Municipality of the District of Lunenburg
POLICY

Title: Municipal Road Design and Construction Standards	
Policy No. **MDL-85**	
Effective Date: September 24, 2018	**Amended Date:**

The policy forms Schedule "H", "H-1", and "H-2" of the Subdivision By-law.

SCHEDULE H

MUNICIPAL ROAD DESIGN AND CONSTRUCTION STANDARDS

1.0 GENERAL

The following are the minimum road standards for proposed Public and Private Designed Roads in the Municipality. In every case, roadway designs will be prepared by a qualified Professional Engineer licensed to practice in the Province of Nova Scotia and holding valid errors and omissions insurance. All roadway design drawings will be subject to approval by the Municipal Engineer. No roadway will be considered a Public Road or Private Designed Road unless stamped engineered drawings, designed to standard, and related survey plans, are approved, and construction of the roadway is completed in accordance with such approved drawings.

Existing provincial public roadways transferred, by law, from the Province of Nova Scotia to the Municipality will not be subject to these road standards.

Requirements in excess of the minimum standards may be necessary for certain roadways, subject to the Municipal Engineer's discretion.

Submitted drawings will include:

(a) legal survey plans showing property boundaries, and proposed rights-of-way and easements;

(b) topographic contour drawings, to minimum 1 m intervals, within the project area, and to minimum 2 m within the contributing drainage area outside the project area;

(c) road and drainage design plans and profile drawings, with preferred metric scales at 1:100 or 1:250 – horizontal, and 1: 10 or 1: 25 – vertical, with each drawing stamped, signed and dated by the Professional Engineer responsible for its preparation; and

(d) all other details of structures, equipment and appurtenances, including manufacturer's and fabricator's shop drawings, and material and equipment test reports, necessary for the Municipal Engineer in their sole discretion to properly complete the review of the roadway project design and construction.

Submitted drawings will be clearly drawn and annotated, to scale, and include a title block with appropriate project information and location, and professional engineer and subdivision applicant identification. No drawing sheet in the drawing set will be larger than 1.0 m^2 (ANSI E size).

Drawing sets will be submitted in both paper form and electronic data, with electronic data in either the *.dwg, *.dxf or IGES file format, and will be on electronic data media that can be read by Municipality personal computer equipment.

In this Standard, regulatory dimensions are stated in metric. The use of metric (Systeme International – S.I.) units in engineering design submissions is required.

2.0 TECHNICAL REFERENCES

The following technical references are noted in these Standards:

2.1 "Geometric Design Guide for Canadian Roads", June 2017, latest revision, issued by the Transportation Association of Canada.

2.2 "Manual of Uniform Traffic Control Devices for Canada", January 2014, latest revision, issued by the Transportation Association of Canada.

Private Designed Roads shall be designed and built according to one of the following road design classes:

- Rural Laneway (RLW)
- Low Volume Rural Road (LVR)

3.1 Urban Streets - Laneways, Urban Local Undivided (ULU)

A developer may desire to build roads or streets that are more urban in nature. If the nature of the proposed development is to create a dense cluster of urban, centrally-serviced buildings and streets, then those Public Roads will be classified as Urban Local Undivided (ULU) and be expected to conform to Urban category standards issued by the Transportation Association of Canada (TAC).

3.2 Rural Laneway and Low Volume Rural Road – RLW & LVR

A Private Designed Road may be classed as Rural Laneway (RLW) provided no more than 18 lots access or front on the Private Designed Road. All other Private Designed Roads shall be classed as Low Volume Rural Roads (LVR).

3.3 Rural Local Undivided Road – RLU

Except where a Public Road is classed as Urban Local Undivided (ULU), Public Roads will be classed as Rural Local Undivided (RLU) roads where the AADT is forecast to be fewer than 600 vehicles per day.

3.4 Rural Collector Undivided Road – RCU

Except where a Public Road is classed as Urban Local Undivided (ULU), Public Roads will be classed as Rural Collector Undivided (RCU) roads where the AADT exceeds 600 vehicles or more per day. For RCU roads, special design requirements, specific to each case, if any, will be established, by the Municipal Engineer.

