POLICY: ENTRANCE POLICY	**REVIEW DATE:** January 1, 2024
EFFECTIVE DATE: July 4, 2023	**AUTHORITY:** Public Works Supervisor

PURPOSE:

To define the Municipality of Powassan's ("Municipality") Public Works Department's policies and procedures on the control, installation, classification, reclassification, replacement, and standards of access to the Municipality's roads, while adhering to Zoning By-Law No. 2019-19 and By-Law No. 2010-16 so that:

- The safety of the travelling public is ensured,
- The operating integrity of the road system is protected by ensuring the efficient flow of traffic,
- The impact of development on the road system is minimized,
- Future maintenance and reconstruction costs are minimized or reduced.

POLICY STATEMENT:

1. **Control of Entrances**

   All entrances onto Municipal roads must have approval of the Municipality's Public Works Supervisor ("Supervisor") or Designate prior to installation and shall be under the control of the Municipality's Public Works Department. All new or altered installations shall conform to this policy and be completed according to these standards. Costs shall be borne by the owners.

   The Supervisor will determine the need for a culvert. Should a culvert be deemed necessary, the culvert and all work involved with installation shall conform to the standards as set out in this Policy.

2. **Entrance Permits Are Required For:**

   - Construction of a new entrance, including a secondary entrance
   - Changing the design of an existing entrance
   - Changing the location of an existing entrance
   - Changing the use of an existing entrance (i.e.) the classification
   - Construction of a temporary entrance
   - Paving of an existing entrance

3. Inventory of Entrances

The Municipality's Public Works Department shall maintain an inventory of all entrances onto Municipal roads. The inventory shall contain the classification and details of each entrance.

4. Classification of Entrances

The classification of an entrance cannot change, nor the entrance be used for any other purpose, without the entrance being reclassified by obtaining an Entrance Permit through the application process. All entrances shall be classed into one of the following classes:

Field Entrance

- Provides access to agricultural fields.

Farm Entrance

- Provides access to farm buildings and agricultural fields. Where a farm entrance also provides access to a farm residence it shall be classified as a residential entrance.

Residential Entrance

- Provides access to residential facilities of four (4) units or less.

Commercial/Industrial /Institutional Entrance

- Provides access to a business where goods or services are manufactured, sold, or distributed.

Temporary Entrance

- Provides access to properties for a limited period, not to exceed one (1) year, for the purpose of construction, repairs or improvements on that property or to facilitate staged development. If an extension is required, the owner must apply for a new permit prior to the expiration of the existing one.
  A temporary permit shall specify:
  - The expiry date
  - The extent and nature of the works to be done on the property
  - The owner's responsibility to clean up mud or debris from the road in a timely fashion.

Emergency Entrance

- Provides access to subdivision developments for emergency vehicles only, if the main entrance to the development is not passable. Adequate measures are to be incorporated to prevent use by residents or for delivery vehicles.

Public Entrance

- Provides access onto a Municipal Road from a registered subdivision by means of a public street.

Private Road

- Private roads provide access to the following:
  - Access to residential units of five (5) or more units
  - Into townhouse condominium developments
  - Roads into public facilities such as landfill sites, parks public institutions etc.
  - Private roads into resort areas providing access to several lots

5. General Policies

a. Number of Entrances per Lot of Record

The following numbers of entrances per property shall be restricted to:

Field Entrances

- A minimum of one (1) per farm with additional field entrances where natural obstructions within the field prevent reasonable access across the field.

Farm

- One (1) per farm for farm buildings

Residential

- One (1) per property

Commercial/Industrial/Institutional

- Maximum of two (2) with a minimum spacing of 30 metres between entrances

b. Alternative Access

Access shall be gained from a Municipal right-of-way where it can reasonably be achieved.

c. Existing Lots of Record

Each lot which is legally in existence is entitled to a residential entrance onto a Municipal Road, if no alternative access exists.

d. Infilling

Infilling refers to the development of vacant lots with existing buildings on both sides in urban areas where the pattern of development and the building line are already established. Extension of an existing built-up area is not considered infilling.

Infilling will be permitted due to the minimal effect on the operation of the road. Reduced setbacks shall be considered if they are in line with existing development.

e. Service Roads

In order to provide access to lots adjacent to a Municipal Road, a service road may be built parallel and adjacent to the Municipal Road. It shall be under local jurisdiction or privately owned. Setbacks shall be calculated from the service road property line.

6. Policies Related to Safety

a. Minimum Stopping Sight distance

Sight distances are measured from a point 3 metres from the outer edge of the traffic lane at an eye level of 1.05 metres above the edge of the traffic lane to an object 0.38 metres in height above the roadway surface in the centre of all lanes affected by the entering vehicle. For example, on a two (2) lane road the distance is measured to the centre of the lanes in both directions. A sight distance verification report and plan prepared by an Ontario Land Surveyor may be requested by the Municipality.

