www.denmark.wa.gov.au
P: (08) 9848 0300 **E:** info@denmark.wa.gov.au
953 South Coast Highway (PO Box 183), Denmark WA 6333

Application No: Yr/No: _____

Privacy Collection Notice: The Shire of Denmark collects your personal information and/or personal information provided by you of third parties to deliver services and meet our legal obligations under relevant laws. We handle your information in accordance with the *Privacy and Responsible Information Sharing Act 2024* and other applicable legislation. Your information is stored securely and kept only as long as required. It may be shared internally at the Shire of Denmark to aid our customer service delivery and may be shared with other government agencies if required by law. If you do not provide your information, the Shire may not be able to provide services to you.

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Application for a Permit to Undertake Crossover Construction Works within a Shire Road Reserve

Applicant's Details Date: _____

☐ Owner of Property ☐ Contractor

Name: _____

Postal Address: _____

Phone: _____ Email: _____

Contractor's Details

Contractor's Name: _____

Phone: _____ Email: _____

Correspondence Required to Builder? Yes / No

Crossover Details

Lot No: _____ Street No: _____ Street: _____ Location: _____

Type of Construction

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

Diagram of crossover location on the block

1. No crossover shall be installed without the issuance of a crossover permit.
2. A crossover application fee in accordance with the Shire of Denmark's fees and charges is required to be paid prior to the issuance of a crossover permit.
3. The Shire of Denmark has the power under the Local Government Act 1995, as amended, to rectify any non-standard crossover at the applicant's expense.
4. The permit for the construction of the crossover is only valid for twelve months from the date of permit issuance.
5. Culvert pipes must be reinforced concrete or Blackmax with a minimum pipe size of 300mm.
6. Gravel crossovers can only be constructed where the adjoining road is gravel.
7. A permit to build a crossover is not a permit to clear vegetation, which requires separate approval. For more information contact the Shire of Denmark.
8. If the proposed crossover site contains vegetation, the applicant must demonstrate that:
    - The site has been chosen to avoid or minimize the clearing of vegetation.
    - They have obtained the necessary permits for the clearing of vegetation, or relevant exemptions apply.
9. Existing footpaths take precedence over new crossovers but may require upgrading to specifications.
10. 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 the headwall construction diagram. These drawings are attached to this application form.
11. If you have any queries, contact the Shire of Denmark's Technical Services 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 Infrastructure & Assets.

Endorsed by: _____ (Applicant)

Date: _____

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You can request access to or correction of your personal information by contacting the Shire of Denmark Privacy Officer at info@denmark.wa.gov.au. **For more information, visit www.denmark.wa.gov.au/privacy**

Application for Crossover Subsidy

To be lodged in conjunction with Application for Permit to undertake Works within a Shire 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.

- 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.
- No subsidy will be paid without the Shire 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; that is second crossovers for a property are ineligible for subsidy payment.
- No subsidy will be paid without the Shire of Denmark receiving a receipt of payment for the crossover.
- The maximum crossover subsidy payable by the Shire of Denmark are as per the current financial year fees and charges schedule.

Payee Details

Owner Name: _____

Property Address: _____

Phone: _____ Email: _____

Subsidy Payment Information

BSB: _____ Account Number: _____

Account Name: _____

Signature: _____ Date: _____

In submitting this form 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 the Shire 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	☐ Yes	☐ No	_____
Application approved by Engineer	☐ Yes	☐ No	_____
On-site location approved	☐ Yes	☐ No	_____
Construction completed	☐ Yes	☐ No	_____

Inspected by:_____ Signed:_____ Dated:_____

Subsidy Payment

☐ Constructed without stormwater pipe/s - sealed

☐ Constructed with stormwater pipe/s – unsealed

☐ Constructed with stormwater pipe/s – sealed
(Refund as per 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 the Shires Road reserve.

Application and Construction Process

Please complete this application and return to the Shire of Denmark along with the 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 Shire of Denmark Technical Services department will contact the applicant to discuss the proposed location of the crossover with the applicant or 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 Shire at least four 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 is shown above.

Main Roads WA has the care and responsibility of South Coast Highway and Denmark-Mt Barker Road. Accordingly, applications for crossovers along these roads must be made through them. You may still be subsidised by the Shire upon completion of the crossover to MRWA requirements, but only upon presentation of the contractor's receipt to the Shire.

