

FOOTHILLS COUNTY
(Municipal District of Foothills No. 31)

ROAD CONSTRUCTION STANDARDS

Revised: January 01, 2008

ROAD CONSTRUCTION STANDARDS

SCHEDULE "A"

Construction of internal subdivision roads and construction of road allowance shall be at no expense to the Municipality and shall be to the standards as follows:

1. Roads shall be designed by a qualified engineer and three (3) copies of the plans sent to the Municipality for approval by Council.
2. The Developer will enter into a Development Agreement and supply a Letter of Credit for 125% of the approved cost estimate prior to commencement of construction. The letter of Credit will be reduced accordingly after the road is accepted by Council, as constructed, to cover a two (2) year maintenance period.
3. A site meeting shall be held prior to the start of construction with the Developer, the Municipality and/or their engineering firm in attendance.
4. Upon completion of the sub-grade construction, an inspection shall be carried out by the Municipality in attendance. The contractor shall supply and operate a loaded test vehicle of 8200 kg axle load to test the sub- grade for rutting, weaving and soft spots. Where proof of rolling indicates areas that are defective, the contractor shall remove and replace the material with suitable compacted material at his expense.
5. The Developer will be responsible for obtaining all approvals for road closures, utility crossings and railway crossings.
6. The Developer will be responsible for providing utility easements and drainage easements, if required.
7. The Developer is responsible to contact the Public Works Department to schedule subgrade Proof Roll inspection prior to the placement of Gravel Base Course.
8. The Developer is responsible to contact the Public Works Department and the Consulting Engineer to schedule CCC and FAC inspection.
9. All phases of road construction shall conform to good engineering practices and be acceptable to the Municipality.
10. All phases of road construction shall be tested by a geotechnical firm and will met the following compaction standards:
 - a) Sub grade- grade to 150 mm depth – 98% Standard Proctor Density
below 150mm depth – 95% Standard Proctor Density
 - b) Gravel Base Course - 100% Standard Proctor Density
 - c) Density of Asphalt – not less than 97% of Marshall Briquettes produced from actual mix.

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11. Country residential and Road allowance right of way width to be 30 meters unless otherwise set by Director of Public Works in accordance with submitted engineered drawings but at no time less than 20 meters. Curb and gutter right of way widths to be set by Director of Public Works on a case by case basis.
12. The road top width and type of surface must conform to the road Surface Policy.
13. Cul-de-sac, if required, minimum 15 meter radius.
14. Shoulder slopes – 3:1 ratio.
15. From the shoulder of the road to the toe of the side slope to be a minimum of 1.0 meters.
16. Bottom of ditch width minimum to be 3 meters.
17. Back slope - 3:1 ratio minimum.
18. Minimum Horizontal Curve Radius: 80 km/hr Design Speed – 250 meters.
19. Minimum K Values: 80 km/hr Design Speed – SAG 45 – Crest 30.
20. Single approaches will be the same width and surface top as the finished surface of the internal road (maximum width of 6 meters). Approaches onto a road allowance shall be 6 meters wide with 3:1 ratio shoulder slopes and maximum +/- 2% gradient from the road shoulder to the property line. Access of a Municipal road shall conform to approach standards of the Municipality.
21. Common approaches shall have a minimum top of 9 meters with 3:1 ratio shoulder slopes and maximum +/- gradient from the road shoulder to the property line.
22. Any approaches onto a secondary road must be approved by Council.
23. Minimum size of roadway culvert shall be 600mm and be approved by the Municipality before being installed.
24. Minimum size of approach culvert shall be 500mm and be approved by the Municipality before being installed.

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25. All culverts shall be rip-rapped at both ends and the size and type of rip-rap shall conform to good engineering practice and acceptable to the Municipality.
26. Any drainage channels and road ditches exceeding 4.0% grade shall be provided with rock ditch checks or an erosion control acceptable to the Municipality.
27. The sight distances on all approaches onto a municipal road shall be 180 meters for 80 km/hr design speed and 250 meters for 100 km/hr design speed.
28. Loam stripped from the construction site to be stockpiled and re-spread on the shoulder slopes, ditches and back slopes to a depth at least equal to the material loam cover of the immediate surrounding area or to a minimum depth of 75mm.
29. All should slopes; ditch bottoms and back slopes to be left in a smooth condition and all rocks will be picked and removed.
30. Shoulders, ditches and back slopes to be seeded at an adequate rate with grasses acceptable to the Municipality.
31. Traffic signs as required and shall conform to Alberta Infrastructure standards. Road ban signs required on surfaced roads.

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SCHEDULE "B"

Road Surfacing Policy - Minimum Requirements

1. **PAVED ROADS** surface is acceptable for multi-parcel subdivision applications.

HDCR & CRR49 application(s) may require additional upgrading beyond the internal road requirements above for:

- (a) intersectional treatment
- (b) road surfacing to the internal road

Approaches are required to all lots created including balance parcel (see approach policy).

All lot numbers include proposed new lots as well as the balance parcel.

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SCHEDULE "C"

Pavement Surface Standards

A. Internal Subdivision Road **90mm ACP
Prime Coat
200mm DES 2 CL 20

** Subdivision roads that pavement would be stage construction – that is 50mm put down initially then after the minimum 2-year maintenance period the 40mm top lift would be added and the FAC issued.