The Public Works Supervisor and/or Designate have the authority to reduce the Sight Distance, including grade corrections, if they deem necessary to ensure the safety of Municipal residents, following the guidelines of the Transportation Association of Canada (TAC). Design Speed is set at 10 km/h over posted speed limits for use in this policy instead of the standard 85th percentile speed.

Field, Farm, Residential and Temporary Entrances

- New entrances, for field, farm, residential and temporary entrances must meet the following minimum sight distances. The table below is based on wet conditions, which is common practice.

Posted Speed (km/hr)	Design Speed (km/hr)	Minimum Sight Distance (metres)	Correction for stopping sight distance (metres)					
			Decrease for Upgrades			Increase for Down Grades		
			3%	6%	9%	3%	6%	9%
100	110	240	10	20	-	15	30	-
90	110	220	0	20	25	10	20	40
80	90	200	10	15	20	10	15	30
70	80	180	5	10	15	5	10	20
60	70	165	5	5	10	5	10	15
50	60	135	5	5	10	-	5	10
40	50	125	-	-	5	-	-	-

Commercial Entrances

- All commercial entrances must meet all of the following minimum requirements:

Speed Limit (km/hr)	Sight Distance (metres)	Horizontal Curve (metres)	Grade (%)
40	140	300	6
50	160	300	6
60	180	600	5
70	200	600	5
80	230	1,200	4
90	250	1,200	4
100	270	1,200	4

Notes:

- In urban areas where the speed limit is significantly lower than the design speed the sight distance may be reduced.
- Commercial entrances must be constructed and approved before the establishment is open for business.

b. Minimum Visibility Requirements at Structures

The minimum sight distance requirements of entrances adjacent to bridges shall be applied.

c. Requirements for Visibility Triangles at Intersections

Visibility triangles are defined by (X), the distance measured along the property line on the Municipal Road and (Y), the distance measured along the property line on the side road (i.e.) these distances are measured from the intersection of the two right-of-way lines.

Posted Speed (km/hr)	Visibility Triangle X & Y Municipality Road Right of Way					
	20 metre		30 metre		45 metre	
	X	Y	X	Y	X	Y
40	8	7	2	2	-	-
50	15	10	7	5	-	-
60	22	11	12	6	-	-
70	29	12	17	7	-	-
80	32	2	19	7	-	-
90	39	14	24	8	2	1

d. Requirements for Spacing from Side Road Intersections

Entrances onto the sight line of the visibility triangle are not permitted. The following table is based on a right-of-way of 20 metres and gives the minimum distances from the centerline of the intersecting road to the closest side of the proposed entrance. The requirements for other widths of rights-of-way will be provided.

Posted Speed (km/hr)	Distance on Municipality Road (metres)	Distance on side road (metres)
40	30	25
50	40	25
60	50	25
70	60	25
80	65	25
90	75	25
100	85	25

7. Policies Related to Road Operation

a. Location of Intersections

Where intersections occur, they shall be located opposite each other to line up with an entrance on the other side of the road.

b. Truck Climbing Lanes, Deceleration Lanes and Acceleration Lanes

No access will be permitted on truck climbing, acceleration, or deceleration lanes.

c. Guide Rails

No access will be permitted which requires crossing through existing guide rails, guideposts, steel beam guide rail or three (3) cable guide cable.

ENTRANCE STANDARDS:

Not following these requirements could result in damage to entrance during grading operations and the Municipality will NOT assume responsibility for such damage.

1. Location of Entrances

The Municipality may restrict the placement of an access onto a Municipal Road in the interest of public safety. New entrances must be located, in the opinion of the Supervisor, so that there are favourable vision, grade and alignment conditions for all traffic using the proposed entrance and the Municipal Road.

- Minimum entrance distances from side property line to centerline of entrance:
  Private, Field and Residential Entrance – 9 metres
  Farm Entrance – 14 metres
  Commercial, Industrial, Institutional Entrance – 20 metres
- Ingress and egress to and from the required parking spaces and areas shall be provided by means of unobstructed driveways or passageways at least 3.0 metres but not more than 12.0 metres in perpendicular width;
- The maximum width of any joint ingress and egress driveway ramp measured along the street line shall be 9.0 metres;
- The minimum distance between any two (2) driveways on one (1) lot or between a driveway and an intersection of street lines measured along the street line intersected by such driveway shall be 9.0 metres; and
- The minimum angle of intersection between a driveway and a street line shall be 60 degrees.

2. Commercial/Industrial/Institutional Entrances and Public and Private Roads

Designs for commercial/industrial/institutional entrances and public and private roads must be submitted for approval as part of the Entrance Permit application procedure. The design shall be site specific, having regard for the number and type of vehicles expected to utilize the entrance. The entrance must be constructed and approved (including paving where required by this policy) before the establishment or the public or private road is open for business or use. The design shall provide for the entrance to be surfaced with asphalt to the property line.

3. Entrance Grades

The finish grade of the entrance must drop away from the edge of the driving lane surface to the edge for the shoulder at the same rate as the shoulder. For 5.0 metres beyond the edge of the shoulder the slope shall not exceed 3%.

