



Table 8 - Design Parameters for Proposed Road Standards

| | Industrial Road | Major Collector Road | Collector Road | Minor Collector Road | Farm Access Road |
|---|-----------------|----------------------|----------------|----------------------|------------------|
| Typical Daily Traffic Volume | >500 | 500 | 250 | <100 | <100 |
| Roadway Width (metres) | 9 | 8 | 8 | 7.6 | 6.5 |
| Recommended R.O.W. (metres) | 40 | 30 | 30 | 20 | 20 |
| Desirable Side Slope | 4:1 | 3:1 | 3:1 | 3:1 | 3:1 |
| Desirable Back Slope | 5:1 | 4:1 | 4:1 | 4:1 | As Required |
| Minimum Back Slope | 2:1 | 2:1 | 2:1 | 2:1 | |
| Minimum Radius (metres) (with spirals) | 600 | 600 | 600 | 600 | 300 |
| Minimum Sight Distance (metres) | 140 | 140 | 140 | 140 | 85 |
| Maximum Gradient % | 7% | 7% | 8% | 8% | 9% |
| Recommended Surfacing | Paved/Gravel | Gravel | Gravel | Gravel | Gravel |

The proposed standards for Key Local roads and for non-key local roads are set out in the following sections.

3.2.1 Class 1: Industrial Road

Function

These roads serve the resource sector such as forestry or oil and gas. They usually accommodate higher than average volumes of heavy truck traffic and can link with any arterial or collector road and sometimes with primary and secondary highways. An industrial road meets one or more of the following criteria:

- Roads constructed to provide all weather access to heavy resource and industrial traffic.
- Accommodates heavy resource and industrial traffic.
- Traffic volumes in excess of 500 AADT.
- 9.0 metre road top.

Right of Way Requirements

- 40 metre right of way, with backsloping easement for construction.
- Full width of right of way to be cleared.

Cross-section Elements

- Finished road top – 9.0 metres, 10.0 metres for roads with greater than 500 AADT.
- Side slope
 - Minimum 1.0 metre vertical @ 4:1 slope
 - 4:1 slope up to 2 metres of fill.

- 3:1 slope in 2 – 4 metres of fill.
- 2:1 slope over 4 metres of fill.
- Minimum 1.5 metres of fill above high water level or ground water table.
- Ditch – flat bottom @ 3.5 metres width.
- Back slope – Desirable @ 5:1 with a maximum of 2:1.
- Minimum stopping sight distance – 140 metres @ 80 km/h.
- Horizontal curve – Minimum radius 600 metres.
 - Spiral curve required for less than 600-metre radius.
 - Minimum 300-metre radius for spiral curves.
- Maximum super elevation – 6 %.
- Maximum gradient 7 % - preferred maximum gradient 6 %.
- Intersection sight distance – Minimum 85 metres from the point of intersection or as per Alberta Infrastructure guidelines.
- Average shoulder elevation of road surface to be approximately 0.5m above adjacent ground surface except in cuts.

Structural Requirements

- Surface aggregate – Des 4 Class 20 material
 - 9.0 metre road top – 330 cubic metres / km.
 - 10.0 metre road top – 400 cubic metres / km.
- Grade – Minimum 1.0 metre non-organic material.
- Compaction – Top 0.3 metres – 100 % of standard proctor density.
 - Below 0.3 metres – 95 % of Standard Proctor Density
- Moisture Content – Optimum moisture content.

Typical Drawing

Refer to Figure 6 – Industrial Road Standard Cross-Section.

3.2.2 Class 2: Major Collector Road

Function

Major collector roads are the main thoroughfares and generally have the highest traffic volumes within the M.D.'s subsystem of roads (excluding industrial roads). They are designed to handle traffic that is going from a provincial highway to another provincial highway or going from a community, through other communities on the way to a provincial highway. They also handle traffic heading to and from numerous resources in the area. The major collector roads provide an integrated network of connections to the provincial highway system. They serve both local and through traffic. The major collector road meets one or more of the following criteria:

- Major collector roads constructed to provide market access for agriculture, industry as well as access to recreational facilities and country residential subdivisions.
- Market access for agriculture and industry.
- Grid road collector.
- Provides access to recreational facilities.
- Traffic volumes of 250 – 500 AADT.
- 8.0 metre road top.

