



# County of Forty Mile No. 8 Policy Handbook

**SUBJECT:** ROAD DESIGN SPECIFICATIONS

**EFFECTIVE:** June 10, 2020

**SECTION:** 32

**REVIEW DATE:**

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**Res. No. 253/20**

**Applicable Legislation:** Municipal Government Act Section 532

**Purpose:** County Rural Road Design Guidelines – Statutory Local Road Allowances

**Policy Statement:**

In the course of County operations, Council receives requests for the construction of new roads on statutory road allowances under its direction, control and management. This policy sets out minimum standards for construction of those roads and other structures incidental to them, and provides direction for residents, staff and others on rural road development in the County.

The guiding principles for the implementation of this policy are:

1. There is an obligation under the Municipal Government Act for the County to keep roads under its direction, control and management in a reasonable state of repair, and a municipality is liable for damage if it fails to perform its duty of care. One way that the County can fulfill its obligation is by adopting standards for road design and construction.
2. The cost of fully developing and maintaining every undeveloped road allowance is neither economically feasible or otherwise desirable. As a result, many road allowances will be left in the natural state or have minor improvements such as levelling or rock picking to provide farm field access. These undeveloped or underdeveloped road allowances are not intended to be travelled by passenger car and light truck traffic. The County's published land ownership map shall only show developed roads intended for travel by the public.
3. Expenses for construction and maintenance of roads intended to service industrial projects should not be borne by the County. Those costs include legal, engineering and other fees that are required for processing requests.

**Design Guidelines**

The following road design guidelines present the County's general requirements for proposed roadway design and construction projects. In addition to the requirements listed in this document, the most recent version of the following guidelines and supporting documents are to be used in preparation of road designs for the County:

1. Geometric Design Guide for Canadian Roads, Transportation Association of Canada (TAC);
  2. Highway Geometric Design Guide, Alberta Transportation (AT);
  3. Traffic Impact Assessment Guideline, Alberta Transportation (AT);
  4. Manual of Uniform Traffic Control Devices for Canada, Transportation Association of Canada (TAC);
  5. Road Approach – Land Access Policy, County of Forty Mile No. 8;
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6. Roadside Design Guide, Alberta Transportation (AT);
7. Standard Specifications for Highway Construction, Alberta Transportation, (AT).

The County may consider innovative design variations from the guidelines presented herein to accommodate site specific variances, provided that public safety and the County are not at risk and that an Engineer licensed to practice in the Province of Alberta provides sufficient reasoning and justification for any proposed variations.

The County may allow or require a variance to the design standards to ensure the guiding principles of this policy are met and allow minor variances (field fit) to the design standard which do not compromise the guiding principles of this policy.

### Design Classification and Criteria

The County of Forty Mile No. 8 recognizes four (4) general rural road classifications for use within the County as identified in the table below, with sub-classifications identified for typically encountered municipal improvement work. General design criteria for each road classification is referenced in the following subsections with more detailed requirements.

Classification	Sub-Classification
Local Access	Municipal Low Volume Road Hamlet Residential Road (Rural Standard) Recreational Road Internal Subdivision Road Wind Energy Facility Road
Collector	Municipal Road (Gravel Standard) Service Road
Arterial Road	Municipal Road (Paved Standard) Municipal Road (Oiled Standard)
Provincial Highway (Not within the County's jurisdiction – Developer shall apply to Alberta Transportation (AT) and refer to AT's Roadside Development Permit for any proposed work on the highway network.)	

### Local Access Roads

Access Roads provide access to land with traffic movement as a secondary consideration. Access Roads connect with other Access Roads or collectors. The Access Road classification describes roadways which experience relatively low volumes of daily traffic that is predominantly composed of light to medium trucks and passenger cars with the occasional heavy truck.

The County recognizes five (5) classifications of Access Roads identified in the following sections which are typically used for municipal improvement works. Any proposed modifications to the sub-



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classifications shall be prepared by a professional engineer and shall be considered on a case-by-case basis by the County.

