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Denmark WA 6333
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Application for a Permit to Undertake Crossover Construction Works within a Council Road Reserve

Application No.: Yr/No. _____

Applicant's Details

- ☐ Owner of Property
☐ Contractor

Date: _____

Name: _____

Postal Address: _____

Phone: _____ Fax: _____ Email: _____

Crossover Type: Residential / Commercial

Contractors Details

Contractors Name: _____

Phone: _____ Fax: _____

Email: _____

Correspondence Required to Builder? Yes / No

Crossover Details

Lot No: _____ Street No: _____ Street: _____

Location: _____

Type of Construction:

☐ Bitumen ☐ Concrete ☐ Brick Paved ☐ Gravel ☐ Other: _____

Important Notes

- No Crossover shall be installed without the issue of a Crossover Permit.
- A Crossover application fee in accordance with the Shire of Denmark fees and charges is required to be paid prior to the issue of a Crossover Permit.
- The Shire of Denmark has the power under the Local Government Act 1995, as amended, to make good any nonstandard Crossover at the applicant's expense.
- The permit for the construction of the crossover is only valid for a period of twelve months from date of permit issue.
- Gravel Crossovers constructed without stormwater pipes are not eligible for a subsidy.
- To receive a subsidy, the completed application form must be lodged at least three working days before work commences and the constructed Crossover must meet the Shire of Denmark's minimum requirements.
- Culvert pipes are to be reinforced concrete or Blackmax with a minimum pipe size of 300mm.
- No subsidy will be paid without Council receiving a receipt of payment for the Crossover application.
- Crossover subsidies are to be paid directly to the landowner.
- Properties are only entitled to one subsidy payment. i.e., 2nd crossovers to a property are ineligible for subsidy payment.
- Gravel crossovers can only be constructed where the adjoining road is gravel.
- If the crossover contains native vegetation:
 - a. The applicant must demonstrate that a site has been chosen to avoid or minimise the clearing of native vegetation.
 - b. If the site contains significant flora, the applicant must demonstrate that they have approvals for the removal of significant flora.
- Existing footpaths take precedence over new Crossovers but may require upgrading to specification
- Please read and understand the crossover specifications included in this document, if you have any queries contact the Shire of Denmark's Engineering department.

I hereby certify that this application contains a true and accurate description of the proposed works. All works will be carried out in accordance with the information contained in this application, legislative & statutory requirements and to any other conditions or specifications imposed by the Director of Assets & Sustainable Development.

Endorsed by (Applicant)



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Application for Crossover Subsidy

To be lodged in conjunction with Application for Permit to undertake Works within a Council Road Reserve. Prior to commencement of works.

Subsidy Payment

The subsidy shall be paid only if the work complies with all specifications as listed. The applicable crossover subsidy is based on the Council's current fees and charges schedule.

- No Crossover shall be installed without the issue of a Crossover Permit.
- No subsidy will be paid without the Shire of Denmark receiving a receipt of payment for the Crossover.
- The Shire of Denmark has the power under the Local Government Act 1995, as amended, to make good any non-standard Crossover at the property owner's expense.
- Gravel Crossovers constructed without stormwater pipes are not eligible for a subsidy.
- The permit for the construction of the crossover is only valid for a period of twelve months from date of permit issue.
- Existing footpaths take precedence over new Crossovers but may require upgrading to specification
- Crossovers are to be designed and constructed in accordance with the Shire of Denmark's standard drawings ES-CR-01, ES-CR-03, ES-CR-04, ES-RO-08 and headwall construction diagram. These drawings are attached in this application form.
- The maximum crossover subsidy for the 2023/2024 financial year is as follows:

Constructed without stormwater pipe:	\$295.00
Constructed with stormwater pipe- unsealed:	\$429.00
Constructed with stormwater pipe- sealed:	\$873.00

Payee Details

Owner Name _____

Property Address _____

Phone: _____ Fax: _____ Email: _____

Subsidy Payment Information

BSB _____ Account Number _____

Account Name _____

Signature: _____

Date: _____

Please be advised that I intend to have a crossover constructed to the above address and hereby wish to apply for a subsidy.

The crossover is _____ metres wide and constructed from Concrete / Hot Mix / Sprayed Bitumen / Brick paving / Gravel (underline applicable material to be used).

I declare that I have not previously made application to Council for a subsidy at the abovementioned address for a sealed crossover.

Signature of Applicant Date.....

Office Use Only

Assessment No: _____ Application No: _____

Site Assessment		Date / Comments
Application and payment lodged	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____
Application approved by Engineer	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____
On-site location approved	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____
Construction completed	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____
Inspected by: _____		Sign: _____ Date: _____

Subsidy Payment

- ☐ Constructed without stormwater pipe/s - sealed \$295.00
- ☐ Constructed with stormwater pipe/s – unsealed \$429.00
- ☐ Constructed with stormwater pipe/s – sealed \$873.00
 (Refund as per current financial year fees & charges under the heading of "Other Property & Services- Crossover")

Approved By: _____

Name Position

Amount: \$ _____ G/Ledger Code: 1228382

Subsidy Paid

Amount: \$ _____ Receipt No: _____ Date: _____

Creditor No: _____ Initial of Accounts Officer: _____

CROSSOVER SPECIFICATIONS

Specification for the construction of bitumen crossings in road reserves from the constructed bitumen road to the property boundary.

Definition

A vehicular crossover is defined as a crossing area for vehicular access between the road and private property boundary within Council's Road reserve.

Application and Construction Process

All crossover construction works require a construction permit. This permit is the Crossover Application form. Once completed, it must be sent to the Shire of Denmark and accompanied with the permit / supervision fee. Construction must not commence until the fee is paid and at least 3 days' notice is given. During this time, an officer from the Council's Infrastructure Services department will contact the applicant to discuss the proposed location of the crossover with yourself/contractor.

The crossover construction permits are only valid for 12 months from the date of receipt of payment. Failure to construct the crossover during this period will require a new application and fee to be paid. Building and Planning License approvals do not constitute approval for the construction of a crossover or exempt from payment of a permit fee.

In general, you must contact the Council at least 4 times:

1. Make application and pay the permit fee.
2. Advise when formwork is in place for inspection.
3. Request inspection when the work is fully completed.
4. Send a copy of the contractor's crossover receipt for subsidy calculation and payment.

You may contact the Shire of Denmark at any time should you require advice, but in order to comply with our requirements and maintain a consistent standard the minimum number of times to contact us are shown above.

Main Roads WA has the care and responsibility of South Coast Highway and The Denmark-Mt Barker Road and accordingly applications for crossovers along these highways must be made through them. You can call a local MRWA representative on 9892 0555. You may still be subsidised by the Council on completion of the crossover to MRWA requirements, but only on presentation of the contractor's receipt to the Council.

Crossover Guidelines

- Crossovers at residential properties are to be constructed to a minimum and maximum width of 3m and 6.25m respectively. Crossovers at commercial properties are to be constructed to a minimum and maximum width of 3m and 10m respectively.
- Redundant vehicular crossovers are to be removed and re-vegetated in keeping with the existing surrounds. Redundant crossover openings in streets that are kerbed, are

to be reinstated with new concrete kerbing having the same profile as that which exists, by your contractor, under our supervision.

- The Shire of Denmark has the discretion to remove or modify any vehicular crossover that is not constructed or maintained to Council's satisfaction, and if not rectified within 21 days of due notice being issued, commence to remove or modify the crossover at your expense.
- The public shall be protected from injury during construction with the use warning signs, barriers and flashing signals overnight.
- No Crossover is to be detrimental to neighbouring properties. That is, not to cross-extend property lines. Storm water runoff is to flow away from properties.
- Protection of works and the public shall be in compliance with the Australian Standards-1742.3 Traffic Control Devices For Works On Roads.
- Damage that may occur to the City's facilities, or to private property, during the course of or arising from works shall be the responsibility of the property owner who shall be held responsible for the repair, replacement, and legal claims

MATERIALS

- Crossovers can only be constructed in gravel, bitumen seal, concrete or brick paving. Sealed crossovers (i.e. bitumen seal, concrete, brick paving) are to be constructed if the existing road frontage is a sealed road. Gravel crossovers are only allowed to be constructed on gravel roads.
- Refer to drawing ES-CR-01 and drawing ES-CR-04 for bitumen and gravel crossovers respectively.
- Crossovers constructed in gravel must comply with the general shape and specification as that for a bitumen sealed crossover. A permit is still required and timber edging to define and contain the gravel is required.
- Concrete crossovers cannot be coloured, without the approval of the Council's Infrastructure Services department. They should have a smooth brushed surface.

