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

Application No.: Yr/No. \_\_\_\_\_

### **Applicant's Details**

- ☐ Owner of Property  
☐ Contractor

Date: \_\_\_\_\_

Name: \_\_\_\_\_

Postal Address: \_\_\_\_\_

Phone: \_\_\_\_\_ Email: \_\_\_\_\_

Crossover Type: Residential / Commercial

### **Contractors Details**

Contractors 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**

## Conditions

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:
  - a. The site has been chosen to avoid or minimize the clearing of vegetation.
  - b. 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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## 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.

- 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: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: \_\_\_\_\_

### Subsidy Payment Information

BSB \_\_\_\_\_ Account Number \_\_\_\_\_

Account Name \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_



**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 Council 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 The Denmark-Mt Barker Road, accordingly, applications for crossovers along these highways must be made through them. You may still be subsidised by the Council upon completion of the crossover to MRWA requirements, but only upon presentation of the contractor's receipt to the Council.

#### **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 Council's satisfaction. If not rectified within 21 days of due notice being issued, the Council 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 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 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 Shires 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 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 Council'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 Council'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**

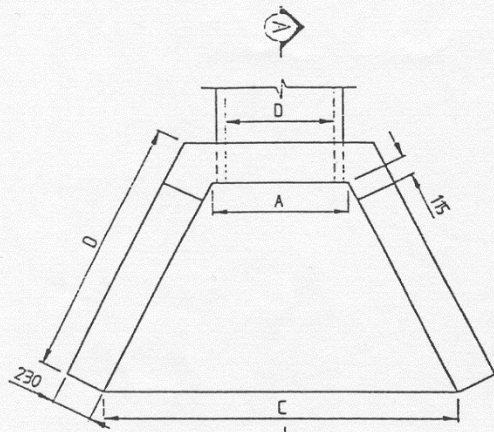
- A crossover cannot be constructed within 6m of the corner boundary of an intersecting road.

## **Future maintenance**

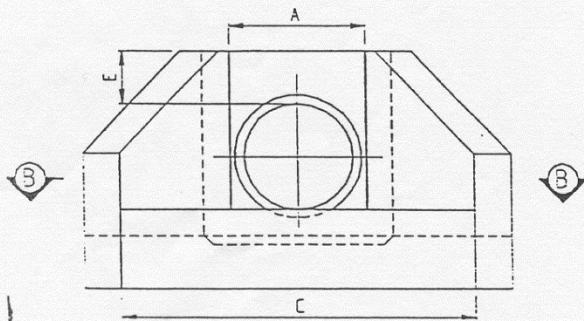
- Future maintenance of the crossover is the responsibility of the property owner. The Shire of Denmark is not responsible for the future maintenance of the crossover.

## Headwall Construction Diagram

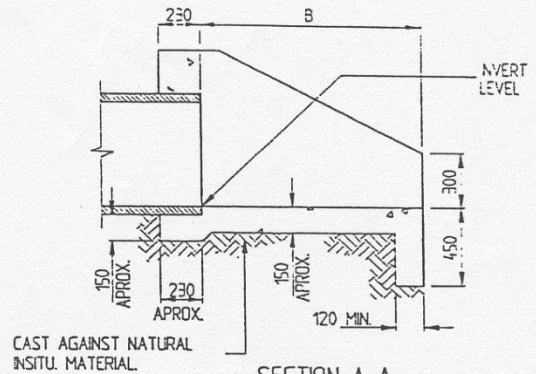
# HEADWALL CONSTRUCTION



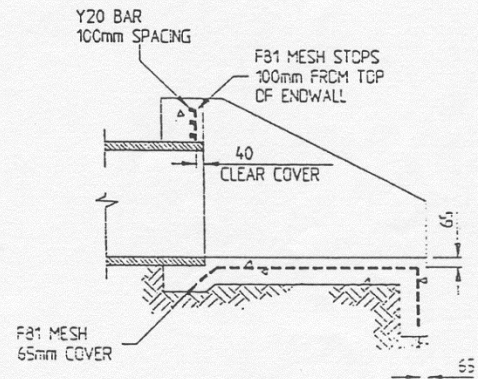
PLAN  
N.T.S.