Crossover Guidelines

- Crossovers at residential properties are to be constructed with a minimum and maximum width of 3m and 6.25m respectively. Crossovers at commercial properties are to be constructed with 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 surroundings. 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 the Shire's satisfaction. If not rectified within 21 days of due notice being issued, the Shire may commence to remove or modify the crossover at your expense.

- The public shall be protected from injury during construction with the use of warning signs, barriers, and flashing signals overnight.

- No Crossover is to be detrimental to neighboring properties and must not extend across property lines. Stormwater runoff is to flow away from properties.

- Protection of works and the public shall comply with the Australian Standards-1742.3 Traffic Control Devices For Works On Roads.

- Damage that may occur to the Shire'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 liable for repair, replacement, and legal claims.

- A permit to build a crossover is not a permit to clear vegetation, which requires separate approval – refer to condition 8.

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 of 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 Shire's Technical 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 an existing sub-grade is required. If the existing sub-grade is soggy, spongy, or unsuitable, 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 two-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, 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, a minimum of 150mm of compacted limestone is required.
- The minimum standard is a non-slip brushed surface (lateral) in the direction of road travel.

Brick Paving

- Refer to drawing ES-CR-01.
- The brick paver colours must be approved by the Shire of Denmark and must 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, it must be replaced with a 150mm limestone base. Brick paving is not usually suitable on very steep slopes greater than 10%.
- The minimum standard is the use of two colours only.

Gravel Crossover

- Refer to drawing ES-CR-04 and ES-RO-08.
- The gravel crossover is to be constructed with a minimum width of 3m and a maximum of 6m. If required, a concrete pipe culvert of 375mm in diameter must be installed with a minimum cover of 300mm.
- The ends of the concrete pipe culvert must 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 must be installed to indicate the position of the headwalls of the concrete pipe culvert for the safety of vehicles. The Shire's standards for rural guide posts are shown in drawing ES-RO-08.

Pipe Crossings

- If you have an open drain or watercourse to cross, the Shire 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, such as 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 150mm x 25mm with stakes a maximum of 1.2m apart. The tops of the stakes are to be secured to the boards and be 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 one crossover per property unless approval is granted by the Director of Infrastructure & Assets. 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.

Shire Assets

- Where Shire's assets, such as manhole covers, grates, road edge markers, etc.., must be relocated for a crossover, then approval must be granted by the Shire's Director of Infrastructure & Assets. If relocation is possible, then the full cost is fully recoverable from the applicant or property owner. A bond may be requested before construction to ensure the work can be done.

- Where a footpath exists, it should normally be replaced with a crossover that blends into the footpath, without leaving any level difference or step. However, clarification would be required in each situation.

Intersecting Roads

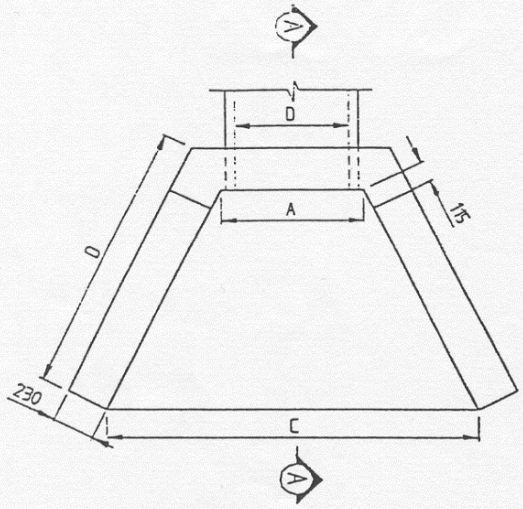
- A crossover cannot be constructed within 6m of the corner boundary of an intersecting road.

Future maintenance

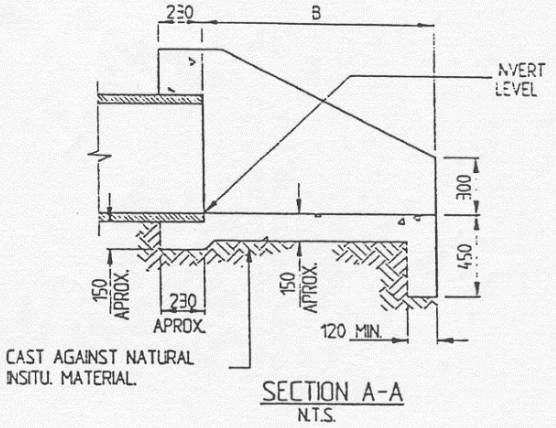
- Future maintenance of the crossover is the responsibility of the property owner. The Shire of Denmark is not responsible for the future maintenance of the crossover.