Bitumen Seal

- Refer to drawing ES-CR-01.
- A base course of 200mm compacted gravel over a sound sub-grade is required. If sub-grade soggy or spongy, then it must be replaced with at least 200mm of limestone.
- For commercial crossovers, a base course of 300mm compacted gravel is required. Similarly, if the sub-grade is poor, then 200mm of limestone is required. Refer to the drawing for layout dimensions.

- The minimum standard is a 2-coat seal (to Australian Standard) with a sand finish. Washed pea gravel is not permitted as a finished surface.

Concrete

- Refer to drawing ES-CR-01.
- For residential crossovers the minimum thickness of 20mpa concrete is 100mm, with a minimum thickness of 150mm at the bund or toe at the kerb line. If the sub-grade is poor, then a minimum of 150mm of compacted limestone is required.
- For commercial crossovers the minimum thickness of 25mpa concrete is 150mm, reinforced with F62 mesh. Similarly, if the sub-grade is poor, then a minimum of 150mm of compacted limestone is required.
- The minimum standard is a non-slip brushed surface (lateral) in the direction of the road travel.

Brick Paving

- Refer to drawing ES-CR-01.
- The brick paver colours must be approved by the Shire of Denmark and be 60mm thick trafficable types. They must be laid in an interlocking herring-bone manner with the edge pavers constrained by a concrete base and lip. All other pavers are to sit on a 20-30mm compacted sand or dust sub-base. If the sub-grade is poor, then it must be replaced with a 150mm limestone base. Brick paving is not usually suitable on very steep slopes > 10%.
- The minimum standard is the use of 2 colours only.

Gravel Crossover

- Refer to drawing ES-CR-04 and ES-RO-08.
- Gravel crossover is to be constructed with a minimum width of 3m and maximum of 6m. If required, a concrete pipe culvert of 375mm in diameter would have to be installed with a minimum cover of 300mm.
- The ends of the concrete pipe culvert would have to be surrounded and reinforced with either standard reinforced concrete headwalls or stone pitched headwalls. Please refer to the attached headwall construction diagram for further details.
- In the event a concrete pipe culvert is installed, two rural guide posts have to be installed to indicate the position of the headwalls of the concrete pipe culvert for the safety of vehicles. The Council's standards for rural guide posts are shown in drawing ES-RO-08.

Pipe Crossings

- If you have an open drain or water course to cross, Council will determine the pipe size required once the site has been inspected following payment of the fee.
- Stormwater pipes for crossovers are not supplied free of charge but can be purchased from local businesses, like hardware stores or earthmoving companies. Odd lengths may incur an additional cutting charge. The usual minimum rural standard is 375mm diameter PVC (Black Max).

Formwork

- Bitumen crossovers are to have jarrah edging positioned flush with the top of the finished surface level. The jarrah edging is to be 150 * 25mm with stakes every 1.2m apart. The tops of the stakes are to be secured to the boards and 25mm below the top of the edging.
- The crossover is to be inspected once the timber edging/formwork is in place for both bitumen and concrete crossover. Once approved on-site, the crossover can then be completed.

One Crossover per property

- There will be no more than 1 crossover to each property unless approval is granted by the Director of Assets & Sustainable Development. The width of the second crossover shall only be 3m wide and will not be subsidised.

Adjoining Properties

- Where two adjoining properties have/will have crossovers abutting, they shall not exceed 5m each in width.

Council Assets

- Where Council's assets such as manhole covers, grates, road edge markers, etc. must be relocated for a crossover, then approval must be granted by the Council's Director of Assets & Sustainable Development. If relocation is possible, then the full cost is fully recoverable from the applicant or property owner. A bond may be requested prior to construction to ensure the work can be done.
- Where a footpath exists, it would normally be replaced with a crossover that would normally blend into the footpath, without leaving any level difference or step to be tripped over. However, clarification would be required in each situation.

Tree Removal

- The removal of trees is generally prohibited unless special circumstances apply. Trees removal requires the approval from Council's Infrastructure & Assets section and Planning / NRM sections and will probably require a replacement tree to be established somewhere else on the verge.

Intersecting Roads

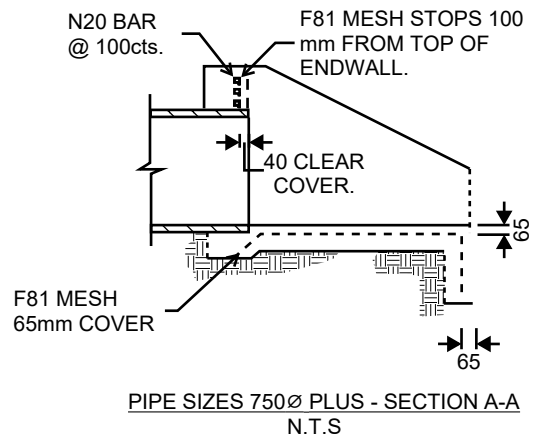
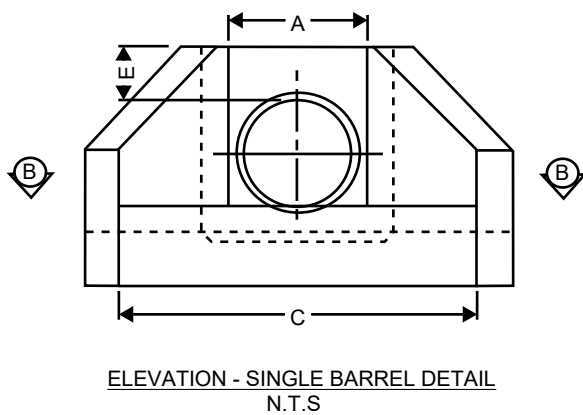
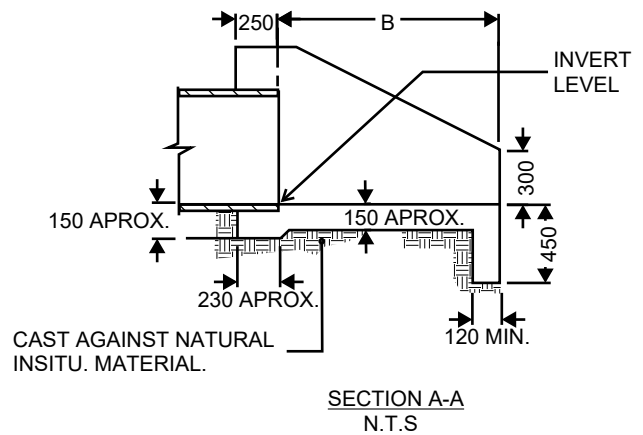
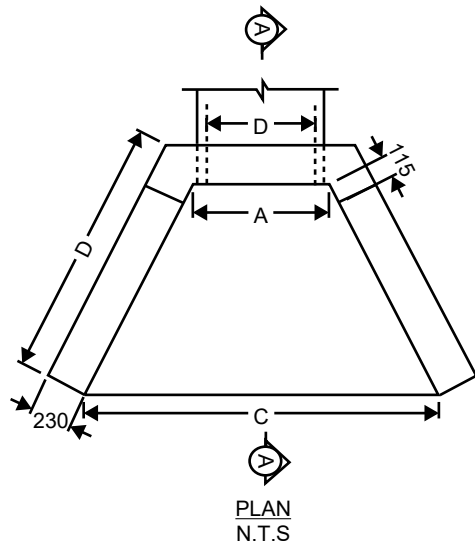
- A crossover cannot be constructed within 6m of the corner boundary of an intersecting road.

Future maintenance

- Future maintenance of the crossover is the responsibility of the property owner. The Shire of Denmark is not responsible for the future maintenance of the crossover.