3.5 Average Annual Daily Traffic Estimation

At the Municipal Engineer's sole discretion, submission of road design trip generation calculations will be required in order to support the AADT forecast necessary to determine road classification. In any case, the Municipal Engineer will determine and approve the road classification.

3.6 Design Speed

Unless lower design speeds are specified by the Municipal Engineer, based upon the projected use of the roadway, minimum design speeds for road classes will be as follows:

RLW	40 km/hr
LVR	40 km/hr
RLU	50 km/hr
RCU	70 km/hr

4.0 ALIGNMENT CONTROLS

Alignments for roads classed as ULU shall be in accordance with the Urban category of the Geometric Design Guide for Canadian Roads.

Design controls for horizontal and vertical road alignment will be for the design speeds as per the assigned rural road classes in Subsection 3.6 of this schedule, and will be in accordance with the Geometric Design Guide for Canadian Roads or as indicated in Table 4.1, below. Note that for the ranges of design speed, there are corresponding ranges of geometric design criteria. The allowance of a 40 km/hr design speed on rural roads shall only be permitted for Private Designed Roads.

4.1 Road Alignment Parameters

Table 4.1 Road Alignment Parameters

	RLW	LVR	RLU	RCU
Posted Speed Limit	30 km/h	30 km/h	70-50 km/h	70 km/h
Design Speed Range	40 km/h	40 km/h	70-50 km/h	80-70 km/h
Max Gradient	12 %	12 %	10 %	8 %
Horizontal Curve radius	40 m	60 m	190-90 m (with design speed)	250-190 m (with design speed)
Stopping Sight Distance	45 m	45 m	110-65 m (with design speed)	140-110 m (with design speed)
Vertical Sag Curve, k	7 m	7 m	25-11 m (with design speed)	30-25 m (with design speed)
Vertical Crest curve, k	4 m	4 m	22-7 m (with design speed)	35-22 m (with design speed)
Passing Sight	290 m	290 m	490-350 m	550-490 m

4.2 Intersections with Existing Roads

4.2.1 Horizontal Approach

Roadway intersections with existing municipal roadways shall have intersection angles at no less than 70 degrees and no greater than 110 degrees to the existing municipal roadway.

Roadway intersections with existing provincial roadways shall be subject to the approval of the Nova Scotia Department of Transportation and Infrastructure Renewal.

4.2.2 Vertical Approach

Roadway gradient adjustments for intersections with existing municipal roadways shall be designed in accordance with the Geometric Design Guide for Canadian Roads.

Roadway intersections with existing provincial roadways shall be subject to the approval of the Nova Scotia Department of Transportation and Infrastructure Renewal.

4.3 Intersections for New Roads

New intersections shall be designed in accordance with the Geometric Design Guide for Canadian Roads.

4.4 Cul-de-Sac Design

Cul-de-sacs shall be placed at the end of all dead-end streets on Public Roads. The geometric layout shall be, at a minimum, as per attached drawing H – 1.

Turning tees or cul-de-sacs shall be placed at the end of all dead-end streets on Private Designed Roads. The geometric layout shall be, at a minimum, as per attached drawings H – 1 or H – 2.

All culs-de-sacs and turning tees shall be constructed to applicable minimum road standards.

4.5 Reserve Road Allowances

As required by this By-law, all subdivisions shall provide for a reserve road allowance for future extension of the public road to the boundaries of an adjacent lot or watercourse, at minimum intervals of 400 metres, as determined to be feasible at the sole discretion of the Municipal Engineer.

4.6 Road and Driveway Layout

Road layout design shall optimize use of materials and future maintenance without compromising safety, the surrounding natural environment, or the convenience of access to properties served by the road network. The Municipal Engineer will review submitted designs and assess the life-cycle economy provided by such designs. Generally, the Municipal Engineer will approve a road layout design that will result in optimal future maintenance costs and reduced environmental impact. Guidance in road layout design is available through several publications of the Transportation Association of Canada and the Institute of Transportation Engineers, including the documents referenced in Section 2 of this schedule.