### *Local Access – Municipal Low Volume Road*



The Municipal Low Volume Road sub-classification is a roadway within an existing government road allowance, whether it be for new construction or re-construction of an existing road to current standards. The minimum basic ROW for this road designation is 20.12m. The Municipal Low Volume Road provides local access to three (3) or less residences or does not permit through traffic.

Typical cross-section and general design guidelines for the Municipal Low Volume Road are found in the Geometric Design Guide for Canadian Roads, TAC, Cross Section Elements for Two-Lane Special Roads, Earth Roads and Gravel Surfaced Roads. When designed and built by the County, the preferred design standard for Municipal Road (Gravel Standard) constructed within the County which are intended for regular public use has a vertical height between 0.5 and 1.0 m above ditch bottom and a minimum travelling surface of 7.0 m in addition to the other design standards listed in the TAC standard for gravel surfaced two lane roads or another standard developed by an Engineer that exceeds those standards.



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The design speed for a Municipal Low Volume Road is 90km/h with a maximum posted speed of 80 km/h or lower. Initial road design shall incorporate 18 mm (300 yards per mile) gravel into the base and 18 mm (300 yards per mile) surface gravel.

Requests for new Municipal Low Volume Roads that receive County approval may be cost shared between the County and the proponent on a 50-50 basis, and must be constructed by the County or a contractor approved by the County.

Upgrades to existing developed roads that receive County approval will be constructed by the County at its cost.

### *Local Access - Hamlet Residential Road*



The Hamlet Residential (Rural Standard) provides access to land in rural hamlet settings. This type of road may incorporate stormwater drainage, water and wastewater infrastructure and/or other utilities within its cross section as required.

The design speed for a Hamlet Residential Road (Rural Standard) is 60 km/h with a maximum posted speed of 50 km/h or lower.





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The basic ROW for a Hamlet Residential Road (Rural Standard) is 20 m with ditches incorporated into the cross section.

### *Local Access – Recreational Road*



The Recreational Road provides access to land in rural park settings. This type of road may incorporate stormwater drainage, water and wastewater infrastructure and/or other utilities within its cross section as required.

The design speed for a Recreational Road is 60 km/h with a maximum posted speed of 50 km/h or lower.

The basic ROW for a Recreational Road is 15-20 m with ditches incorporated into the cross section.



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### *Local Access – Internal Subdivision Road*



The Internal Subdivision Road provides access to country residential parcels. The basic design for an Internal Subdivision Road provides an oiled 7.6m road surface with 4:1 side slopes and 3m ditches within a 30m right-of-way.

The design speed for an Internal Subdivision Road is 60km/h with a maximum posted speed of 50 km/h or lower.

### *Local Access – Wind Energy Facility Road*

The Wind Energy Facility Road sub-classification provides local access for wind energy facilities on undeveloped and developed road allowances. This classification accommodates a higher percentage of heavy truck traffic compared to other road designations, and connects private turbine access roads to aggregate sources, turbine delivery points, operations and maintenance yards, laydown yards and higher classification roads.



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This roadway designation can provide for greater horizontal curve parameters, increased surface structure, greater stopping distances for larger vehicles, and withstands a high volume of heavy loads during the period of construction. Following the initial construction period, use of the roads typically returns to slightly above pre-development levels as they are then used primarily for periodic maintenance by facility operators. Existing developed roads are often upgraded beyond the minimum Municipal Road (Gravel Standard) to accommodate weight and traffic requirements.

Typical cross-section and general design guidelines for the Wind Energy Facility Road are found in the Geometric Design Guide for Canadian Roads, TAC, Cross Section Elements for Two-Lane Special Roads, Earth Roads and Gravel Surfaced Roads. When designed and built by the County, the preferred design standard for Municipal Road (Gravel Standard) constructed within the County which are intended for regular public use has a vertical height between 0.5 and 1.0 m above ditch bottom and a minimum travelling surface of 7.0 m in addition to the other design standards listed in the TAC standard for gravel surfaced two lane roads or another standard developed by an Engineer that exceeds those standards.