ELEVATION - SINGLE BARREL DETAIL  
N.T.S.



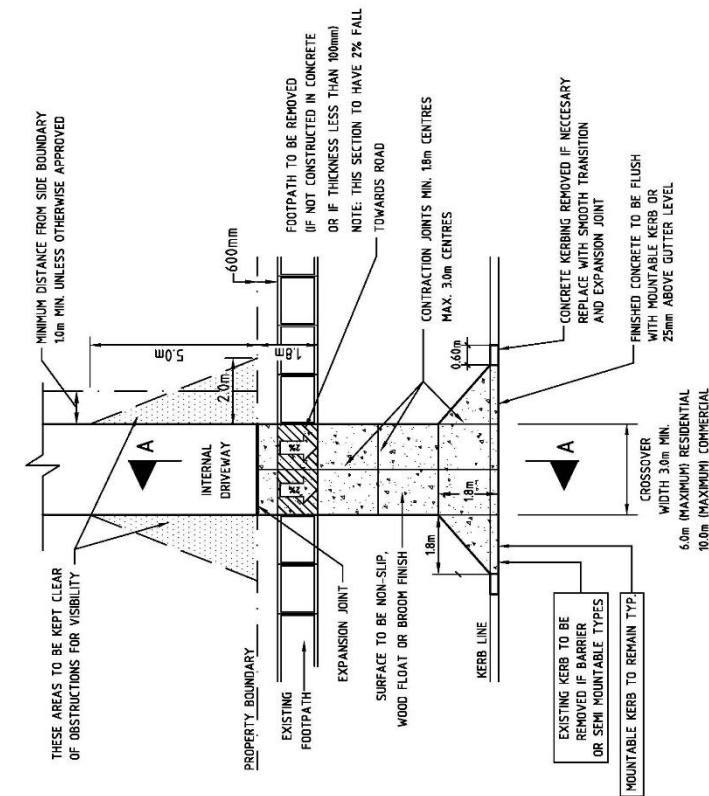
SECTION A-A  
N.T.S.



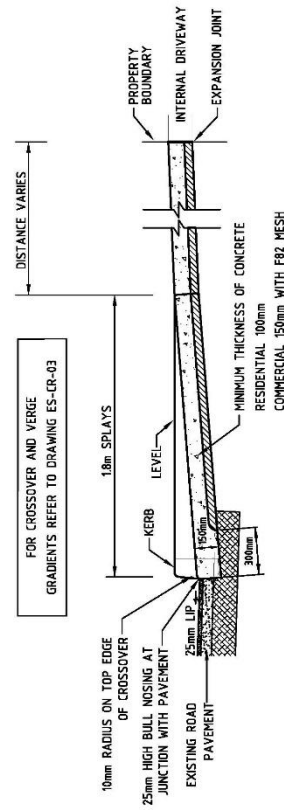
PIPE SIZES 750mm PLUS - SECTION A-A  
N.T.S.

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	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 OVERT	250	200	250	250	300	300	300	300	400	400	400
F	ADD PER BARREL - TO HEADWALL & APRON WIDTH	550	500	600	700	700	850	1060	1200	1500	1800	2100