Residential driveway access design shall conform to the recommendations contained in the "Guidelines for Residential Subdivision Street Design" and the "Geometric Design Guide for Canadian Roads". Where the road traffic will consist of a mix of residential, commercial and/or industrial traffic volumes, the Municipal Engineer may, at their sole opinion, specify other driveway design requirements. Proposed and existing (if applicable) driveway locations shall be shown on the submitted plan drawings.

5.0 CROSS-SECTION CONTROLS

Cross-section controls refer to the cross-sectional geometry of the roadway. Except where varied in this Section, all Public Roads and Private Designed Roads shall meet the cross-sectional geometry outlined in Schedule 'J' for the applicable road class, as determined by Section 3 of this Schedule.

5.1 Minimum Right-of-Way Width

The minimum right-of-way width for all municipal Public Roads, except public laneways in the ULU class of roads, shall be 20 m, assuming maximum drainage ditch back slopes can be accommodated. Where the maximum drainage ditch back slopes cannot be accommodated, the right-of-way width shall be determined by the Municipal Engineer at their sole discretion. The minimum right-of-way for public laneways in the ULU class of roads shall be the width of the road, as required by Schedule 'J', plus 3.6 m.

The minimum right-of-way width shall be 20 m for all Private Designed Roads except under exceptional circumstances, subject to discretion of the Municipal Engineer and in accordance with accepted engineering practice. Under no circumstances shall the right-of-way width be less than 15.2 m.

Where a road right-of-way was approved under a previous Subdivision By-law and is less than 20 metres wide and the road is either a private road subject to a municipal takeover of ownership, or a private road that is being upgraded to a Private Designed Road, the Municipal Engineer may specify special engineering criteria regarding the placement of the road and drainage infrastructure within the confined right-of-way, without requiring widening of the right-of-way to the standard width.

5.2 Guard Rails

Guard rails shall be placed where the drop from the road surface is greater than 3 m and the slope is less than 6:1 (H:V). If guard rails are placed, fill side slopes for RLU and RCU class may be reduced to 2:1. Where guard rails are placed, roadway width is to be increased by a minimum of 0.5 m, adjacent the guard rail. Guard rail installation shall be as per the Nova Scotia Department of Transportation and Infrastructure Renewal Standard Specification Book.

5.3 Rock Slopes

Back slopes in rock are maximum 1:4 for all road classes. Fill side slopes in rock are 1.5:1 with guard rail for all classes. Without guard rail, fill side slopes in rock are the same as for earth fill slopes as per road class.

5.4 Roadway Surface Slope

Generally, the roadway surface is to be crowned in the centre, with a 3% slope towards each drainage ditch, for gravel-surfaced roads, and a 2% slope towards each roadside drainage structure for asphalt concrete surfaced roads. Exceptions can occur where superelevations are required to accommodate turning radii or intersection alignment, or where hydraulic analysis indicates a greater crown slope is required.

5.5 Design for Wide-Turning Vehicles

Where it is expected that wide-turning vehicles (trucks) may be occasionally encountered on the road, adjustments to roadway width, particularly at turns, may be required, in conformance with the Geometric Design Guide for Canadian Roads.

5.6 Retaining Walls

Other than undisturbed, or otherwise stable, naturally-occurring rock faces, all exposed vertical cuts of soil in the road right-of-way shall be stabilized and prevented from failure by a retaining wall of sufficient height and strength where a cut slope conforming to the requirements of Schedule 'J' is uneconomic. The design and the construction inspection of retaining walls will be prepared by and directed through a Professional Engineer, licensed in the province of Nova Scotia, and competent in the field of geotechnical engineering. The design will be subject to the review and approval of the Municipal Engineer, at their sole discretion.

6.0 ROADBED CONSTRUCTION

6.1 Earthwork, Grubbing, Excavation, Compacted Fills, Retaining Structures

Preparation of road sub-grade and related works shall be as per the Standard Specifications for Municipal Services. The Municipal Engineer may request geotechnical test reports regarding the bearing capacity of the in'situ subgrade material, as well as other relevant geotechnical information, at the Engineer's sole discretion.

