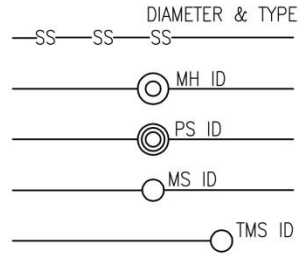


**Section 9 Drawings**

# Sheet 1 Standard Symbols

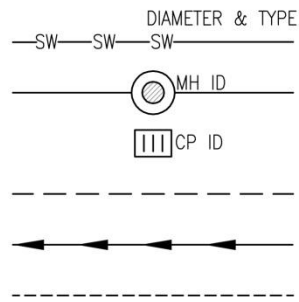
## Sewer Reticulation

- Sewer Lines
- Sewer Manholes
- Pump Station
- Maintenance Shaft
- Terminal Maintenance Shaft



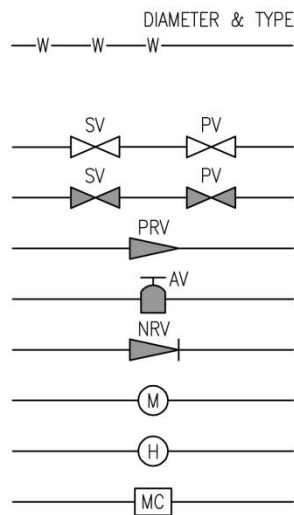
## Stormwater Reticulation

- Stormwater Lines
- Stormwater Manholes
- Cesspit/Sump
- Sussoil Drain
- Watercourse
- Limit of Catchment Area



## Water Reticulation

- Water Lines
- Sluice & Peet Valve
  - Normally open
  - Normally closed
- Pressure Reducing Valve
- Air Valve
- Non Return Valve
- Bulk Meter
- Hydrant
- Multi Chamber



## STANDARD SYMBOLS



**WHANGAREI DISTRICT COUNCIL**  
 ENVIRONMENTAL ENGINEERING STANDARDS

Date: APRIL 2010

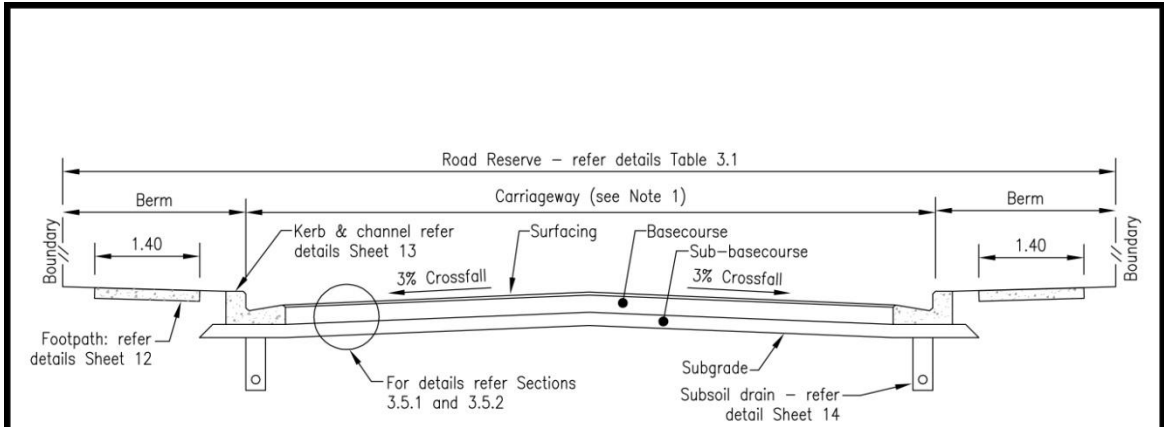
Revision: R0

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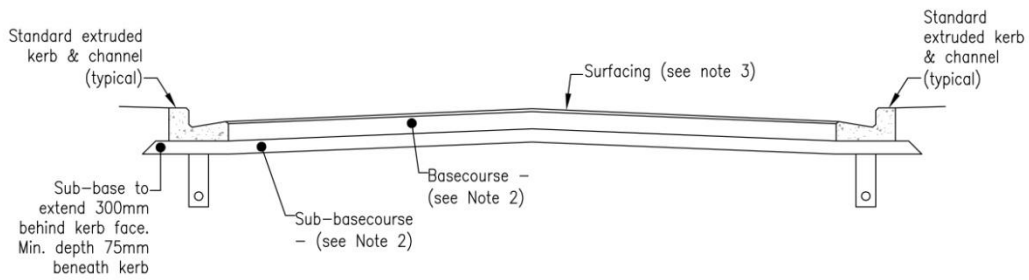
SHEET No. **1**