B. Road Allowance 90mm ACP
Prime Coat
200mm DES 2 CL 20

** Road Allowance, the complete 90mm ACP would be placed in two lifts at the initial construction.

C. Industrial / Commercial Roads 130mm ACP
Prime Coat
250mm DES 2 CL 20

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RURAL APPROACH STANDARDS

The County retains the authority to allow for discretionary variances and the relaxation of standards for both existing and newly constructed approach(es). All accesses onto a Provincial Highway must be approved by Alberta Transportation. All subdivision I boundary adjustment approvals are subject to having a proper legal access onto the proposed lot as well as legal access(es) for all other approach(es) onto the balance of the parcel. Only one approach is allowed for a parcel of 10 acres or less. All approach(es) shall comply with the following guidelines:

Minimum Distances and Obstructions

- Sight distance on approach shall be as per **Table 1**.
- There shall be no obstruction on the approach (gate, curbing, fence, control box, mailbox, landscaping etc.).
- Approaches should be located directly across from existing approaches if possible.
- Approach shall not be closer than 60 m (197 ft.) from the centre line of an intersection, mailbox location, bridge, or any at-grade railway crossing.
- Approach shall not be closer than 15 m (50 ft.) from the centre line of an existing approach on the same side of the road.
- A 6.0-meter (20 ft.) buffer between any power pole, power pole anchor or utility pedestal to the beginning of the culvert end must be maintained.

Geometric Design

- Angle of the approach shall be 90 degrees to the roadway.
- **A standard approach** shall have a minimum surface width of 6 meters (20 ft.) at the property line with a 3 meter intersecting radius at the 12 meter (40 ft.) road allowance.
- **A common approach** shall have a minimum surface width of 9 meters (30 ft.) at the property line with a 3 meter intersecting radius at the 15 meter (50 ft.) road allowance.
- **A commercial approach** shall have a minimum surface width of 8 meters (26 ft.) at the property line with a 6 meter intersecting radius at the 20 meter (65 ft.) road allowance.
- The side slopes of the approach shall be a 3:1 ratio. NOTE: 3 meters (10 ft.) slope (length) for 1 meter (3 ft.) of rise (height).
- Maximum gradient of the approach shall not exceed +2% to -2% from the shoulder of the road to the property line or for a minimum distance of 8 meters (26 ft.). In the case of + 1% or greater gradient the surface must be crowned + 2% in both directions from the centre of the approach to accommodate for drainage.

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Materials

- Approach shall be built with the same material as of new or existing road (clay or granular type materials) at a minimum 250 millimeter gravel base and the surface structure the same as the abut road or under the discretion of the County.
- **A gravel approach** shall be crushed gravel 20 mm (3/4 inch) at a minimum depth of 50 mm (2 inches).
- **A paved approach** shall be ACP at a minimum depth of 90 mm and shall meet the specifications of Commercial "B" mix asphalt for the City of Calgary. The approach shall be paved from the shoulder of the road to the property line or for a minimum distance of 8 meters (26 ft.). A field approach is exempt unless otherwise specified.
- If a culvert is required, it shall be of new corrugated steel, minimum 500 mm (20 inch) diameter with beveled ends (**See Figure A.**). All culvert couplers shall be buried below the depth of the ground cover over the culvert. Minimum ground cover over culvert is 0.3 meters (1 ft.). **Rip Rap** must be placed around the ends of the culvert as per **Figure B.** **The culvert length** shall be sized to meet the toe of slope length minus 0.6m, 2x "N" in Figure A.

Additional Items

- All disturbed areas adjacent to the approach must be maintained to original grade, loamed, seeded, and reclaimed in a manner to allow for natural grasses to re-grow.
- All debris or topsoil must be removed from the road allowance and hauled to a safe distance so that no wash out is deposited onto the road allowance.
- Upon the completion of approach(s) construction onto the parcel and acknowledging that all the above stated conditions have been met, notify Foothills County for a final inspection.
- **CALL BEFORE YOU DIG!** Remember; call 1 800 242 3447 call before you dig and **Alberta One Call** will arrange to have buried utilities in your area located for you at no charge