6.2 Base Gravel Course

The base gravel course of all Public Roads and Private Designed shall consist of Type 2 material placed and compacted to approved grade, as per the Standard Specifications for Municipal Services. The material shall meet the specification of the Nova Scotia Department of Transportation and Infrastructure Renewal, as per the Standard Specification Manual, and shall meet the sulphide content limits of the Sulphide-Bearing Material Disposal Regulations of Nova Scotia Environment.

Notwithstanding the above, the base gravel course for Private Designed Roads may consist of hard and durable crushed or screened pit run gravel or rock with the following gradation:

Sieve Size	Percent Passing
112 mm	100 percent
14 mm	30 to 70 percent
80 μm	0 to 10 percent

The minimum thickness of the base gravel course of Public Roads and Private Designed Roads shall be as outlined in Schedule 'J' for the applicable road class, as determined by Section 3 of this Schedule. The required thickness of the base course may be reduced at the discretion of the Municipal Engineer where a site-specific road bed design has been provided by a Professional Engineer licensed to practice in Nova Scotia.

6.3 Surface Course

The surface course of all Public Roads and Private Designed Roads shall consist of Type 1 or Type 1S material and/or asphalt. Type 1 and Type 1S material, where used, shall be compacted to approved grade and shall meet the specification of the Nova Scotia Department of Transportation and Infrastructure Renewal, as per the Standard Specification Manual, and shall meet the sulphide content limits of the Sulphide-Bearing Material Disposal Regulations of Nova Scotia Environment. Asphalt material and construction specification shall be as per the Nova Scotia Department of Transportation and Infrastructure Renewal Standard Specification Book, and the Standard Specifications for Municipal Services.

The minimum thickness of the surface course of Public Roads and Private Designed Roads shall be as outlined in Schedule 'J' for the applicable road class, as determined by Section 3 of this Schedule. The required thickness of the surface course may be reduced at the discretion of the Municipal Engineer where a site-specific road bed design has been provided by a Professional Engineer licensed to practice in Nova Scotia.

6.4 Erosion Control and Prevention

Minimum erosion control and prevention measures shall be as per the Standard Specifications for Municipal Services, and the Erosion and Sedimentation Control Handbook for Construction Sites, latest edition, or as per an approved design drawing submitted as part of the design, and sealed by a Professional Engineer licensed to Practice in the Province of Nova Scotia.

6.5 Municipal Public Road Inspections and Approval of Construction

Municipal Public Road inspections shall occur, at a minimum, by appointment:

i) prior to construction;
ii) after clearing and grubbing;
iii) during placement of drainage culverts and structures;
iv) after placement of base gravel;
v) after placement of surface gravel; and,
vi) during placement of asphalt concrete pavement (where required).

Municipal inspections are not a substitute for the proponent's on-going quality control of the construction of the roadway. All proponents of roadway development and construction will require continuous, independent quality control inspection of the construction of the proposed

works under the direct supervision of a named professional engineer, licensed to practice in the Province of Nova Scotia, and competent in the field of civil engineering.

Municipal Engineer's approval shall be given only for construction in accordance with approved plans.

Prior to Municipal acceptance and takeover of the road the Municipal Engineer must be in receipt of and have approved a certification by the design engineer, and their geotechnical and materials engineering consultants, stating that the road was constructed to the approved design and standards of this by-law, or as modified in writing by the Municipal Engineer. No final approval of the constructed works will be given unless complete record drawings and satisfactory test results, at identified points of inspection have been submitted to and approved by, the Municipal Engineer.

6.5 Private Designed Road Inspection and Approval of Construction

Prior to Municipal approval for the creation and development of lots fronting on a Private Designed Road, the Municipal Engineer must be in receipt of and have approved a certification by the design engineer, and their geotechnical and materials engineering consultants, stating that the road was constructed to the approved design and standards of this by-law, or as modified in writing by the Municipal Engineer.