Headwall Construction Diagram

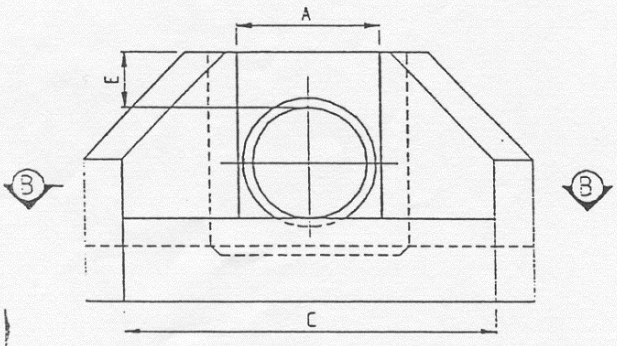
HEADWALL CONSTRUCTION



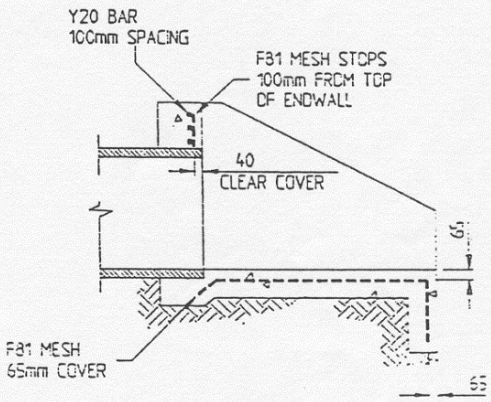
PLAN
N.T.S.



SECTION A-A
N.T.S.



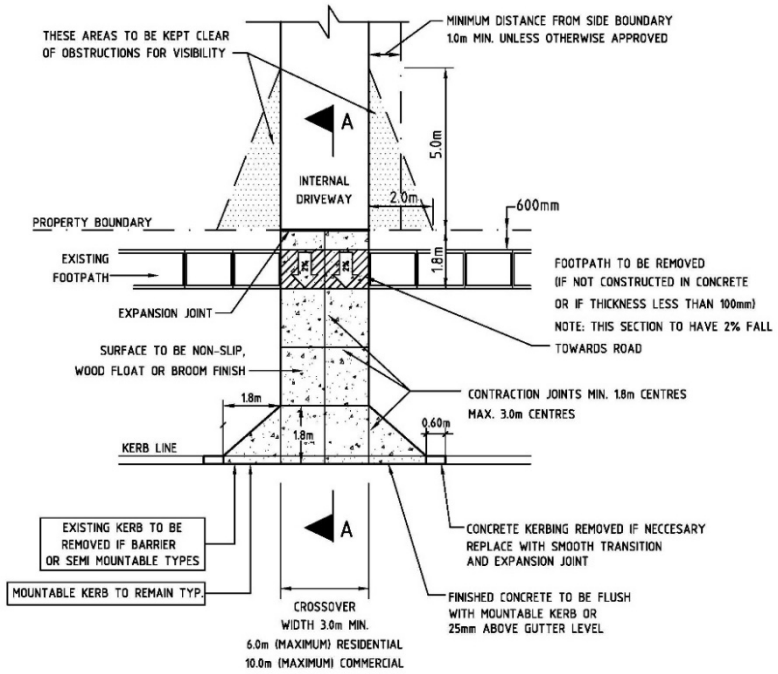
ELEVATION - SINGLE BARREL DETAIL
N.T.S.