Right of Way Requirements

- 30 metre right of way with backsloping easement for construction.
- Full width of right of way to be cleared.

Cross-section Elements

- Finished road top width – 8.0 metres for gravel surface roads, 8.6 metres for oil surface roads and 10 metres for roads with greater than 250 AADT.
 - Road top widened an additional 0.6 metres in embankment areas over 3.0 metres and all curves.
 - Side slope – minimum 1.0 metre vertical @ 3:1 slope.
 - 3:1 slope up to 3 metres of fill.
 - 2:1 slope over 3 metres of fill.
 - Minimum 1.5 metres of fill above high water level or ground water table.
 - Ditch – flat bottom @ 3.5 metres width.
 - Back slope – Desirable @ 4:1 with a maximum of 2:1.
 - Minimum stopping sight distance – 140 metres @ 80 km/h.
 - Horizontal curve – Minimum radius 600 metres.
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- Spiral curve required for less than 600 metre radius.
 - Minimum 300 metre radius for spiral curves.
 - Maximum super elevation – 6 %.
 - Maximum gradient 7 % - preferred maximum gradient 6 %.
 - Intersection sight distance – Minimum 85 metres from the point of intersection or as per Alberta Infrastructure guidelines.
 - Average shoulder elevation of road surface to be approximately 0.5m above adjacent ground surface except in cut areas.

Structural Requirements

- Surface aggregate – Des 4 Class 20 material @ 280 cubic metres / km.
- Grade – Minimum 1.0 metres of non-organic material.
- Compaction – Top 0.3 metres – 100 % of standard proctor density.
- Below 0.3 metres – 95 % of Standard Proctor Density
- Moisture Content – Optimum moisture content.

Typical Drawing

Refer to Figure 7 – Major Collector Road Standard Cross-Section.

3.2.3 Class 3: Collector Road

Function

A collector road serves the purpose of linking Minor Collector roads to Major Collector roads. They also serve the purpose of gathering traffic from internal country residential roads or multi parcel subdivisions to the Major Collector roads.

- Provide access from minor collector roads and internal country residential subdivision roads to the major collector system.
- Access to country residential subdivisions.
- Access to recreational facilities.
- Accommodate traffic volumes of 100 – 250 AADT.
- 8.0 metre road top.

Right of Way Requirements

- 30 metre right of way.
 - Full width of right of way to be cleared.
-

Cross-section Elements

- Finished road top width – 8.0 metres.
- Road top widened to 8.6 metres in embankment areas over 2.0 metres and all curves.
- Side slope – minimum 0.6 metres vertical @ 3:1 slope.
 - 3:1 slope up to 3 metres of fill.
 - 2:1 slope over 3 metres of fill.
- Minimum 1.5 metres of fill above high water level or ground water table.
- Ditch – flat bottom @ 3.5 metres width.
- Back slope – Desirable @ 4:1 with a maximum of 2:1.
- Minimum stopping sight distance – 110 metres @ 70 km/h.
- Horizontal curve – Minimum radius 600 metres.
 - Spiral curve required for less than 600 metre radius.
 - Minimum 300 metre radius for spiral curves.
- Maximum super elevation – 6 %.
- Maximum gradient 8 % - preferred maximum gradient 7 %.
- Intersection sight distance – Minimum 85 metres from the point of intersection or as per Alberta Infrastructure guidelines.

Structural Requirements

- Surface aggregate – Des 4 Class 20 material @ 230 cubic metres / km.
- Grade – Minimum 0.6 metres of non-organic material.
- Compaction – Top 0.3 metres – 100 % of standard proctor density.
 - Below 0.3 metres – 95 % of Standard Proctor Density
- Moisture Content – Optimum moisture content.