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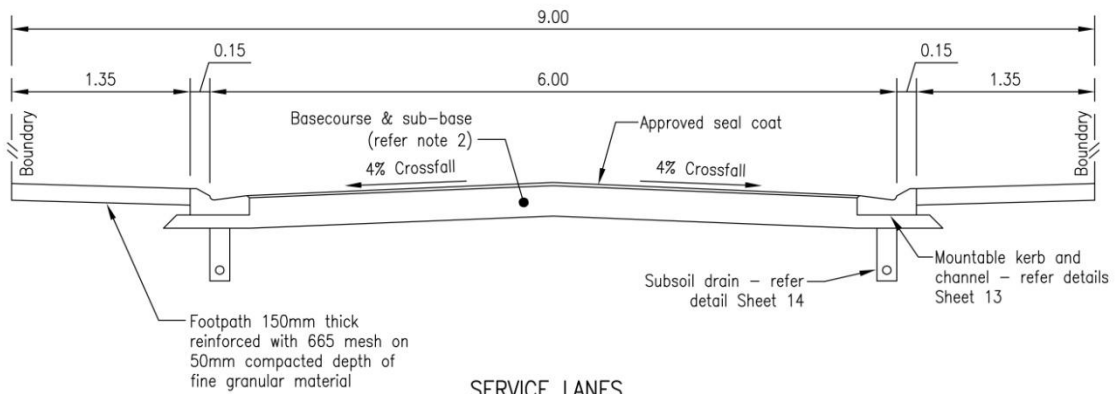
# Sheet 2 Urban Road and Service Lane Details



**TYPICAL CROSS SECTION**  
NTS



**FURTHER DETAIL**  
NTS



**SERVICE LANES**  
1:50 (A4)

**NOTES:**

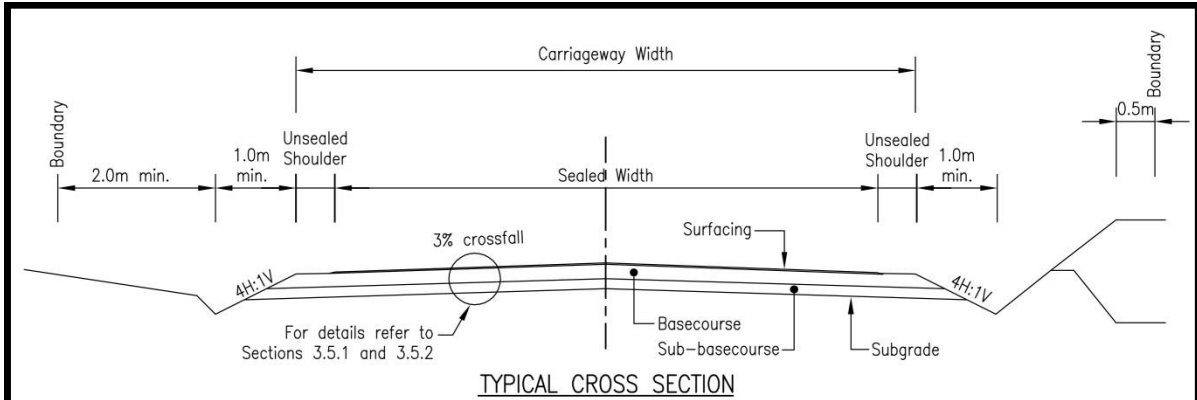
1. Refer to Table 3.1 for carriageway width.
2. Pavement thickness to be determined by the designer in accordance with "Austroads – A Guide to the Structural Design of Road Pavements, 2004" and the latest NZTA supplement.
3. Refer to Section 3.5.2 for details.
4. Privateways in industrial developments shall be formed to service lane standards.

URBAN ROAD & SERVICE LANE DETAILS (LIVING 1 AND 2, AND ALL BUSINESS ENVIRONMENTS)	Date: APRIL 2010
	Revision: RO
 <b>WHANGAREI DISTRICT COUNCIL</b> ENVIRONMENTAL ENGINEERING STANDARDS	Scale: AS SHOWN
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# Sheet 3 Rural Road Details



Class	Type	Criteria	Min. Road Reserve Width	Carriageway				
				Unsealed Shoulder	Sealed Shoulder	Lane Width	Total Sealed Width	Carriageway Width
LOCAL ROADS								
A	Minor	0 – 300 vpd	20	2 x 0.5	2 x 0.5	2 x 2.5	6.0	7.0
B	Sub Collector	301 – 700 vpd	20	2 x 0.5	2 x 0.5	2 x 3.0	7.0	8.0
COLLECTOR ROADS								
C	Minor and Major Collector	701 – 2500 vpd	20	2 x 0.5	2 x 0.5	2 x 3.5	8.0	9.0
ARTERIAL								
D	Arterial	> 2500 vpd	20	2 x 0.5	2 x 1.0	2 x 3.5	9.0	10.0