Construction within road allowances, whether developed or undeveloped, shall be carried out in accordance with the County's standards as well as any conditions for approval. The Developer shall submit detailed design, related drawings, in the form of a transportation plan, prepared by a Professional Engineer licensed to practice in the Province of Alberta for County approval. The plan shall show how the road will be kept in a reasonable state of repair during the course of construction.

A Development Agreement, signed by the Developer, including a letter of credit for security, and proof of liability insurance is required prior to County approval for new construction within any road allowance. A Road Use Agreement signed by the Developer, including a letter of credit for security, and proof of liability insurance is required prior to County approval for upgrades to existing roads and road maintenance requirements for all roads throughout the life of the project. Where practical, the Road Use Agreement and Development Agreement may be combined. On completion of the project, roads must meet or exceed the original condition if they were previously developed or the Municipal Road (Gravel Standard).

The design speed for a Wind Energy Facility Road is 90km/h with a maximum posted speed of 80 km/h or lower.





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### Collectors



Collectors provide access to land and provide a higher level of traffic movement than Access Roads. Collector roadways collect traffic from Access Roads and channel it to higher classified roadways. The Collector classification applies for roadways with moderate volumes of daily traffic composed of light, medium and heavy-duty trucks and passenger cars.

The County recognizes two (2) sub-classifications of Collectors, identified in the following sections, which are typically used for municipal improvement works. Any proposed modifications to the sub-classifications shall be prepared by a professional engineer and shall be considered on a case-by-case basis by the County.





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### *Collector – Municipal Road (Gravel Standard)*



The Municipal Road (Gravel Standard) sub-classification is a roadway within an existing government road allowance, whether it be for new construction or re-construction of an existing road to current standards. The minimum basic ROW for this road designation is 20.12m or 30.18m.

Typical cross-section and general design guidelines for the Municipal Road (Gravel Standard) are found in the Geometric Design Guide for Canadian Roads, TAC, Cross Section Elements for Two-Lane Special Roads, Earth Roads and Gravel Surfaced Roads. When designed and built by the County, the preferred design standard for Municipal Road (Gravel Standard) constructed within the County which are intended for regular public use has a minimum vertical height of 1.0 m above ditch bottom and a minimum travelling surface of 8.6 m in addition to the other design standards listed in the TAC standard for gravel surfaced two lane roads or another standard developed by an Engineer that exceeds those standards.

A developer who constructs a new Municipal Road (Gravel Standard) is responsible for surfacing the road with gravel prior to acceptance by the County. Construction within road allowances, whether developed or undeveloped, shall be carried out in accordance with the County's standards as well as any



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conditions for approval. The Developer shall submit detailed design and related drawings, prepared by a Professional Engineer licensed to practice in the Province of Alberta for County approval. A Development Agreement, signed by the Developer, a letter of credit for security, and proof of liability insurance is required prior to County approval for construction within any road allowance.

The design speed for the Municipal Road (Gravel Standard) sub-classification is 90 km/h with a maximum posted speed of 80 km/h or less. Initial road design shall incorporate 18mm (300 yards per mile) gravel into the base and 25mm (400 yards per mile) surface gravel.

### *Collector – Service Road*

The Service Road provides local access to properties (residential, business or otherwise) adjacent to a road designation with access limitations such as an arterial, expressway or freeway.

The design speed for a Service Road is 60km/h with a maximum posted speed of 50 km/h or lower.



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### Arterial Roads



Arterial roads are high capacity roads for which the primary function is to deliver traffic from collector roads to freeways or expressways, and between urban centers at the highest level of service possible.

Any proposed construction or upgrades to an existing road to an arterial designation shall be considered on a case-by-case basis by the County. Proposed designs for arterial roads may be prepared by a Professional Engineer and may incorporate access management.

The County recognizes two (2) sub-classifications of Arterial Roads, identified in the following sections, which are typically used for municipal improvement works.





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### *Arterial – Municipal Road (Surfaced)*



The Municipal Road (Surfaced) sub-classification is a bituminous or concrete roadway within an existing government road allowance, whether it be for new construction or re-construction of an existing road to current standards. The minimum basic ROW for this road designation is 20.12m and preferred ROW is 30.18m.

