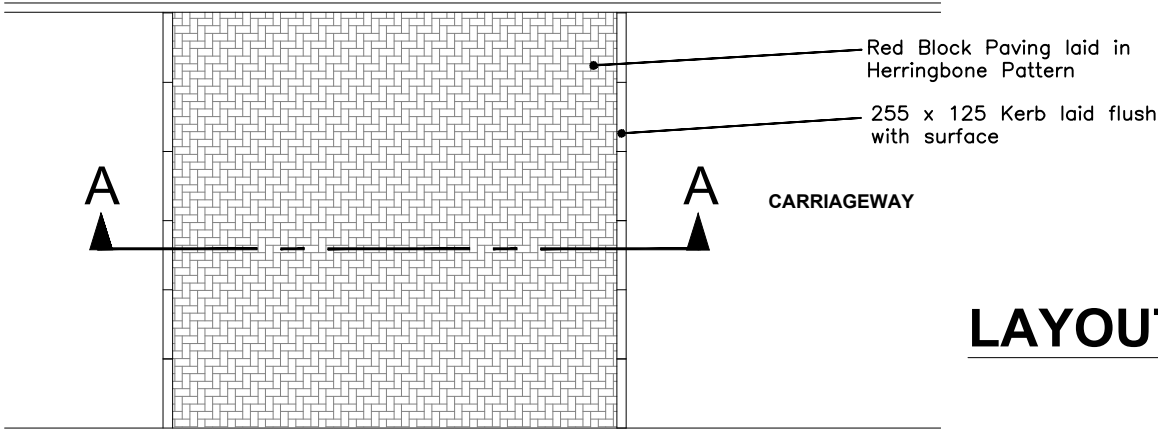
SHARED AND SGREGATED FOOTWAY AND CYCLEWAY

COMMON STANDARDS FOR WALES HIGHWAY DESIGN GUIDE

Drawn	MT
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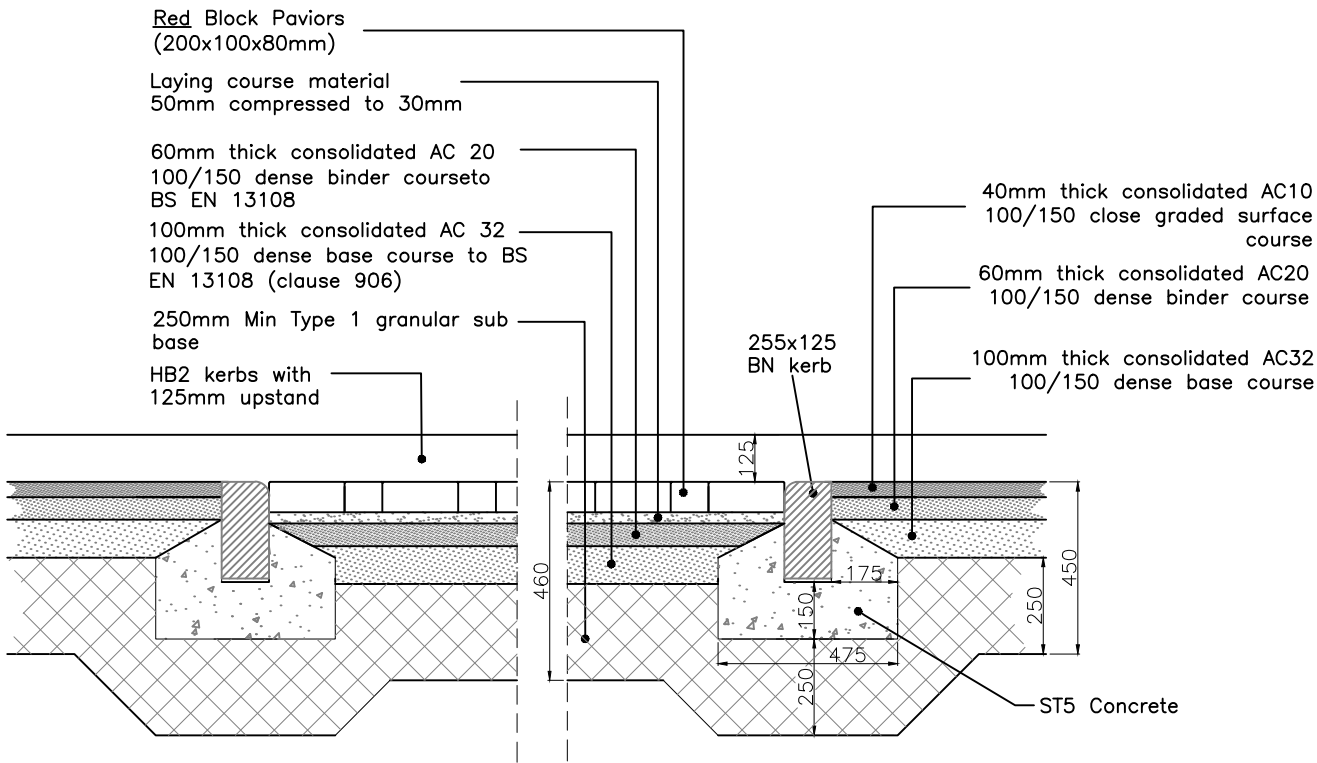
Rev.	Amendments	Date	Made By	Chk'd By

FOOTWAY



LAYOUT PLAN

FOOTWAY



SECTION A - A

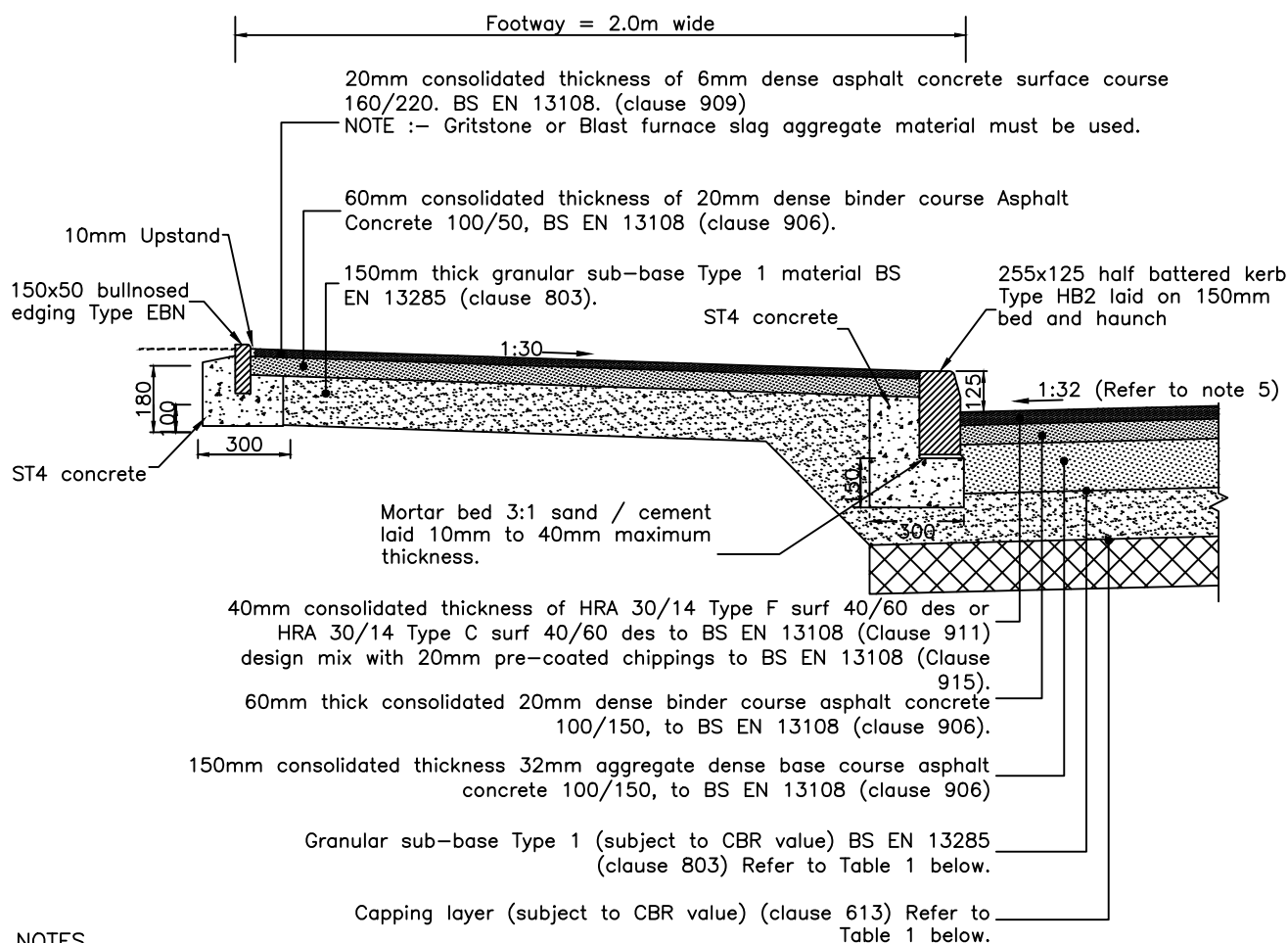
- NOTES**
1. All dimensions are in millimetres unless otherwise stated
 2. All blocks to be laid in accordance with BS 7533
 3. No cut block shall be less than one third of block
 4. Weed killer to be applied at formation level
 5. Sub Base thickness to be dependent on CBR values.