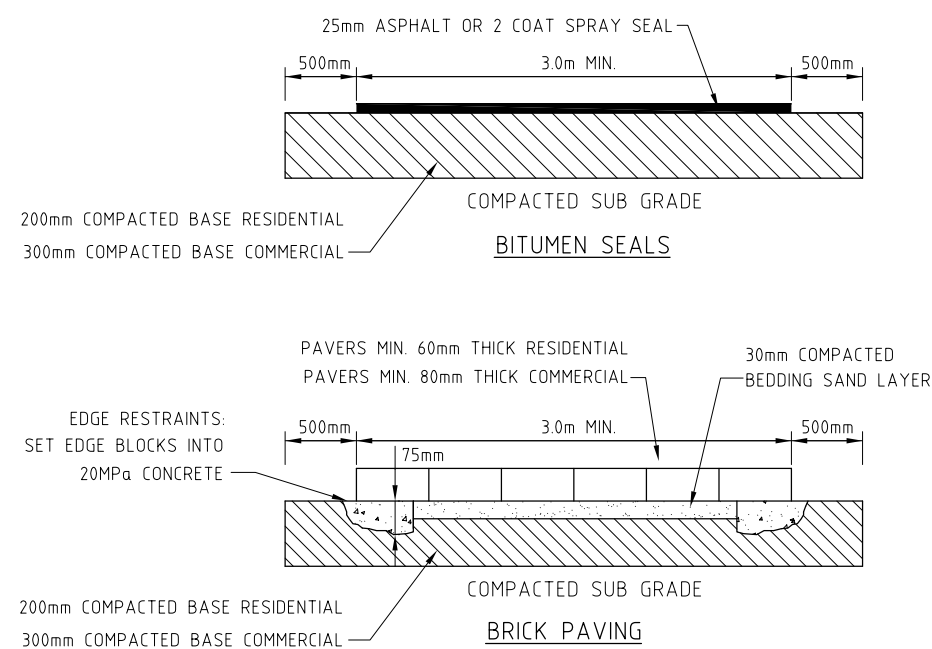
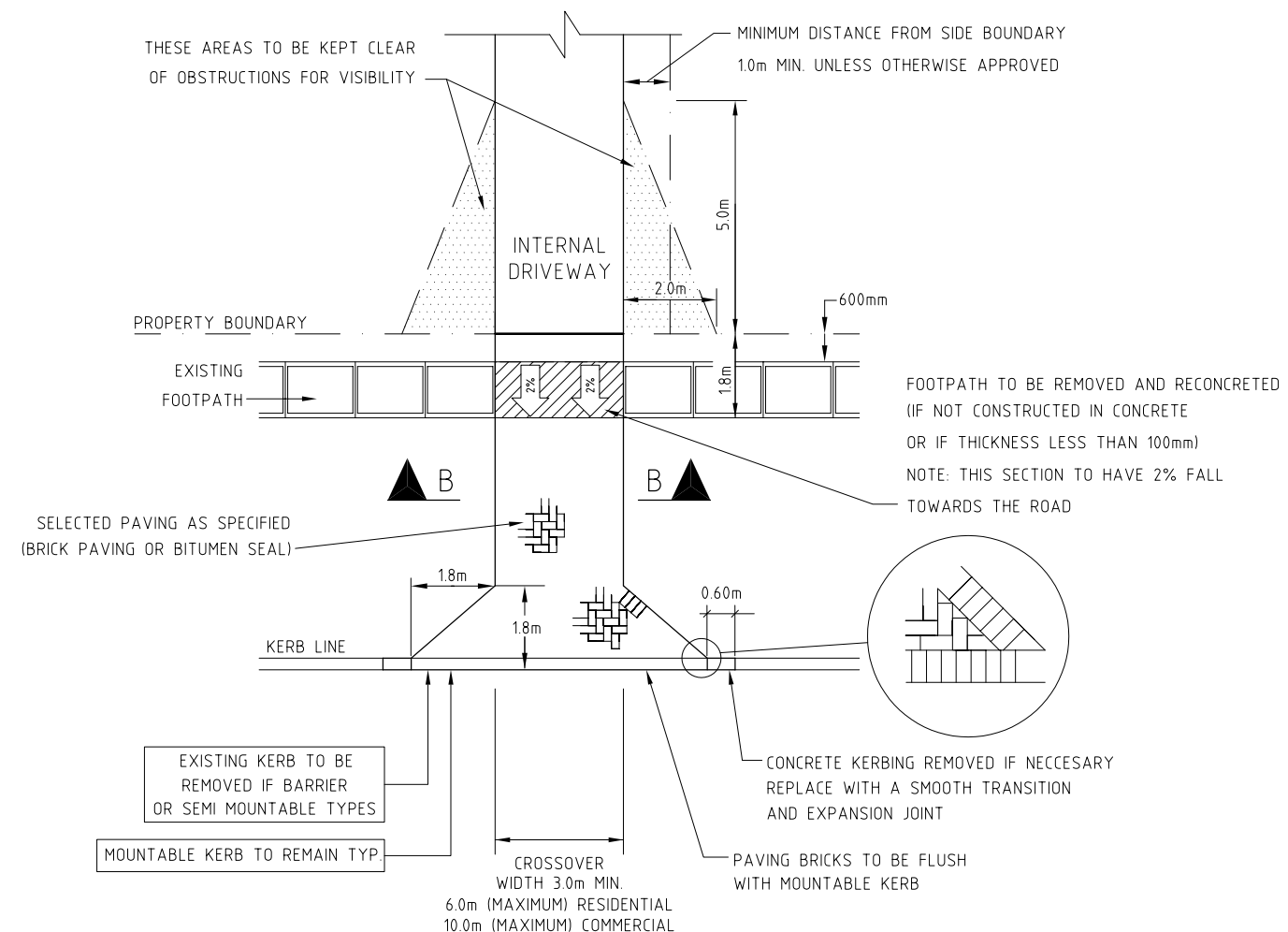
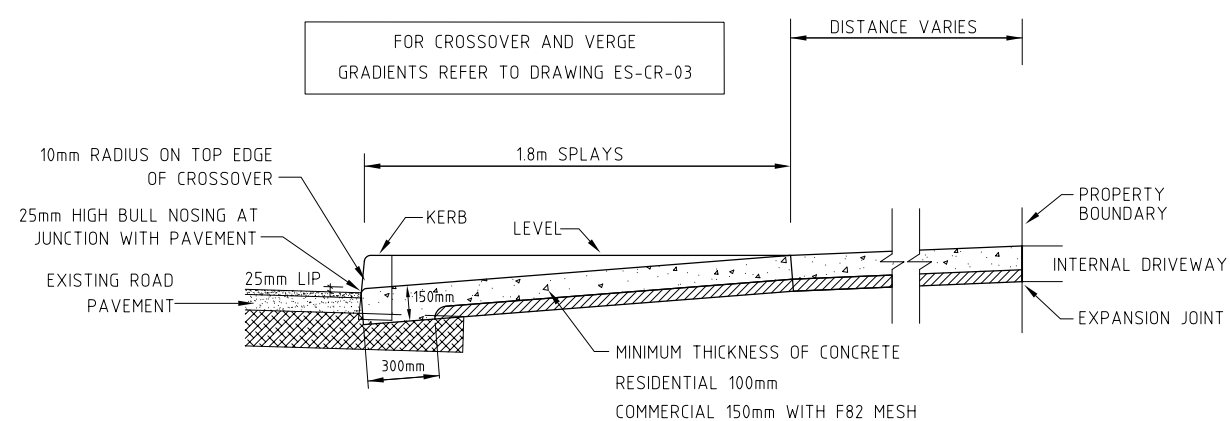
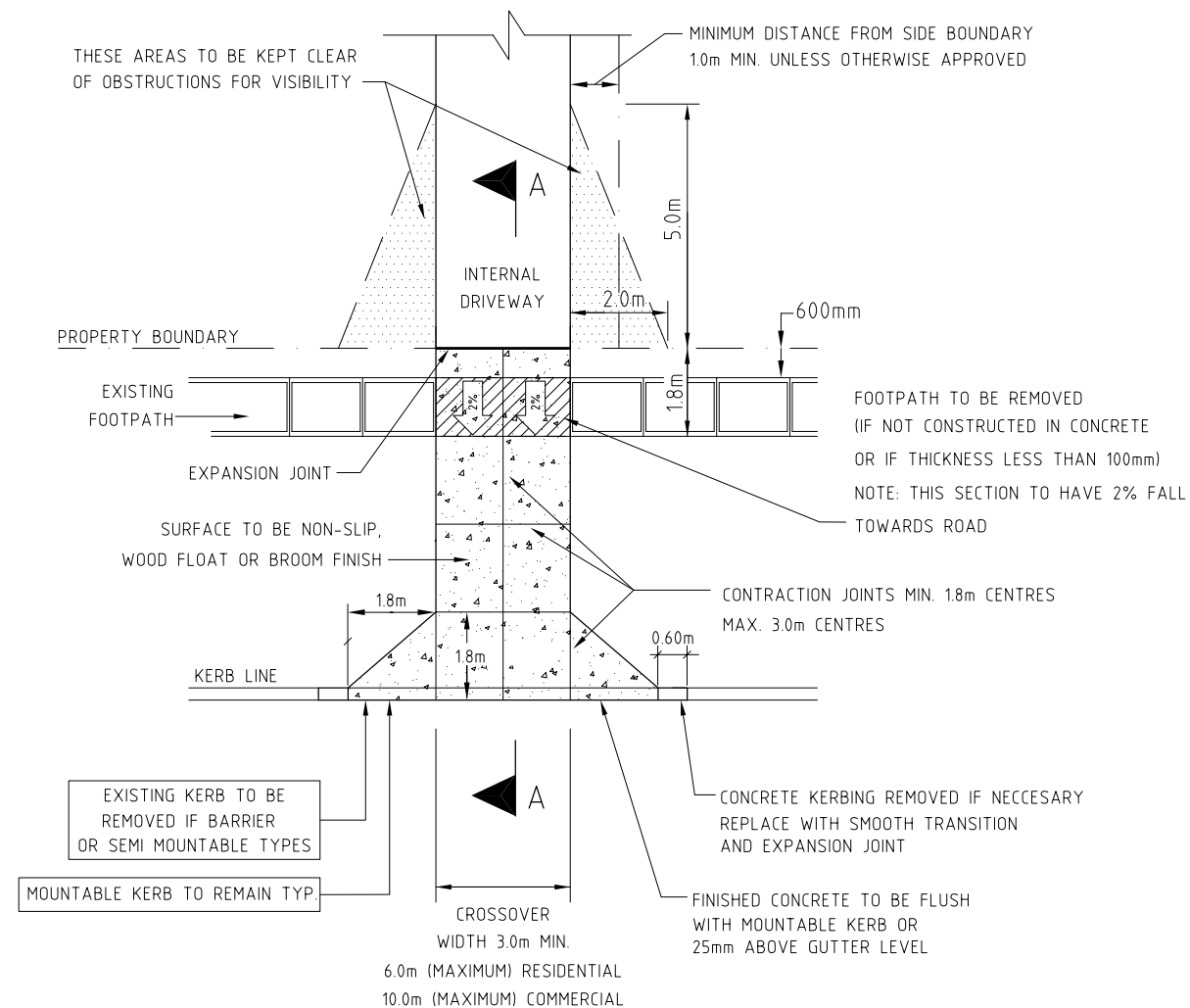
Headwall Construction Diagram