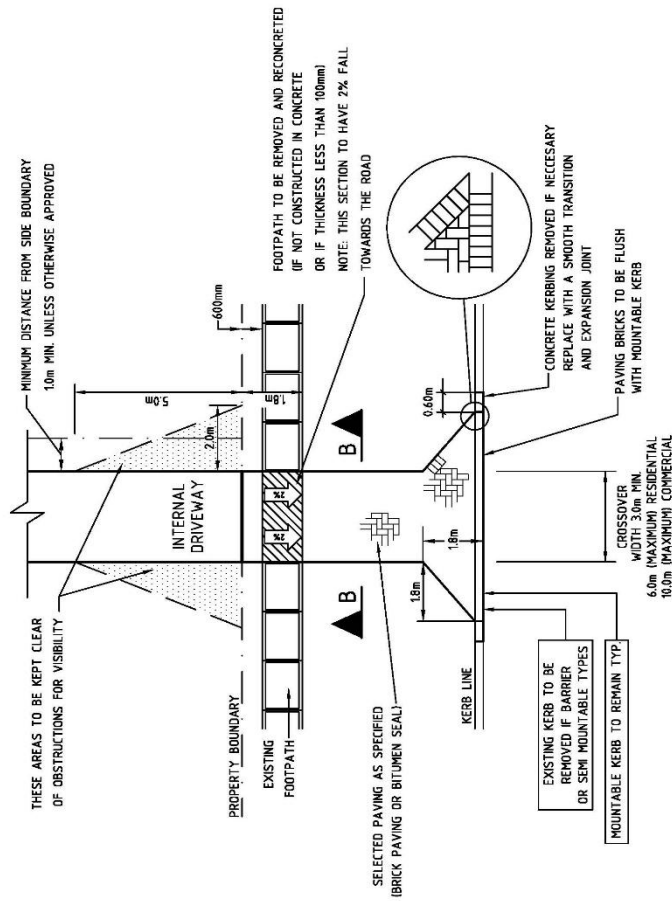
STANDARD INFORMATION FOR NEW INSTALLATION OF REINFORCED CONCRETE PIPE USING SPACING OF 150mm BETWEEN PIPES. PIPE WALL THICKNESS MAXIMUM OF 60mm.



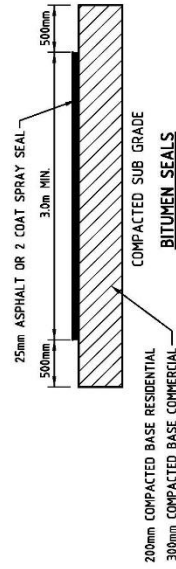
## CONCRETE CROSSOVER PLAN



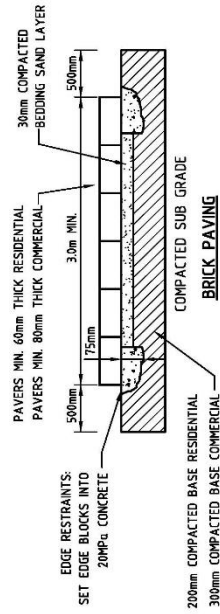
**SECTION A - A**



**BITUMEN SEAL OR BRICK PAVED**  
**CROSSOVER PLAN**



## BITUMEN SEALS



**SECTION B - B**

## NOTES

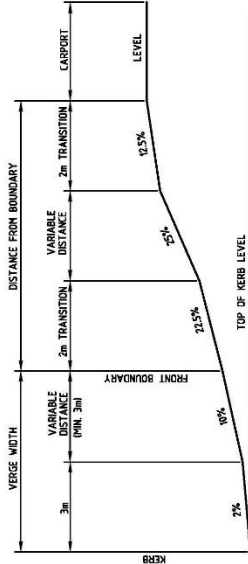
1. ALL CROSSOVERS SHALL BE AT RIGHT ANGLES TO THE KERB & BOUNDARY UNLESS APPROVED OTHERWISE.
2. SHOULD ANY TREE, POWER POLE, SIGN, PIT, MANHOLE OR ANY OTHER OBSTRUCTION BE LOCATED ON THE PROPOSED ALIGNMENT OF THE CROSSOVER THE APPLICANT SHALL BE LIABLE FOR THE COSTS ASSOCIATED WITH THE REMOVAL OR ALTERATION OF THE ITEM.
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-R0-09.
7. FOR CROSSOVER GRADIENTS REFER TO DWG ES-CR-03.