### WIDTH REQUIREMENTS

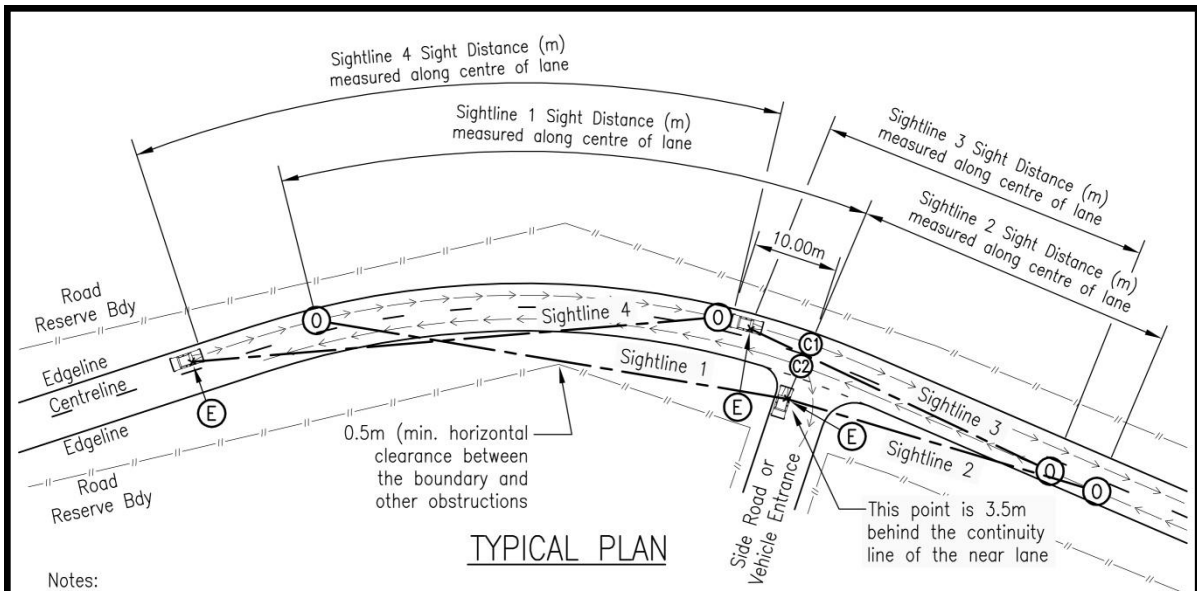
**NOTES:**

- The standards above are the minimum permitted. Road reserve widths may need to be increased to provide for services, berms, batters, drainage, landscaping etc.
- The sealed carriageway width shall be widened on curves (see Table 3.4).
- The road reserve shall be located 0.5 metres outside the top and/or bottom of batter slopes unless the slope of the earthworks is 1V:5H (20%) or less in which case it can be located at the minimum distance from the centreline.
- Footpaths 1.4 m wide shall be provided in Living 3 Environments, and level berms suitable for pedestrian use are required in the vicinity of cluster developments in Countryside and Coastal Countryside Environments.
- Road gradients shall be in the range of 0.4% to 12.5 % for Local Roads, and 0.4% to 10% for Collector and Arterial roads.
- All rural roads shall be sealed except where specifically exempted by the Roading Manager.
- Road drainage shall be provided by the use of side drains, dished channels or kerb and channel (with subsoil drains). The road boundary shall be at least 2.0 m outside of side drains. On steep gradients where scouring is likely, open water tables shall be protected (see Section 3.4.15.4 and details of Concrete Dish Channels, Sheet 13). Specific provision shall be made to control velocity, particularly prior to a discharge.

<b>WHANGAREI DISTRICT COUNCIL</b> ENVIRONMENTAL ENGINEERING STANDARDS	RURAL ROAD DETAILS (COUNTRYSIDE, COASTAL COUNTRYSIDE AND LIVING 3 ENVIRONMENTS)	Date: APRIL 2010
		Revision: R0
		Scale: AS SHOWN
		SHEET No. <b>3</b>