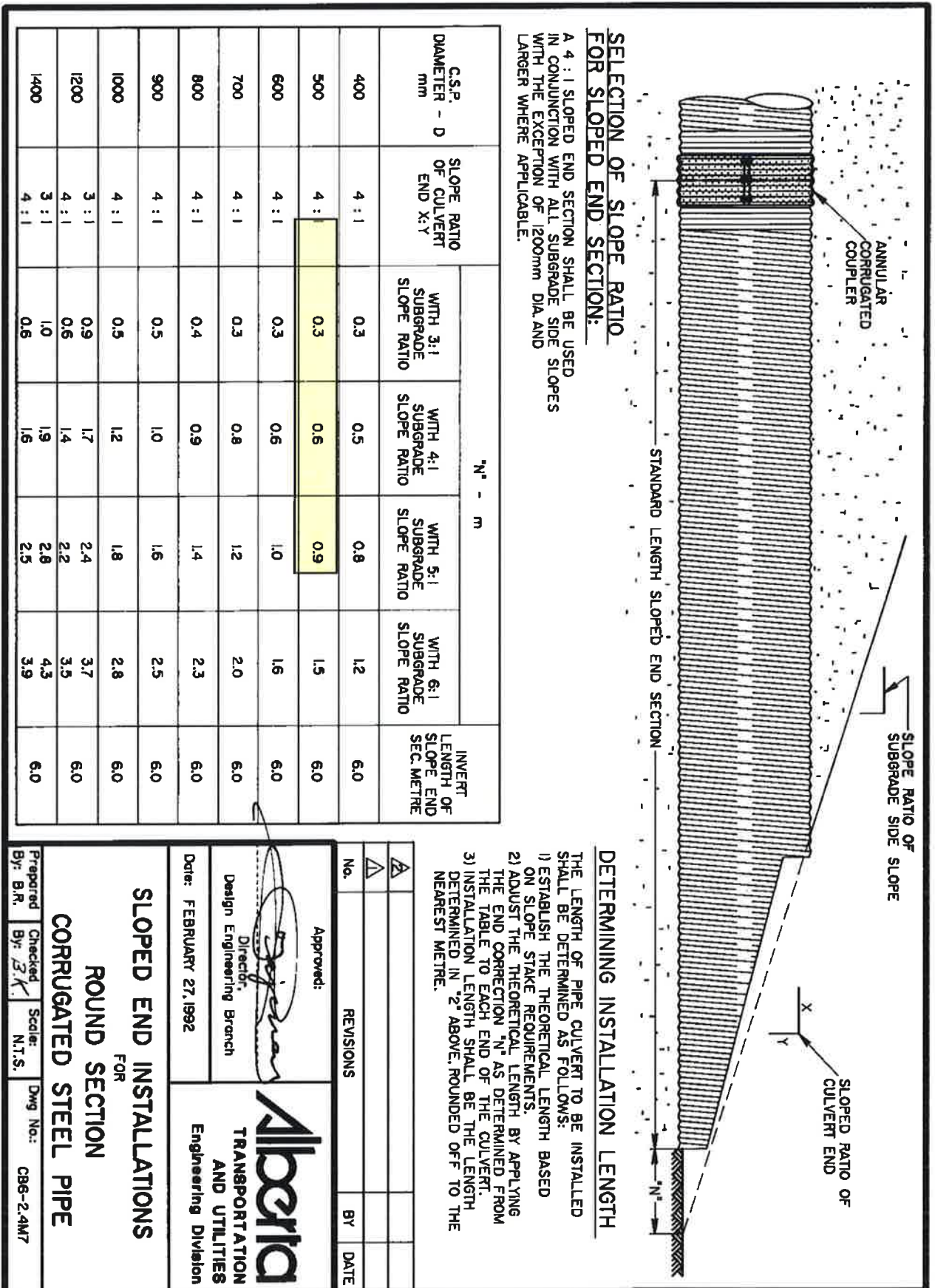
TABLE-1
Sight Distance

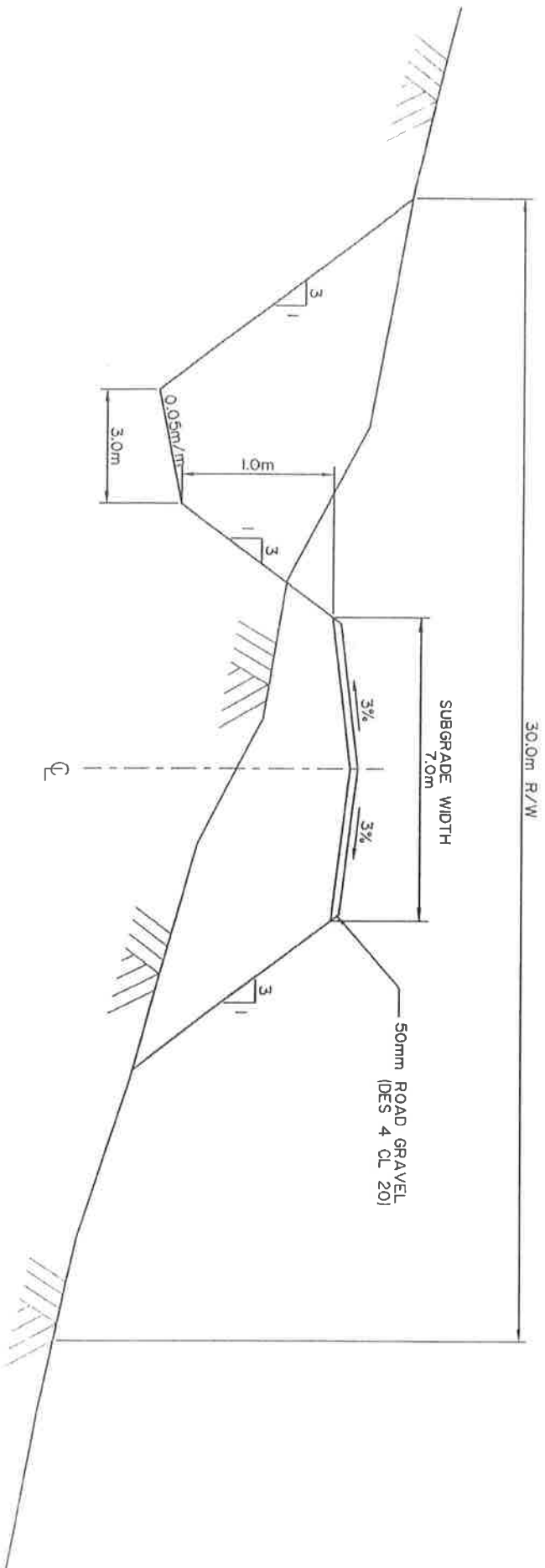
The height of the object shall be 1.10 meter on the main road. The eye height shall be used at the intersection 1.10 meter for passenger vehicle and 1.80 meter for single unit trucks/buses.