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

MODIFIED 2% - 10% 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	0.26	0.31	0.36	0.41	0.46	0.51	0.56	0.61
1.6	0.24	0.25	0.26	0.31	0.36	0.41	0.46	0.51	0.56	0.61	0.66
2.0	0.29	0.30	0.31	0.36	0.41	0.46	0.51	0.56	0.61	0.66	0.71
2.4	0.35	0.36	0.37	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80
2.8	0.41	0.42	0.43	0.54	0.59	0.64	0.69	0.74	0.79	0.84	0.89
3.2	0.46	0.47	0.48	0.63	0.68	0.73	0.78	0.83	0.88	0.93	0.98
3.6	0.52	0.53	0.54	0.72	0.77	0.82	0.87	0.92	0.97	1.02	1.07
4.0	0.58	0.59	0.60	0.81	0.86	0.91	0.96	1.01	1.06	1.11	1.16
4.4	0.63	0.64	0.65	0.91	0.96	1.01	1.06	1.11	1.16	1.21	1.26
4.8	0.68	0.69	0.70	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35
5.2	0.73	0.74	0.75	1.09	1.14	1.19	1.24	1.29	1.34	1.39	1.44
5.6	0.78	0.79	0.80	1.18	1.23	1.28	1.33	1.38	1.43	1.48	1.53
6.0	0.83	0.84	0.85	1.27	1.32	1.37	1.42	1.47	1.52	1.57	1.62
6.4	0.88	0.89	0.90	1.36	1.41	1.46	1.51	1.56	1.61	1.66	1.71
6.8	0.93	0.94	0.95	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80
7.2	0.98	0.99	1.00	1.54	1.59	1.64	1.69	1.74	1.79	1.84	1.89
7.6	1.03	1.04	1.05	1.63	1.68	1.73	1.78	1.83	1.88	1.93	1.98
8.0	1.08	1.09	1.10	1.72	1.77	1.82	1.87	1.92	1.97	2.02	2.07
8.4	1.13	1.14	1.15	1.81	1.86	1.91	1.96	2.01	2.06	2.11	2.16
8.8	1.18	1.19	1.20	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.25
9.2	1.23	1.24	1.25	1.99	2.04	2.09	2.14	2.19	2.24	2.29	2.34
9.6	1.28	1.29	1.30	2.08	2.13	2.18	2.23	2.28	2.33	2.38	2.43
10.0	1.33	1.34	1.35	2.17	2.22	2.27	2.32	2.37	2.42	2.47	2.52
10.4	1.38	1.39	1.40	2.26	2.31	2.36	2.41	2.46	2.51	2.56	2.61
10.8	1.43	1.44	1.45	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70
11.2	1.48	1.49	1.50	2.44	2.49	2.54	2.59	2.64	2.69	2.74	2.79
11.6	1.53	1.54	1.55	2.53	2.58	2.63	2.68	2.73	2.78	2.83	2.88
12.0	1.58	1.59	1.60	2.62	2.67	2.72	2.77	2.82	2.87	2.92	2.97
12.4	1.63	1.64	1.65	2.71	2.76	2.81	2.86	2.91	2.96	3.01	3.06
12.8	1.68	1.69	1.70	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15
13.2	1.73	1.74	1.75	2.89	2.94	2.99	3.04	3.09	3.14	3.19	3.24
13.6	1.78	1.79	1.80	2.98	3.03	3.08	3.13	3.18	3.23	3.28	3.33
14.0	1.83	1.84	1.85	3.07	3.12	3.17	3.22	3.27	3.32	3.37	3.42



TYPICAL PROFILE OF TREATMENT  
ABOVE KERB

(CROSSOVER AND DRIVEWAY GRADIENTS  
SPECIAL APPROVAL REQUIRED)