BLOCK PAVIOUR AWARENESS SURFACE

COMMON STANDARDS FOR WALES
HIGHWAY DESIGN GUIDE

Drawn	MT
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Drg. No.	220
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Rev.	Amendments	Date	Made By	Chk'd By



NOTES

- When bituminous mixture is laid as base course and is not covered immediately with the binder course or binder course is laid and not immediately covered with surface course, then apply tack coat bituminous spray Class C40B4 cationic emulsion (BS EN 13808) at a rate of spread of 0.5 litres/m². (clause 920)
- Production/Laying/compaction requirements, sub-base – clause 802, capping layer – clause 612, asphalt concrete base course/binder course/surface course – clause 901 and 903.
- Table below is given for guidance only. Specialist geo-technical advice should be taken particularly where the CBR value is below 5%. Consideration should also be given for the provision of geo-grid and geo-textile membranes depending on the site conditions.
- The use of recycled material will require prior agreement and the provision sample test certificates indicating suitable grading characteristics and the absence of contamination. When permitted it may only be used as capping material or as sub-base in non-carriageway areas.
- The minimum overall construction thickness of carriageway shall be 500mm.
- Apart for those lengths requiring superelevation by design need, the cross section of the new carriageway should be crowned to provide a balanced camber. This will ensure that surface water from higher ground will not drain across the carriageway to the lower side.
- Weed killer to be applied at formation level or top of the sub-base to the approval of the Highway Engineer.
- All dimensions are in millimetres unless otherwise stated

TABLE 1

CBR Value	Below 2%	2% – 5%	Above 5%
Sub-base	150mm	150mm	250mm
Capping Layer	600mm	350mm	0mm

FOOTWAY AND CARRIAGEWAY CONSTRUCTION – INDUSTRIAL ESTATE ROADS

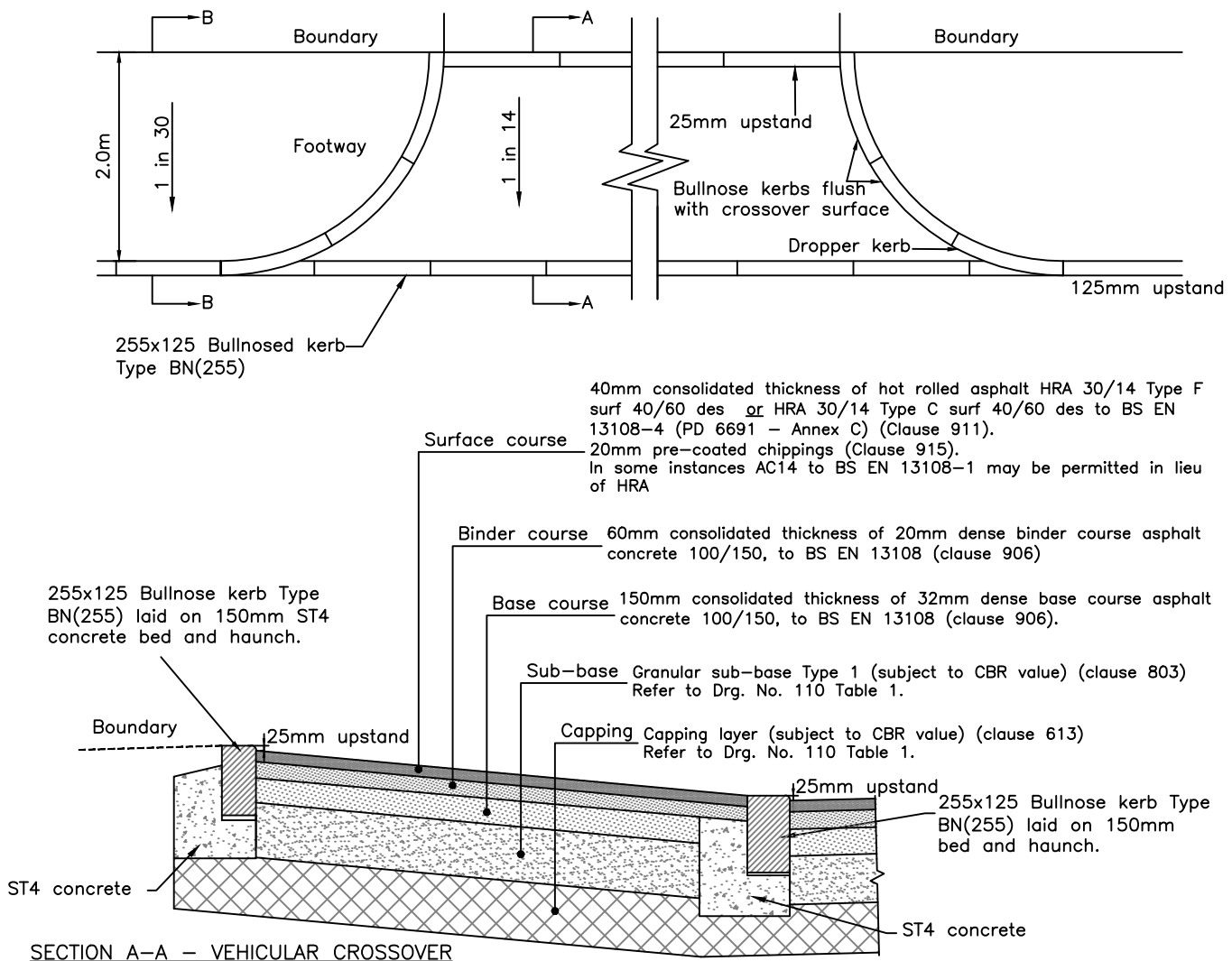
COMMON STANDARDS FOR WALES HIGHWAY DESIGN GUIDE

Drawn	MT
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NOTES

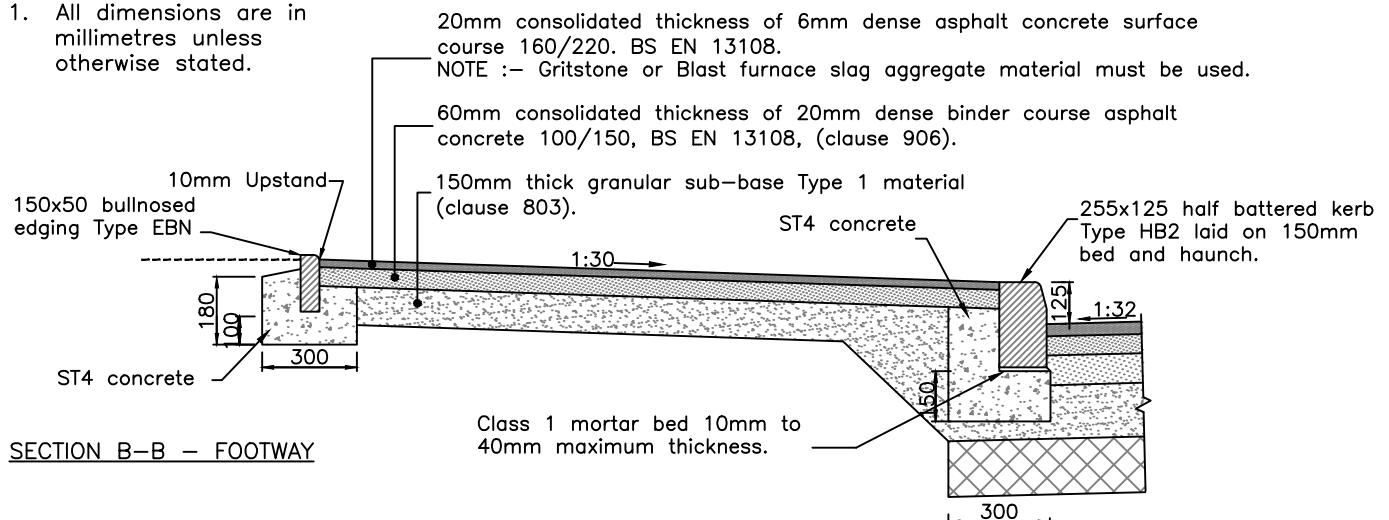
1. All dimensions are in millimetres unless otherwise stated.