A developer who constructs a new Municipal Road (Surfaced) is responsible for surfacing the road prior to acceptance by the County. Construction within road allowances, whether developed or undeveloped, shall be carried out in accordance with the County's standards as well as any conditions for approval. The Developer shall submit detailed design and related drawings, prepared by a Professional Engineer licensed to practice in the Province of Alberta for County approval. A Development Agreement, signed by the Developer, a letter of credit for security, and proof of liability insurance is required prior to County approval for construction within any road allowance.

The design speed for the Municipal Road (Surfaced) sub-classification is 90 km/h with a maximum posted speed of 80 km/h or less.





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Typical cross-section and general design guidelines are found in the Geometric Design Guide for Canadian Roads, TAC.

### Undeveloped Road Allowances



In consideration that the cost of fully developing and maintaining every undeveloped road allowance is neither economically feasible or otherwise desirable, the County may consider allowing or performing minor improvements to undeveloped road right of ways within the County for the purpose of improved access for agricultural operations. These minor improvements are not intended to provide emergency or all-weather access. They provide access to fields seasonally or occasionally for livestock and crop production and access to storage facilities such as grain bins for movement of crops to market. Development of this minor road allowance access is not intended for regular public travel by vehicle, nor are these accesses to be shown on the County Land Ownership Map.

The procedure for minor improvements to road allowances is as follows:

1. Application for construction of farm access roads must be made in writing on the required form to the County.
2. Upon request of the Superintendent of Public Works or their designate, the landowner requesting farm access improvements shall:
  - a. Contact all adjacent landowners and obtain their written agreement with the proposed work.
  - b. Remove all surface rocks from the travelling surface.
  - c. Break up grass and work it using a disk until grass lumps are eliminated.
  - d. Spray for grass and weeds on an annual basis or as needed.



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- e. Upon request the County will fill low areas with appropriate material and install culverts as required on a 50/50 cost share basis.
- 3. The Public Works Department shall:
  - a. Upgrade the road allowance to a minimum standard as follows:
    - i. 7 meter travelling surface
    - ii. 0.6 meter ditch
    - iii. no surface aggregate will be applied
  - b. Maintain the road allowance at least once a year and more often, if necessary.

### Road Signs

Municipal road names require the approval of the County.