Maximum gradients shall be 6% for residential entrances and 10% for farm and field entrances. Slope shall be 3H:1V or flatter when specified and must slope centre line of ditch and not be higher than grade of road where they meet.

For entrances on a steep slope or where earth cut or fill is required, Grading Plans showing existing and proposed features along with existing and proposed elevations will be required and to be submitted to the Municipality for approvals. Refer to Schedule A for further specifications.

4. Field Entrances

Field entrances must have an entrance width of 6.0 metres and a 5.0 metre radius. If entrance will be used for farm equipment than the radius must be 8.0 metres. Surface must be at least 150 mm (6”) of pit run or granular A.

Where a culvert is required, its length shall be sufficient to provide a 3H:1V up from the ditch to an entrance width of 6.0 metres. Driveway must slope centre line of ditch and not be higher than grade of road where they meet. Not following these requirements could result in damage to driveway during grading operations and the Municipality will NOT assume responsibility for such damage. A minimum cover on the culvert shall be 300 mm. Refer to Schedule A for further specification.

5. Farm Entrances

Farm entrances must have an entrance width of 6.0 metres and an 8.0 metre radius. Surface must be at least 150 mm (6”) of pit run or granular A.

Where a culvert is required, its length shall be sufficient to provide a 3H:1V up from the ditch to an entrance width of 6.0 metres. Driveway must slope centre line of ditch and not be higher than grade of road where they meet. Not following these requirements could result in damage to driveway during grading operations and the Municipality will NOT assume responsibility for such damage. A minimum cover on the culvert shall be 300 mm. Refer to Schedule A for further specification.

6. Residential Entrances

Residential entrances must have an entrance width of 6.0 metres. Surface must be at least 150 mm (6”) of pit run or granular A.

Where a culvert is required, its length shall be sufficient to provide a 3H:1V up from the ditch to an entrance width of metres. Driveway must slope centre line of ditch and not be higher than grade of road where they meet. Not following these requirements could result in damage to driveway during grading operations and the Municipality will NOT assume responsibility for such damage. A minimum cover on the culvert shall be 300 mm. Refer to Schedule A for further specifications.

7. Culvert

Where a culvert is required, the landowners must purchase and install their own culvert under the supervision of the Public Works Supervisor and/or Designate. Culverts shall be installed in accordance with the following Municipal standards:

- All new or altered entrances must have signed installation acceptance before acceptance will be issued by the Municipality.
- Culvert must be a new, galvanized, Corrugated Steel Pipe (C.S.P.), thickness as per Schedule B (b) or a new High Density Polyethylene Pipe (HDPE) that is double walled, thickness as per Schedule B(c). Culverts must conform to OPSS 1801 specifications or double walled plastic that meets the 182.8 Canadian Standards

Association (C.S.A.) storm sewer pipe specifications and be installed as per manufacturer's specifications.

- Culverts must have a minimum diameter of 400 mm and a minimum length of 6.0 metres. The Public Works Supervisor or Engineer may demand a larger and/or longer culvert if necessary to maintain Municipality standards and safety.
- The culvert must be sufficient to provide a slope of 3H:1V or flatter when specified.
- No concrete is allowed at the ends of culverts. The culvert must be exposed a minimum of 300 mm (1 foot) at both ends.
- The culvert bed shall be compacted and shaped to receive the bottom of the culvert.
- A minimum of 300 mm of Granular A or Granular B must be placed around the culvert, including underneath, in order to prevent frost action. Height of fill is measured from the finished surface to the top of the culvert.
    - Where the frost penetration line is below the bedding grade, frost tapers shall start at bedding grade.
    - Where the frost penetration line is between the top of culvert and bedding grade the frost treatment shall be symmetrical about the centerline of culvert. Frost tapers shall start at the intersection of the 1H:1V or 3A:1V slope and the frost penetration line.
- Condition of excavation is symmetrical about centerline of culvert.
- Granular material placed in the haunch area shall be compacted prior to placing and compacting the remainder of the embedment material. Refer to Schedule B (c).
- Refer to Schedule B (b) and (c) for height of fill requirements.
- A minimum of 150 mm (6 in) Granular "A" must be placed above the culvert.
- A minimum cover on the culvert shall be 300 mm. Refer to Schedule B (a).
- All lengthening of existing culverts must be installed at same standards as a new entrance.
- The Municipality will no longer restore driveways beyond a Granular A surface within the municipal right of way due to culvert replacement or maintenance of entrance. The Municipality reserves the right to change or alter any entrance at any time. Any finished work, i.e., interlocking brick, paving, clear stone will be the responsibility of the landowner (As per By-Law 2010-16, effective January 1, 2010).

8. Surface Water

Each entrance shall be designed, installed and maintained in a manner that will prevent surface water runoff from the entrance or from the adjoining property from being discharged onto the travelled portion of the road or the shoulder of the road. Water shall be directed into the roadside ditches. Rip rap of entrance ditches may be necessary to prevent siltation of the roadside ditches.