Typical Drawing

Refer to Figure 8 – Collector Road Standard Cross-Section.

3.2.4 Class 4: Minor Collector Road (non Key local road)

Function

Minor collector roads are the first level of roads within the network which provide a means to funnel traffic to a higher classification of road. These roads would serve as collector roads where a minimal number of residences are involved in a rural setting or to gather traffic onto the internal road of a rural residential area.

- Roads constructed to provide access to Collector roads.
- Provides access to Collector roads.
- Accommodate traffic volumes of less than 100 AADT.
- 7.6 metre road top.

Right of Way Requirements

- 20.12 metre right of way with backsloping easement for construction.
- Full width of right of way to be cleared.

Cross-section Elements

- Finished road top width – 7.6 metres.
 - Road top widened to 8.1 metres in embankment areas of 2 -3 metres and all curves.
 - Road top widened to 8.6 metres in embankments over 3 metres.
 - Side slope – minimum 1.0 metres vertical @ 3:1 slope.
 - 3:1 slope up to 3 metres of fill.
 - 2:1 slope over 3 metres of fill.
 - Minimum 1.5 metres of fill above high water level or ground water table.
 - Ditch – flat bottom @ 3.5 metres width.
 - Back slope – Desirable @ 4:1 with a maximum of 2:1.
 - Minimum stopping sight distance – 140 metres @ 80 km/h.
 - Horizontal curve – Minimum radius 600 metres.
 - Spiral curve required for less than 600 metre radius.
 - Minimum 300 metre radius for spiral curves.
 - Maximum super elevation – 6 %.
 - Maximum gradient 8 % - preferred maximum gradient 7 %.
-

- Intersection sight distance – Minimum 85 metres from the point of intersection or as per Alberta Infrastructure guidelines.

Structural Requirements

- Surface aggregate – Des 4 Class 20 material @ 230 cubic metres / km.
- Grade – Minimum 1.0 metres of non-organic material.
- Compaction – Top 0.3 metres – 100 % of standard proctor density.
 - Below 0.3 metres – 95 % of Standard Proctor Density
- Moisture Content – Optimum moisture content.

Typical Drawing

Refer to Figure 9 – Minor Collector Road Standard Cross Section.

3.2.5 Class 5: Farm Machinery Road (non Key local road)

Function

Rural roads that are not included in the above classification system or the provincial highway system are considered to be non-key local roads. Non-Key Local roads meet one or both of the following criteria:

- Roads constructed to minimal standards to provide farm machinery access to agricultural land.
- Generally 0.8 – 3.2 km long.
- 6.5 metre road top.

Right of Way Requirements

- 20.12 metre right of way with back sloping easement for construction.
- Full width of right of way to be cleared.

Cross-section Elements

- Finished road top width – 6.5 metres.
 - Road top widened to 7.1 metres in embankment areas over 2 metres, and all curves.
 - Side slope – minimum 0.6 metres vertical @ 3:1 slope.
 - 3:1 slope up to 2 metres of fill.
 - 2:1 slope over 2 metres of fill.
 - Ditch – V-ditch.
 - Back slope – as required.
-

- Minimum stopping sight distance – 85 metres @ 60 km/h.
- Horizontal curve – Minimum radius 300 metres.
- Maximum super elevation – 6 %.
- Maximum gradient 9 % - preferred maximum gradient 7 %.
- Intersection sight distance – Minimum 85 metres from the point of intersection.