HEADWALL CONSTRUCTION



CODE	DESCRIPTION	Ø - PIPE INTERIOR DIAMETER										
		300	375	375	450	450	600	750	900	1200	1500	1800
A	HEADWALL WIDTH	450	515	515	600	600	750	1110	1260	1560	1860	2200
B	APPRON LENGTH	600	550	650	800	900	1200	1500	1854	2632	3216	3800
C	APPRON WIDTH	1050	1065	1165	1400	1500	1950	2610	3200	4200	5100	6000
D	WINGWALL LENGTH	813	757	870	1037	1148	1484	1934	2215	3085	3738	4391
E	HEIGHT ABOVE OBVERT	250	200	250	250	300	300	300	300	400	400	400
F	ADD PER BARREL - TO HEADWALL & APPRON WIDTH	550	600	600	700	700	850	1060	1200	1500	1800	2100

STANDARD INFORMATION FOR NEW INSTALLATION OF REINFORCED CONCRETE PIPE. USING SPACING OF 150mm BETWEEN PIPES. PIPE WALL THICKNESS MAXIMUM OF 60mm.



NOTES

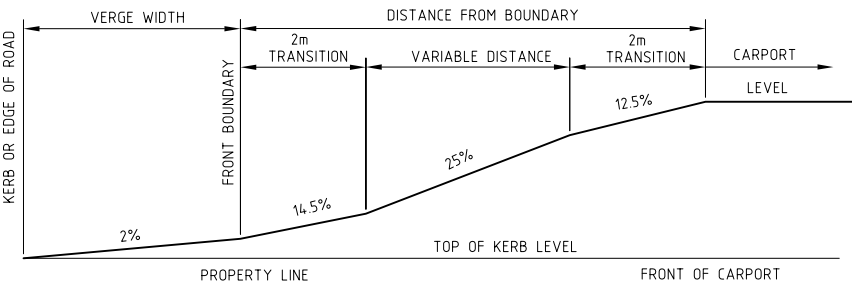
1. ALL CROSSTOVERS SHALL BE AT RIGHT ANGLES TO THE KERB & BOUNDARY UNLESS APPROVED OTHERWISE.
2. SHOULD ANY TREE, POWER POLE, SIGN, PIT, MANHOLE OR ANY OTHER OBSTRUCTION BE LOCATED ON THE PROPOSED ALIGNMENT OF THE CROSSTOVER THE APPLICANT SHALL BE LIABLE FOR THE COSTS ASSOCIATED WITH THE REMOVAL OR ALTERATION OF THE ITEM.
ANY REMOVAL OR ALTERATION REQUIRES PRIOR APPROVAL OF COUNCIL.
3. IF CONSIDERED NECESSARY, TRENCH GRATING & SOAK WELL SHALL BE CONSTRUCTED BY THE APPLICANT TO CUT OFF WATER ENTERING THE PROPERTY, OR ENTERING THE ROAD FROM INTERNAL DRIVEWAYS.
4. VEHICLE CROSSTOVERS ABUTTING SOUTH COAST HIGHWAY AND MT BARKER ROAD SHALL ALSO BE SUBJECT TO APPROVAL BY MAIN ROADS WA.
5. FOR CULVERT INSTALLATIONS REFER TO DRG ES-CR-04.
6. FOR CROSSTOVER LAYOUTS IN CUL-DE-SACS & APPROVED BRICK PAVING PATTERNS REFER TO DRG ES-CR-02.
7. FOR KERB DETAILS REFER TO DWG ES-RO-09.
7. FOR CROSSTOVER GRADIENTS REFER TO DWG ES-CR-03.

Amendments																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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STANDARD 2% VERGE GRADING