Rev.	Amendments	Date	Made By	Chk'd By



NOTES

1. All dimensions are in millimetres unless otherwise stated.

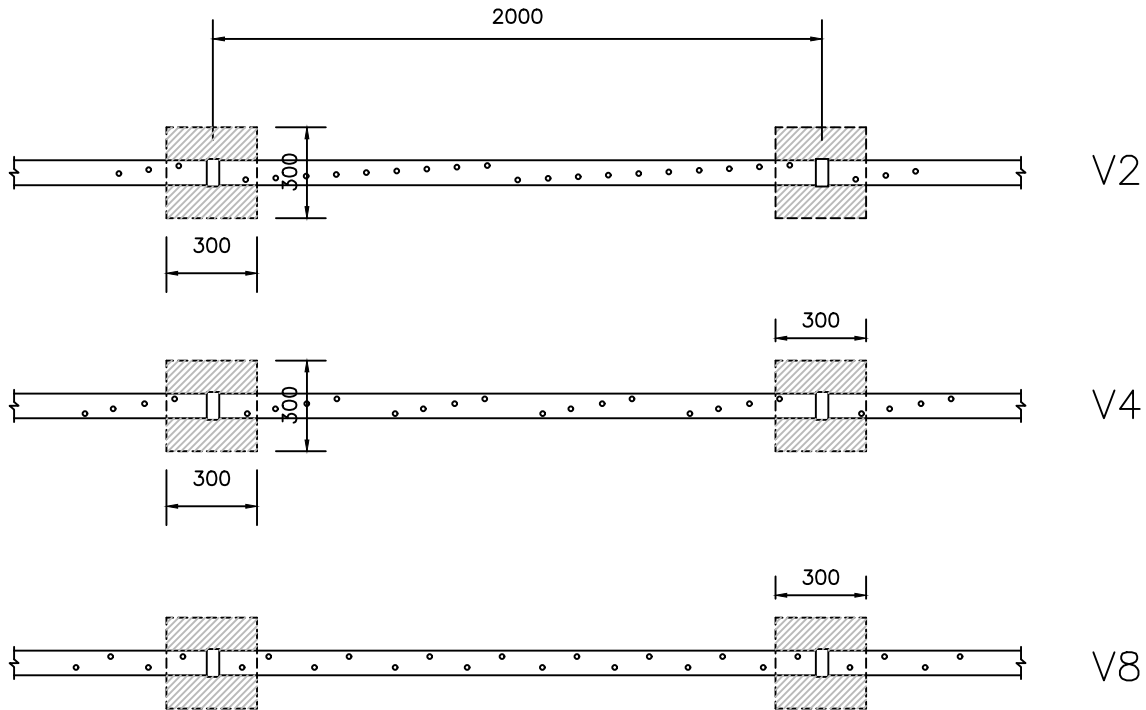


FOOTWAY AND VEHICULAR CROSSOVER - INDUSTRIAL AND COMMERCIAL ROADS

COMMON STANDARDS FOR WALES HIGHWAY DESIGN GUIDE

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Type	Infill rows	Optimum sight angle	Typical uses
V2	2	2.5 to 5	Straight roads, moderate to high speeds
V4	4	5 to 14	Straight roads, low to moderate speeds. Curves
V8	8	More than 14	Curves less than 15m radius, eg bellmouths

NOTES

1. All dimensions are in millimetres unless otherwise stated.
2. Guardrails to comply with BS 7818 Class A. Modifications can be made to the standard panels to meet with Class B and Class C if required.
3. Finish is to be hot dip galvanised in accordance with BS EN ISO 1461.
4. The guardrail shall be VISIRAIL or similar approved railing.

PEDESTRIAN GUARDRAIL (VISIRAIL)

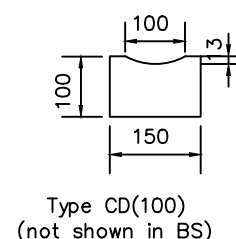
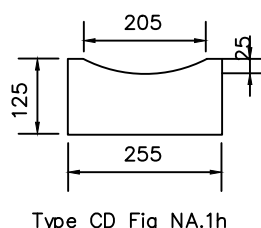
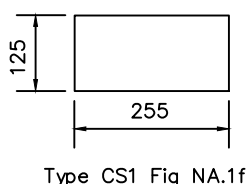
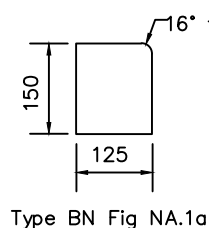
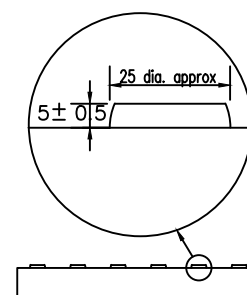
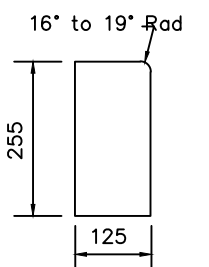
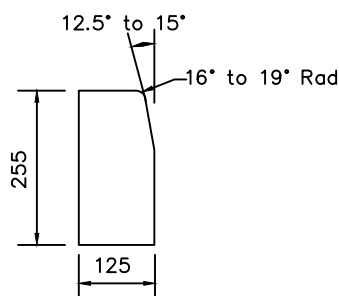
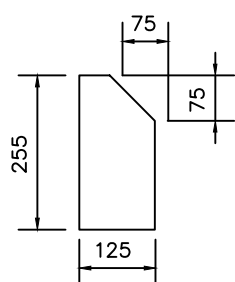
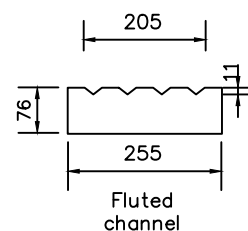
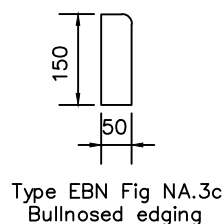
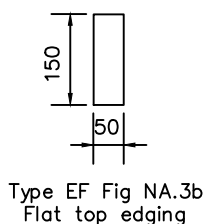
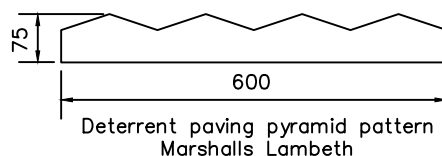
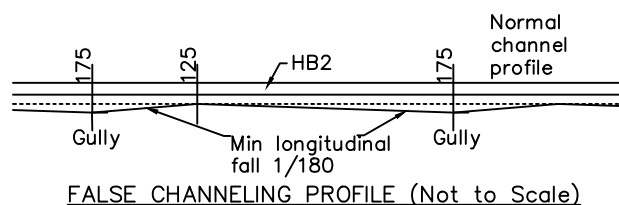
COMMON STANDARDS FOR WALES
HIGHWAY DESIGN GUIDE

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Standardized Prescribed Concretes and Indicative Strengths	
Standardized Prescribed Concrete	Strength class that may be assumed for structural design
ST1	8
ST2	10
ST3	15
ST4	20
ST5	25

Number of Kerbs required per 1/4 circle	
Radius in Metres	No.
0.6	1
1	2
2	4
3	6
4	8
5	10
6	12
8	16
10	20
12	24

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PRECAST CONCRETE KERBS, CHANNELS AND EDGINGS to BS EN 1340:2003

NOTES

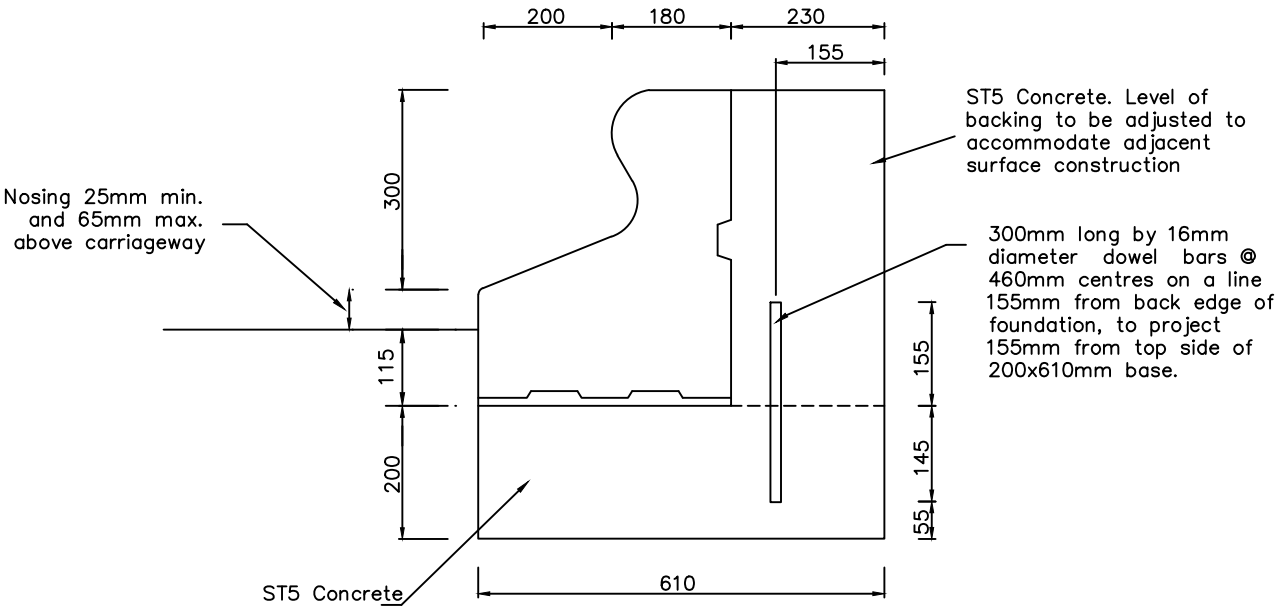
- All dimensions are in millimetres unless otherwise stated.

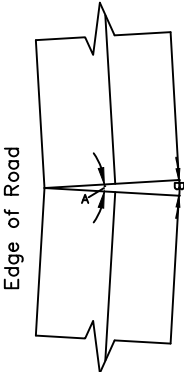
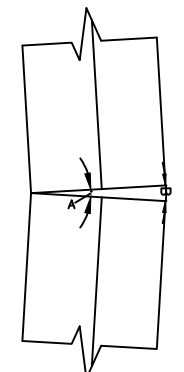
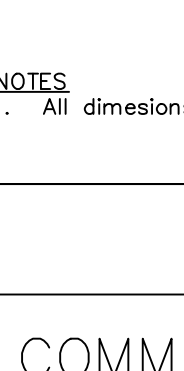
PRECAST CONCRETE KERBS, CHANNELS AND EDGINGS