9. **Curb and Gutter**

   Where curb and gutter exist at the location of a proposed entrance, the applicant shall be required to construct a drop curb at the entrance location. The existing curb shall be cut or removed and replaced using materials and construction methods acceptable to the Municipality.

   The area behind the curb and sidewalk is to be paved with hot mix asphalt, concrete paving stones, or topsoil and sod, in accordance with the Municipality's requirements to 2 metres behind the curb.

10. **Temporary/Emergency Entrances**

    The design and construction details of temporary/emergency accesses must be submitted to and approved by the Municipality.

MAINTENANCE OF ENTRANCES:

- If the surface of an approved entrance is gravel, the Municipality will maintain the surface of an approved entrance from the edge of the travelled lane of the road to the outer edge of the shoulder.
- If the surface of an approved entrance is hard topped, the Municipality will not maintain the surface.
- After the initial installation of the culvert any subsequent replacement or repair, (but not widening), shall be done by the Municipality at its expense.
- Curbs and or headwalls will not be built, maintained or replaced by the Municipality. No curb or headwall shall extend above the surface of the shoulder.

STANDARD DRAWINGS:

The following standard drawings shall apply:

OPSD 301.010 – RURAL ENTRANCES TO ROADS ON FILL
OPSD 301.020 – RURAL ENTRANCES TO ROADS IN EARTH CUT
OPSD 301.030 – RURAL ENTRANCE ROCK CUT
OPSD 310.050 – CONCRETE SIDEWALK DRIVEWAY ENTRANCE DETAILS
OPSD 350.010 – URBANKINDUSTRIAL, COMMERCIAL AND APARTMENT ENTRANCES
OPSD 351.010 – URBAN RESIDENTIAL ENTRANCE
OPSD 802.010 – FLEXIBLE PIPE EMBEDMENT AND BACKFILL EARTH EXCAVATION
OPSD 805.010 – HEIGHT OF FILL TABLE – Corrugated steel pipe
OPSD 806.020 – HEIGHT OF FILL TABLE – Corrugated polyethylene gravity sewer pipe

PROCEDURES:

1. **Requests for New or Reclassified Entrances**

   All requests for an Entrance Permit for new installations, or reclassifications of existing entrances, shall be applied for by the property owner or an agent on forms supplied by the Municipality.

   The Municipality shall determine the location, length, and diameter of a culvert, if required, and any conditions that must be met, financial or otherwise, prior to, or as part of the installation.

2. **Application**

   The proposed entrance location shall be clearly illustrated on a sketch, which is to accompany the application. The sketch must provide enough information to enable Municipal staff to locate it at the property, with dimensions to buildings and/or landmarks such as fences, hedgerows, tree lines, etc. The applicant must also place flags or stakes at the property to indicate the proposed location of the entrance.

   A non-refundable application fee shall be payable to the Municipality with the application. The application fee is $120.00. The application must be properly filled out in order to be approved.

3. **Entrance Permit**

   If approved, an Entrance Permit will be issued after a refundable deposit is made to the Municipality. The cost for the permit shall be included in the application fee.

4. **Change of Ownership of Property**

   Should the ownership of the property change after the date of the application, the new owner shall become the applicant.

5. **Refundable Deposit**

   Refundable deposits in the amounts identified by the Municipality, payable to the Municipality of Powassan, shall be collected prior to the Municipality issuing a permit. The deposit will be refunded to the applicant upon acceptance of the installation by the Municipality, less any amounts expended by the Municipality to bring the entrance installation to Municipality standards.

6. **Installation of the Entrance**

   The entrance shall be installed by the applicant, at the applicant's expense, to the specifications outlined on the permit and in accordance with Municipality standards.

7. Inspection of the Entrance

The installation of the entrance will be inspected by the Municipality after completion by the applicant. It shall be the applicant's responsibility to call the Municipality for an inspection of the entrance installation, once it has been completed.

8. Adjustments Required

Should any adjustments be required, they must be made within ten (10) days of notification by the Municipality.

9. Cancellation of Permit

Where the entrance has not been constructed and accepted by the Municipality within six (6) months of the date of the permit, the permit shall be cancelled, and the refundable deposit shall be forfeited.

10. Renewal of Permit

An entrance permit may be renewed for an additional six (6) month period. An application shall be filled out for the renewal and another application fee paid to the Municipality. A second permit will be issued. The deposit fee shall be carried forward to the second permit.

11. No Permit Required

There will be no Entrance Permit required by the Municipality, or fee payable for an entrance onto a provincial highway. A copy of the Ministry of Transportation Permit must be submitted to the Municipality.