VERGE WIDTH (m)												
	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5
1.2	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30
1.6	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.31	0.32	0.33	0.34	0.35
2.0	0.29	0.30	0.31	0.32	0.33	0.34	0.35	0.36	0.37	0.38	0.39	0.40
2.4	0.35	0.36	0.37	0.38	0.39	0.40	0.41	0.42	0.43	0.44	0.45	0.46
2.8	0.41	0.42	0.43	0.44	0.45	0.46	0.47	0.48	0.49	0.50	0.51	0.52
3.2	0.46	0.47	0.48	0.49	0.50	0.51	0.52	0.53	0.54	0.55	0.56	0.57
3.6	0.52	0.53	0.54	0.55	0.56	0.57	0.58	0.59	0.60	0.61	0.62	0.63
4.0	0.58	0.59	0.60	0.61	0.62	0.63	0.64	0.65	0.66	0.67	0.68	0.69
4.4	0.68	0.69	0.70	0.71	0.72	0.73	0.74	0.75	0.76	0.77	0.78	0.79
4.8	0.78	0.79	0.80	0.81	0.82	0.83	0.84	0.85	0.86	0.87	0.88	0.89
5.2	0.88	0.89	0.90	0.91	0.92	0.93	0.94	0.95	0.96	0.97	0.98	0.99
5.6	0.98	0.99	1.00	1.01	1.02	1.03	1.04	1.05	1.06	1.07	1.08	1.09
6.0	1.08	1.09	1.10	1.11	1.12	1.13	1.14	1.15	1.16	1.17	1.18	1.19
6.4	1.18	1.19	1.20	1.21	1.22	1.23	1.24	1.25	1.26	1.27	1.28	1.29
6.8	1.28	1.29	1.30	1.31	1.32	1.33	1.34	1.35	1.36	1.37	1.38	1.39
7.2	1.38	1.39	1.40	1.41	1.42	1.43	1.44	1.45	1.46	1.47	1.48	1.49
7.6	1.48	1.49	1.50	1.51	1.52	1.53	1.54	1.55	1.56	1.57	1.58	1.59
8.0	1.58	1.59	1.60	1.61	1.62	1.63	1.64	1.65	1.66	1.67	1.68	1.69
8.4	1.68	1.69	1.70	1.71	1.72	1.73	1.74	1.75	1.76	1.77	1.78	1.79
8.8	1.78	1.79	1.80	1.81	1.82	1.83	1.84	1.85	1.86	1.87	1.88	1.89
9.2	1.88	1.89	1.90	1.91	1.92	1.93	1.94	1.95	1.96	1.97	1.98	1.99
9.6	1.98	1.99	2.00	2.01	2.02	2.03	2.04	2.05	2.06	2.07	2.08	2.09
10.0	2.08	2.09	2.10	2.11	2.12	2.13	2.14	2.15	2.16	2.17	2.18	2.19
10.4	2.18	2.19	2.20	2.21	2.22	2.23	2.24	2.25	2.26	2.27	2.28	2.29
10.8	2.28	2.29	2.30	2.31	2.32	2.33	2.34	2.35	2.36	2.37	2.38	2.39
11.2	2.38	2.39	2.40	2.41	2.42	2.43	2.44	2.45	2.46	2.47	2.48	2.49
11.6	2.48	2.49	2.50	2.51	2.52	2.53	2.54	2.55	2.56	2.57	2.58	2.59
12.0	2.58	2.59	2.60	2.61	2.62	2.63	2.64	2.65	2.66	2.67	2.68	2.69
12.4	2.68	2.69	2.70	2.71	2.72	2.73	2.74	2.75	2.76	2.77	2.78	2.79
12.8	2.78	2.79	2.80	2.81	2.82	2.83	2.84	2.85	2.86	2.87	2.88	2.89
13.2	2.88	2.89	2.90	2.91	2.92	2.93	2.94	2.95	2.96	2.97	2.98	2.99
13.6	2.98	2.99	3.00	3.01	3.02	3.03	3.04	3.05	3.06	3.07	2.08	3.09
14.0	3.08	3.09	3.10	3.11	3.12	3.13	3.14	3.15	3.16	3.17	3.18	3.19

MAXIMUM FINISHED CARPORT LEVEL ABOVE KERB

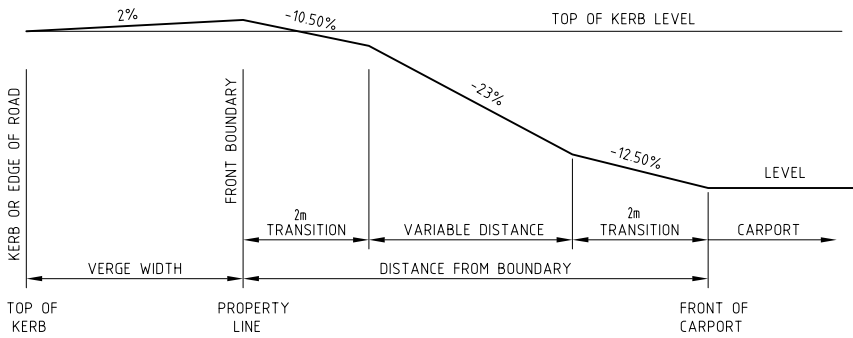


TYPICAL PROFILE OF TREATMENT ABOVE KERB

CROSSOVER AND DRIVEWAY GRADIENTS
STANDARD APPROVAL

VERGE WIDTH (m)												
	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5
1.2	-0.09	-0.08	-0.07	-0.06	-0.05	-0.04	-0.03	-0.02	-0.01	0.00	0.01	0.02
1.6	-0.13	-0.12	-0.11	-0.10	-0.09	-0.08	-0.07	-0.06	-0.05	-0.04	-0.03	-0.02
2.0	-0.17	-0.16	-0.15	-0.14	-0.13	-0.12	-0.11	-0.10	-0.09	-0.08	-0.07	-0.06
2.4	-0.22	-0.21	-0.20	-0.19	-0.18	-0.17	-0.16	-0.15	-0.14	-0.13	-0.12	-0.11
2.8	-0.27	-0.26	-0.25	-0.24	-0.23	-0.22	-0.21	-0.20	-0.19	-0.18	-0.17	-0.16
3.2	-0.32	-0.31	-0.30	-0.29	-0.28	-0.27	-0.26	-0.25	-0.24	-0.23	-0.22	-0.21
3.6	-0.37	-0.36	-0.35	-0.34	-0.33	-0.32	-0.31	-0.30	-0.29	-0.28	-0.27	-0.26
4.0	-0.42	-0.41	-0.40	-0.39	-0.38	-0.37	-0.36	-0.35	-0.34	-0.33	-0.32	-0.31
4.4	-0.51	-0.50	-0.49	-0.48	-0.47	-0.46	-0.45	-0.44	-0.43	-0.42	-0.41	-0.40
4.8	-0.60	-0.59	-0.58	-0.57	-0.56	-0.55	-0.54	-0.53	-0.52	-0.51	-0.50	-0.49
5.2	-0.70	-0.69	-0.68	-0.67	-0.66	-0.65	-0.64	-0.63	-0.62	-0.61	-0.60	-0.59
5.6	-0.79	-0.78	-0.77	-0.76	-0.75	-0.74	-0.73	-0.72	-0.71	-0.70	-0.69	-0.68
6.0	-0.88	-0.87	-0.86	-0.85	-0.84	-0.83	-0.82	-0.81	-0.80	-0.79	-0.78	-0.77
6.4	-0.97	-0.96	-0.95	-0.94	-0.93	-0.92	-0.91	-0.90	-0.89	-0.88	-0.87	-0.86
6.8	-1.06	-1.05	-1.04	-1.03	-1.02	-1.01	-1.00	-0.99	-0.98	-0.97	-0.96	-0.95
7.2	-1.16	-1.15	-1.14	-1.13	-1.12	-1.11	-1.10	-1.09	-1.08	-1.07	-1.06	-1.05
7.6	-1.25	-1.24	-1.23	-1.22	-1.21	-1.20	-1.19	-1.18	-1.17	-1.16	-1.15	-1.14
8.0	-1.34	-1.33	-1.32	-1.31	-1.30	-1.29	-1.28	-1.27	-1.26	-1.25	-1.24	-1.23
8.4	-1.43	-1.42	-1.41	-1.40	-1.39	-1.38	-1.37	-1.36	-1.35	-1.34	-1.33	-1.32
8.8	-1.52	-1.51	-1.50	-1.49	-1.48	-1.47	-1.46	-1.45	-1.44	-1.43	-1.42	-1.41
9.2	-1.62	-1.61	-1.60	-1.59	-1.58	-1.57	-1.56	-1.55	-1.54	-1.53	-1.52	-1.51
9.6	-1.71	-1.70	-1.69	-1.68	-1.67	-1.66	-1.65	-1.64	-1.63	-1.62	-1.61	-1.60
10.0	-1.80	-1.79	-1.78	-1.77	-1.76	-1.75	-1.74	-1.73	-1.72	-1.71	-1.70	-1.69
10.4	-1.89	-1.88	-1.87	-1.86	-1.85	-1.84	-1.83	-1.82	-1.81	-1.80	-1.79	-1.78
10.8	-1.98	-1.97	-1.96	-1.95	-1.94	-1.93	-1.92	-1.91	-1.90	-1.89	-1.88	-1.87
11.2	-2.08	-2.07	-2.06	-2.05	-2.04	-2.03	-2.02	-2.01	-2.00	-1.99	-1.98	-1.97
11.6	-2.17	-2.16	-2.15	-2.14	-2.13	-2.12	-2.11	-2.10	-2.09	-2.08	-2.07	-2.06
12.0	-2.26	-2.25	-2.24	-2.23	-2.22	-2.21	-2.20	-2.19	-2.18	-2.17	-2.16	-2.15
12.4	-2.35	-2.34	-2.33	-2.32	-2.31	-2.30	-2.29	-2.28	-2.27	-2.26	-2.25	-2.24
12.8	-2.44	-2.43	-2.42	-2.41	-2.40	-2.39	-2.38	-2.37	-2.36	-2.35	-2.34	-2.33
13.2	-2.54	-2.53	-2.52	-2.51	-2.50	-2.49	-2.48	-2.47	-2.46	-2.45	-2.44	-2.43
13.6	-2.63	-2.62	-2.61	-2.60	-2.59	-2.58	-2.57	-2.56	-2.55	-2.54	-2.53	-2.52
14.0	-2.72	-2.71	-2.70	-2.69	-2.68	-2.67	-2.66	-2.65	-2.64	-2.63	-2.62	-2.61