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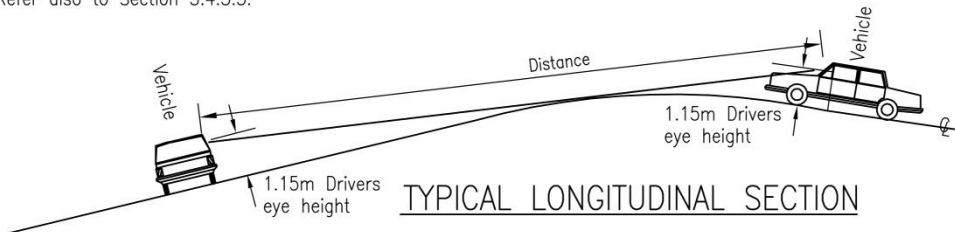
# Sheet 4 Traffic Sightlines for Non-Signalised Intersections and Vehicle Entrances



TYPICAL PLAN

Notes:

- "O" = Object. "E" = Drivers's Eye. "C1" and "C2" are the "conflict points" for each lane of the main road. They are located in the centre of the lane and on the centreline of the access or side road.
- Sightlines shall be straight, fully contained within the road reserve boundary and:
  - \*1.15m above the carriageway at each end,
  - \*Clear of the carriageway, ground, road reserve boundary or other permanent obstructions by at least 0.3 metres vertically, or 0.5 metres horizontally, everywhere else along their length.
- The ends of all sightline vectors other than point E of sightlines 1 & 2, shall be at the centre of the applicable lane.
- The site distance is the distance along the centre of the lane of the main road in the applicable direction of travel between the following points:
  - \*For sightline 1, between its point O and point C1.
  - \*For sightline 2, between its point O and point C2.
  - \*For sightlines 3 & 4 between their points E and O.
- Minimum sight distances are as tabulated below.
- Sightline 4 does not apply for entrances or side roads on which there is a full right turn bay and tapers marked out in accordance with MOTSAM.
- Earthworks, retaining or vegetation removal within the road reserve shall only be carried out with the prior written approval of Council's Roading Manager and with all necessary consents.
- Refer also to Section 3.4.3.5.



TYPICAL LONGITUDINAL SECTION

Side Road or Vehicle Entrance	Operating Speed Environment (km/hr)	Minimum Sight Distance (m)			Side Road or Vehicle Entrance	Operating Speed Environment (km/hr)	Minimum Sight Distance (m)		
		Main Road Classification					Main Road Classification		
		Local	Collector	Arterial			Local	Collector	Arterial
LOW VOLUME Up to 200 vehicle movements per day per access	40	30	35	70	HIGH VOLUME More than 200 vehicle movements per day per access	40	30	70	70
	50	40	45	90		50	40	90	90
	60	55	65	115		60	55	115	115
	70	85	85	140		70	85	140	140
	80	105	105	175		80	105	175	175
	90	130	130	210		90	130	210	210
	100	160	160	250	100	160	250	250	

TRAFFIC SIGHT LINES FOR NON SIGNALISED INTERSECTIONS AND VEHICLE ENTRANCES



**WHANGAREI DISTRICT COUNCIL**  
ENVIRONMENTAL ENGINEERING STANDARDS

Date: APRIL 2010

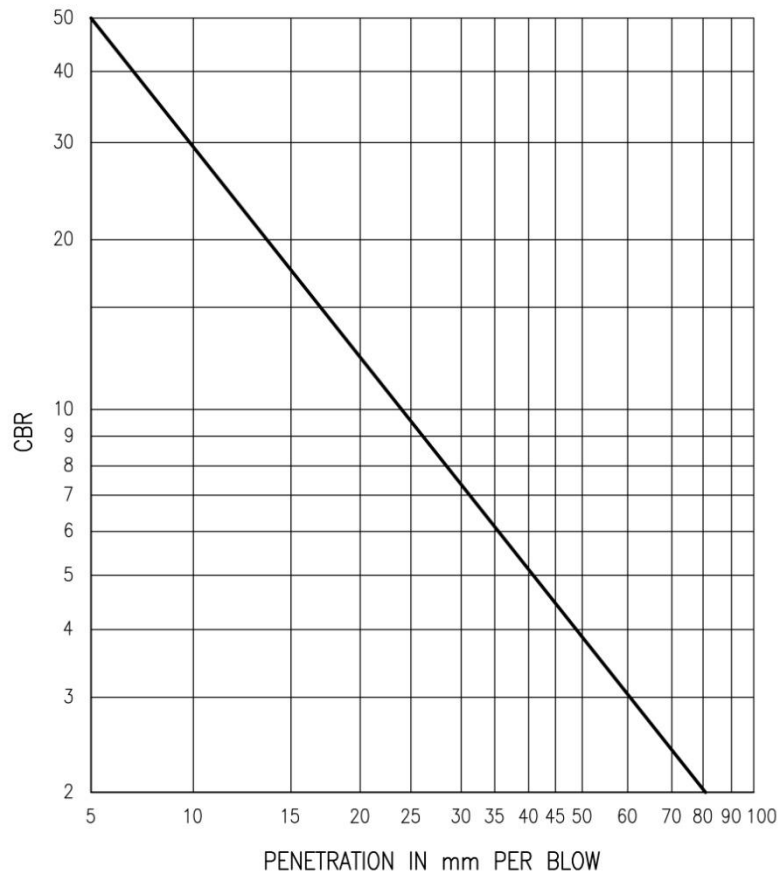
Revision: R0

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SHEET No. **4**

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**Sheet 5 Scala Penetrometer Chart**