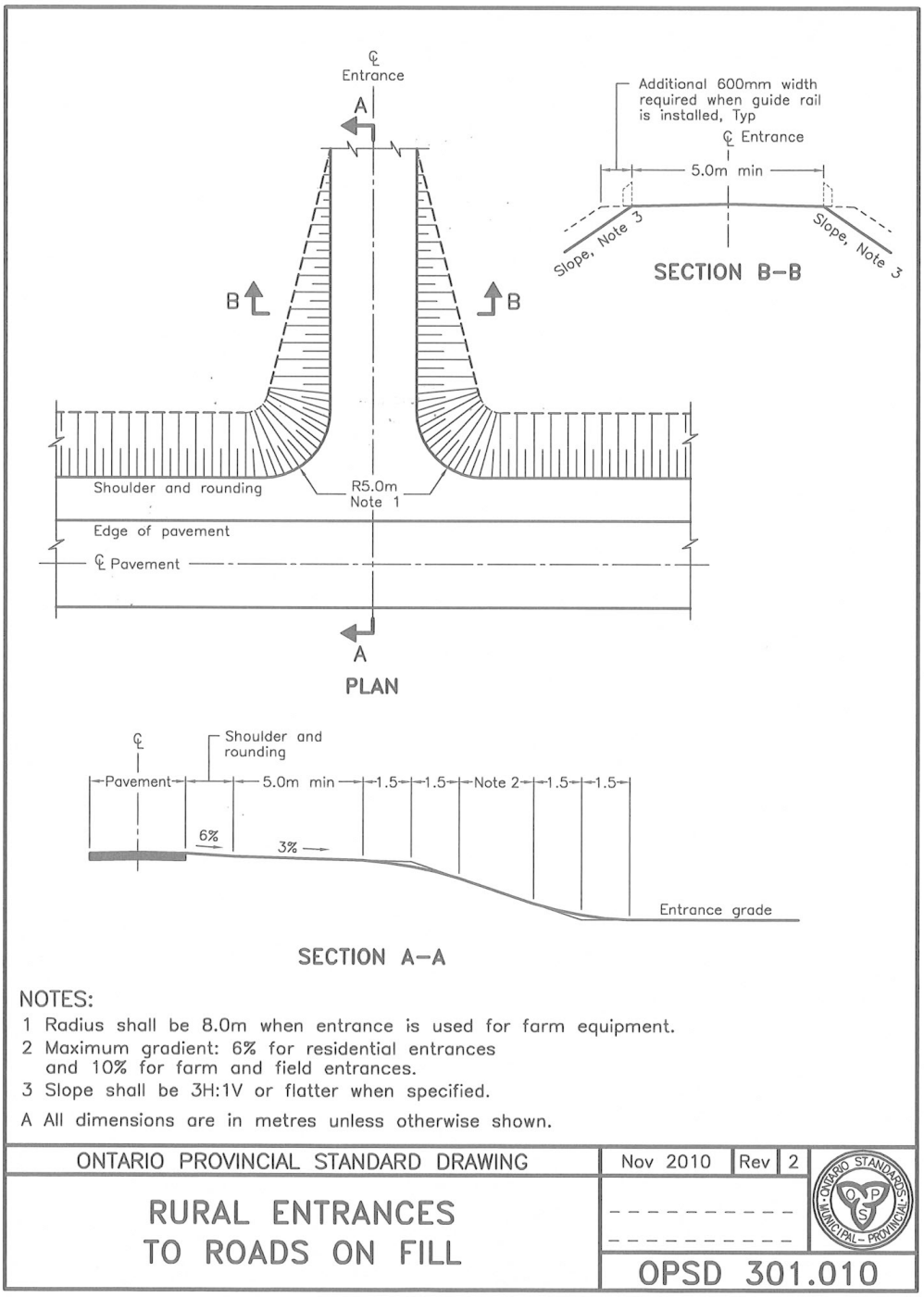
12. Opinion of Entrance

An opinion on the availability of an entrance can be obtained by providing the necessary fee (no deposit) and application forms. This process is helpful during a severance application and can be provided by Municipal staff. The Municipality would not issue a permit, only give an opinion on the likelihood of success in obtaining an entrance permit.