MAXIMUM FINISHED CARPORT LEVEL BELOW KERB



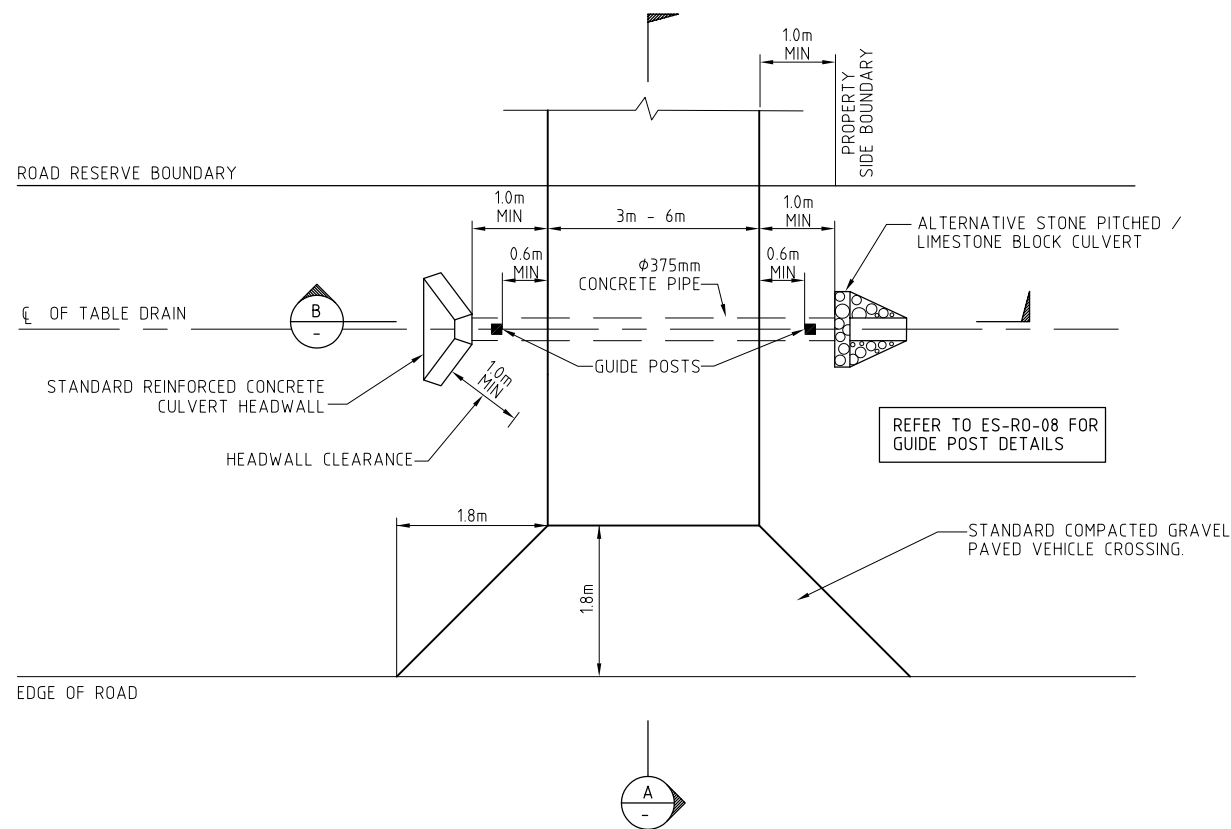
TYPICAL PROFILE OF TREATMENT BELOW KERB

MODIFIED 2% - 10% VERGE GRADING

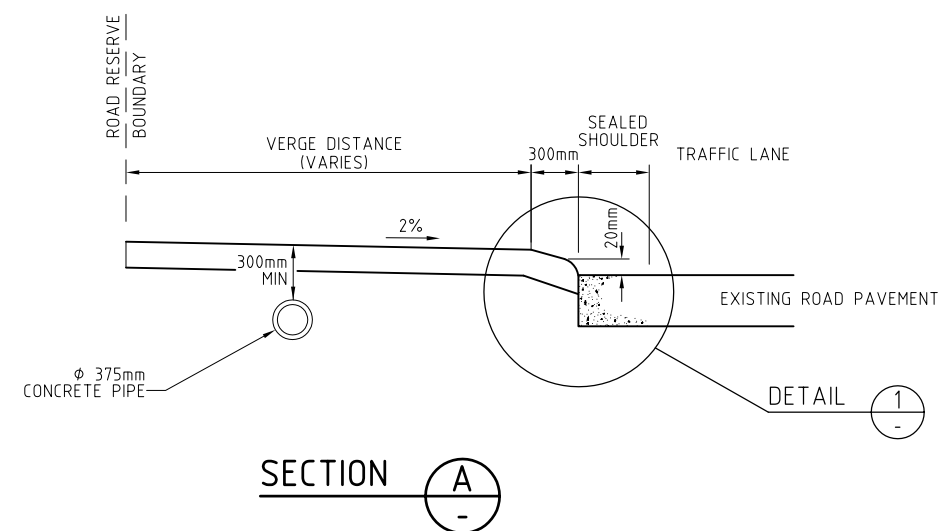
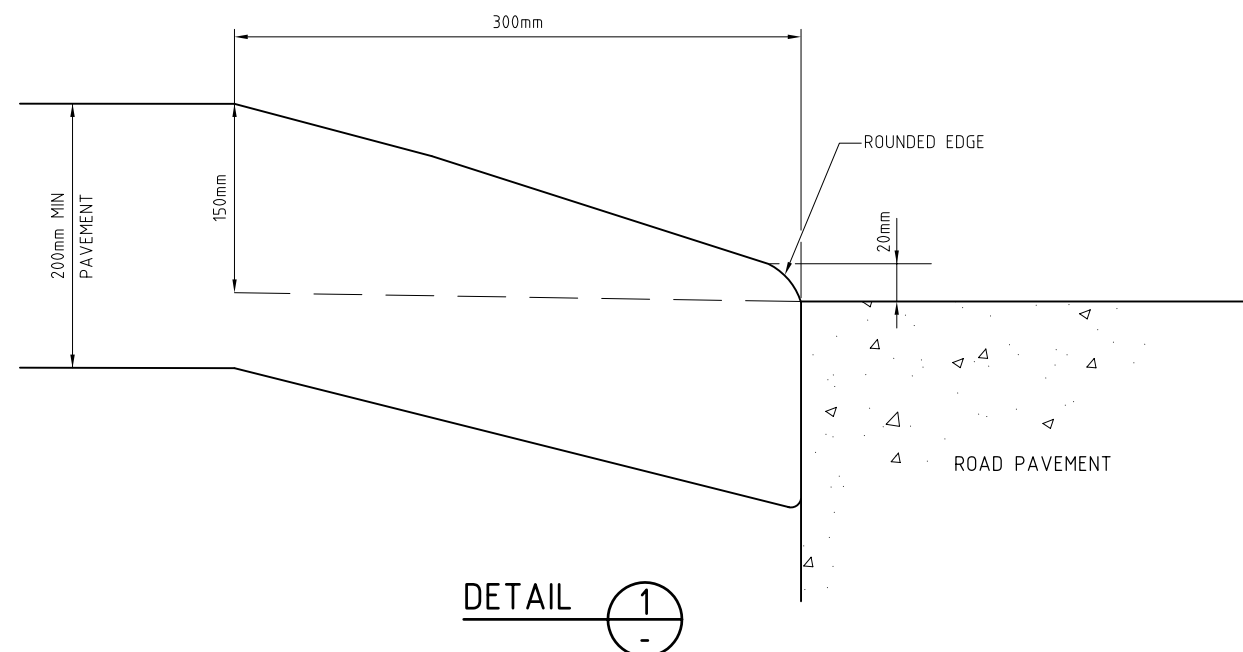
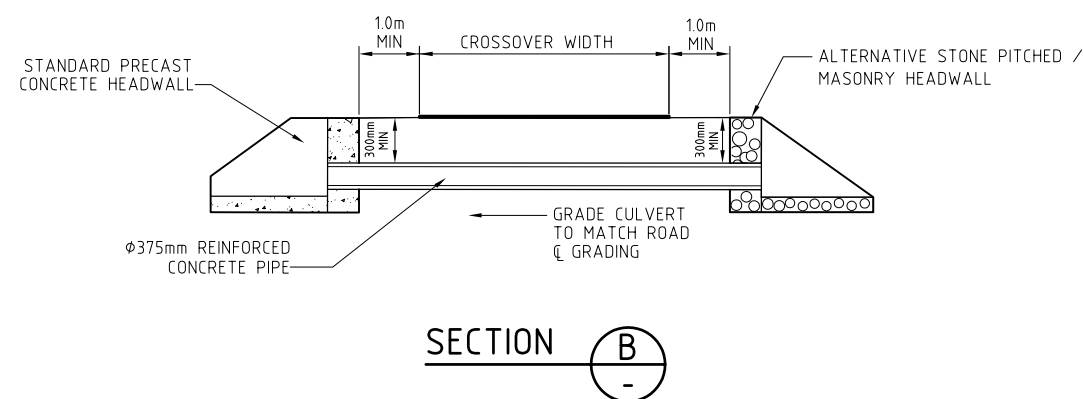
NOTE