Posted Speed (km/h)	Minimum sight distance required from intersecting road/approach (m)
40	65
50	90
60	115
80	180

ROAD CONSTRUCTION STANDARDS

Figure A.

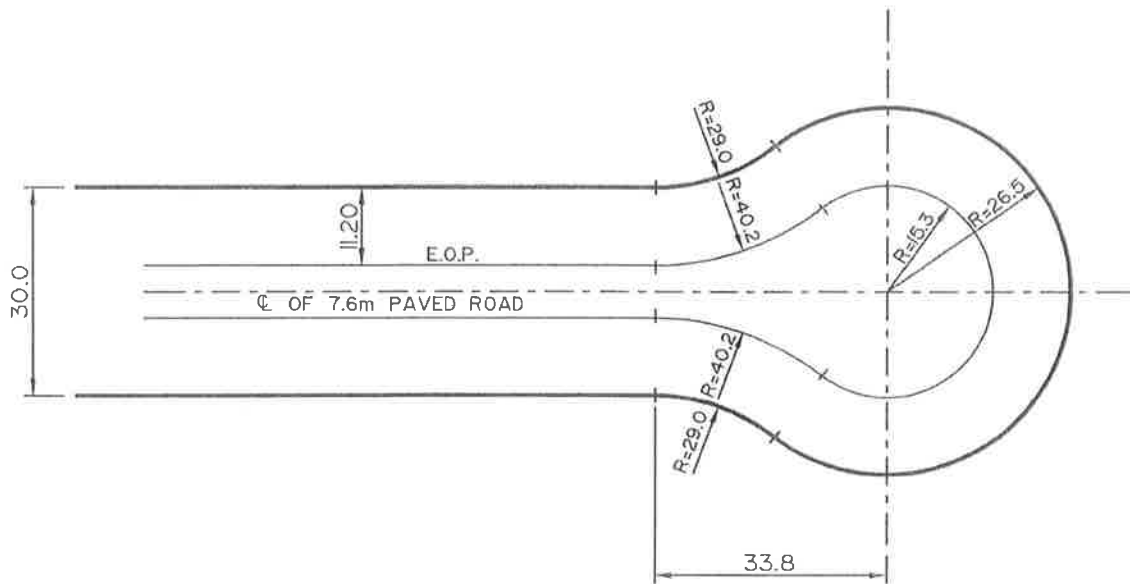




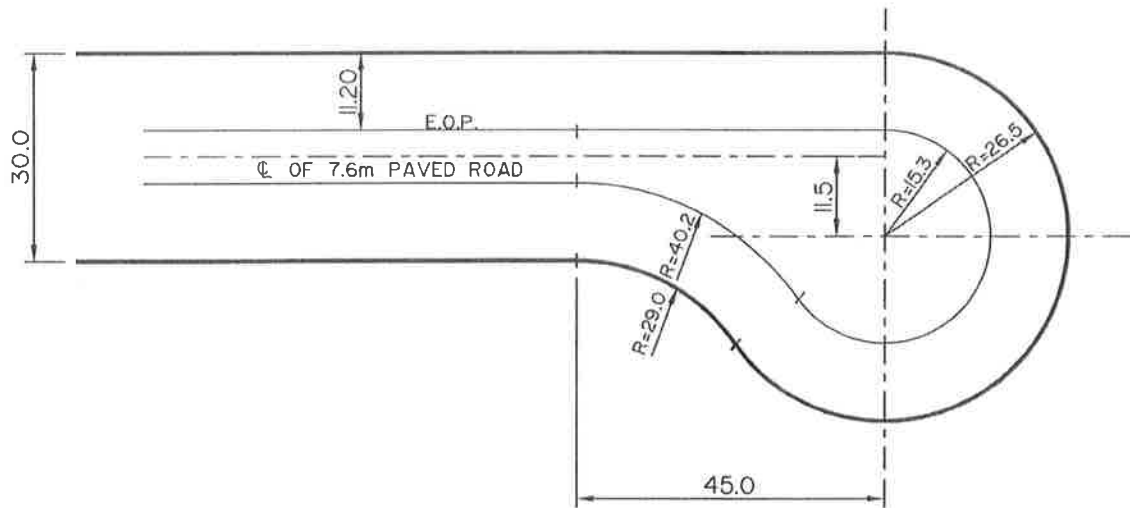
- NOTES:
1. ALL DITCH SLOPES AND DITCH BOTTOMS REQUIRE TOPSOIL DRESSING.
 2. ALL TOPSOIL TO BE REMOVED PRIOR TO BACKFILLING.
 3. TOP 0.15m OF SUBGRADE COMPACTED TO 98% STANDARD PROCTOR DENSITY.