COMMON STANDARDS FOR WALES HIGHWAY DESIGN GUIDE

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	JOINT WIDTH		UNIT LENGTHS			
			914mm	669mm	543mm	455mm
	AT A	AT B	EXTERNAL RADIUS ACHIEVED			
	16mm	25mm	14m	10m	8m	7m
	11mm	20mm	18m	13m	10m	9m
	10mm	16mm	21m	15m	12m	11m
	JOINT WIDTH		UNIT LENGTHS			
			914mm	669mm	543mm	455mm
	AT A	AT B	INTERNAL RADIUS ACHIEVED			
	16mm	25mm	14m	10m	8m	7m
	11mm	20mm	18m	13m	10m	9m
	10mm	16mm	21m	15m	12m	11m
	JOINT WIDTH		UNIT LENGTHS			
			914mm	669mm	543mm	455mm
	AT A	AT B	INTERNAL RADIUS ACHIEVED			
	16mm	25mm	14m	10m	8m	7m
	11mm	20mm	18m	13m	10m	9m
	10mm	16mm	21m	15m	12m	11m
	JOINT WIDTH		UNIT LENGTHS			
			914mm	669mm	543mm	455mm
	AT A	AT B	INTERNAL RADIUS ACHIEVED			
	16mm	25mm	14m	10m	8m	7m
	11mm	20mm	18m	13m	10m	9m
	10mm	16mm	21m	15m	12m	11m

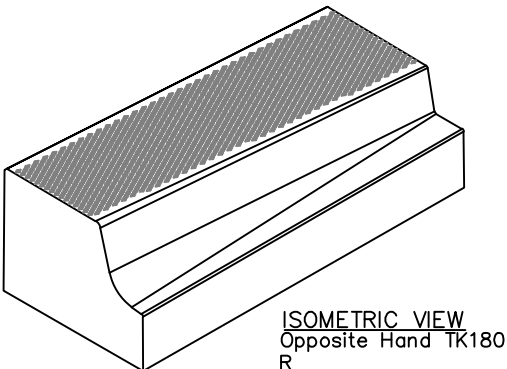
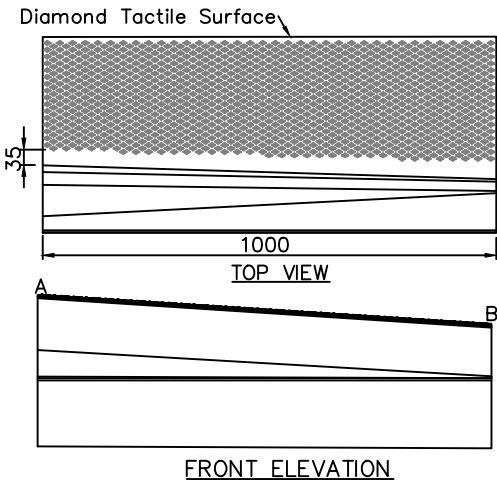
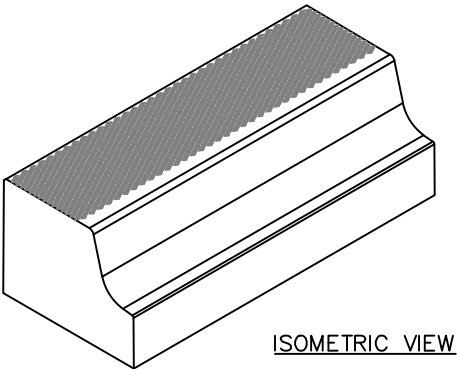
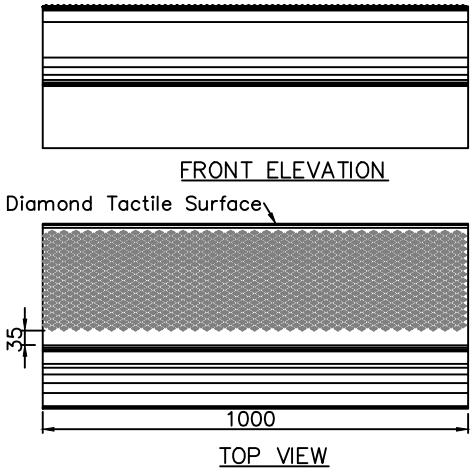
NOTES
1. All dimesions are in millimetres unless otherwise stated.

TRIEF KERBING

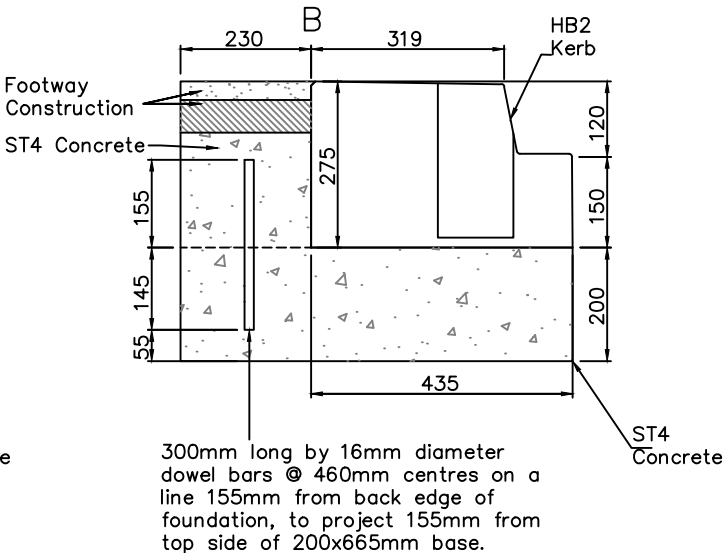
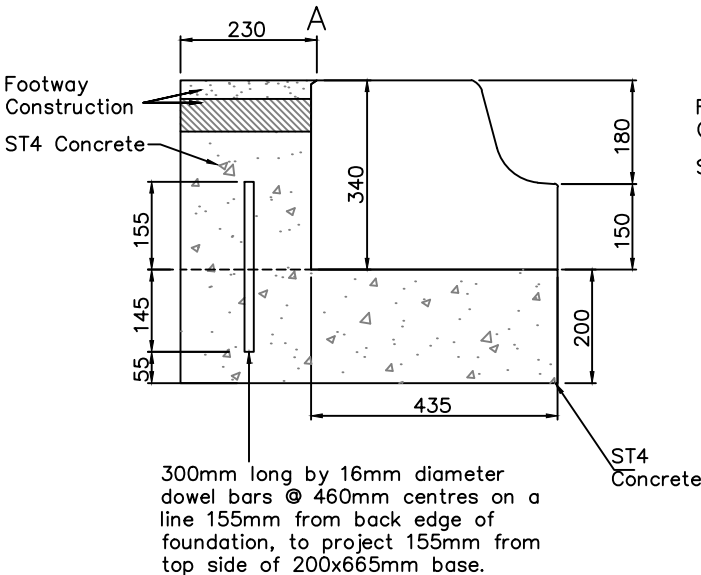
COMMON STANDARDS FOR WALES
HIGHWAY DESIGN GUIDE