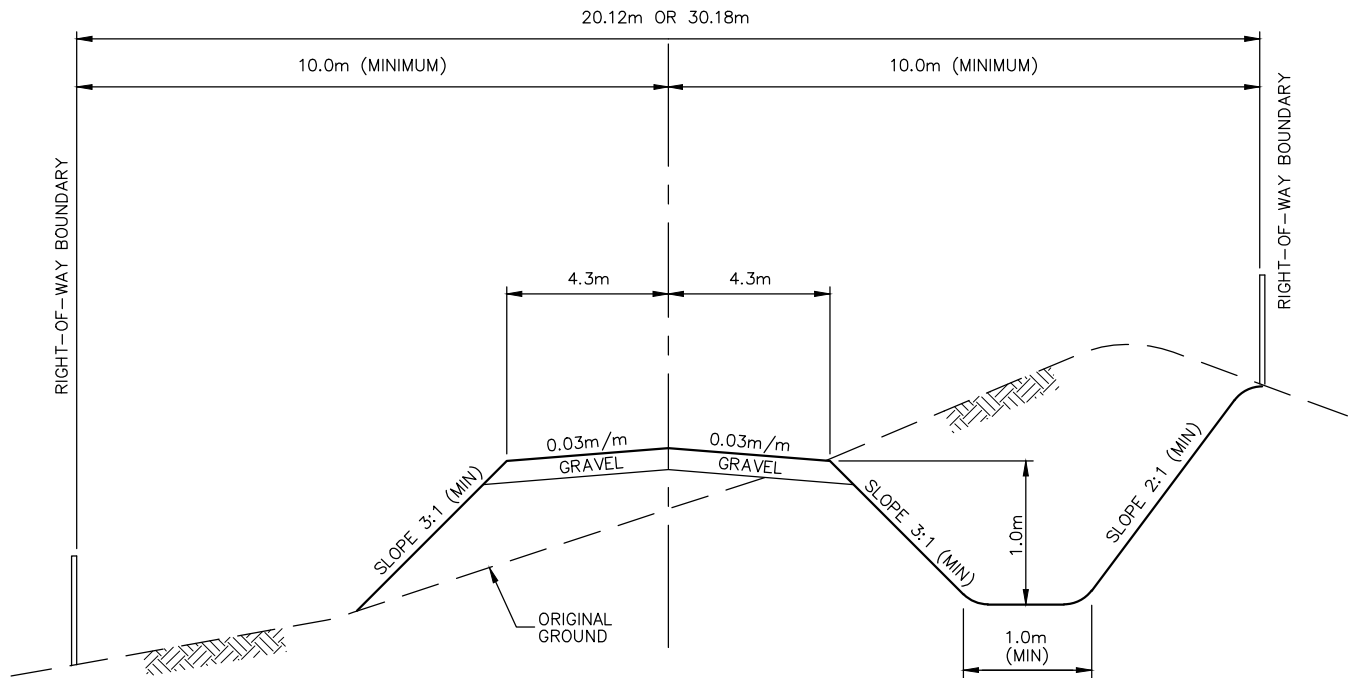
Road name signs shall be located in the northeast quadrant of the intersection, approximately 2.0 meters from the adjacent property lines. The sign shall be installed so that the bottom edge of the sign is 2.4 meters above the edge of the travelling surface of the adjacent roadway with a minimum bury depth of 0.75 meters for the sign post.

Road signs along Provincial highways in rural areas shall be installed in accordance with the Recommended Practice for Placement of Signs published by Alberta Transportation.

[http://www.transportation.alberta.ca/Content/docType233/Production/29Placement\\_of\\_Signs\\_Aug2017.pdf](http://www.transportation.alberta.ca/Content/docType233/Production/29Placement_of_Signs_Aug2017.pdf)

All other traffic control devices and paint required for paved roads shall be installed in accordance with TAC's Manual of Uniform Traffic Control Devices for Canada.

Road Ban Signs are required on any through road adjacent to a Provincial Highway.



SURFACE WIDTH (m)	R.O.W. REQUIRED (m)	DESIRABLE SIDE SLOPE	MINIMUM SIDE SLOPE	DESIRABLE BACK SLOPE	MINIMUM BACK SLOPE	DESIRABLE DITCH BOTTOM (m)	MINIMUM DITCH BOTTOM (m)
8.6	20.12 OR 30.18	4:1	3:1	6:1	2:1	3.0	1.0