1. A NEGATIVE VERGE GRADING SHALL NEVER
BE ADOPTED WITHOUT THE APPROVAL OF
MANAGER ENGINEERING SERVICES

VERGE WIDTH (m)													MANA
	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	
DISTANCE FROM BOUNDARY (m)	1.2	0.19	0.20	0.21	0.26	0.31	0.36	0.41	0.46	0.51	0.56	0.61	0.66
	1.6	0.24	0.25	0.26	0.31	0.36	0.41	0.46	0.51	0.56	0.61	0.66	0.71
	2.0	0.29	0.30	0.31	0.36	0.41	0.46	0.51	0.56	0.61	0.66	0.71	0.76
	2.4	0.35	0.36	0.37	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85
	2.8	0.41	0.42	0.43	0.54	0.59	0.64	0.69	0.74	0.79	0.84	0.89	0.94
	3.2	0.46	0.47	0.48	0.63	0.68	0.73	0.78	0.83	0.88	0.93	0.98	1.03
	3.6	0.52	0.53	0.54	0.72	0.77	0.82	0.87	0.92	0.97	1.02	1.07	1.12
	4.0	0.58	0.59	0.60	0.81	0.86	0.91	0.96	1.01	1.06	1.11	1.16	1.21
	4.4	0.68	0.69	0.70	0.91	0.96	1.01	1.06	1.11	1.16	1.21	1.26	1.31
	4.8	0.78	0.79	0.80	1.01	1.06	1.11	1.16	1.21	1.26	1.31	1.36	1.41
	5.2	0.88	0.89	0.90	1.11	1.16	1.21	1.26	1.31	1.36	1.41	1.46	1.51
	5.6	0.98	0.99	1.00	1.21	1.26	1.31	1.36	1.41	1.46	1.51	1.56	1.61
	6.0	1.08	1.09	1.10	1.31	1.36	1.41	1.46	1.51	1.56	1.61	1.66	1.71
	6.4	1.18	1.19	1.20	1.41	1.46	1.51	1.56	1.61	1.66	1.71	1.76	1.81
	6.8	1.28	1.29	1.30	1.51	1.56	1.61	1.66	1.71	1.76	1.81	1.86	1.91
	7.2	1.38	1.39	1.40	1.61	1.66	1.71	1.76	1.81	1.86	1.91	1.96	2.01
	7.6	1.48	1.49	1.50	1.71	1.76	1.81	1.86	1.91	1.96	2.01	2.06	2.11
	8.0	1.58	1.59	1.60	1.81	1.86	1.91	1.96	2.01	2.06	2.11	2.16	2.21
	8.4	1.68	1.69	1.70	1.91	1.96	2.01	2.06	2.11	2.16	2.21	2.26	2.31
	8.8	1.78	1.79	1.80	2.01	2.06	2.11	2.16	2.21	2.26	2.31	2.36	2.41
	9.2	1.88	1.89	1.90	2.11	2.16	2.21	2.26	2.31	2.36	2.41	2.46	2.51
	9.6	1.98	1.99	2.00	2.21	2.26	2.31	2.36	2.41	2.46	2.51	2.56	2.61
	10.0	2.08	2.09	2.10	2.31	2.36	2.41	2.46	2.51	2.56	2.61	2.66	2.71
	10.4	2.18	2.19	2.20	2.41	2.46	2.51	2.56	2.61	2.66	2.71	2.76	2.81
	10.8	2.28	2.29	2.30	2.51	2.56	2.61	2.66	2.71	2.76	2.81	2.86	2.91
	11.2	2.38	2.39	2.40	2.61	2.66	2.71	2.76	2.81	2.86	2.91	2.96	3.01
	11.6	2.48	2.49	2.50	2.71	2.76	2.81	2.86	2.91	2.96	3.01	3.06	3.11
	12.0	2.58	2.59	2.60	2.81	2.86	2.91	2.96	3.01	3.06	3.11	3.16	3.21
12.4	2.68	2.69	2.70	2.91	2.96	3.01	3.06	3.11	3.16	3.21	3.26	3.31	
12.8	2.78	2.79	2.80	3.01	3.06	3.11	3.16	3.21	3.26	3.31	3.36	3.41	
13.2	2.88	2.89	2.90	3.11	3.16	3.21	3.26	3.31	3.36	3.41	3.46	3.51	
13.6	2.98	2.99	3.00	3.21	3.26	3.31	3.36	3.41	3.46	3.51	3.56	3.61	
14.0	3.08	3.09	3.10	3.31	3.36	3.41	3.46	3.51	3.56	3.61	3.66	3.71	