CROSSOVER GRADIENTS

SHEET	OF
DRAWING NO.	ES-CR-03
DATE	

CROSSOVER GRADIENTS

A.H.D.	DATUM	10%
N.T.S.	SCALE	10%
APPROVED		
# ROB WHOLEY		
# INDICATE ORIGINALS SIGNED		

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	-0.09	-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	-0.47	-0.46	-0.45	-0.44	-0.43	-0.42	-0.41	-0.40	-0.39	-0.38	-0.37	-0.36
4.8	-0.50	-0.49	-0.48	-0.47	-0.46	-0.45	-0.44	-0.43	-0.42	-0.41	-0.40	-0.39
5.2	-0.53	-0.52	-0.51	-0.50	-0.49	-0.48	-0.47	-0.46	-0.45	-0.44	-0.43	-0.42
5.6	-0.56	-0.55	-0.54	-0.53	-0.52	-0.51	-0.50	-0.49	-0.48	-0.47	-0.46	-0.45
6.0	-0.59	-0.58	-0.57	-0.56	-0.55	-0.54	-0.53	-0.52	-0.51	-0.50	-0.49	-0.48
6.4	-0.62	-0.61	-0.60	-0.59	-0.58	-0.57	-0.56	-0.55	-0.54	-0.53	-0.52	-0.51
6.8	-0.65	-0.64	-0.63	-0.62	-0.61	-0.60	-0.59	-0.58	-0.57	-0.56	-0.55	-0.54
7.2	-0.68	-0.67	-0.66	-0.65	-0.64	-0.63	-0.62	-0.61	-0.60	-0.59	-0.58	-0.57
7.6	-0.71	-0.70	-0.69	-0.68	-0.67	-0.66	-0.65	-0.64	-0.63	-0.62	-0.61	-0.60
8.0	-0.74	-0.73	-0.72	-0.71	-0.70	-0.69	-0.68	-0.67	-0.66	-0.65	-0.64	-0.63
8.4	-0.77	-0.76	-0.75	-0.74	-0.73	-0.72	-0.71	-0.70	-0.69	-0.68	-0.67	-0.66
8.8	-0.80	-0.79	-0.78	-0.77	-0.76	-0.75	-0.74	-0.73	-0.72	-0.71	-0.70	-0.69
9.2	-0.83	-0.82	-0.81	-0.80	-0.79	-0.78	-0.77	-0.76	-0.75	-0.74	-0.73	-0.72
9.6	-0.86	-0.85	-0.84	-0.83	-0.82	-0.81	-0.80	-0.79	-0.78	-0.77	-0.76	-0.75
10.0	-0.89	-0.88	-0.87	-0.86	-0.85	-0.84	-0.83	-0.82	-0.81	-0.80	-0.79	-0.78
10.4	-0.92	-0.91	-0.90	-0.89	-0.88	-0.87	-0.86	-0.85	-0.84	-0.83	-0.82	-0.81
10.8	-0.95	-0.94	-0.93	-0.92	-0.91	-0.90	-0.89	-0.88	-0.87	-0.86	-0.85	-0.84
11.2	-0.98	-0.97	-0.96	-0.95	-0.94	-0.93	-0.92	-0.91	-0.90	-0.89	-0.88	-0.87
11.6	-1.01	-1.00	-0.99	-0.98	-0.97	-0.96	-0.95	-0.94	-0.93	-0.92	-0.91	-0.90
12.0	-1.04	-1.03	-1.02	-1.01	-1.00	-0.99	-0.98	-0.97	-0.96	-0.95	-0.94	-0.93
12.4	-1.07	-1.06	-1.05	-1.04	-1.03	-1.02	-1.01	-1.00	-0.99	-0.98	-0.97	-0.96