M. D. OF FOOTHILLS No.31
 R/A SINGLE DWELLING
 GRAVEL SURFACE

DATE	SHEET	SCALE
2003	1 OF 1	N.T.S.



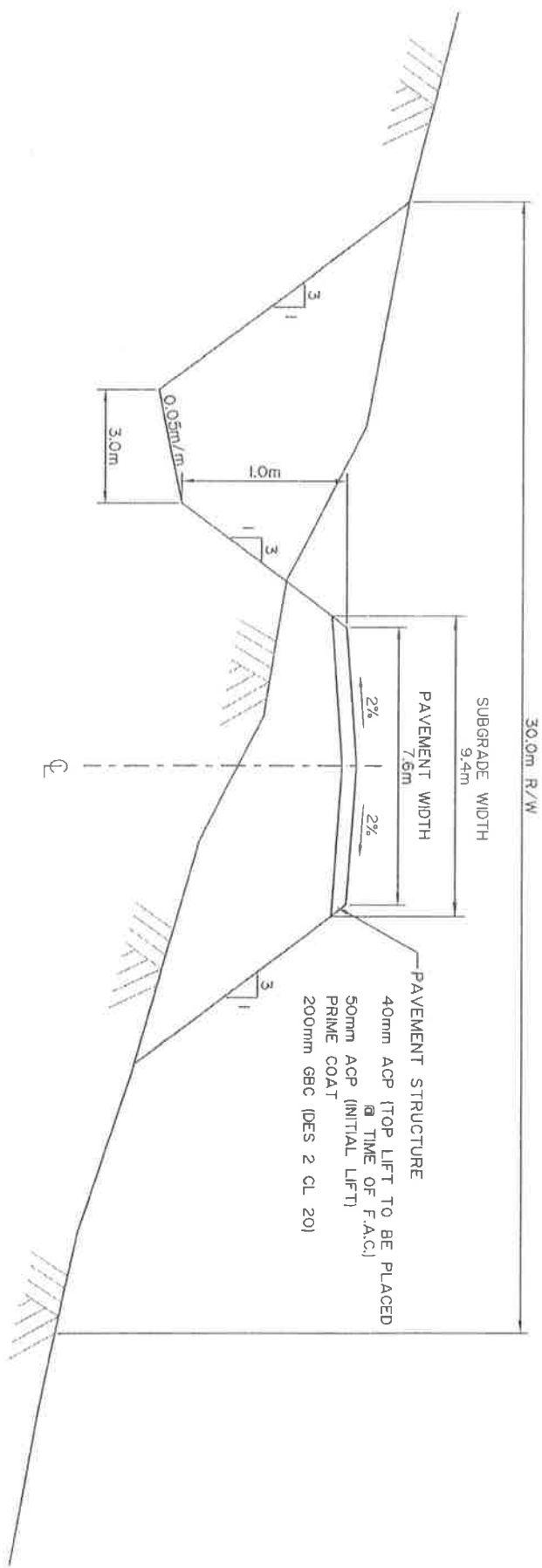
CIRCULAR CUL-DE-SAC



CIRCULAR OFF-SET CUL-DE-SAC

M. D. OF FOOTHILLS No.31
MINIMUM CUL-DE-SAC DIMENSIONS
FOR A 30m RIGHT OF WAY

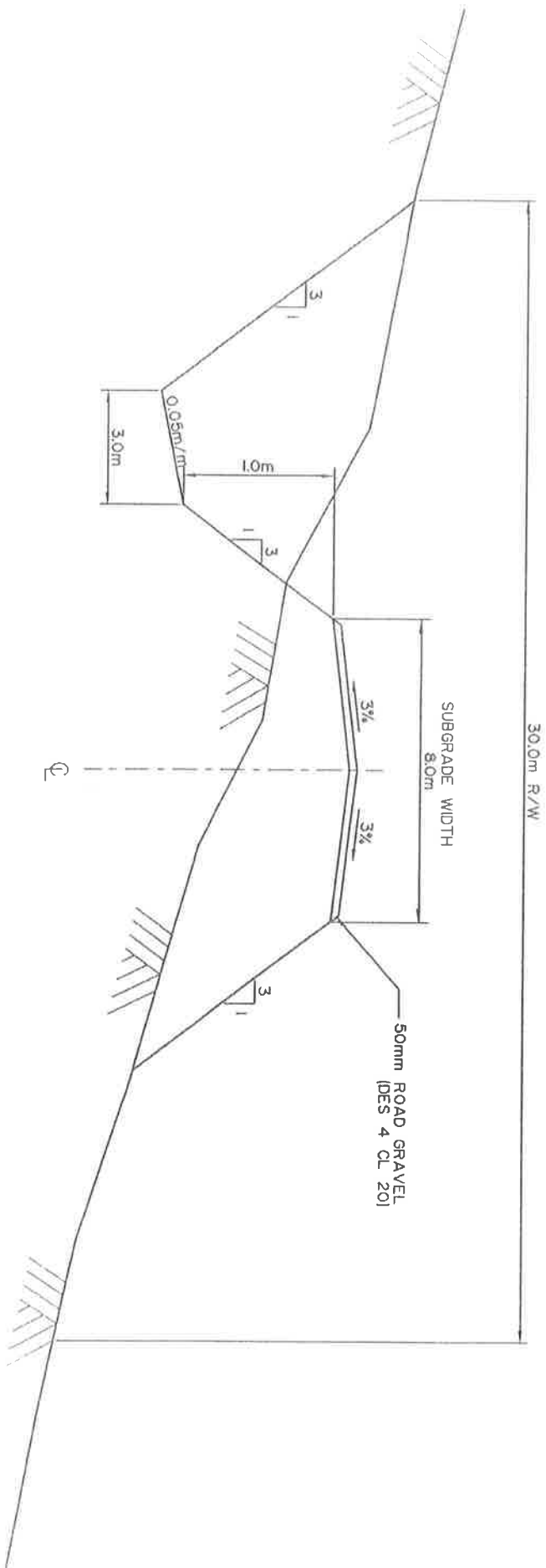
DATE	SHEET	SCALE
2008	I OF I	N.T.S.