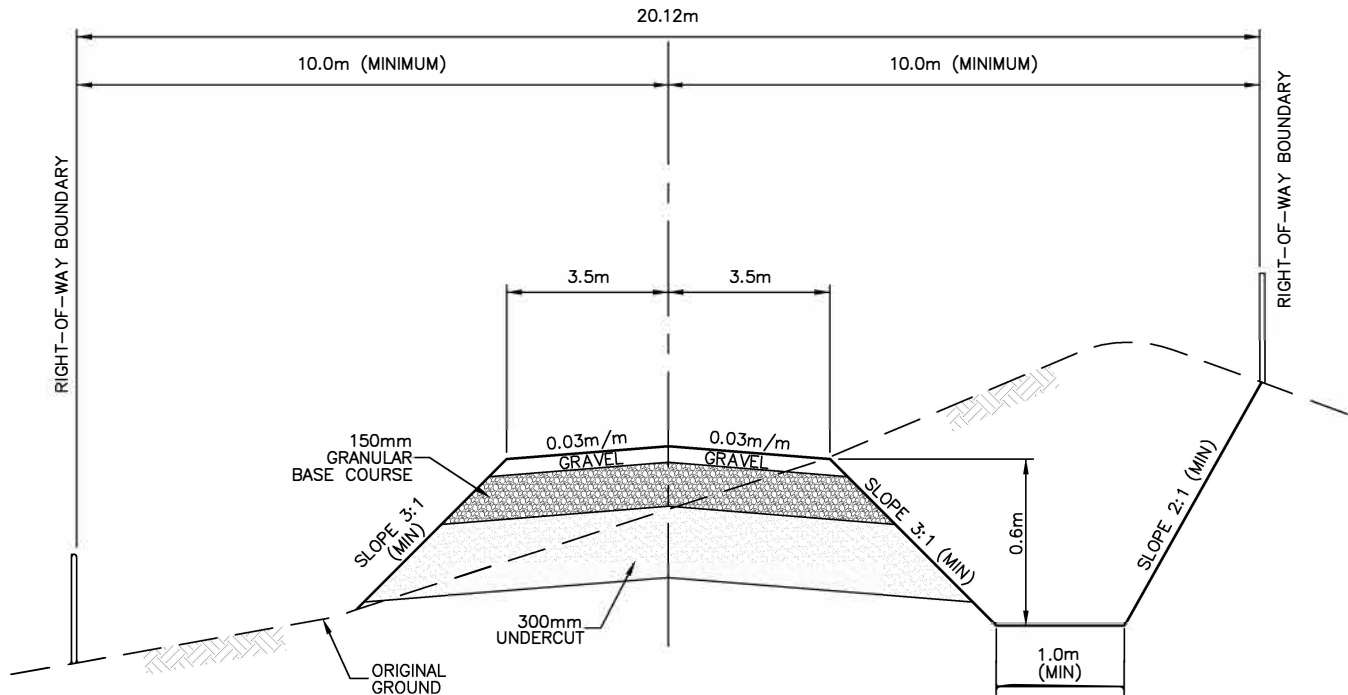
**NOTES:**

- IF ADDITIONAL RIGHT-OF-WAY IS REQUIRED, TRY TO OBTAIN BY BACK SLOPING AGREEMENT, OTHERWISE PURCHASE.
- THE TOP 0.60m OF SUBGRADE TO BE COMPACTED TO 98% STANDARD PROCTOR DRY DENSITY. THE FINISHED ROAD WIDTH SHALL INCLUDE 18mm OF GRANULAR BASE COURSE INCORPORATED INTO THE SUBGRADE SURFACE AND BE DRESSED WITH 25mm (MINIMUM) OF SURFACE GRAVEL.
- CULVERTS ARE REQUIRED WHERE NATURAL DRAINAGE IS AFFECTED BY ROAD DEVELOPMENT.
- WHEN CULVERTS ARE REQUIRED THEY MUST BE CSP AND MINIMUM 600mm DIAMETER WITH RIPRAP APRONS. THE MINIMUM COVER OVER CENTERLINE CULVERTS IS 300mm.
- BACK SLOPES ADJACENT TO CULTIVATED LAND ARE TO BE 6:1 WHEREVER POSSIBLE AND PRACTICAL. FIELD FIT OF STEEPER SLOPES UP TO 2:1 MAY BE CONSIDERED UPON APPROVAL OF THE SUPERINTENDENT OF PUBLIC WORKS OR THEIR DESIGNATE.
- ALL TOPSOIL TO BE REMOVED AND SALVAGED PRIOR TO CONSTRUCTION
- ALL DITCH SLOPES AND DITCH BOTTOMS REQUIRE TOPSOIL DRESSING.
- ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
- FOR APPROACH ROADS REFER TO THE COUNTY OF FORTY MILE ROAD APPROACH POLICY.