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END VIEWS

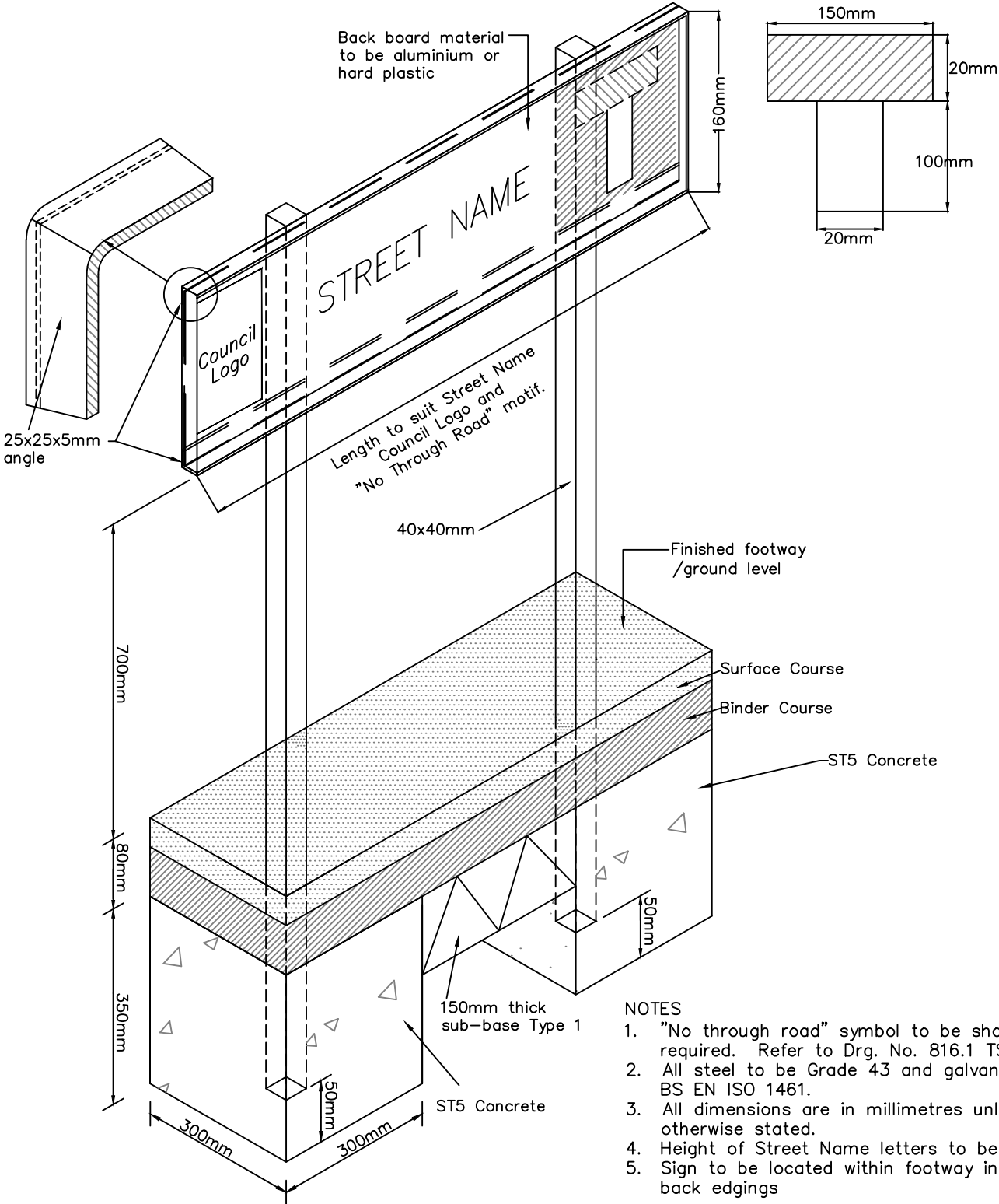


NOTES

1. All dimensions are in millimetres unless otherwise stated.

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COMMON STANDARDS FOR WALES HIGHWAY DESIGN GUIDE		Checked	SZ
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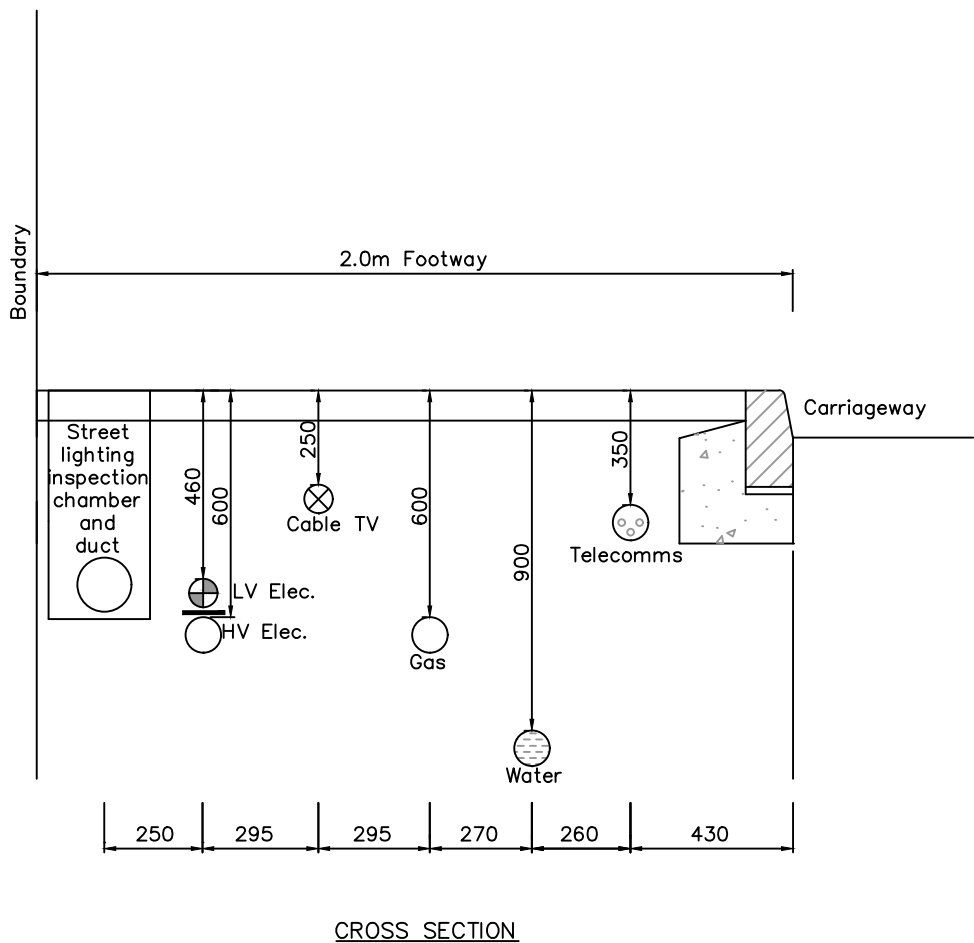
Rev.	Amendments	Date	Made By	Chk'd By



STREET NAME PLATE

Drawn	MT
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Date	Feb '20
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NOTES

1. All dimensions are in millimetres unless otherwise stated

ARRANGEMENT OF SERVICES IN FOOTWAY	
COMMON STANDARDS FOR WALES HIGHWAY DESIGN GUIDE	Drawn MT
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For all locations use double triangular 150mm depth cover and frame with minimum flange width of 75mm, to BS EN 124, D400 Kitemarked with a minimum clear opening of 675mm.

Mortar haunching to frame

Carriageway construction

Minimum clear access to be 675mm

On manholes less than 1.5m dia. reducing slab not to be used and P.C. rings to continue up to cover slab

Ladder to BS EN 14396
Max 675mm from surface to top rung

All in situ concrete to be ST4 with sulphate resisting cement unless agreed otherwise

High strength concrete topping to be brought up to a dense smooth face neatly shaped and finished to all branch connections (min. thickness 20mm)

Self cleaning toe holes to be provide where channel exceeds 600mm wide

Inverts to be formed using channel pipes

Joint to be as close as possible to face of manhole to permit satisfactory joint and subsequent movement

Minimum width of benching to be 500mm

Cover and frame to be bedded on mortar

Class B engineering bricks 225mm thick.
Min 2 Courses

900mm Clear access behind ladder

Precast concrete manhole sections and cover slab to be bedded with mortar, proprietary bitumen or resin mastic sealant

Concrete surround 150mm thick

The bottom precast section to be built into base concrete min. 75mm

Benching slope to be 1 in 10 to 1 in 30

Construction joint

Distance between top of pipe and underside of precast section to be 100mm

225mm to barrel of pipe

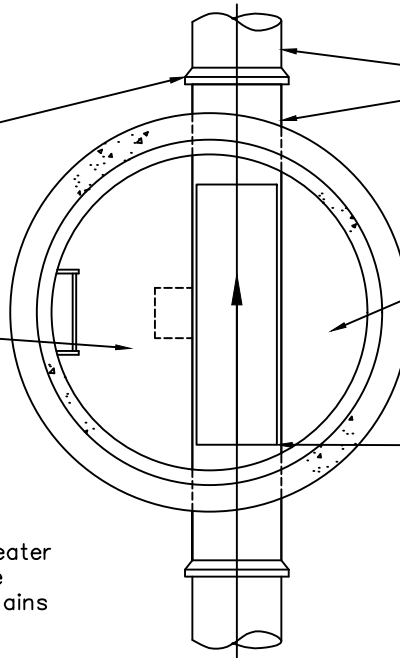
Rocker and short length pipe

Minimum width of benching to be 225mm

Pipe joint with channel to be located min. 100mm inside face of chamber

NOTES

1. All dimensions are in millimetres unless otherwise stated.
2. Manholes with outgoing pipes greater than 600mm diameter should be fitted with guard bars, safety chains or other safety devices.



MANHOLE DETAIL – TYPE A

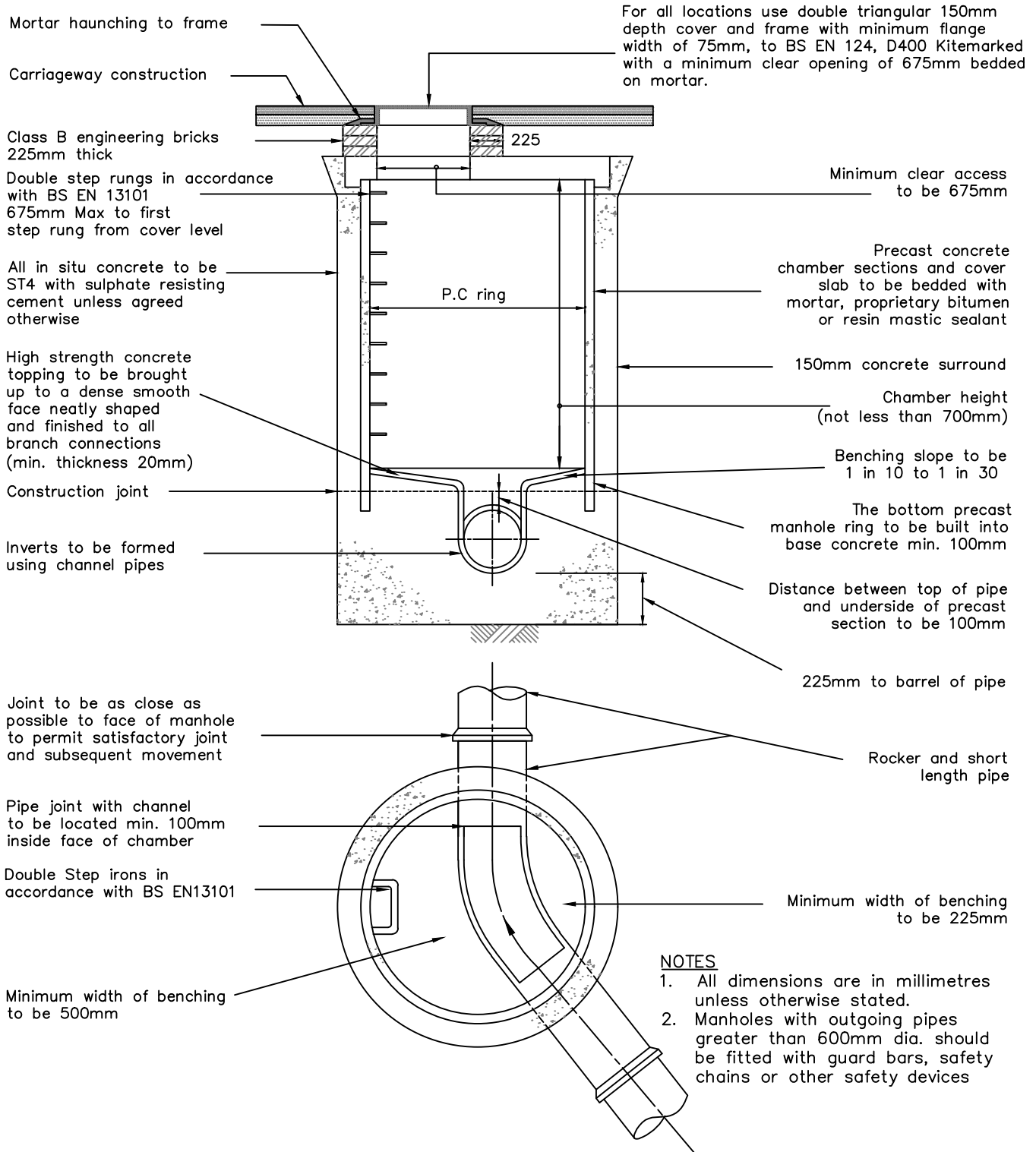
Depth From Ground Level to Soffit of Pipe 3m to 6m