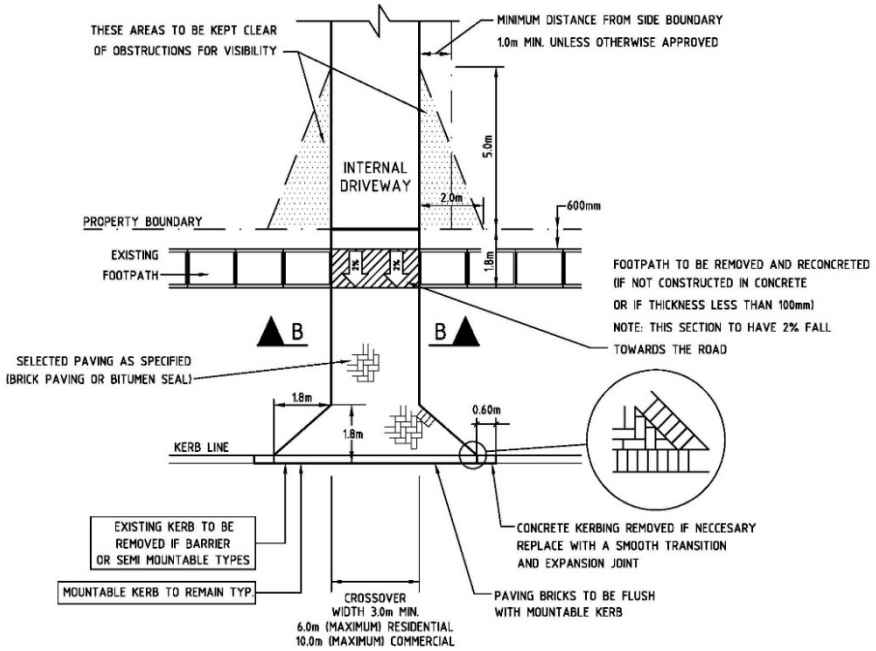
PIPE SIZES 750Φ PLUS - SECTION A-A
N.T.S.

		Φ - PIPE INTERIOR DIAMETER										
CODE	DESCRIPTION	300	375	375	450	450	600	750	900	1200	1500	1800
A	HEADWALL WIDTH	450	515	515	600	600	750	1110	1250	1560	1860	2200
B	APRON LENGTH	600	550	650	800	900	1200	1500	1854	2632	3216	3800
C	APRON 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 & APRON WIDTH	550	600	600	700	700	850	1060	1200	1500	1800	2100

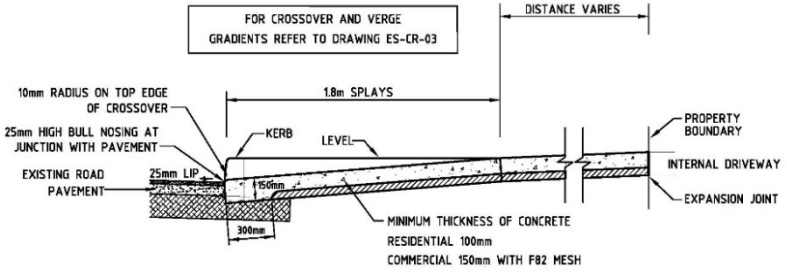
STANDARD INFORMATION FOR NEW INSTALLATION OF REINFORCED CONCRETE PIPE. USING SPACING OF 150mm BETWEEN PIPES. PIPE WALL THICKNESS MAXIMUM OF 60mm.



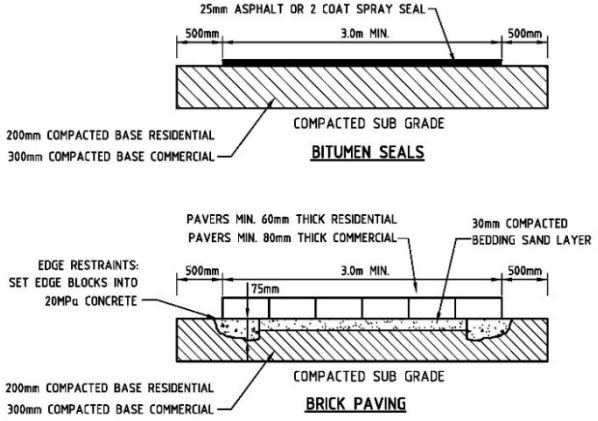
CONCRETE CROSSOVER PLAN



BITUMEN SEAL OR BRICK PAVED CROSSOVER PLAN



SECTION A - A



SECTION B - B

NOTES

1. ALL CROSSOVERS 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 CROSSOVER 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 CROSSOVERS 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 CROSSOVER 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 CROSSOVER GRADIENTS REFER TO DWG ES-CR-03.