**COLLECTOR – MUNICIPAL ROAD  
(GRAVEL STANDARD)  
ROAD CROSS-SECTION**

Date:	Drawn By:	Checked By:	Scale:	Drawing No.
JUNE 2020	DD	RS	NTS	01



SURFACE WIDTH (m)	R.O.W. REQUIRED (m)	DESIRABLE SIDE SLOPE	MINIMUM SIDE SLOPE	DESIRABLE BACK SLOPE	MINIMUM BACK SLOPE	DESIRABLE DITCH BOTTOM (m)	MINIMUM DITCH BOTTOM (m)
7.0	20.12	4:1	3:1	6:1	2:1	3.0	1.0

**NOTES:**

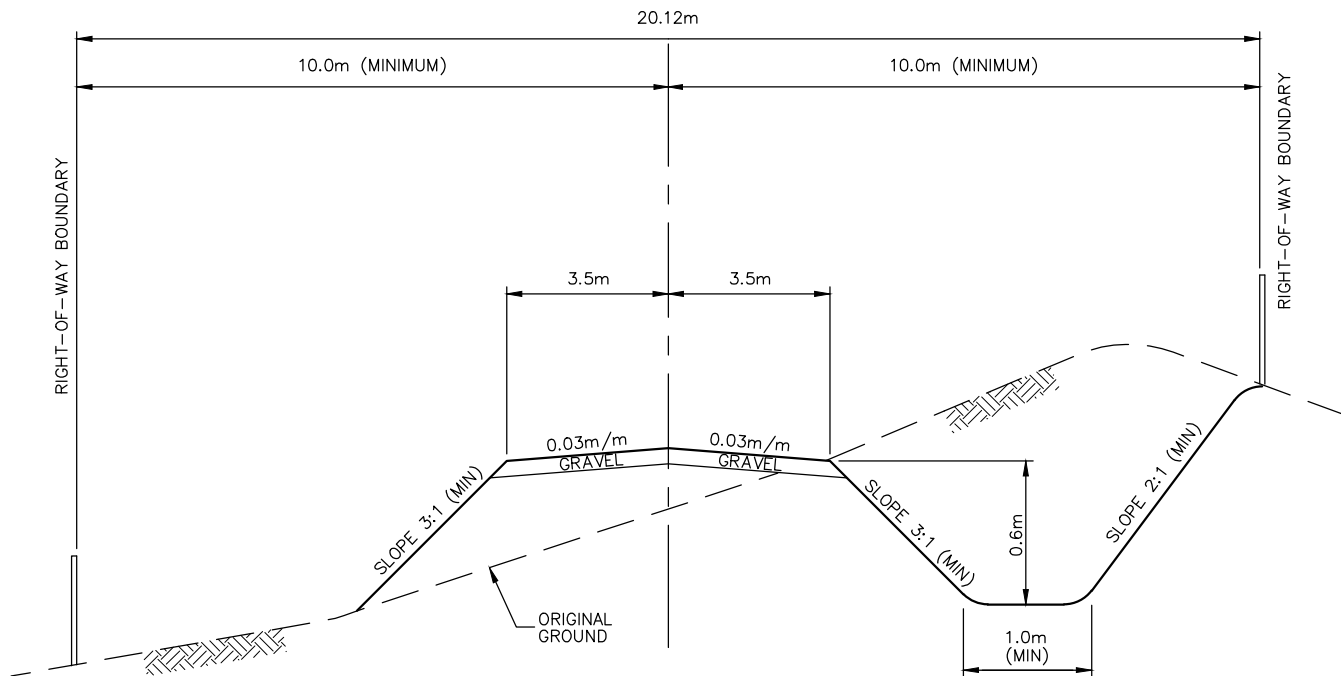
- IF ADDITIONAL RIGHT-OF-WAY IS REQUIRED, TRY TO OBTAIN BY BACK SLOPING AGREEMENT, OTHERWISE PURCHASE.
- THE TOP 0.30m OF SUBGRADE TO BE COMPACTED TO 98% STANDARD PROCTOR DRY DENSITY. THE FINISHED ROAD WIDTH SHALL INCLUDE 150mm OF GRANULAR BASE COURSE AND BE DRESSED WITH 25mm (MINIMUM) OF SURFACE GRAVEL.
- CULVERTS ARE REQUIRED WHERE NATURAL DRAINAGE IS AFFECTED BY ROAD DEVELOPMENT.
- WHEN CULVERTS ARE REQUIRED THEY MUST BE CSP AND MINIMUM 600mm DIAMETER WITH RIPRAP APRONS. THE MINIMUM COVER OVER CENTERLINE CULVERTS IS 300mm.
- BACK SLOPES ADJACENT TO CULTIVATED LAND ARE TO BE 6:1 WHEREVER POSSIBLE AND PRACTICAL. FIELD FIT OF STEEPER SLOPES UP TO 2:1 MAY BE CONSIDERED UPON APPROVAL OF THE SUPERINTENDENT OF PUBLIC WORKS OR THEIR DESIGNATE.
- ALL TOPSOIL TO BE REMOVED AND SALVAGED PRIOR TO CONSTRUCTION
- ALL DITCH SLOPES AND DITCH BOTTOMS REQUIRE TOPSOIL DRESSING.
- ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
- FOR APPROACH ROADS REFER TO THE COUNTY OF FORTY MILE ROAD APPROACH POLICY.
- ALTERNATIVE ROAD STRUCTURES PROPOSED BY DEVELOPERS MAY BE CONSIDERED BY THE COUNTY OF FORTY MILE No.8. CONSIDERATION WILL BE GIVEN TO ALTERNATIVE DESIGN PLANS STAMPED BY AN ENGINEER LICENSED TO PRACTICES IN THE PROVINCE OF ALBERTA.