COMMON STANDARDS FOR WALES

HIGHWAY DESIGN GUIDE

Drawn	MT
Checked	SZ
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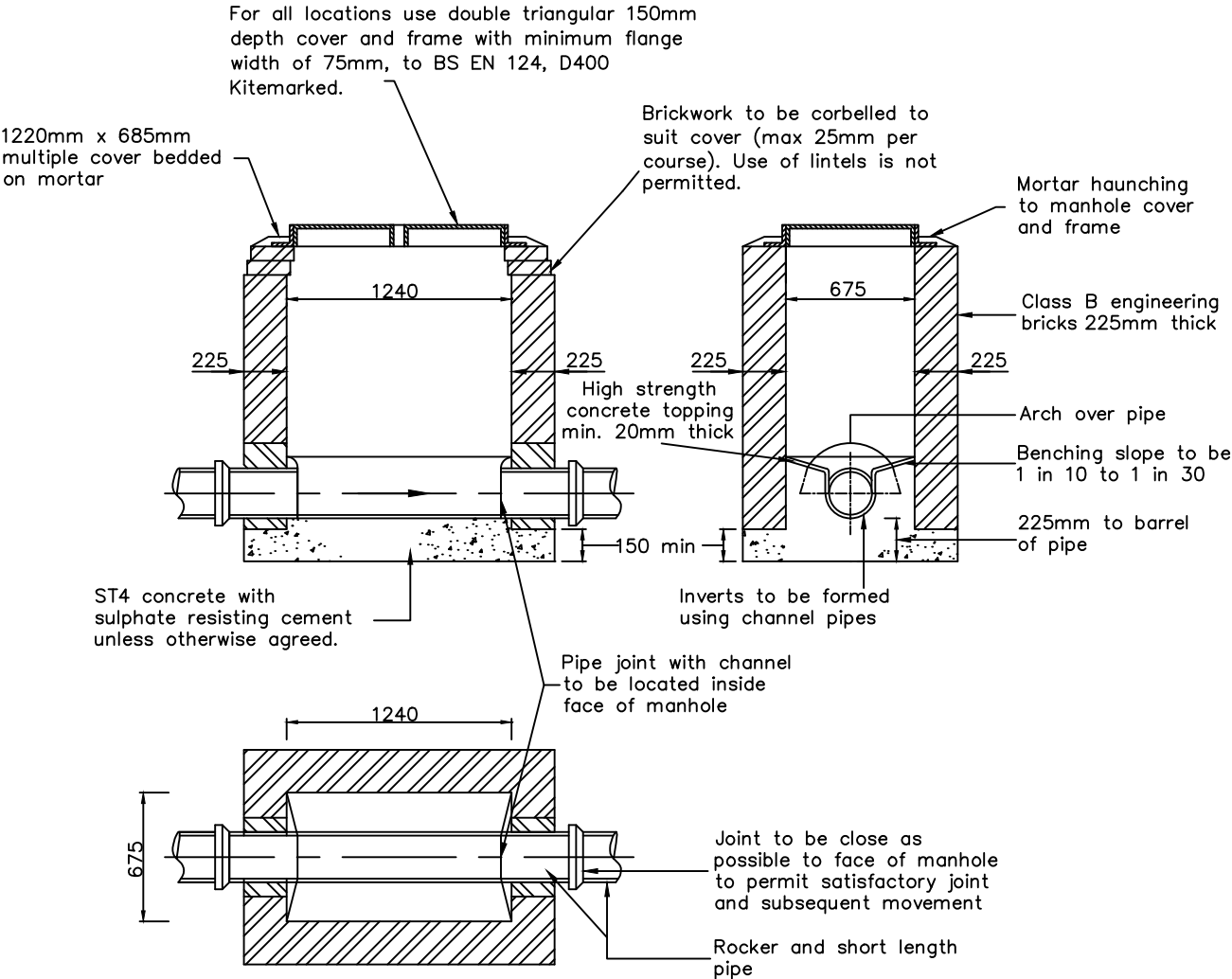
MANHOLE DETAIL – TYPE B

Maximum Depth From Ground Level to Soffit of Pipe 3.0m

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NOTES

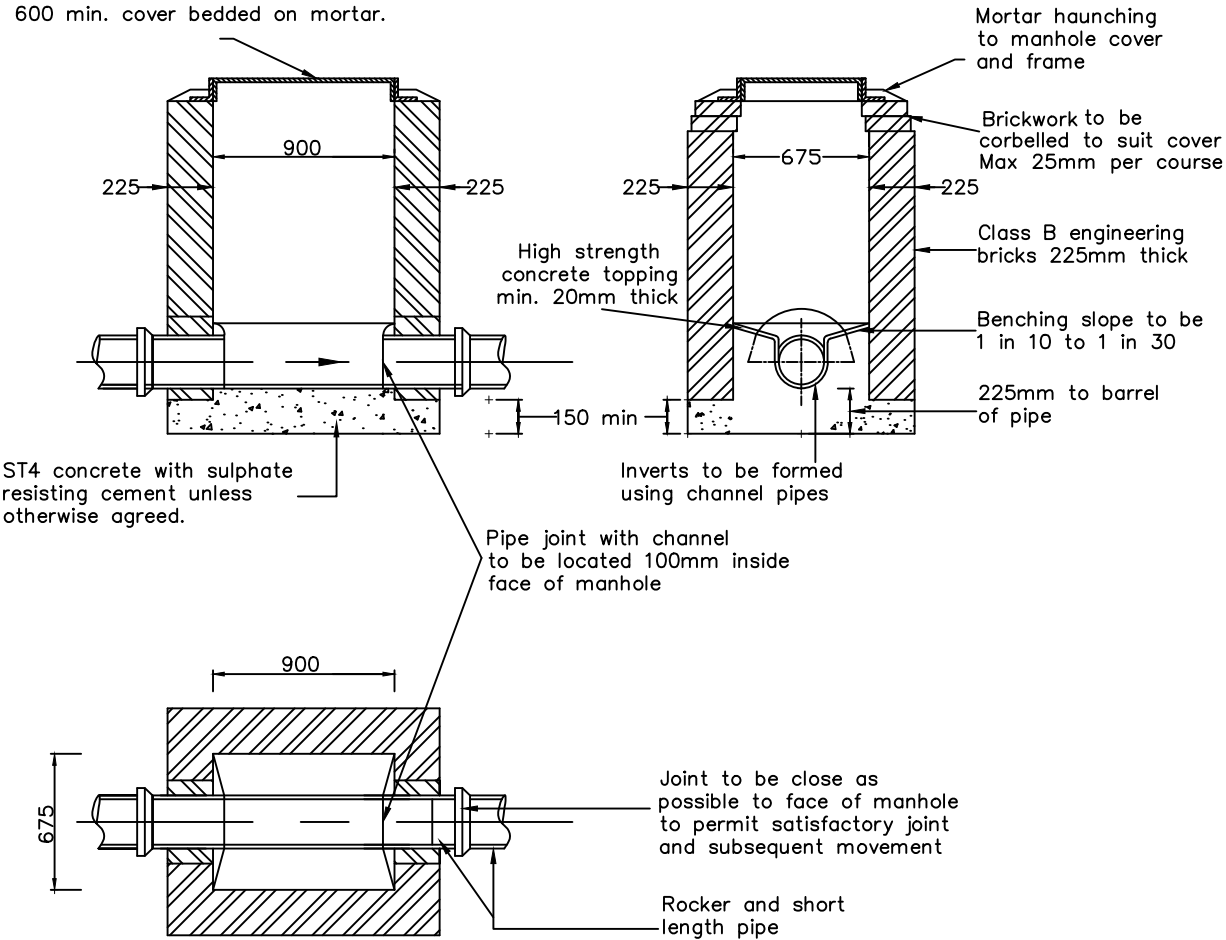
1. All dimensions are in millimetres unless otherwise stated.
2. Brickwork manholes should be a last case scenario and where the chamber height is less than 900mm and a Type B manhole can not be used, a Type F manhole will be considered as an alternative.
3. For Type C manholes, the internal dimensions are normally 1240 x 675, but manhole width should be increased for pipes larger than 225 diameter to give 225 benching each side with the brickwork corbelled down to suit cover.

MANHOLE DETAIL – TYPE C
Depth From Ground Level to Soffit of Pipe 1m to 1.25m

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For all locations use double triangular 150mm depth cover and frame with minimum flange width of 75mm, to BS EN 124, D400 Kitemarked. 900 x 600 min. cover bedded on mortar.



- NOTES**
1. All dimensions are in millimetres unless otherwise stated.
 2. Brickwork manholes should be a last case scenario. a Type F manhole will be considered as an alternative.
 3. For Type D manholes, the internal dimensions are normally 900 x 675, but a manhole width should be increased for pipes larger than 225mm diameter to give 225mm benching each side of the pipe with the brickwork corbelled to suit the cover.