Amendments							
No	Date	REVISION	By	App'd	Tax Sheet		
					Survey No		
					FB	p	
					File No		

Shire of Denmark

DESIGNED	PL	10/06	DATUM	A.H.D.
DRAWN	PL	10/06	SCALE	N.T.S.
CHECKED			APPROVED	# ROB WHOOLEY
RECOMMENDED			# INDICATES ORIGINALS SIGNED	

RESIDENTIAL CROSSOVER TYPICAL PLANS AND SECTIONS

SHEET OF
DRAWING No. ES-CR-01
Job No.
A 1

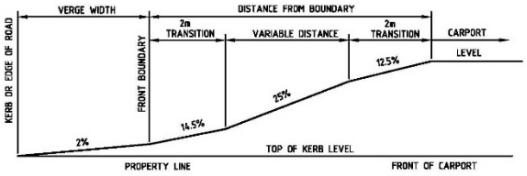
STANDARD 2% VERGE GRADING

VERGE WIDTH (m)

DISTANCE FROM BOUNDARY (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



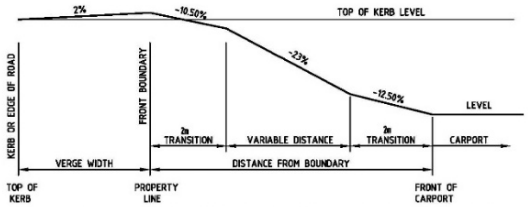
TYPICAL PROFILE OF TREATMENT ABOVE KERB

VERGE WIDTH (m)

DISTANCE FROM BOUNDARY (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

CROSSOVER AND DRIVEWAY GRADIENTS
STANDARD APPROVAL

MODIFIED 2% – 10% VERGE GRADING

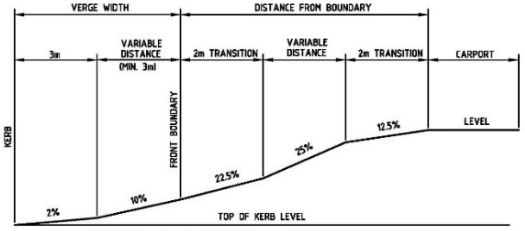
NOTE
1. A NEGATIVE VERGE GRADING SHALL NEVER BE ADOPTED WITHOUT THE APPROVAL OF MANAGER ENGINEERING SERVICES

VERGE WIDTH (m)

DISTANCE FROM BOUNDARY (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	0.26	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

MAXIMUM FINISHED CARPORT LEVEL ABOVE KERB



TYPICAL PROFILE OF TREATMENT ABOVE KERB

CROSSOVER AND DRIVEWAY GRADIENTS
SPECIAL APPROVAL REQUIRED

Amendments		Tax Sheet	
No	Date	REVISION	By App'd	Survey No	
				FB	p
				File No	

Shire of Denmark

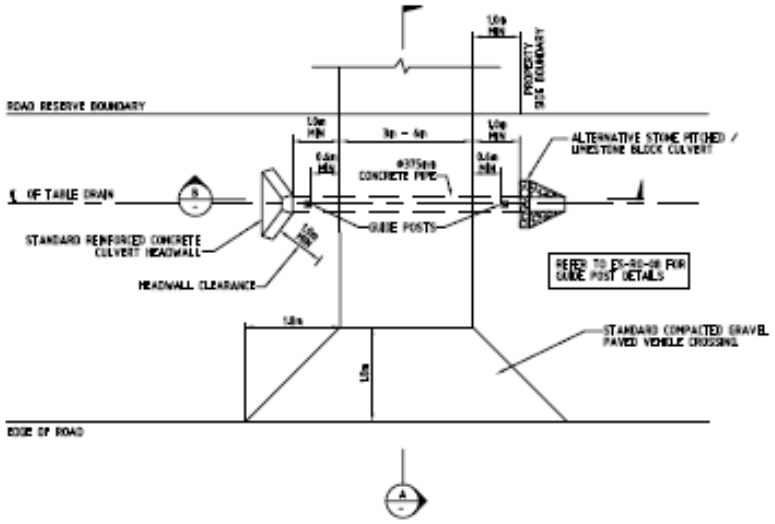
DESIGNED	PL	10/06
DRAWN	PL	10/06
CHECKED		
RECOMMENDED		
APPROVED	# ROB WHOOLEY	
# INDICATES ORIGINALS SIGNED		
DATUM	A.H.D.	
SCALE	N.T.S.	