- NOTES:
1. INCREASE TOTAL PAVEMENT STRUCTURE WIDTH FOR HORIZONTAL CURVES LESS THAN 300m RADIUS.
 2. ALL DITCH SLOPES AND DITCH BOTTOMS REQUIRE TOPSOIL DRESSING.
 3. ALL TOPSOIL TO BE REMOVED PRIOR TO BACKFILLING.
 4. TOP 0.15m OF SUBGRADE COMPACTED TO 98% STANDARD PROCTOR DENSITY.

M. D. OF FOOTHILLS No.31
INTERNAL SUBDIVISION ROAD

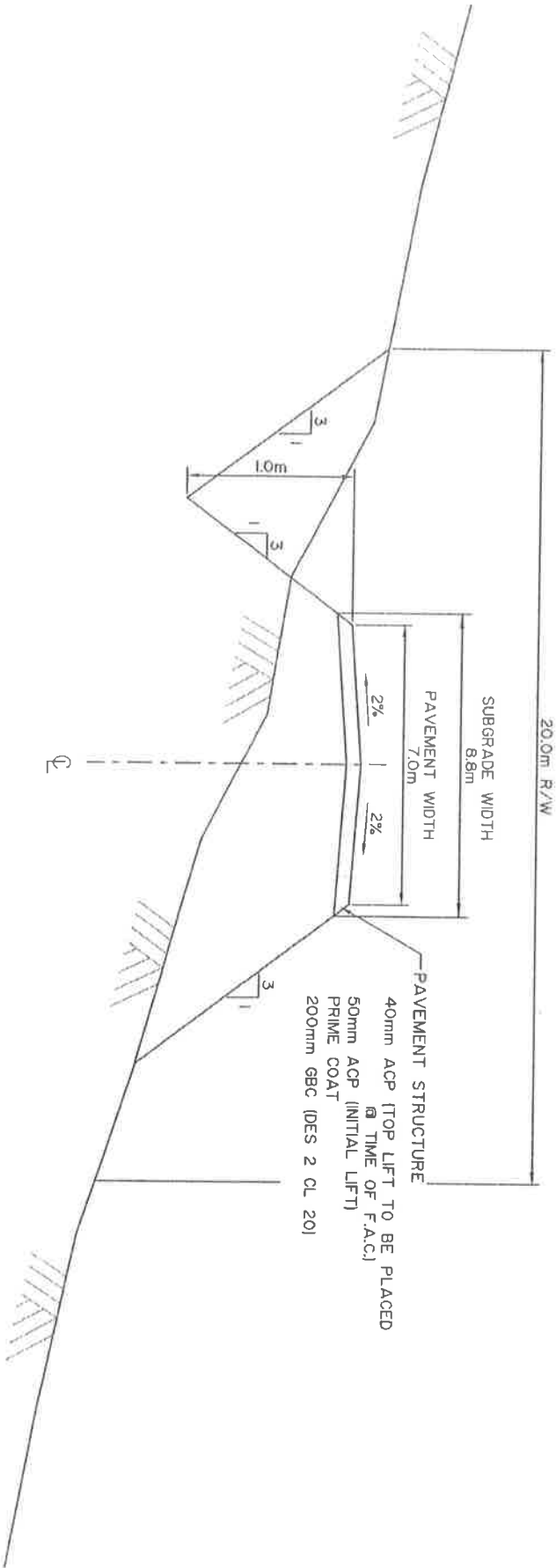
DATE	SHEET	SCALE
2008	1 OF 1	N.T.S.



- NOTES:
1. ALL DITCH SLOPES AND DITCH BOTTOMS REQUIRE TOPSOIL DRESSING.
 2. ALL TOPSOIL TO BE REMOVED PRIOR TO BACKFILLING.
 3. TOP 0.15m OF SUBGRADE COMPACTED TO 98% STANDARD PROCTOR DENSITY.