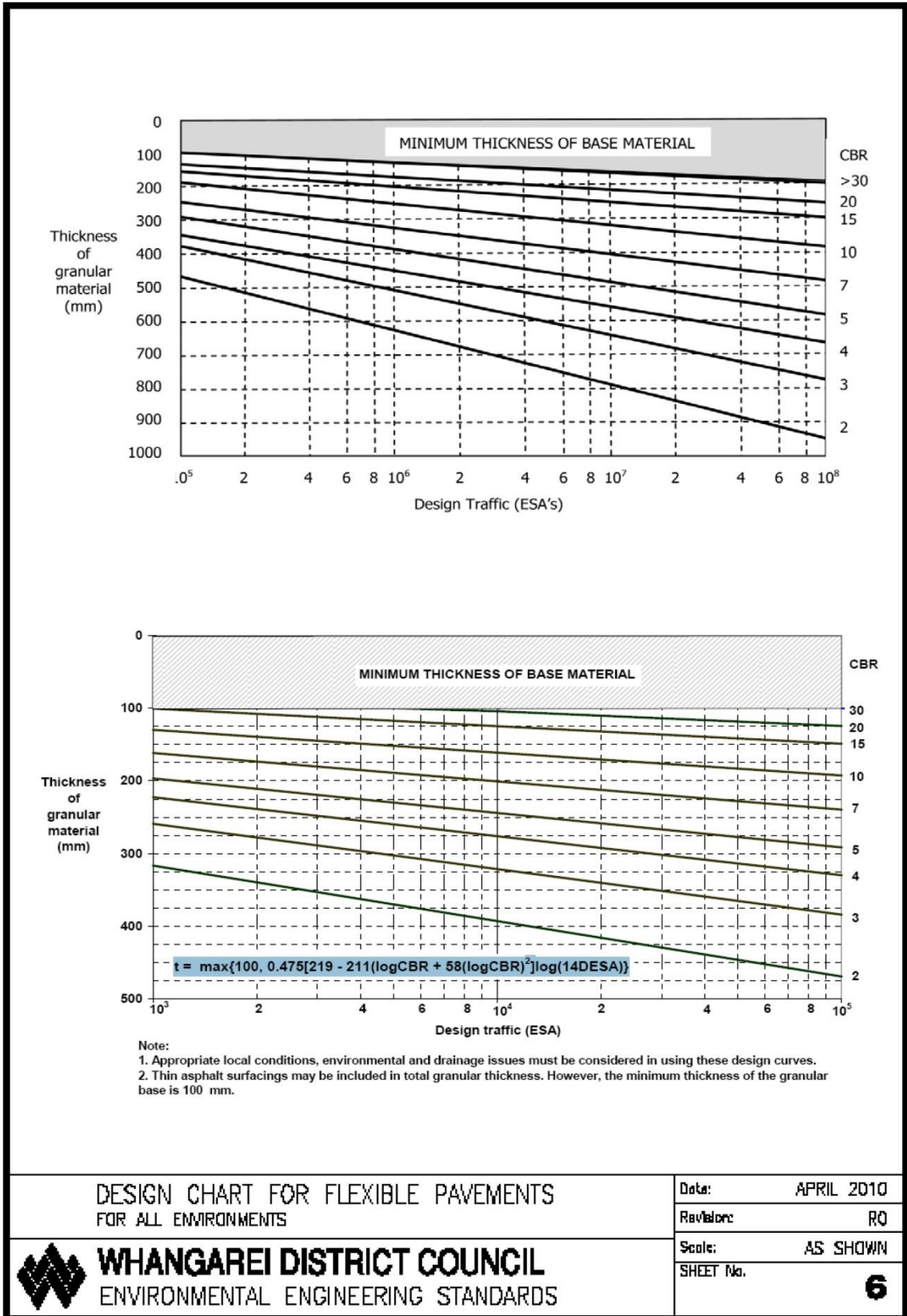


SCALA PENETROMETER CHART FOR C.B.R. VALUES (Subgrade)