7.0 STORM WATER DRAINAGE

7.1 General

All lands serviced by the proposed roadway system shall be serviced by a drainage system. This shall consist of such open ditches and closed conduits as required to collect and remove storm water from at least a 1 in 5 year storm event for urban areas and urban class roads and streets that have storm sewers; a one in 10 year storm event for RLW, LVR, and RLU class roads; and at least a 1 in 100 year storm event for RCU class roads. The Municipal Engineer may specify a greater return period storm event where infrastructure and/or property are at greater risk of damage due to flooding, or due to the critical service nature of the affected infrastructure and/or property. Rainfall intensity curves to be used for specified return periods will be based on the most recent Environment Canada trending data available for Shearwater, Nova Scotia, adjusted for local meteorological conditions. The Culvert Sizing program sponsored by Nova Scotia Environment is not an acceptable substitute for this engineering work, and is not applicable to any culvert sizing in

the Municipality. Only a Professional Engineer shall size culverts under a Public or Private Designed Road.

All ditches and conduits shall be placed in the municipal road right-of-way or in a storm utility easement, identified as such in the submitted plans. Storm utility easements are to be a minimum of 9.144 m, unless otherwise approved by the Municipal Engineer. In any case, easements must be of sufficient width to permit safe and efficient public works maintenance operations within the easement.

7.2 Nova Scotia Environment Approval; Other Agency Approvals

Design and construction of all storm water drainage systems shall comply with the Storm Drainage Works Approval issued by Nova Scotia Environment. No construction shall take place unless such approval is received in compliance with the Activities Designation Regulations of Nova Scotia Environment.

Depending on the nature of the works proposed, approvals may also be required from other public agencies and public and private utilities, including, but not limited, to the Nova Scotia Department of Transportation and Infrastructure Renewal, the Nova Scotia Department of Natural Resources, Fisheries and Oceans Canada, the Canadian Coast Guard (Navigable Waters Protection Act section), Nova Scotia Power Inc., applicable telecommunications companies and other municipal units. The obtention of these approvals is the responsibility of the subdivision applicant. No construction will take place unless all necessary approvals have been received.

7.3 Acceptable Drainage Structures

The type and placement of culverts, conduits and drainage ditches shall be clearly shown on all engineering drawings. Acceptable culvert and conduit materials include concrete Class III pipe to CAN/CSA-A257 Series-M92, PVC and HDPE pipe, complete with smooth interior surface and ribbed exterior, to CAN/CSA-B137 Series-02. Other culvert and conduit structures may be acceptable pending Municipal Engineer's approval of their appropriate structural and hydraulic characteristics, and their life-cycle economic maintenance.

7.4 Structural Design

All culvert and conduit structures shall be of sufficient design and strength to resist soil, hydraulic, earthquake, temperature, traffic, and other loads reasonably expected to be imposed upon them.

Structural design calculations and drawings shall be submitted for the Municipal Engineer's approval for all drainage structures spanning in excess of 1.5 m at their greatest cross-sectional extent (i.e. distance between supports or maximum distance between structure sidewalls). Such calculations and drawings shall be prepared by a Professional Engineer, licensed in the Province of Nova Scotia, and competent in the field of structural engineering. A geotechnical report regarding the soil conditions in the location of the proposed drainage structure(s) shall be submitted upon request of the Municipal Engineer. Such geotechnical report shall be prepared by a Professional Engineer, licensed in the Province of Nova Scotia, and competent in the field of geotechnical engineering.

Drainage structures with a span greater than 2.5 m and subject to traffic or pedestrian loading shall be designed and constructed in accordance with the Canadian Highway Bridge Design Code, CAN/CSA – S6-00. Such design and construction inspection and supervision shall be prepared by and directed through a Professional Engineer, licensed in the Province of Nova Scotia, and competent in the field of structural engineering.

7.5 Hydrology and Hydraulic Design

Hydraulic calculations may be based on the Rational Method, where the contributing drainage area for the designed drainage system is estimated to be 40 hectares or less, or storm water detention is not required. Otherwise, flow calculations must be developed from storm water management modeling using TR-55 hydrologic methods, or another equivalent method recognized in civil engineering practice. Empirical methods such as that used by the Nova Scotia Environment Culvert Sizing protocols are not acceptable.

Hydraulic calculations and designs shall include complete topographical information regarding structure inverts, crowns, head water and tail water elevations and, where applicable, backwater elevations, throughout the proposed system.

All drainage culverts, conduits and other structures shall be constructed with headwalls and tail walls of approved design, and of stable and durable material, including stone, concrete, pressure-treated wood cribbing, and pre-manufactured plastic and metal assemblies. Where appropriate, security screening at culvert openings may be specified at the sole discretion the Municipal Engineer.