M. D. OF FOOTHILLS No.31
 ROAD ALLOWANCE
 GRAVEL SURFACE

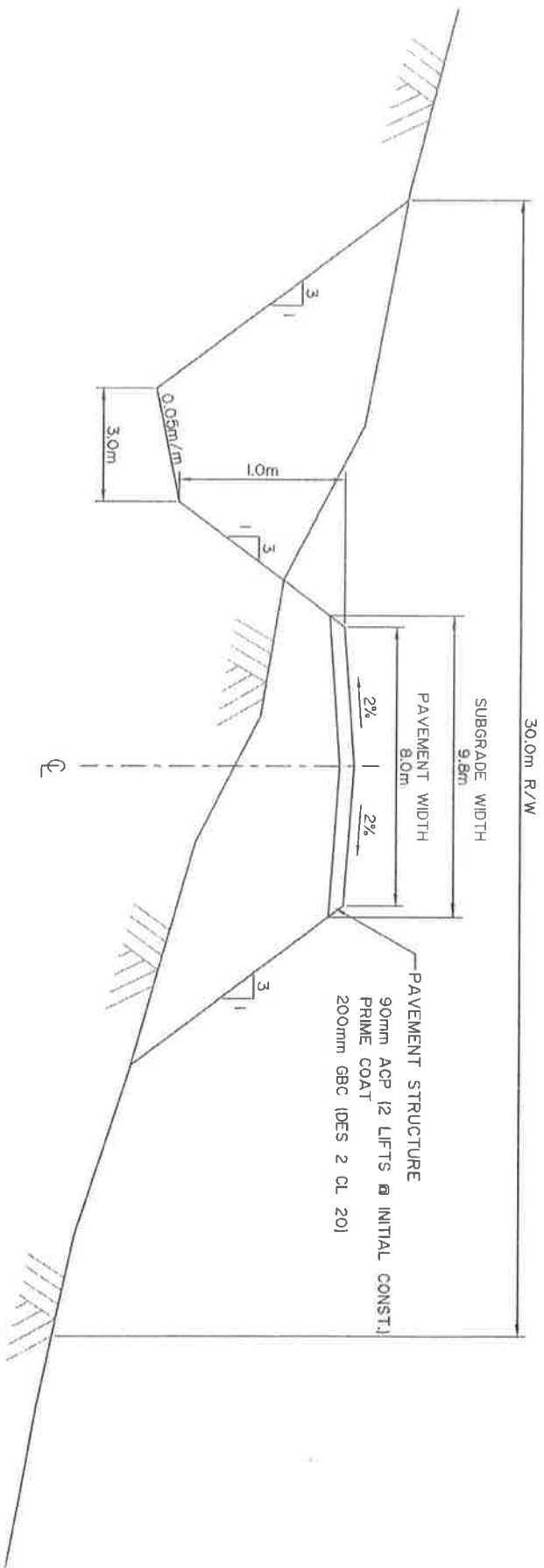
DATE	SHEET	SCALE
2003	1 OF 1	N.T.S.



- NOTES:
1. INCREASE TOTAL PAVEMENT STRUCTURE WIDTH FOR HORIZONTAL CURVES LESS THAN 300m RADIUS.
 2. ALL DITCH SLOPES AND DITCH BOTTOMS REQUIRE TOPSOIL DRESSING.
 3. ALL TOPSOIL TO BE REMOVED PRIOR TO BACKFILLING.
 4. TOP 0.15m OF SUBGRADE COMPACTED TO 98% STANDARD PROCTOR DENSITY.

M. D. OF FOOTHILLS No.31
HAMLET STANDARD ROAD
PAVED

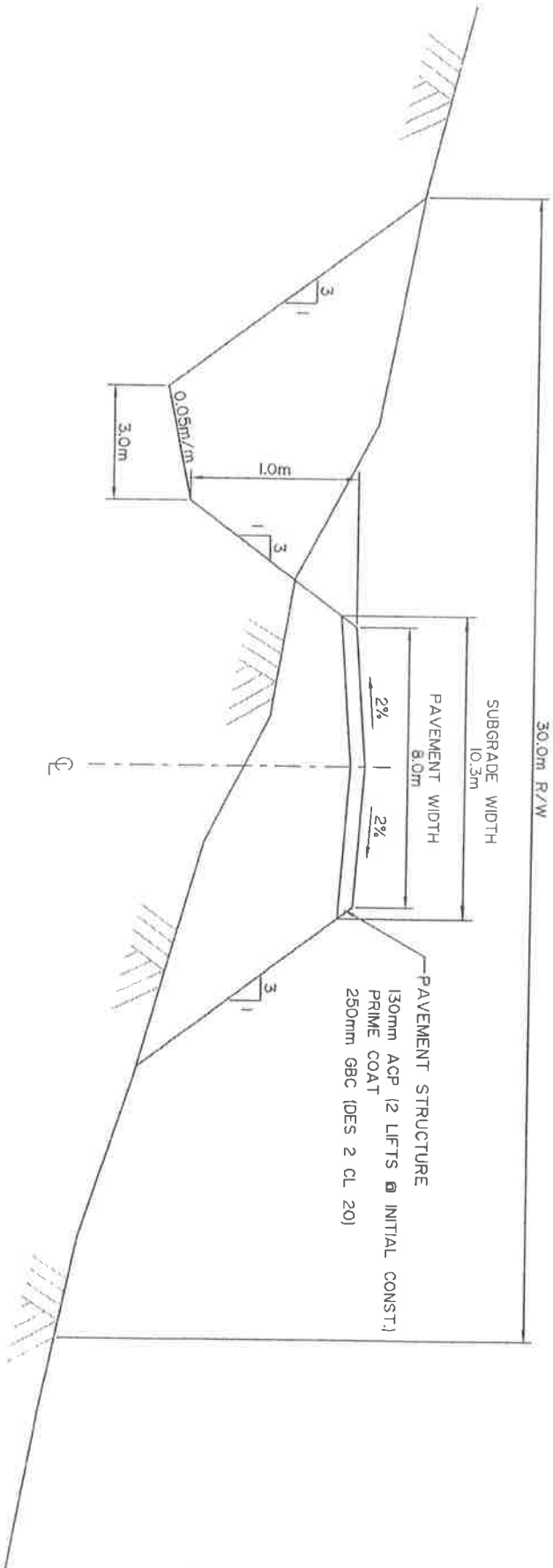
DATE	SHEET	SCALE
2008	1 OF 1	N.T.S.