12.8	-1.10	-1.09	-1.08	-1.07	-1.06	-1.05	-1.04	-1.03	-1.02	-1.01	-1.00	-0.99
13.2	-1.13	-1.12	-1.11	-1.10	-1.09	-1.08	-1.07	-1.06	-1.05	-1.04	-1.03	-1.02
13.6	-1.16	-1.15	-1.14	-1.13	-1.12	-1.11	-1.10	-1.09	-1.08	-1.07	-1.06	-1.05
14.0	-1.19	-1.18	-1.17	-1.16	-1.15	-1.14	-1.13	-1.12	-1.11	-1.10	-1.09	-1.08
14.4	-1.22	-1.21	-1.20	-1.19	-1.18	-1.17	-1.16	-1.15	-1.14	-1.13	-1.12	-1.11
14.8	-1.25	-1.24	-1.23	-1.22	-1.21	-1.20	-1.19	-1.18	-1.17	-1.16	-1.15	-1.14
15.2	-1.28	-1.27	-1.26	-1.25	-1.24	-1.23	-1.22	-1.21	-1.20	-1.19	-1.18	-1.17
15.6	-1.31	-1.30	-1.29	-1.28	-1.27	-1.26	-1.25	-1.24	-1.23	-1.22	-1.21	-1.20
16.0	-1.34	-1.33	-1.32	-1.31	-1.30	-1.29	-1.28	-1.27	-1.26	-1.25	-1.24	-1.23
16.4	-1.37	-1.36	-1.35	-1.34	-1.33	-1.32	-1.31	-1.30	-1.29	-1.28	-1.27	-1.26
16.8	-1.40	-1.39	-1.38	-1.37	-1.36	-1.35	-1.34	-1.33	-1.32	-1.31	-1.30	-1.29
17.2	-1.43	-1.42	-1.41	-1.40	-1.39	-1.38	-1.37	-1.36	-1.35	-1.34	-1.33	-1.32
17.6	-1.46	-1.45	-1.44	-1.43	-1.42	-1.41	-1.40	-1.39	-1.38	-1.37	-1.36	-1.35
18.0	-1.49	-1.48	-1.47	-1.46	-1.45	-1.44	-1.43	-1.42	-1.41	-1.40	-1.39	-1.38
18.4	-1.52	-1.51	-1.50	-1.49	-1.48	-1.47	-1.46	-1.45	-1.44	-1.43	-1.42	-1.41
18.8	-1.55	-1.54	-1.53	-1.52	-1.51	-1.50	-1.49	-1.48	-1.47	-1.46	-1.45	-1.44
19.2	-1.58	-1.57	-1.56	-1.55	-1.54	-1.53	-1.52	-1.51	-1.50	-1.49	-1.48	-1.47
19.6	-1.61	-1.60	-1.59	-1.58	-1.57	-1.56	-1.55	-1.54	-1.53	-1.52	-1.51	-1.50
20.0	-1.64	-1.63	-1.62	-1.61	-1.60	-1.59	-1.58	-1.57	-1.56	-1.55	-1.54	-1.53
20.4	-1.67	-1.66	-1.65	-1.64	-1.63	-1.62	-1.61	-1.60	-1.59	-1.58	-1.57	-1.56
20.8	-1.70	-1.69	-1.68	-1.67	-1.66	-1.65	-1.64	-1.63	-1.62	-1.61	-1.60	-1.59
21.2	-1.73	-1.72	-1.71	-1.70	-1.69	-1.68	-1.67	-1.66	-1.65	-1.64	-1.63	-1.62
21.6	-1.76	-1.75	-1.74	-1.73	-1.72	-1.71	-1.70	-1.69	-1.68	-1.67	-1.66	-1.65
22.0	-1.79	-1.78	-1.77	-1.76	-1.75	-1.74	-1.73	-1.72	-1.71	-1.70	-1.69	-1.68