All culverts and drainage structures with a span greater than 1.5 m shall include bevelled edge entries, smooth inlet transition and smooth interior surface throughout the flow length.

Hydraulic calculations and designs shall be prepared by, and the construction inspection of structures directed through, a Professional Engineer, licensed in the Province of Nova Scotia, and competent in the field of civil engineering.

Hydraulic calculations shall be submitted for review and approval by the Municipal Engineer.

7.6 Watercourse Alterations, Detention Pond Design and Storm Water Disposal

All necessary watercourse alteration permits and approvals required from Nova Scotia Environment, and all other relevant agencies and departments, shall be obtained prior to construction and presented to the Municipal Engineer.

All detention pond designs shall clearly state the pond dimensions, the volume of water retained during the specified return storm period, the minimum freeboard available at the specified return storm period, the location of the outfall, the anticipated flow and impact on the receiving watercourse, and the security features of the structure to prevent unauthorized access.

All storm water drainage systems shall drain to a public watercourse with flow and water quality in compliance with the approval issued by Nova Scotia Environment.

No storm water drainage system shall be acceptable to the Municipal Engineer where, in their sole opinion the disposal location of collected storm water negatively impacts the receiving environment or can create property damage.

7.7 Construction Methods

Installation of culverts, conduits and ditches, and related appurtenances shall be, at a minimum, as per the Standard Specifications for Municipal Services. Other requirements shall be as determined at the sole discretion of the Municipal Engineer.

7.8 Stormwater Management

Wherever possible, roadside ditches shall be vegetated and designed to capture, treat, and infiltrate stormwater runoff as it moves downstream.

8.0 ROAD SIGNAGE

All road signage, signals and markings shall be in accordance with the Manual of Uniform Traffic Control Devices for Canada manual and the Nova Scotia Traffic Signs Regulations. All road signage shall be placed in the right-of-way, subject to approval by the Municipal Engineer. Signage shall not be placed in the municipal right-of-way without the prior approval of the Municipal Engineer.

8.1 Stop Signs

Stop signs shall be placed within 5 m of all intersections, at the minor leg approaches. Intersections with equal traffic for all approaches may be designated as a four way stop, subject to approval by the Municipal Engineer.

8.2 Traffic Signals

If traffic volumes indicate electrified traffic signals are necessary, a traffic signal warrant shall be submitted for approval by the Municipal Engineer.

8.3 Road Names

All Municipal Public Road and Private Designed Road names shall be subject to approval by the Civic Address Coordinator prior to final approval being given by the Development Officer.

8.4 Road Name Signage

All Public Roads and Private Design Roads are required to have road name signage placed on each road intersection.

8.5 Other Road Signage

Other directional, speed rating and cautionary signage shall be placed in the right-of-way, as warranted, in the sole discretion of the Municipal Engineer. Information or advertising signage shall only be placed in the right-of-way with the approval of the Municipal Engineer, and only to such specifications, and terms and conditions, as directed.

8.6 Signage Material

8.6.1 Signs

Signs shall be made of plate or extruded anodized aluminum, with high-intensity grade reflective vinyl markings. Signage shall be securely fixed to posts.