SCALA PENETROMETER CHART (FOR ALL ENVIRONMENTS)	Date: APRIL 2010
	Revision: R0
 <b>WHANGAREI DISTRICT COUNCIL</b> ENVIRONMENTAL ENGINEERING STANDARDS	Scale: AS SHOWN
	SHEET No. <b>5</b>

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Sheet 6 Design Charts for Flexible Pavements



DESIGN CHART FOR FLEXIBLE PAVEMENTS  
FOR ALL ENVIRONMENTS

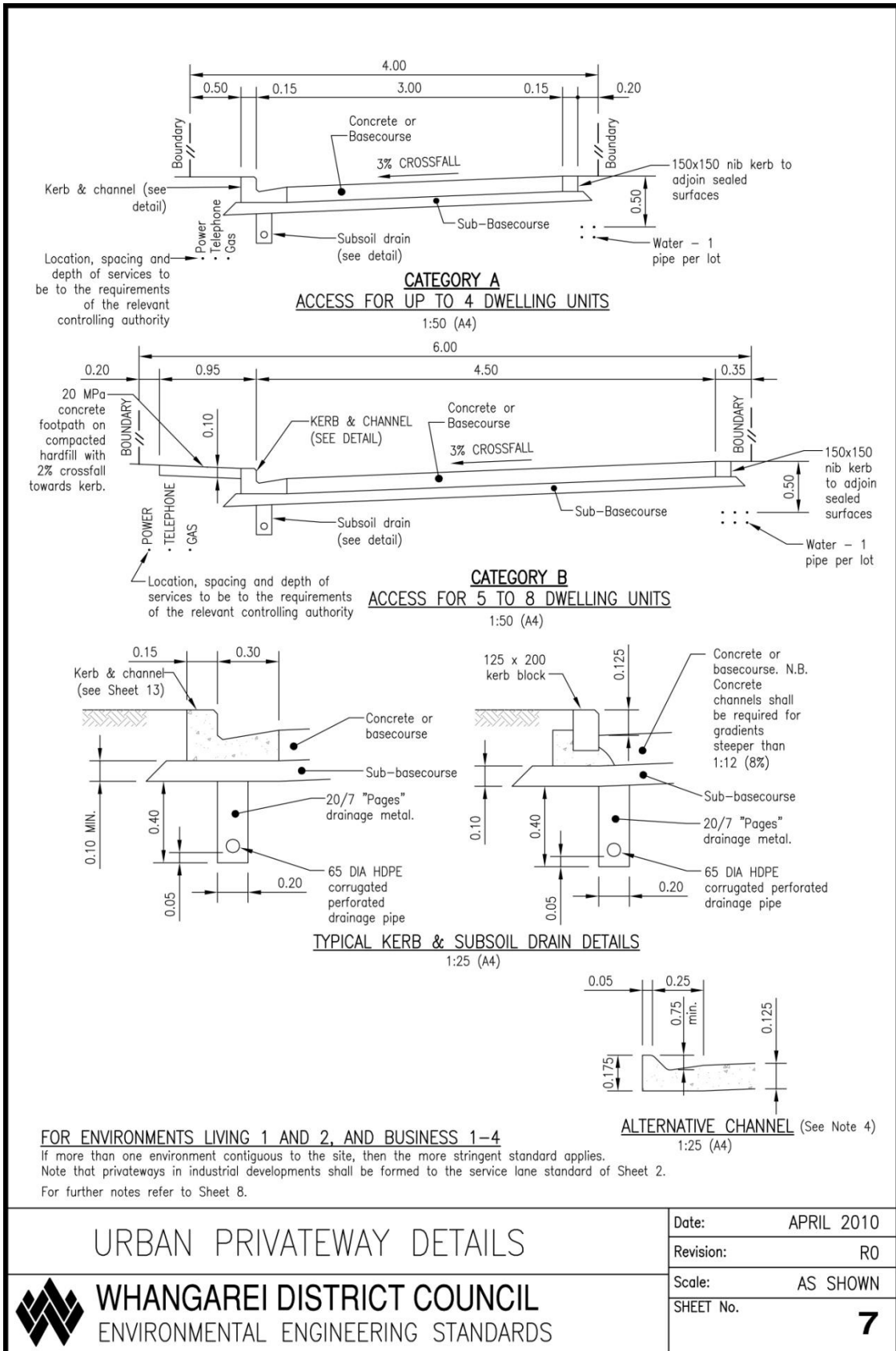
Date:	APRIL 2010
Revision:	R0
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SHEET No.	<b>6</b>



**WHANGAREI DISTRICT COUNCIL**  
ENVIRONMENTAL ENGINEERING STANDARDS

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# Sheet 7 Urban Privateway Details