CROSSOVER GRADIENTS

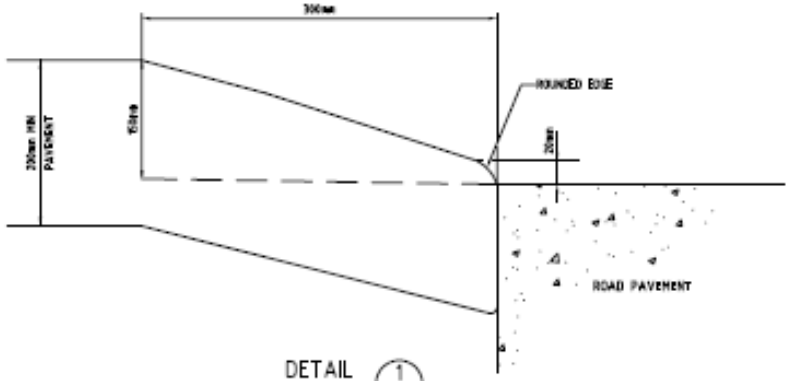
SHEET OF
DRAWING No. ES-CR-03
Job No.

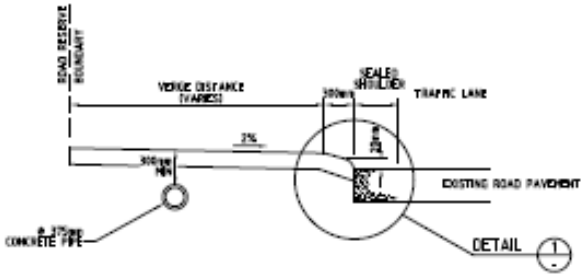
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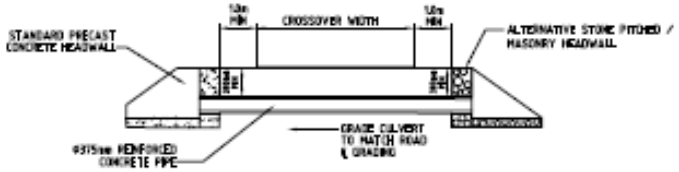
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RURAL GRAVEL VEHICLE CROSSING PLAN



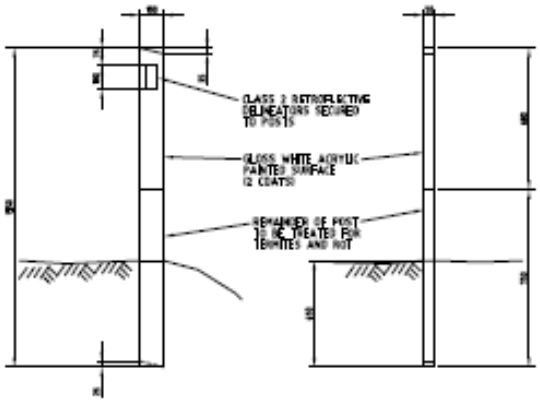




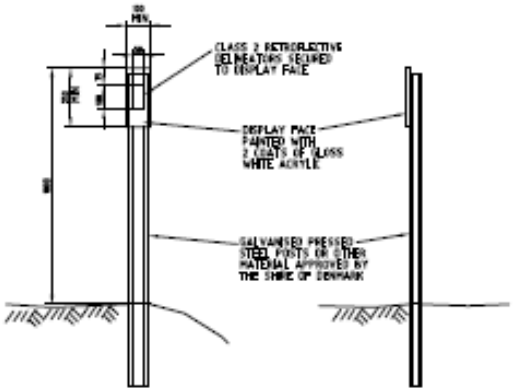
NOTES:

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

Shire of Denmark	DESIGNED PL	DRAWN PL	CHECKED	APPROVED P ROB WHEELEY	RURAL GRAVEL CROSSOVER TYPICAL PLAN AND SECTIONS	SHEET	A1
						DRAWING No. ES-CR-04	

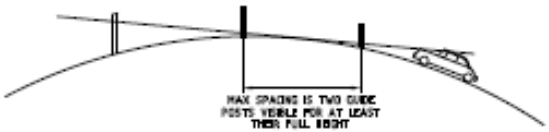


STANDARD TIMBER DESIGN



ALTERNATIVE DESIGN

GUIDE POSTS

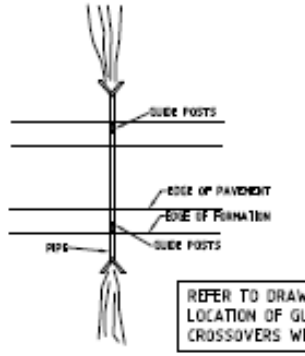


GUIDE POST SPACING ON CRESTS HAVING A STRAIGHT ALIGNMENT

MAJOR RURAL & DISTRIBUTOR ROADS	
RADIUS(m)	SPACING OF GUIDE POSTS
UP TO 599	OPPOSITE EVERY SECOND POST ON OUTSIDE OF CURVE
600 – 1200	40m
1201 +	OPPOSITE EVERY POST ON OUTSIDE OF CURVE