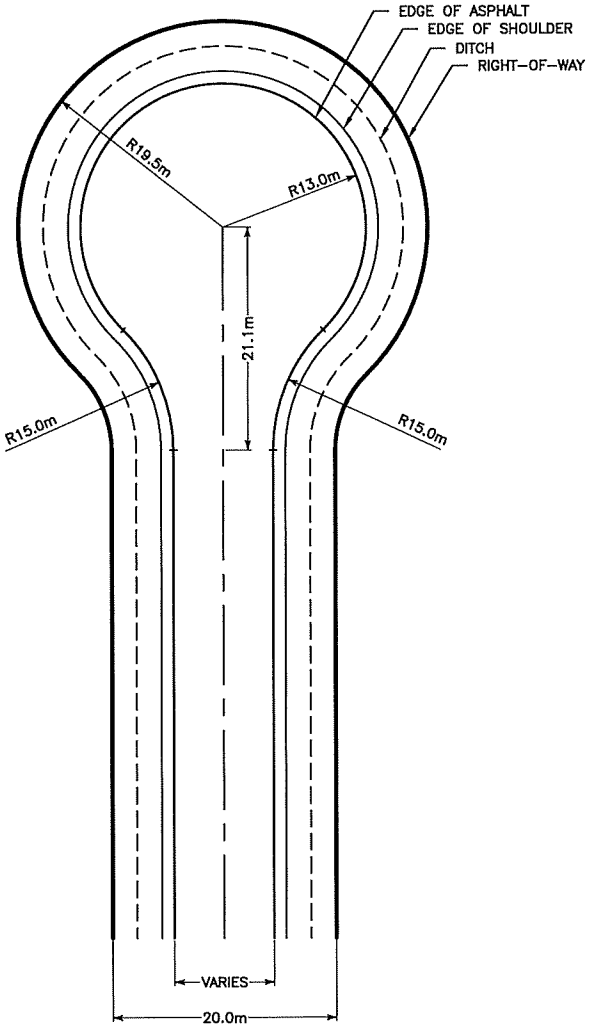
Street name signs shall generally consist of all the letters of the primary street name, with the letters made from 100 mm black vinyl marking stock, applied to extruded aluminum plate covered with white, high-intensity grade reflective vinyl material. All letters shall be capitalized.

Other highway signage shall generally be made from highway sign grade aluminum plate with high-intensity vinyl reflective markings. The minimum size of signs shall conform to the Uniform Traffic Control Devices for Canada manual, and the Nova Scotia Traffic Signs Regulations.

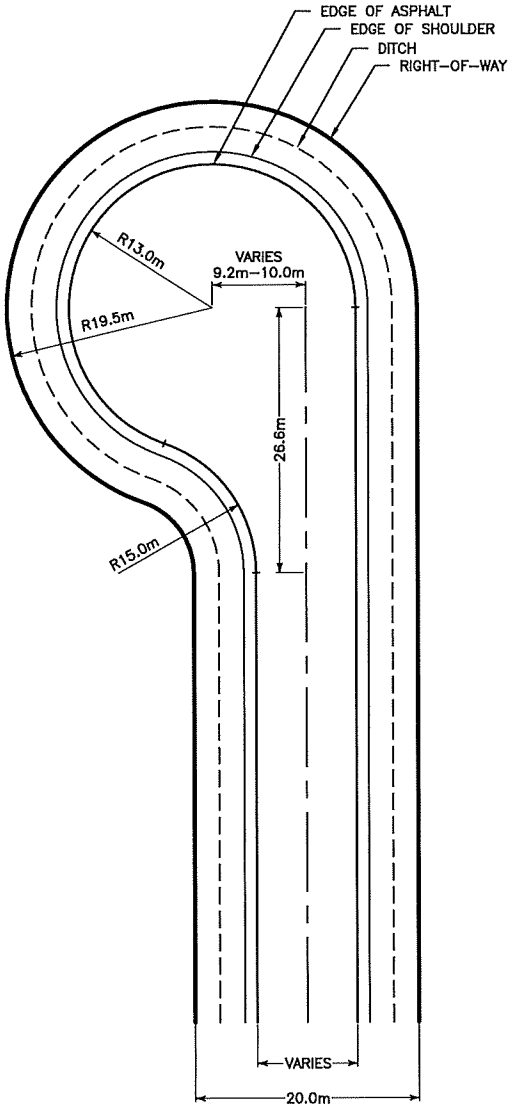
8.6.2 Posts

Generally, roadside marking posts shall be of galvanized, perforated steel, of nominal 51 mm X 51 mm members; including galvanized steel post anchors and sleeves. Posts shall be placed a minimum of 600 mm in firm ground and in all cases will be designed and constructed to securely hold all signs and signals upright, and resist loading due to wind, snow, temperature and other environmental factors. All sign anchors and fasteners will be of galvanized steel or anodized aluminum.

There will be special structural requirements for sign assemblies that have an exposed sign area of greater than 0.675 m^2, with approval of the assembly design and construction subject to approval by the Municipal Engineer.