22.4	-1.82	-1.81	-1.80	-1.79	-1.78	-1.77	-1.76	-1.75	-1.74	-1.73	-1.72	-1.71
22.8	-1.85	-1.84	-1.83	-1.82	-1.81	-1.80	-1.79	-1.78	-1.77	-1.76	-1.75	-1.74
23.2	-1.88	-1.87	-1.86	-1.85	-1.84	-1.83	-1.82	-1.81	-1.80	-1.79	-1.78	-1.77
23.6	-1.91	-1.90	-1.89	-1.88	-1.87	-1.86	-1.85	-1.84	-1.83	-1.82	-1.81	-1.80
24.0	-1.94	-1.93	-1.92	-1.91	-1.90	-1.89	-1.88	-1.87	-1.86	-1.85	-1.84	-1.83
24.4	-1.97	-1.96	-1.95	-1.94	-1.93	-1.92	-1.91	-1.90	-1.89	-1.88	-1.87	-1.86
24.8	-2.00	-1.99	-1.98	-1.97	-1.96	-1.95	-1.94	-1.93	-1.92	-1.91	-1.90	-1.89
25.2	-2.03	-2.02	-2.01	-2.00	-1.99	-1.98	-1.97	-1.96	-1.95	-1.94	-1.93	-1.92
25.6	-2.06	-2.05	-2.04	-2.03	-2.02	-2.01	-2.00	-1.99	-1.98	-1.97	-1.96	-1.95
26.0	-2.09	-2.08	-2.07	-2.06	-2.05	-2.04	-2.03	-2.02	-2.01	-2.00	-1.99	-1.98
26.4	-2.12	-2.11	-2.10	-2.09	-2.08	-2.07	-2.06	-2.05	-2.04	-2.03	-2.02	-2.01
26.8	-2.15	-2.14	-2.13	-2.12	-2.11	-2.10	-2.09	-2.08	-2.07	-2.06	-2.05	-2.04
27.2	-2.18	-2.17	-2.16	-2.15	-2.14	-2.13	-2.12	-2.11	-2.10	-2.09	-2.08	-2.07
27.6	-2.21	-2.20	-2.19	-2.18	-2.17	-2.16	-2.15	-2.14	-2.13	-2.12	-2.11	-2.10
28.0	-2.24	-2.23	-2.22	-2.21	-2.20	-2.19	-2.18	-2.17	-2.16	-2.15	-2.14	-2.13
28.4	-2.27	-2.26	-2.25	-2.24	-2.23	-2.22	-2.21	-2.20	-2.19	-2.18	-2.17	-2.16
28.8	-2.30	-2.29	-2.28	-2.27	-2.26	-2.25	-2.24	-2.23	-2.22	-2.21	-2.20	-2.19
29.2	-2.33	-2.32	-2.31	-2.30	-2.29	-2.28	-2.27	-2.26	-2.25	-2.24	-2.23	-2.22
29.6	-2.36	-2.35	-2.34	-2.33	-2.32	-2.31	-2.30	-2.29	-2.28	-2.27	-2.26	-2.25
30.0	-2.39	-2.38	-2.37	-2.36	-2.35	-2.34	-2.33	-2.32	-2.31	-2.30	-2.29	-2.28
30.4	-2.42	-2.41	-2.40	-2.39	-2.38	-2.37	-2.36	-2.35	-2.34	-2.33	-2.32	-2.31
30.8	-2.45	-2.44	-2.43	-2.42	-2.41	-2.40	-2.39	-2.38	-2.37	-2.36	-2.35	-2.34
31.2	-2.48	-2.47	-2.46	-2.45	-2.44	-2.43	-2.42	-2.41	-2.40	-2.39	-2.38	-2.37
31.6	-2.51	-2.50	-2.49	-2.48	-2.47	-2.46	-2.45	-2.44	-2.43	-2.42	-2.41	-2.40