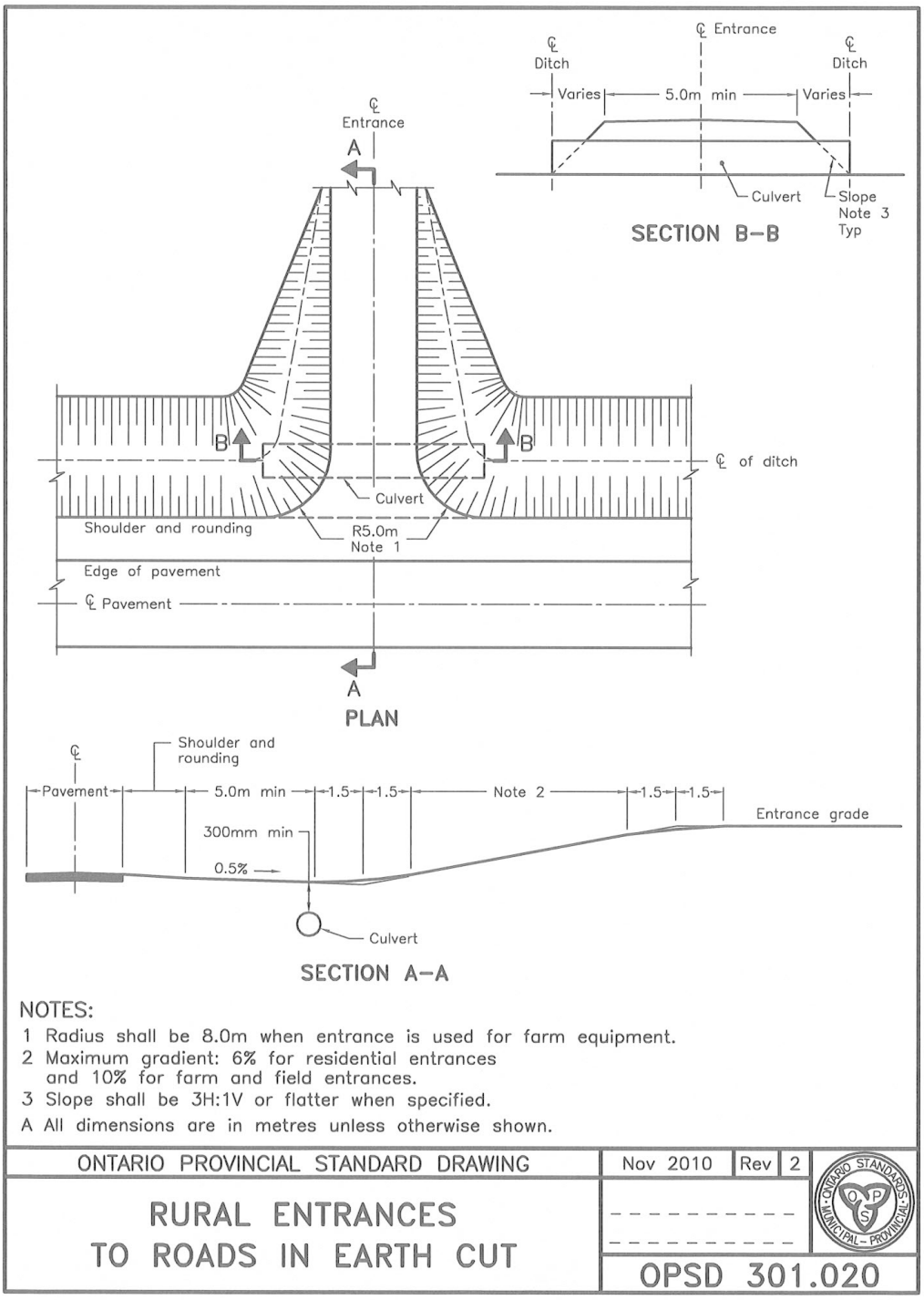
If the applicant decides to proceed with the entrance permit application, the entrance application will be updated, and the refundable portion collected. If the owner does not apply for the entrance permit within twelve months of the opinion, a new permit process will be required.

SCHEDULE A - ENTRANCES

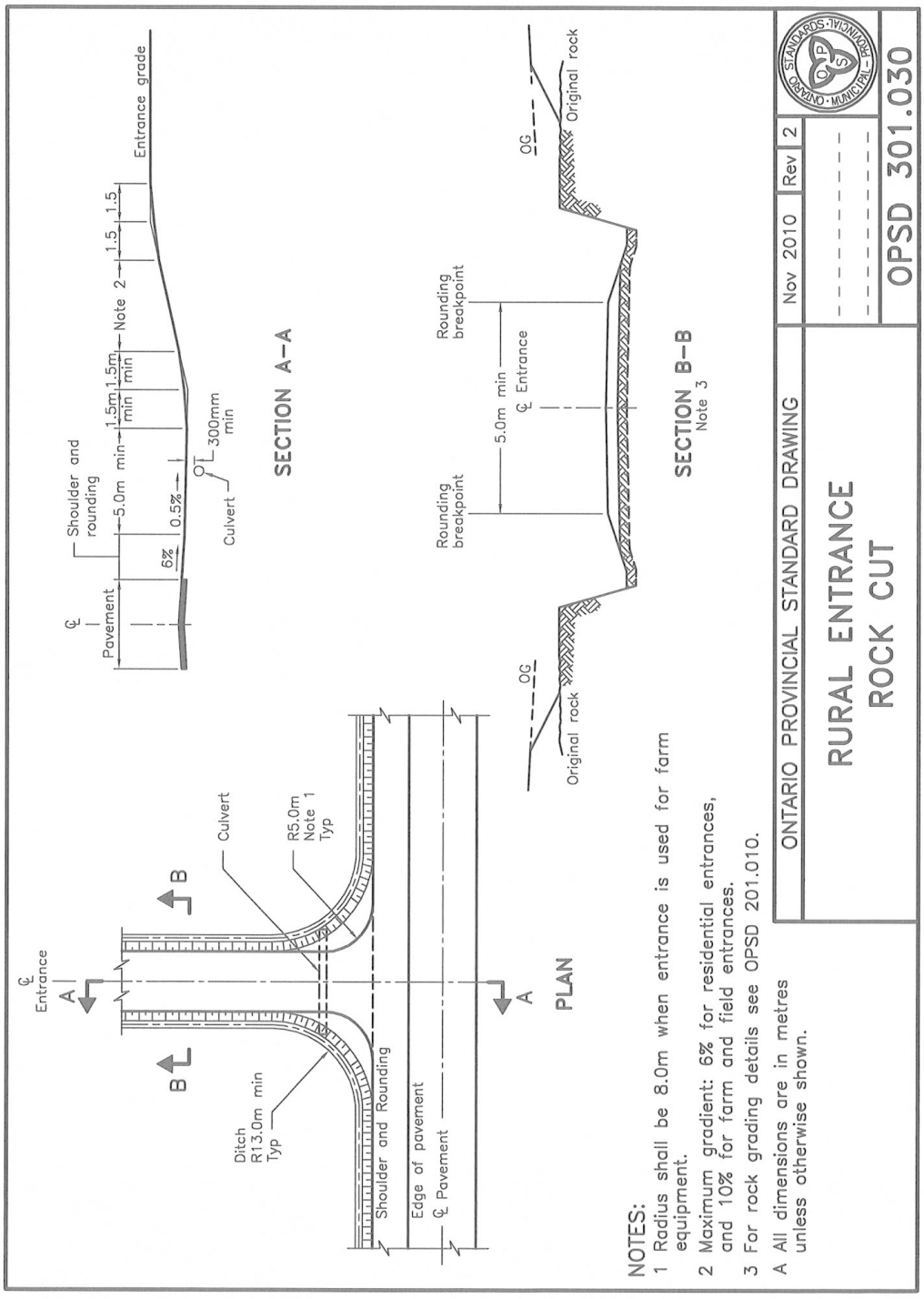
a. OPSD 301.010 – RURAL ENTRANCES TO ROADS ON FILL