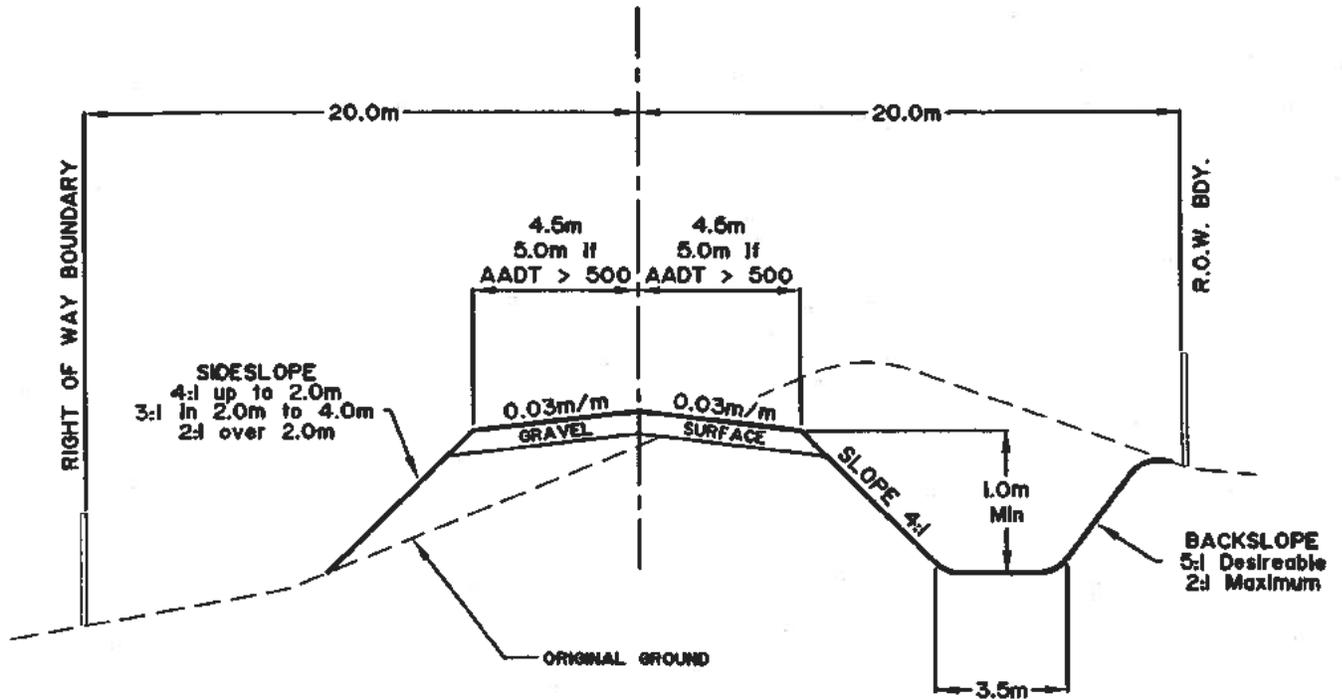
Structural Requirements

- Surface aggregate – Des 4 Class 20 material as required.
- Grade – Minimum 0.6 metres of non-organic material.
- Compaction – 95 % of Standard Proctor Density
- Moisture Content – Optimum moisture content.

Typical Drawing

Refer to Figure 10 - Farm Access Road Standard Cross-Section.

INDUSTRIAL ROAD (CLASS I)



GRAVEL REQUIREMENTS (4-20 SPECIFICATION)
 NEW CONSTRUCTION -330m³/km (MINIMUM 9.0m ROAD TOP)
 -400m³/km (MINIMUM 10.0m ROAD TOP)
 MAINTENANCE -125m³/km (MINIMUM)