MANHOLE DETAIL – TYPE D Depth From Ground Level to Soffit of Pipe Less Than 1m

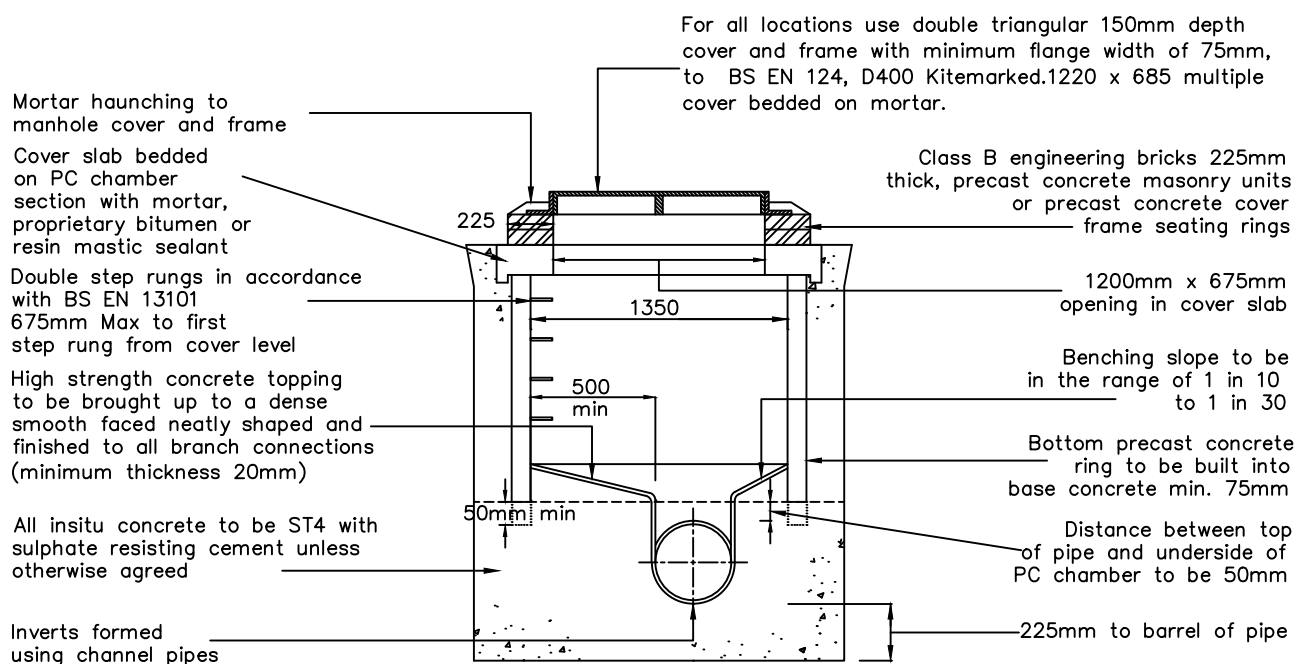
COMMON STANDARDS FOR WALES

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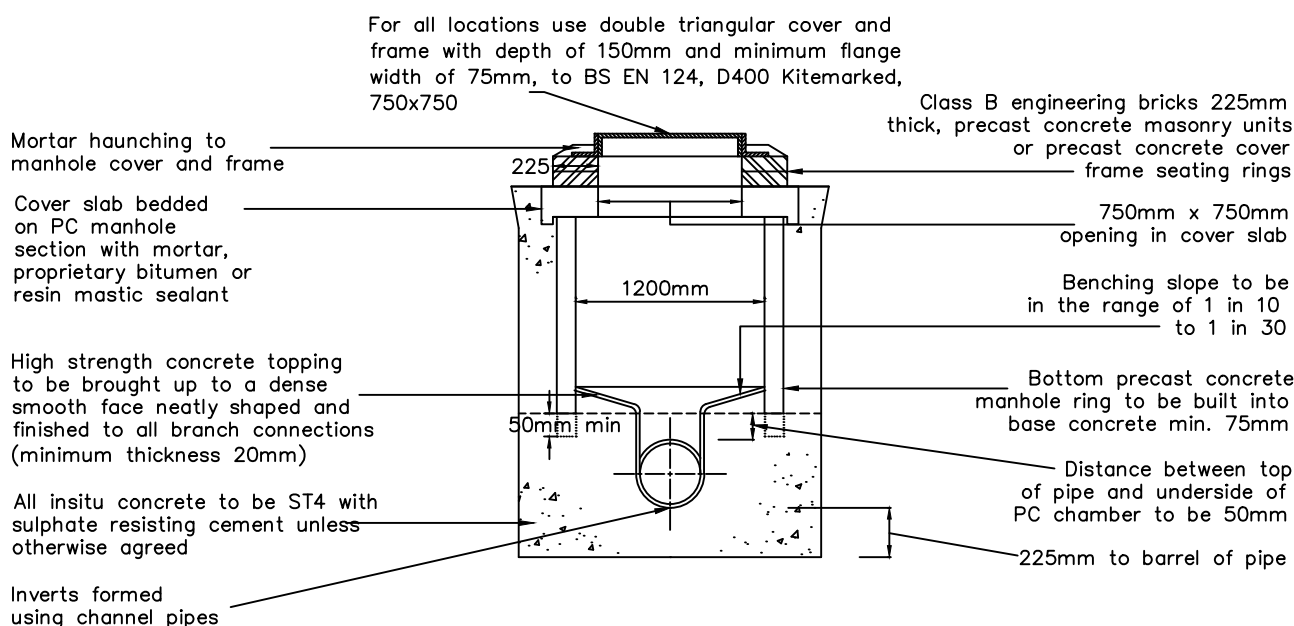
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MANHOLE DETAIL – TYPE E
DEPTH FROM GROUND LEVEL TO SOFFIT OF PIPE 1.0m TO 1.45m



MANHOLE DETAIL – TYPE F
DEPTH FROM GROUND LEVEL TO SOFFIT OF PIPE LESS THAN 1.0m



NOTES

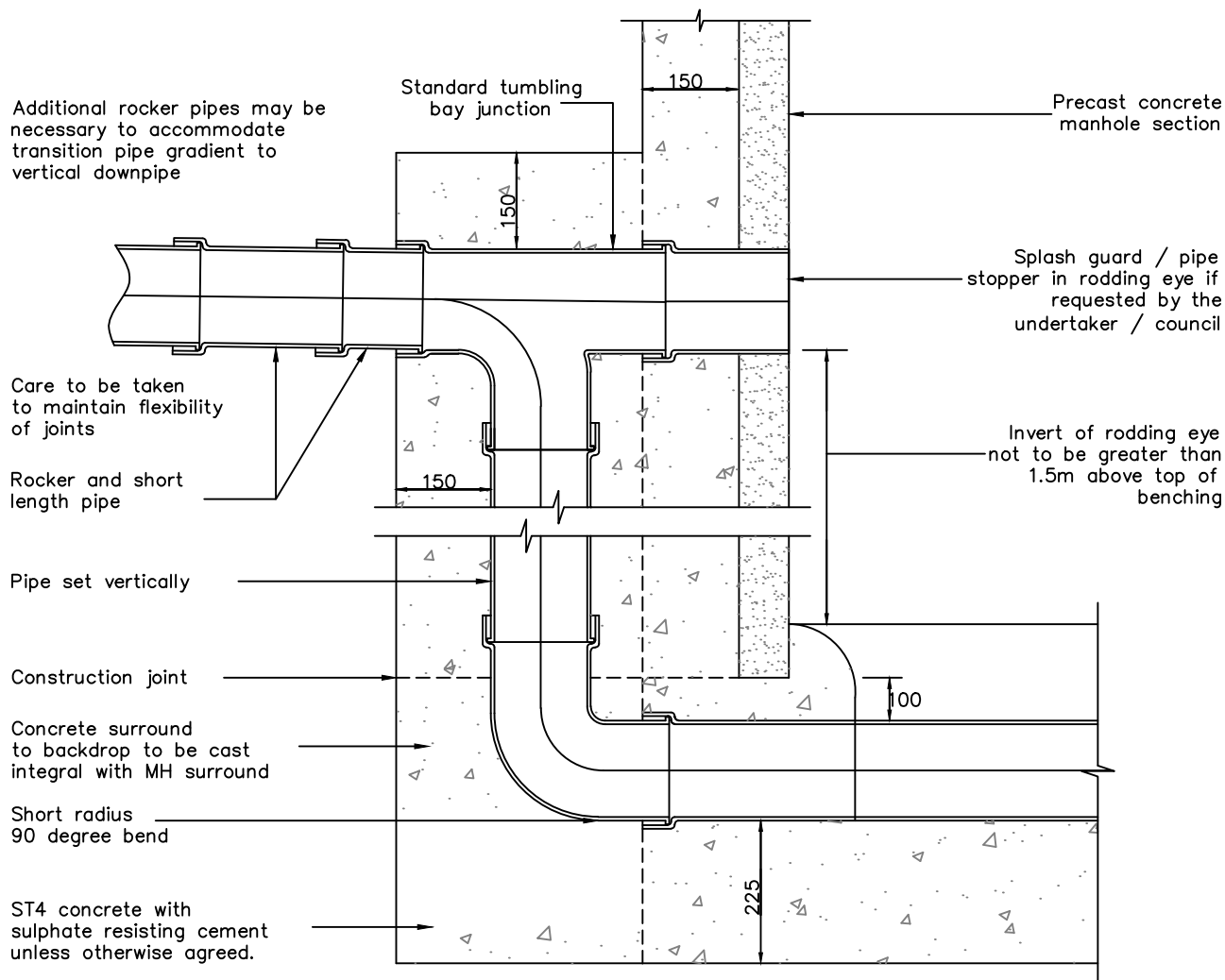
1. All dimensions are in millimetres unless otherwise stated

MANHOLE DETAIL – TYPES E & F

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NOTES

1. Where the drop is not excessive a 45 degree drop pipe may be used.
2. Steeper gradients are preferred to the use of backdrops.
3. All dimensions are in millimetres unless otherwise stated.