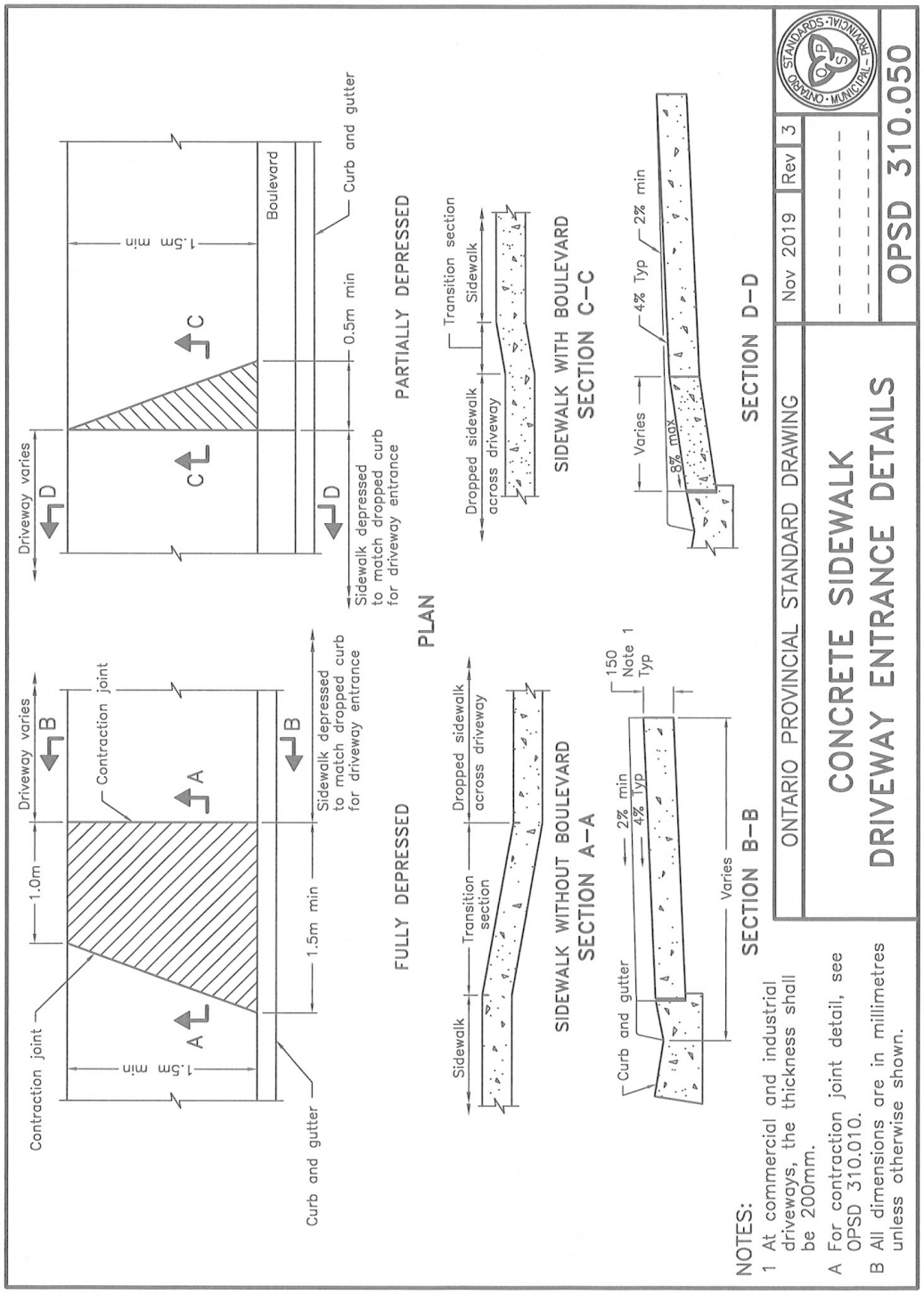
b. OPSD 301.020 – RURAL ENTRANCES TO ROADS IN EARTH CUT