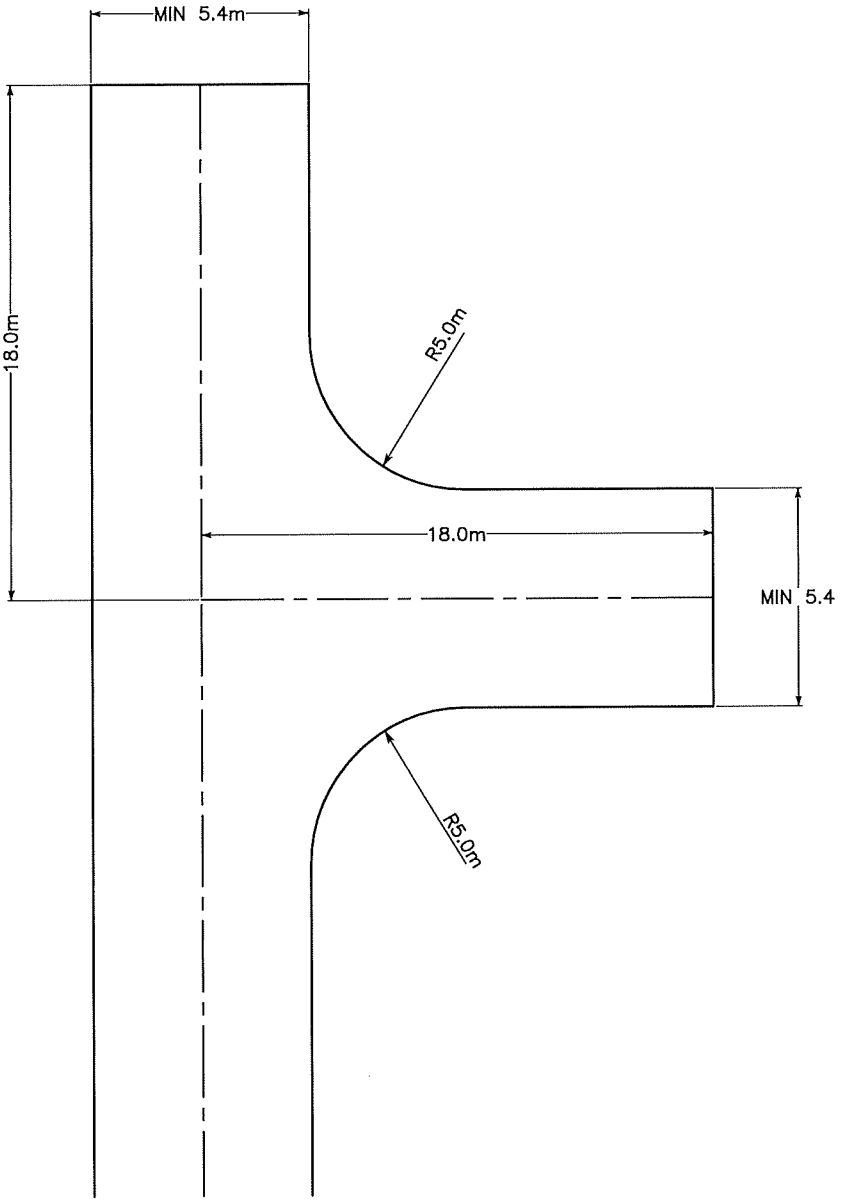


7 J SYMMETRICAL CUL-DE-SAC
SCALE: N.T.S.



8 J OFFSET CUL-DE-SAC
SCALE: N.T.S.

DRAWING H-1



9
J

TURNING TEE
STANDARD PRIVATE DESIGNED ROAD
SCALE: N.T.S.

DRAWING H-2

Clerk's Annotation for Official Policy Book

Date of Notice to Council Members: August 28, 2018

Date of Passage of Current Policy: September 24, 2018

Date of Notice to Council Members
of Intent to Consider Amendments:

Date of Passage of Amendments:

I certify that this "*Policy MDL-85*" was adopted by Council as indicated above.

Sheryl Conrad
Municipal Clerk

Sept. 25/18
Date