**LOCAL ACCESS – WIND ENERGY  
FACILITY ROAD CROSS-SECTION**

Date:	Drawn By:	Checked By:	Scale:	Drawing No.
JUNE 2020	DD	RS	NTS	02





SURFACE WIDTH (m)	R.O.W. REQUIRED (m)	DESIRABLE SIDE SLOPE	MINIMUM SIDE SLOPE	DESIRABLE SLOPE	MINIMUM BACK SLOPE
7.0	20.12	4:1	3:1	6:1	2:1

**NOTES:**

1. IF ADDITIONAL RIGHT-OF-WAY IS REQUIRED, TRY TO OBTAIN BY BACK SLOPING AGREEMENT, OTHERWISE PURCHASE.
2. TYPICALLY THIS ROAD IS USED WHERE 3 OR LESS RESIDENCES ARE SERVED.
3. THE TOP 0.30m OF SUBGRADE TO BE COMPACTED TO 98% STANDARD PROCTOR DRY DENSITY. THE FINISHED ROAD WIDTH SHALL INCLUDE 18mm OF GRANULAR BASE COURSE INCORPORATED INTO THE SUBGRADE SURFACE AND BE DRESSED WITH 18mm OF SURFACE GRAVEL.
4. CULVERTS ARE REQUIRED WHERE NATURAL DRAINAGE IS AFFECTED BY ROAD DEVELOPMENT.
5. WHEN CULVERTS ARE REQUIRED THEY MUST BE CSP AND MINIMUM 600mm DIAMETER WITH RIPRAP APRONS. THE MINIMUM COVER OVER CENTERLINE CULVERTS IS 300mm.
6. BACK SLOPES ADJACENT TO CULTIVATED LAND ARE TO BE 6:1 WHEREVER POSSIBLE AND PRACTICAL. FIELD FIT OF STEEPER SLOPES UP TO 2:1 MAY BE CONSIDERED UPON APPROVAL OF THE SUPERINTENDENT OF PUBLIC WORKS OR THEIR DESIGNATE.
7. ALL TOPSOIL TO BE REMOVED AND SALVAGED PRIOR TO CONSTRUCTION
8. ALL DITCH SLOPES AND DITCH BOTTOMS REQUIRE TOPSOIL DRESSING.
9. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
10. FOR APPROACH ROADS REFER TO THE COUNTY OF FORTY MILE ROAD APPROACH POLICY.



**LOCAL ACCESS – MUNICIPAL LOW VOLUME ROAD  
ROAD CROSS-SECTION**

Date:	Drawn By:	Checked By:	Scale:	Drawing No.
JUNE 2020	DD	RS	NTS	03