VERTICAL BACKDROP

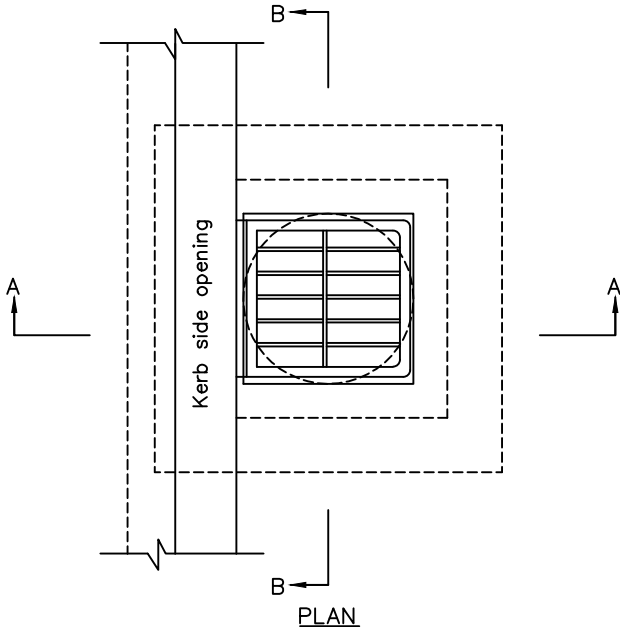
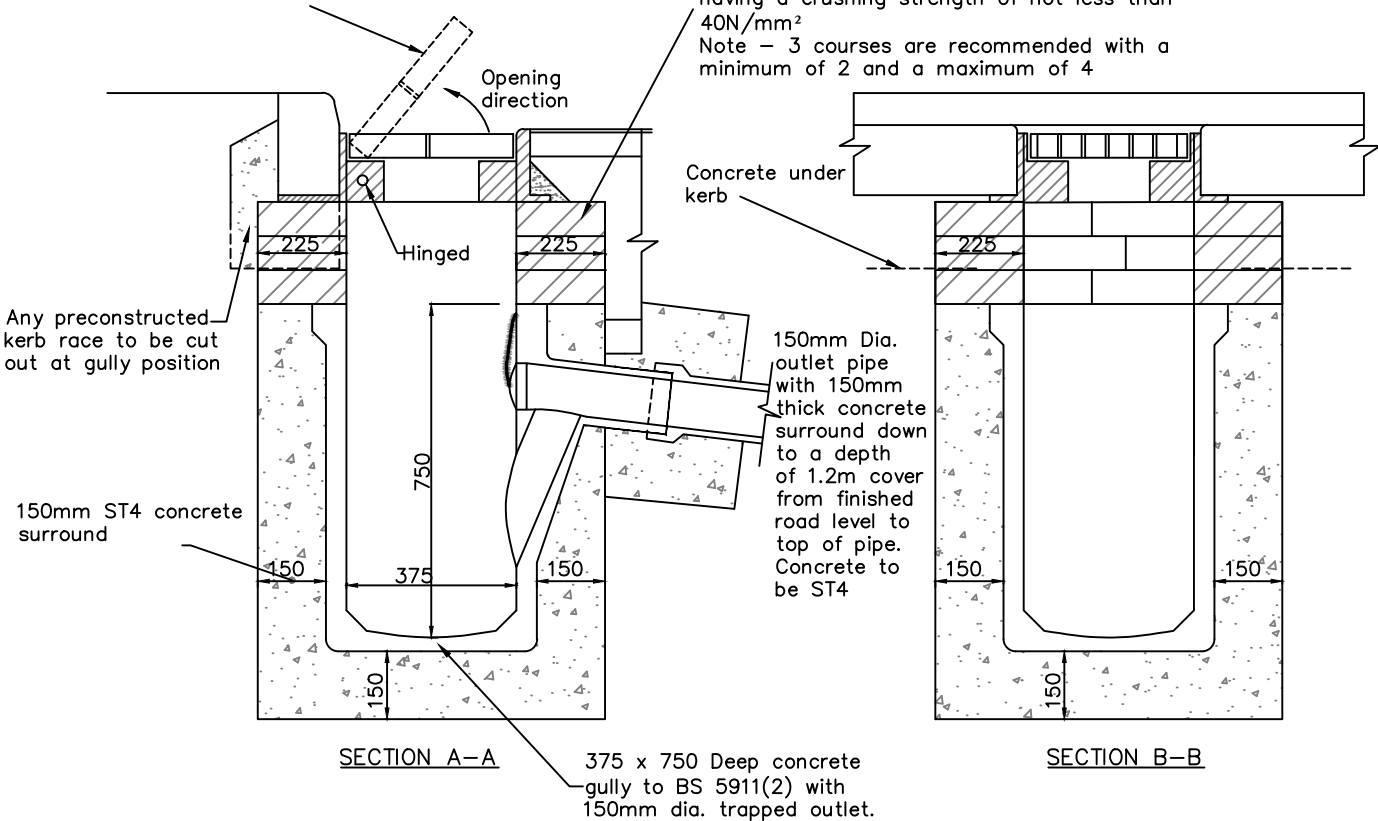
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Heavy duty grating and frame, single piece, hinged, non-rock, kerb side opening Class D400 to BS EN 124 and Kitemarked, minimum flange thickness of 75mm. The clear opening shall be 370 x 430 and a clear waterway area of 980cm as per the Watershed D400 or equivalent alternative to be agreed prior to use.
Cover shall be set 5mm below finished road level.

HD type Class 'B' engineering brick 225mm thick to BS EN 771 or concrete bricks to BS EN 771 having a crushing strength of not less than 40N/mm²
Note – 3 courses are recommended with a minimum of 2 and a maximum of 4

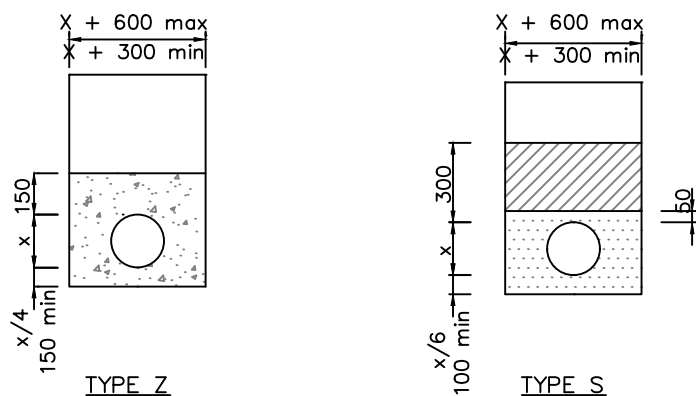


- NOTES**
1. All dimensions are in millimeters unless otherwise stated.
 2. Gratings must be hinged with kerb side opening.
 3. Gully pot must be correctly positioned in line with the kerb face
 4. Lintels will not be permitted
 5. A small amount of corbelled brickwork will be permitted up to 25mm per course.
 6. Bricks laid on edge will not be permitted
 7. Gully pots must be 375mm diameter and 750mm depth.

PRECAST CONCRETE GULLY

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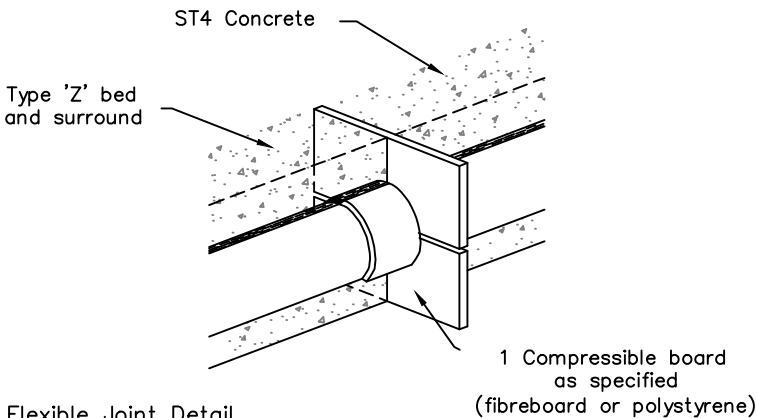
- Granular material to Specification for Highway Works Clause 503.3 (i).
- ST4 Concrete.
- Class 8 material to Specification for Highway Works Clause 503.3 (iv).

NOTE – Class 8 Material is Class 1, 2 & 3 material with no lumps or stones greater than 40mm

NOTES

Flexible joint in concrete

- Flexible joints must be provided in the concrete by inserting compressible board (fibreboard or polystyrene) at centres of 6m maximum and at all pipe joints.
- A board thickness of 18mm for pipes up to 450mm nominal diameter and 36mm for pipes over 450mm in diameter.



NOTES

- All dimensions are in millimetres unless otherwise stated.
- Dimension X is the external diameter of the pipe.
- The minimum or maximum width of the trench applies on and below a line 300mm above the outside top of the pipe. Above the 300mm line the trench backfill material shall be as described in the Specification for Highway Works.
- The concrete bed or surround may extend to the sides of the trench or be of minimum width. Class 8 material is to be used to fill any voids so formed.

TRENCH, BEDDING AND FLEXIBLE JOINT

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