## URBAN PRIVATEWAY DETAILS



**WHANGAREI DISTRICT COUNCIL**  
 ENVIRONMENTAL ENGINEERING STANDARDS

Date:	APRIL 2010
Revision:	R0
Scale:	AS SHOWN
SHEET No.	<b>7</b>

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## Sheet 8 Urban Privateway Details - Notes

### NOTES:

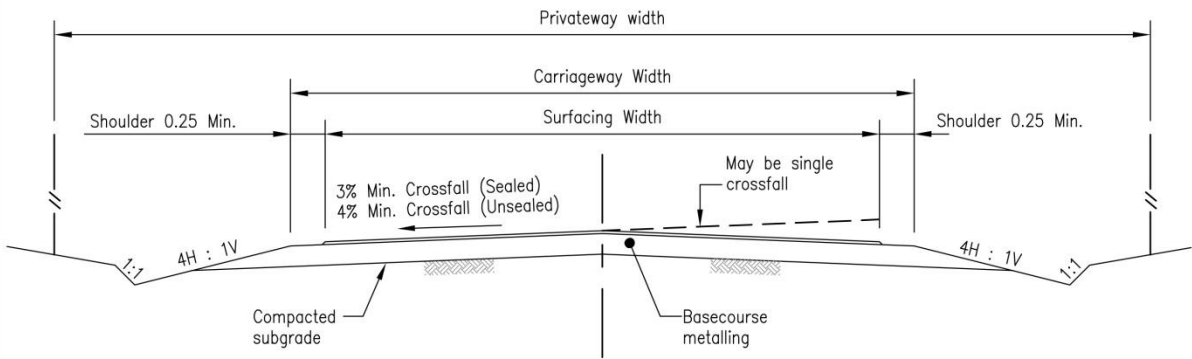
The standards are minimum and may need to be increased to cope with services, topographical and drainage problems, or similar.

1. Access longitudinal gradients shall not be steeper than 1:4.5 (22.2%) unless specifically approved. the first 5m within the property shall not exceed 12.5%.
2. Pavements may be 30 MPa concrete 125mm thick with 665 mesh (or as approved) with construction joints @ 3.5m centres on 100mm compacted basecourse.  
  
OR, Where the subgrade CBR is not less than 7 the sub-base can be 150mm of GAP 65 with 100mm of selected blue GAP 40 basecourse with a chip seal for gradients less than 1:4.5 (22.2%)  
  
OR, A minimum of 30mm of asphaltic concrete over a waterproofing seal coat (with compacted aggregate as above).  
  
OR, specifically designed by a council approved IQP, and in particular where the subgrade CBR is less than 7.
3. If kerb blocks are used, concrete channels shall also be provided for gradients steeper than 1:12.5 (8%).
4. The alternative channel may only be used with specific approval and must be slipformed. It shall not be used in business environments.
5. Privateways with a carriageway less the 4.5m shall have passing bays at no more than 50m spacing, subject to adequate visibility, or as approved.
6. Gated privateways shall ensure that vehicles are not required to park on the road affecting through traffic.
7. Sealed surfaces may be grade 4 chip with a grade 6 dry locking coat chip rolled in within 5 hours of the application of the grade 4 chip, OR, as approved. Emulsion seal shall be in accordance with Section 3.5.2.2.4 (chip seal).
8. The Clegg Impact Value prior to sealing shall record at least 40 for 90% of the surface tested at 10m intervals, and not record any value less than 35.
9. Concrete vehicle crossings shall comply with Sheet 19 or as approved including drainage provisions as required.
10. Privateways containing public water mains, sewers, or cables, must be of adequate width for separation of services to comply with Table 6.4, or as approved.
11. Stormwater pipes and associated installation are to comply with relevant NZ standards and the manufacturer,s requirements, be suitable for the catchment, and not less than 200mm diameter.
12. Sump grates shall be not less than 300mm x 300mm, be suitable for catchment, and vehicle loading.
13. Where an access falls towards a road, a sump is to be installed at the property boundary discharging to an approved outfall. Runoff is not to be concentrated so as to pond, flood, or cause erosion on any adjacent property, or affect pedestrian use of footpaths.
14. Cut and fill batters are to be contained within the legal access, unless otherwise approved.
15. Adequate turning & parking areas for fire appliances and service vehicles shall be provided in the vicinity of fire hydrant and sewer pump stations located within or adjacent to a privateway.