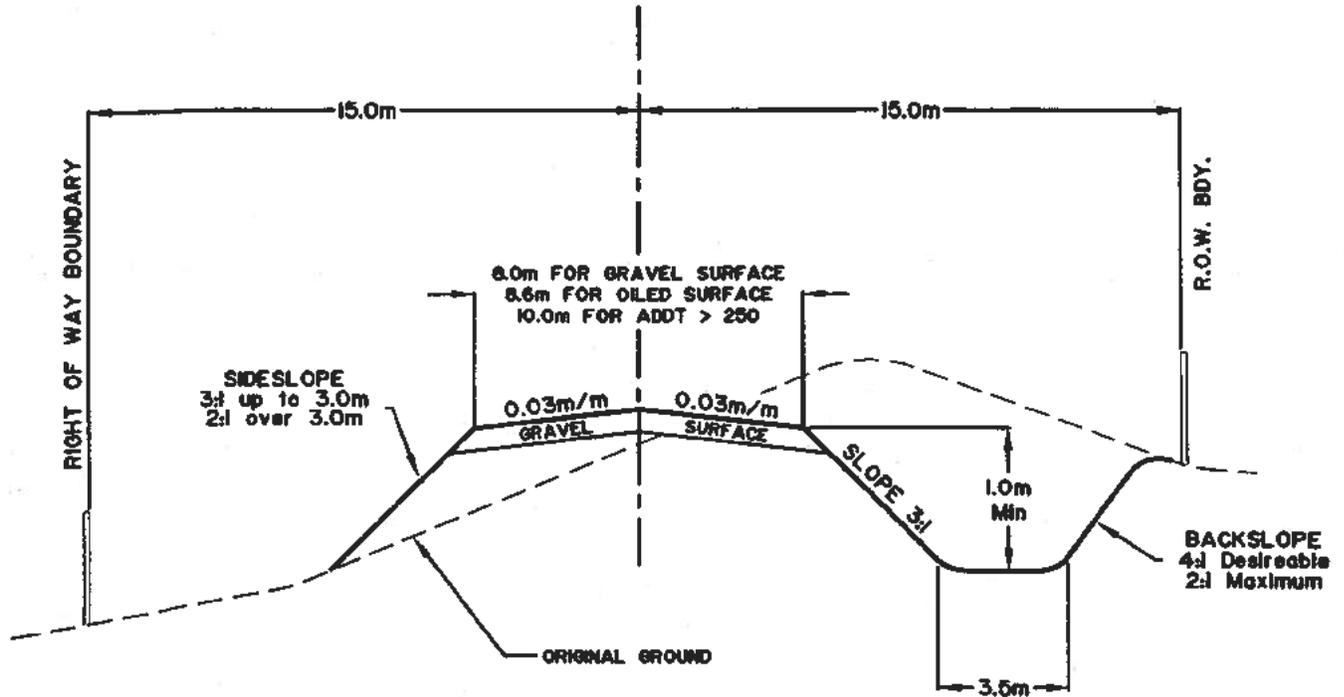
| SURFACE WIDTH (m) | R.O.W. REQUIRED (m) | NORMAL SIDE SLOPE | MAXIMUM SIDE SLOPE | NORMAL BACK SLOPE | MAXIMUM BACK SLOPE | MINIMUM CURVE RADIUS (m) | MAXIMUM SUPER ELEVATION (m/m) | MAXIMUM GRADIENT (%) |
|-------------------|---------------------|-------------------|--------------------|-------------------|--------------------|--------------------------|-------------------------------|----------------------|
| 9.0/10.0 | 40.0 | 4:1 | 2:1 | 5:1 | 2:1 | 600 | 0.06 | 7.0 |



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FIGURE 6 INDUSTRIAL ROAD STANDARD CROSS-SECTION

MAJOR COLLECTOR (CLASS 2)



GRAVEL REQUIREMENTS (4-20 SPECIFICATION)
 NEW CONSTRUCTION -280m³/km (MINIMUM)
 MAINTENANCE -125m³/km (MINIMUM)