SUBDIVISION & LOCAL RURAL ROADS	
RADIUS(m)	SPACING OF GUIDE POSTS
UP TO 600	OPPOSITE EVERY SECOND POST ON OUTSIDE OF CURVE
600 – 1000	70m
1001 +	OPPOSITE EVERY POST ON OUTSIDE OF CURVE

SPACING ON INSIDE OF CURVE



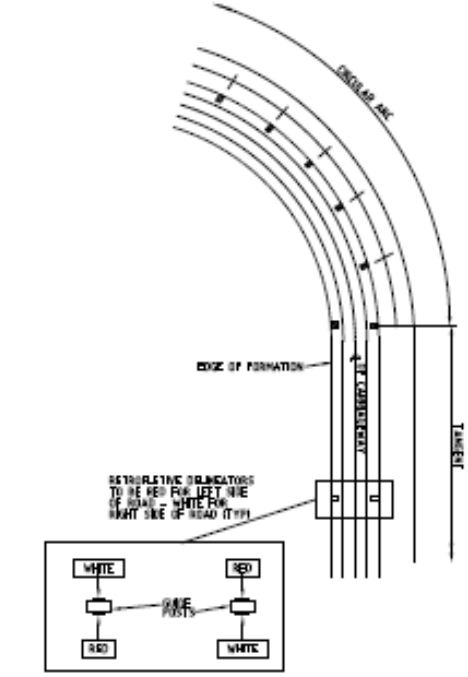
REFER TO DRAWING ES-CR-04 FOR LOCATION OF GUIDE POSTS AT CROSSOVERS WITH CULVERTS

LOCATION OF GUIDE POSTS AT CULVERTS

MAJOR RURAL & DISTRIBUTOR ROADS	
RADIUS(m)	SPACING ON CIRC. ARC(m)
UP TO 199	6
200 – 299	8
300 – 399	10
400 – 499	12
500 – 599	14
600 – 799	16
800 – 999	20
1000 – 1199	24
1200 – 1599	28
1600 – 2000	32
2000 +	40

SUBDIVISION & LOCAL RURAL ROADS	
RADIUS(m)	SPACING ON CIRC. ARC(m)
60	4
70	5
80	5
90	6
100	6
110	7
120	7
130	8
140	8
150	9
160	9
170	10
180	10
190	11
200	11
210	12
220	12
230	13
240	13
250	14
260	14
270	15
280	15
290	16
300	16
310	17
320	17
330	18
340	18
350	19
360	19
370	20
380	20
390	21
400	21
410	22
420	22
430	23
440	23
450	24
460	24
470	25
480	25
490	26
500	26
510	27
520	27
530	28
540	28
550	29
560	29
570	30
580	30
590	31
600	31
610	32
620	32
630	33
640	33
650	34
660	34
670	35
680	35
690	36
700	36
710	37
720	37
730	38
740	38
750	39
760	39
770	40
780	40
790	41
800	41
810	42
820	42
830	43
840	43
850	44
860	44
870	45
880	45
890	46
900	46
910	47
920	47
930	48
940	48
950	49
960	49
970	50
980	50
990	51
1000	51
1500	76
2000	101
2500	126
3000	151

SPACING ON OUTSIDE OF CURVE



NOTES:

1. MAXIMUM SPACING ON OUTSIDE OF CURVES IS 150m.
2. GUIDE POSTS SHALL BE JARRAH OR TANALITH 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 1.5m.

		Shire of Denmark	DESIGNED: FL	DRAWN: A.M.D.	RURAL ROAD GUIDE POST DETAILS	SHEET OF	A1
			CHECKED: FL	SCALE: N.T.S.		ES-RO-08	
			RECOMMENDED:	APPROVED: R ROB WHOOLEY A MANAGER ENGINEERING SERVICES			