 <b>WHANGAREI DISTRICT COUNCIL</b> ENVIRONMENTAL ENGINEERING STANDARDS	<b>URBAN PRIVATEWAY DETAILS</b>	Date:	APRIL 2010
			Revision:
		Scale:	AS SHOWN
		SHEET No.	<b>8</b>

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# Sheet 9 Rural Privateway Details



## TYPICAL MINIMUM RURAL PRIVATEWAY CROSS SECTION

1:50 (A4)

CATEGORY	C	D	E	F	G	
No of properties or residential units served	2	3-5	2	3-5	6-8	9 or more
Environment	Living 3	Living 3	Countryside & Coastal Countryside	Countryside & Coastal Countryside	All environments	Public road or as per resource consent
Maximum Gradient (See Note 1, Sheet 10)	22.22% 1:4.5	22.22% 1:4.5	22.22% 1:4.5	22.22% 1:4.5	22.22% 1:4.5	
Surfacing Width	3.0m	4.0m	3.0m	4.0m	5.5m	
Min.. privateway width	4.0m	6.0m	4.0m	6.0m	10.0m	
Type of surfacing (see notes)	Seal or concrete 3m wide	Seal or concrete 4m wide	Aggregate 3m wide	Aggregate 4m wide	Seal 5.5m wide	

### FOR ENVIRONMENTS LIVING 3, COUNTRYSIDE AND COASTAL COUNTRYSIDE

**NOTE:**

If there is more than one environment contiguous to the site, then the more stringent standard applies

For further notes refer to Sheet 10.  
See Also Table 3.7

## RURAL PRIVATEWAY DETAILS



**WHANGAREI DISTRICT COUNCIL**  
ENVIRONMENTAL ENGINEERING STANDARDS

Date: APRIL 2010

Revision: R0

Scale: AS SHOWN

SHEET No. **9**

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## Sheet 10 Rural Privateway Details - Notes

### NOTES:

The above standards are minimum and may need to be increased to cope with services, topographical and drainage problems, or similar.

1. Access longitudinal gradients shall not be steeper than 1:4.5 (22.2%) unless specifically approved. the first 5m within the property shall not exceed 12.5%.
2. Pavements may be 30 MPa concrete 125mm thick with 665 mesh (or as approved) with construction joints @ 3.5m centres on 100mm compacted basecourse.  
  
OR, Where the subgrade CBR is not less than 7 the sub-base can be 150mm of GAP 65 with 100mm of selected blue GAP 40 basecourse with a chip seal for gradients less than 22.2%.  
  
OR, A minimum of 30mm of asphaltic concrete over a waterproofing seal coat (with compacted aggregate as above) for any approved gradient.  
  
OR, specifically designed by a council approved IQP, and in particular where the subgrade CBR is less than 7.
3. Privateways with a carriageway less the 4.5m shall have passing bays at no more than 100m spacing, subject to adequate visibility, or as approved.
4. Gated privateways shall ensure that vehicles are not required to park on the road affecting through traffic.
5. Sealed surfaces may be grade 4 chip with a grade 6 dry locking coat chip rolled in within 5 hours of the application of the grade 4 chip, OR, as approved. Emulsion sealing shall be in accordance with Section 3.5.2.2.4 (Chip Seal).
6. The Clegg Impact Value prior to sealing shall record at least 40 for 90% of the surface tested at 20m intervals, and not record any value less than 35.
7. Concrete vehicle crossings shall terminate 0.5m from the edge of the road seal or aggregate as applicable, or 0.5m outside of the carriageway width required by these standards, which ever is the further. The area between the concrete crossing and the seal edge shall be sealed as above.
8. Piped vehicle crossings onto a road shall comply with Sheet 21.
9. Privateways containing public watermain, sewers, or cables, must be of adequate width for separation of services to comply with Tables 5.7 & 6.4 or as approved.
10. Stormwater pipes and associated installation are to comply with relevant NZ standards and the manufacturer's requirements, be suitable for the catchment, and not less than 200mm diameter.
11. Any sump grates shall be not less than 300mm x 300mm, be suitable for catchment, and vehicle loading.
12. Where an access falls towards a publicly maintained road, controlled stormwater disposal is required that prevents erosion or flooding within the road boundaries due to construction of the access. See also NZS 4404.
13. Approved concrete dished channels, kerb and channelling, concrete or stonework headwalls and aprons, wooden flume outfalls, or similar, are to be installed for discharges into controlled and stable outfalls.
14. Cut and fill batters are to be contained within the legal access, unless otherwise approved.

## RURAL PRIVATEWAY DETAILS



**WHANGAREI DISTRICT COUNCIL**  
ENVIRONMENTAL ENGINEERING STANDARDS

Date: APRIL 2010

Revision: R0

Scale: AS SHOWN

SHEET No. **10**

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