- NOTES:
1. INCREASE TOTAL PAVEMENT STRUCTURE WIDTH FOR HORIZONTAL CURVES LESS THAN 300m RADIUS.
 2. ALL DITCH SLOPES AND DITCH BOTTOMS REQUIRE TOPSOIL DRESSING.
 3. ALL TOPSOIL TO BE REMOVED PRIOR TO BACKFILLING.
 4. TOP 0.15m OF SUBGRADE COMPACTED TO 98% STANDARD PROCTOR DENSITY.

M. D. OF FOOTHILLS No.31
ROAD ALLOWANCE
PAVED

DATE	SHEET	SCALE
2008	1 OF 1	N.T.S.



- NOTES:
1. INCREASE TOTAL PAVEMENT STRUCTURE WIDTH FOR HORIZONTAL CURVES LESS THAN 300m RADIUS.
 2. ALL DITCH SLOPES AND DITCH BOTTOMS REQUIRE TOPSOIL DRESSING.
 3. ALL TOPSOIL TO BE REMOVED PRIOR TO BACKFILLING.
 4. TOP 0.15m OF SUBGRADE COMPACTED TO 98% STANDARD PROCTOR DENSITY.

M. D. OF FOOTHILLS No.31
 INDUSTRIAL / COMMERCIAL ROAD
 PAVED

DATE	SHEET	SCALE
2008	1 OF 1	N.T.S.

TABLE 3.2.3.1

SPECIFICATIONS FOR AGGREGATE

AGGREGATE PRODUCTION AND STOCKPILING

SPECIFICATION 3.2

DESIGNATION	1					2					3					4					5					6					7					8					9				
	10	12.5	15	18	20	25	40	12.5	12.5	12.5C	16	20	25	40	10A	10B	80	125	40	40	80	125	40	40	80	125	40	40	80	125	40	40	80	125	40	40									
CLASS (mm)	10	12.5	15	18	20	25	40	12.5	12.5	12.5C	16	20	25	40	10A	10B	80	125	40	40	80	125	40	40	80	125	40	40	80	125	40	40													
PERCENT PASSING METRIC SIEVE	100	83-92	70-84	78-94	63-86	52-79	44-74	35-65	55-75	70-93	53-82	35-77	30-77	25-72	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100													
Flakiness Index	40	40	40	50	50	50	50	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35													
U.A. abrasion loss percent max.	40	40	40	50	50	50	50	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35													
Plasticity Index (PI)	NP	NP	NP	NP	NP-6	NP-6	NP-6	N/A	N/A	NP-4	NP-4	NP-8	NP-8	NP-8	NP-6	NP-6	NP-8	NP-8	NP-5	NP-5	NP-5	NP-5	NP-5	NP-5	NP-5	NP-5	NP-5	NP-5	NP-5	NP-5	NP-5														
%fracture by weight (2 face) (all + 5000)	60+	60+	see	60+	60+	60+	60+	75+	75+	60+	60+	40+	40+	25+	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A													
Coefficient of Uniformity	N/A	N/A	N/A	N/A	N/A	N/A	N/A	MAX 15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A												

*Notes:

Designation 1 -- Asphalt Concrete Aggregate
 Designation 2 -- Base Course Aggregate
 Designation 3 -- Seal Coat Aggregate
 Designation 4 -- Gravel Surfacing Aggregate
 Designation 5 -- Sanding Material
 Designation 6 -- Pit-run Gravel Fill
 Designation 7 -- Cement Stabilized Base Course Aggregate
 Designation 8 -- Granular Filter Aggregate
 Designation 9 -- Slurry Seal Aggregate
 N1. Asphalt Concrete Mix Type 1 - 90+ (100% 1 face)
 Asphalt Concrete Mix Type 2 - 70+
 Other Asphalt Concrete Mix Types - 60+
 Designation 2 Class 16 Material is for ASBC
 N2.
 N3. For crushed aggregates other than all Des. 5 & Des. 9 materials, tolerance of 3% in the amount passing the maximum size sieve will be permitted provided all oversize material passes the next larger standard sieve size.