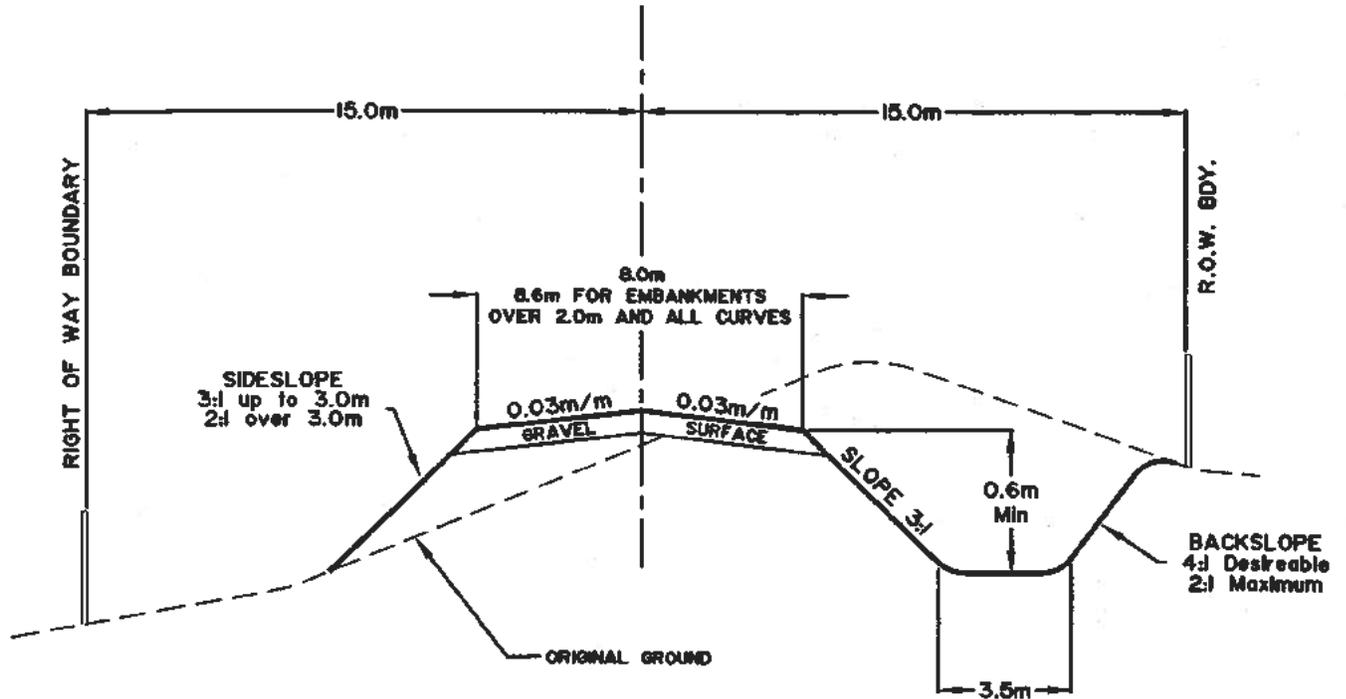
| SURFACE WIDTH (m) | R.O.W. REQUIRED (m) | NORMAL SIDE SLOPE | MAXIMUM SIDE SLOPE | NORMAL BACK SLOPE | MAXIMUM BACK SLOPE | MINIMUM CURVE RADIUS (m) | MAXIMUM SUPER ELEVATION (m/m) | MAXIMUM GRADIENT (%) |
|--------------------|---------------------|-------------------|--------------------|-------------------|--------------------|--------------------------|-------------------------------|----------------------|
| 8.0 8.6 10.0 | 30.0 | 3:1 | 2:1 | 4:1 | 2:1 | 600 | 0.06 | 7.0 |



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**FIGURE 7
MAJOR COLLECTOR
STANDARD CROSS-SECTION**

COLLECTOR (CLASS 3)



GRAVEL REQUIREMENTS (4-20 SPECIFICATION)
 NEW CONSTRUCTION -230m³/km (MINIMUM)
 MAINTENANCE -125m³/km (MINIMUM)