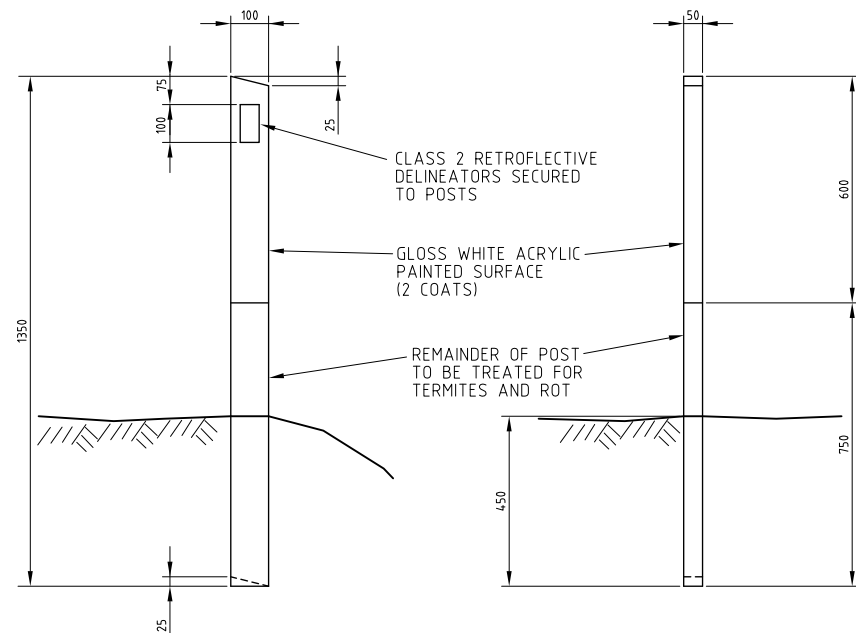
RURAL GRAVEL VEHICLE CROSSING PLAN



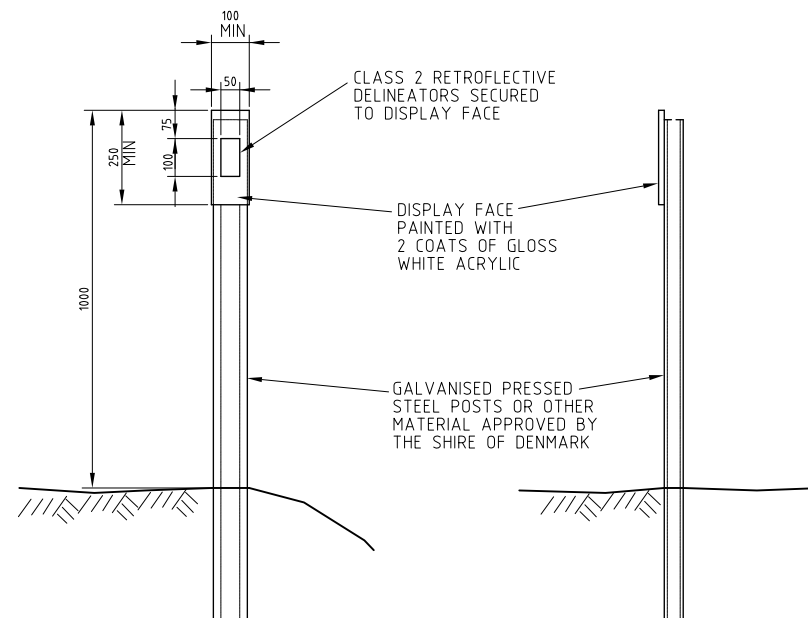
NOTES:

- GRAVEL CROSSOVERS SHALL ONLY BE PERMITTED WHERE CONNECTING TO A GRAVEL ROAD.
- REFER TO DWG ES-CR-01 AND ES-CR-02 FOR CROSSOVER DETAILS WHERE CONNECTING TO SEALED ROADS.
- REFER TO DWG ES-CR-03 FOR CROSSOVER GRADIENTS.
- ALTERNATIVE HEADWALL TREATMENTS:-
 - PRECAST CONCRETE REFER DWG ES-DR-02
 - φ 200mm STONE / ROCK WALL OR MASONRY USING 6:1 SAND / CEMENT MORTAR.

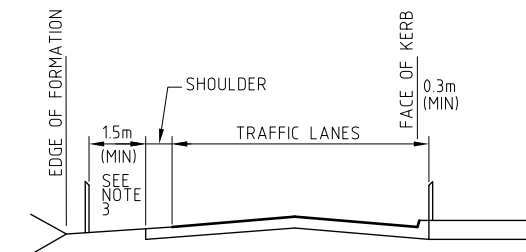
Amendments																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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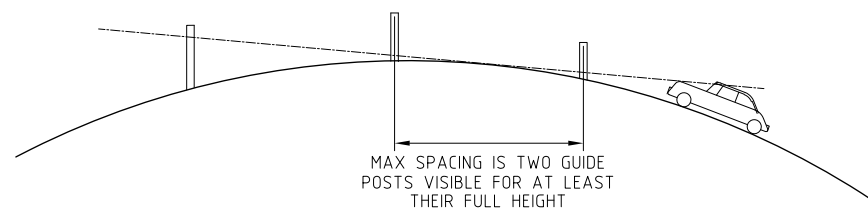
STANDARD TIMBER DESIGN



ALTERNATIVE DESIGN



GUIDE POSTS



GUIDE POST SPACING ON CRESTS
HAVING A STRAIGHT ALIGNMENT

MAJOR RURAL & DISTRIBUTOR ROADS	
RADIUS(m)	SPACING OF GUIDE POSTS
UP TO 599	OPPOSITE EVERY SECOND POST ON OUTSIDE OF CURVE
600 - 1200	60m
1200 +	OPPOSITE EVERY POST ON OUTSIDE OF CURVE

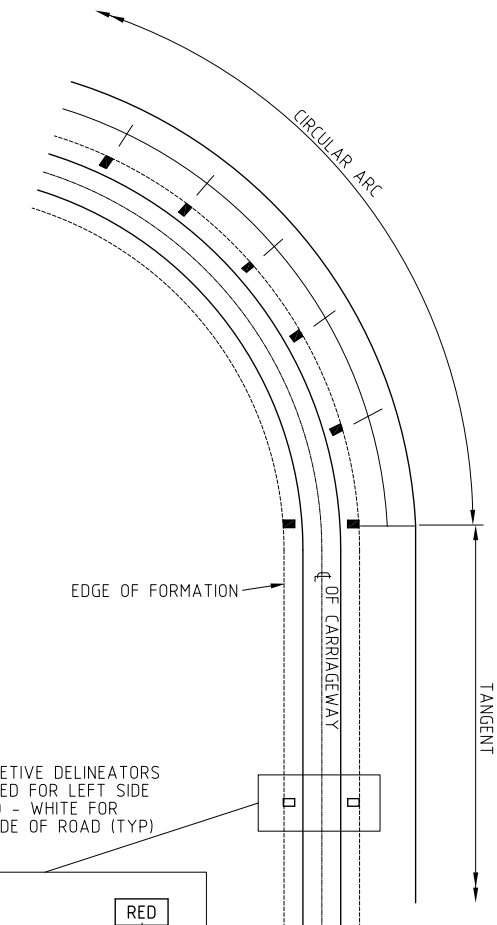
SUBDIVISION & LOCAL RURAL ROADS	
RADIUS(m)	SPACING OF GUIDE POSTS
UP TO 400	OPPOSITE EVERY SECOND POST ON OUTSIDE OF CURVE
400 - 1000	70m
1000 +	OPPOSITE EVERY POST ON OUTSIDE OF CURVE

SPACING ON INSIDE OF CURVE

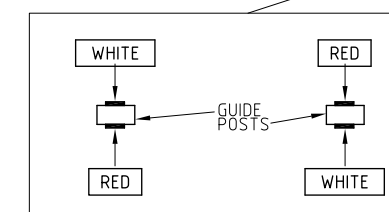
MAJOR RURAL & DISTRIBUTOR ROADS	
RADIUS(m)	SPACING ON CIRC. ARC(m)
UP TO 100	6
100 - 199	10
200 - 299	15
300 - 399	20
400 - 599	30
600 - 799	40
800 - 1199	60
1200 - 2000	90
2000 +	150

SUBDIVISION & LOCAL RURAL ROADS	
RADIUS(m)	SPACING ON CIRC. ARC(m)
25	10
50	13
70	15
100	20
200	25
300	31
400	36
500	42
600	47
700	53
800	58
900	63
1000	69
1500	96
2000	123
2500	150

SPACING ON OUTSIDE OF CURVE

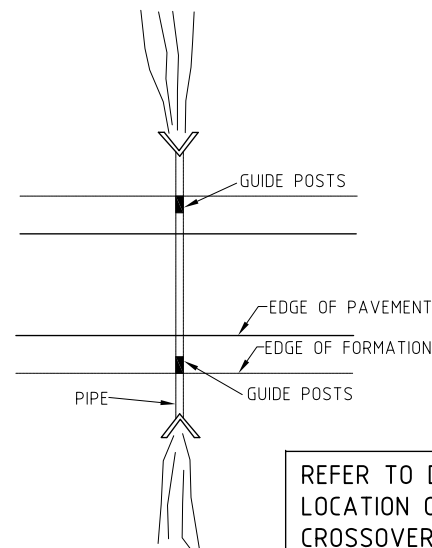


RETROFLECTIVE DELINEATORS TO BE RED FOR LEFT SIDE OF ROAD - WHITE FOR RIGHT SIDE OF ROAD (TYP)



NOTES:

1. MAXIMUM SPACING ON OUTSIDE OF CURVES IS 150m.
2. GUIDE POSTS SHALL BE JARRAH OR TANOLITH TREATED PINE POSTS TO THE DIMENSIONS SPECIFIED OR GALVANISED PRESSED STEEL OR OTHER MATERIAL APPROVED BY ENGINEERING SERVICES.
3. WHERE PRACTICABLE MIN. OFFSET OF GUIDE POST TO PAVEMENT TO BE 15m.



REFER TO DRAWING ES-CR-04 FOR LOCATION OF GUIDE POSTS AT CROSSOVERS WITH CULVERTS

LOCATION OF GUIDE POSTS AT CULVERTS