32.0	-2.54	-2.53	-2.52	-2.51	-2.50	-2.49	-2.48	-2.47	-2.46	-2.45	-2.44	-2.43
32.4	-2.57	-2.56	-2.55	-2.54	-2.53	-2.52	-2.51	-2.50	-2.49	-2.48	-2.47	-2.46
32.8	-2.60	-2.59	-2.58	-2.57	-2.56	-2.55	-2.54	-2.53	-2.52	-2.51	-2.50	-2.49
33.2	-2.63	-2.62	-2.61	-2.60	-2.59	-2.58	-2.57	-2.56	-2.55	-2.54	-2.53	-2.52
33.6	-2.66	-2.65	-2.64	-2.63	-2.62	-2.61	-2.60	-2.59	-2.58	-2.57	-2.56	-2.55
34.0	-2.69	-2.68	-2.67	-2.66	-2.65	-2.64	-2.63	-2.62	-2.61	-2.60	-2.59	-2.58
34.4	-2.72	-2.71	-2.70	-2.69	-2.68	-2.67	-2.66	-2.65	-2.64	-2.63	-2.62	-2.61
34.8	-2.75	-2.74	-2.73	-2.72	-2.71	-2.70	-2.69	-2.68	-2.67	-2.66	-2.65	-2.64
35.2	-2.78	-2.77	-2.76	-2.75	-2.74	-2.73	-2.72	-2.71	-2.70	-2.69	-2.68	-2.67
35.6	-2.81	-2.80	-2.79	-2.78	-2.77	-2.76	-2.75	-2.74	-2.73	-2.72	-2.71	-2.70
36.0	-2.84	-2.83	-2.82	-2.81	-2.80	-2.79	-2.78	-2.77	-2.76	-2.75	-2.74	-2.73
36.4	-2.87	-2.86	-2.85	-2.84	-2.83	-2.82	-2.81	-2.80	-2.79	-2.78	-2.77	-2.76
36.8	-2.90	-2.89	-2.88	-2.87	-2.86	-2.85	-2.84	-2.83	-2.82	-2.81	-2.80	-2.79
37.2	-2.93	-2.92	-2.91	-2.90	-2.89	-2.88	-2.87	-2.86	-2.85	-2.84	-2.83	-2.82
37.6	-2.96	-2.95	-2.94	-2.93	-2.92	-2.91	-2.90	-2.89	-2.88	-2.87	-2.86	-2.85
38.0	-2.99	-2.98	-2.97	-2.96	-2.95	-2.94	-2.93	-2.92	-2.91	-2.90	-2.89	-2.88
38.4	-3.02	-3.01	-3.00	-2.99	-2.98	-2.97	-2.96	-2.95	-2.94	-2.93	-2.92	-2.91
38.8	-3.05	-3.04	-3.03	-3.02	-3.01	-3.00	-2.99	-2.98	-2.97	-2.96	-2.95	-2.94
39.2	-3.08	-3.07	-3.06	-3.05	-3.04	-3.03	-3.02	-3.01	-3.00	-2.99	-2.98	-2.97
39.6	-3.11	-3.10	-3.09	-3.08	-3.07	-3.06	-3.05	-3.04	-3.03	-3.02	-3.01	-3.00
40.0	-3.14	-3.13	-3.12	-3.11	-3.10	-3.09	-3.08	-3.07	-3.06	-3.05	-3.04	-3.03
40.4	-3.17	-3.16	-3.15	-3.14	-3.13	-3.12	-3.11	-3.10	-3.09	-3.08	-3.07	-3.06
40.8	-3.20	-3.19	-3.18	-3.17	-3.16	-3.15	-3.14	-3.13	-3.12	-3.11	-3.10	-3.09
41.2	-3.23	-3.22	-3.21	-3.20	-3.19	-3.18	-3.17	-3.16	-3.15	-3.14	-3.13	-3.12
41.6	-3.26	-3.25	-3.24	-3.23	-3.22	-3.21	-3.20					