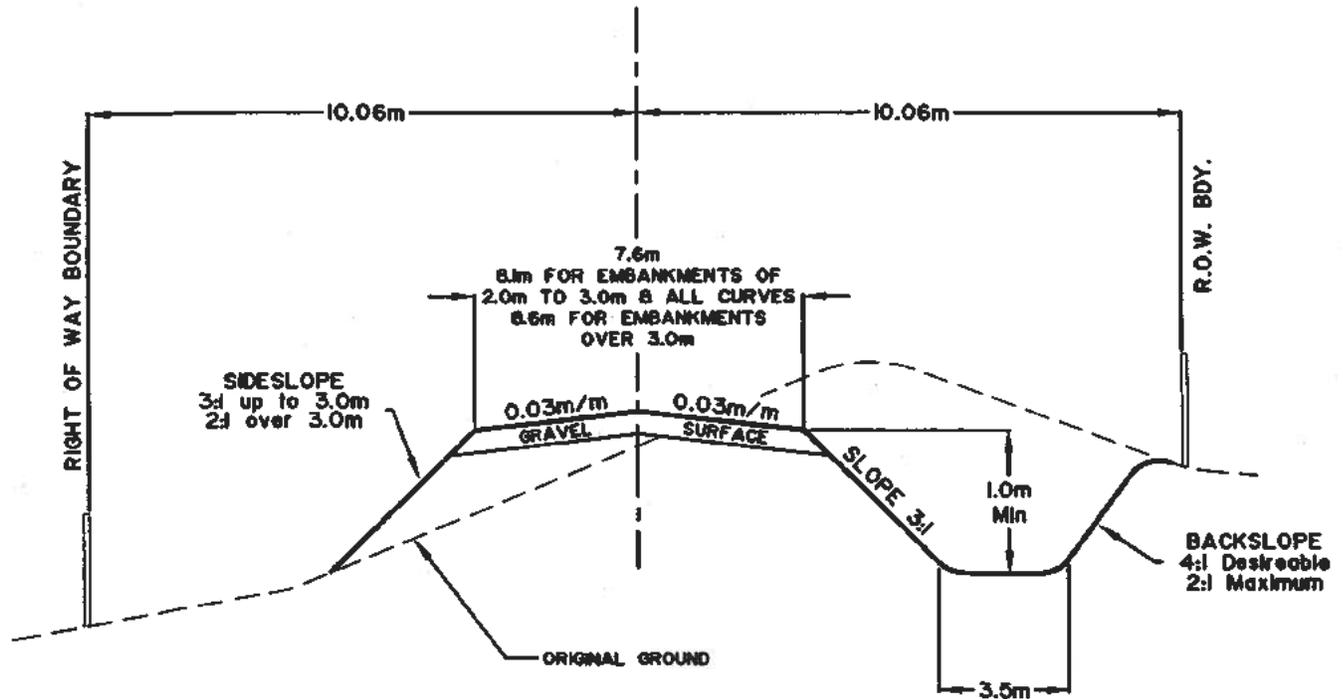
| SURFACE WIDTH (m) | R.O.W. REQUIRED (m) | NORMAL SIDE SLOPE | MAXIMUM SIDE SLOPE | NORMAL BACK SLOPE | MAXIMUM BACK SLOPE | MINIMUM CURVE RADIUS (m) | MAXIMUM SUPER ELEVATION (m/m) | MAXIMUM GRADIENT (%) |
|-------------------|---------------------|-------------------|--------------------|-------------------|--------------------|--------------------------|-------------------------------|----------------------|
| 8.0 8.6 | 30.0 | 3:1 | 2:1 | 4:1 | 2:1 | 600 | 0.06 | 7.0 |



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**FIGURE 8
COLLECTOR
STANDARD CROSS-SECTION**

MINOR COLLECTOR (CLASS 4)



GRAVEL REQUIREMENTS (4-20 SPECIFICATION)
 NEW CONSTRUCTION -230m³/km (MINIMUM)
 MAINTENANCE -125m³/km (MINIMUM)

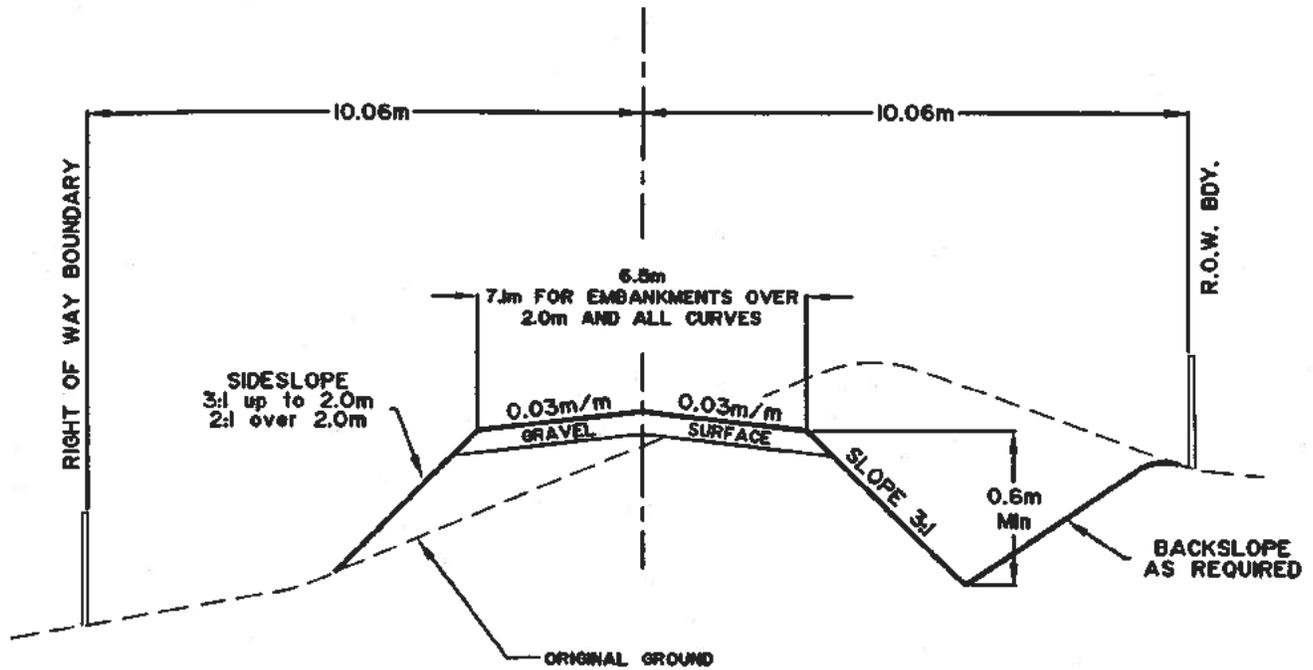
| SURFACE WIDTH (m) | R.O.W. REQUIRED (m) | NORMAL SIDE SLOPE | MAXIMUM SIDE SLOPE | NORMAL BACK SLOPE | MAXIMUM BACK SLOPE | MINIMUM CURVE RADIUS (m) | MAXIMUM SUPER ELEVATION (m/m) | MAXIMUM GRADIENT (%) |
|-------------------|---------------------|-------------------|--------------------|-------------------|--------------------|--------------------------|-------------------------------|----------------------|
| 7.6 | 20.12 | 3:1 | 2:1 | 4:1 | 2:1 | 600 | 0.06 | 8.0 |
| 8.1 | | | | | | | | |
| 8.6 | | | | | | | | |



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**FIGURE 9
MINOR COLLECTOR
STANDARD CROSS-SECTION**

FARM MACHINARY ROAD (CLASS 5)



GRAVEL REQUIREMENTS (4-20 SPECIFICATION)
NEW CONSTRUCTION -AS REQUIRED
MAINTENANCE -AS REQUIRED

| SURFACE WIDTH (m) | R.O.W. REQUIRED (m) | NORMAL SIDE SLOPE | MAXIMUM SIDE SLOPE | NORMAL BACK SLOPE | MAXIMUM BACK SLOPE | MINIMUM CURVE RADIUS (m) | MAXIMUM SUPER ELEVATION (m/m) | MAXIMUM GRADIENT (%) |
|-------------------|---------------------|-------------------|--------------------|-------------------|--------------------|--------------------------|-------------------------------|----------------------|
| 6.5 7.1 | 20.12 | 3:1 | 2:1 | AS REQUIRED | | 300 | 0.06 | 9.0 |



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**FIGURE 10
FARM MACHINERY ROAD
STANDARD CROSS-SECTION**