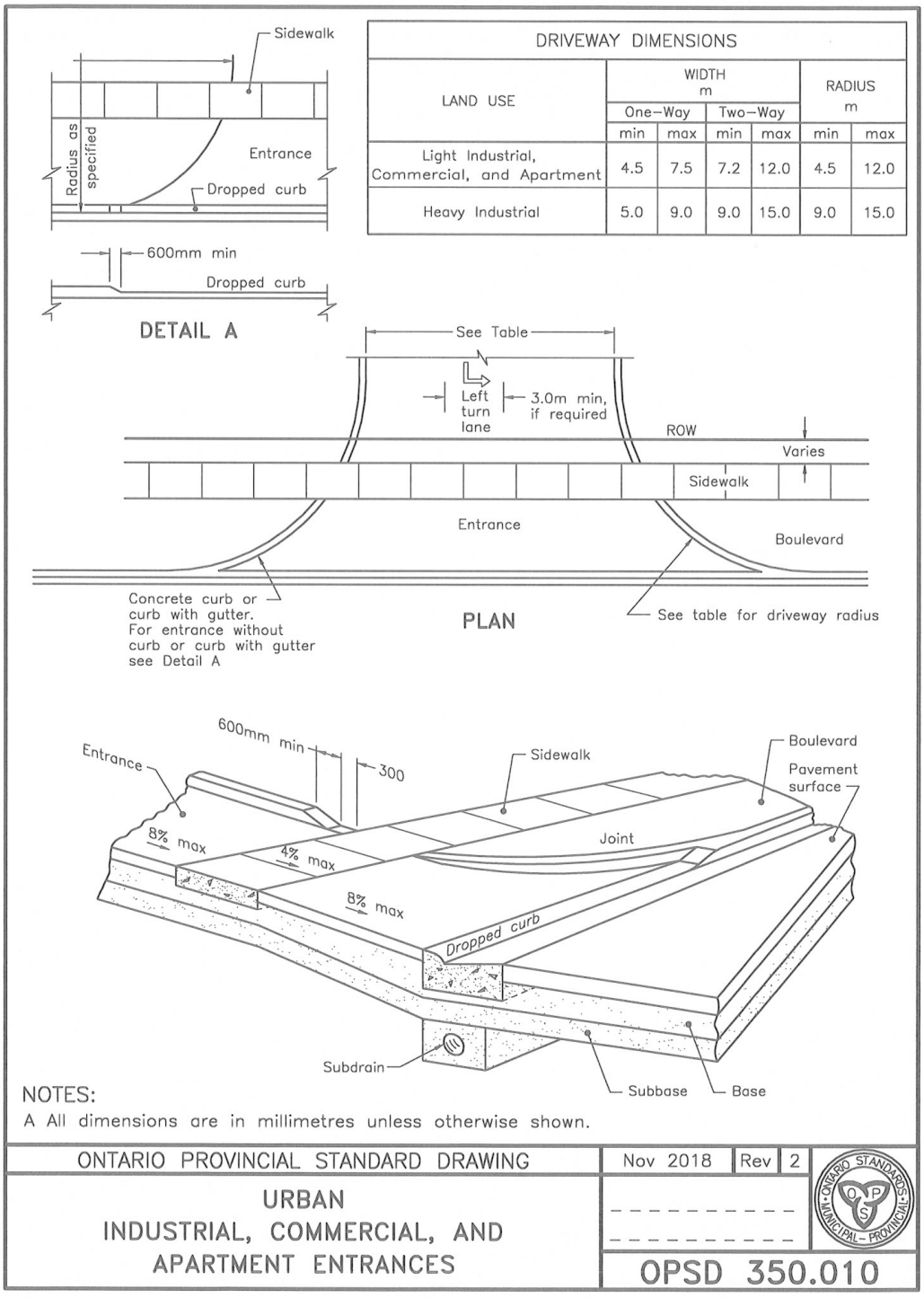
c. OPSD 301.030 – RURAL ENTRANCE ROCK CUT



d. OPSD 310.050 – CONCRETE SIDEWALK DRIVEWAY ENTRANCE DETAILS



e. OPSD 350.010 – URBAN INDUSTRIAL, COMMERCIAL AND APARTMENT ENTRANCES



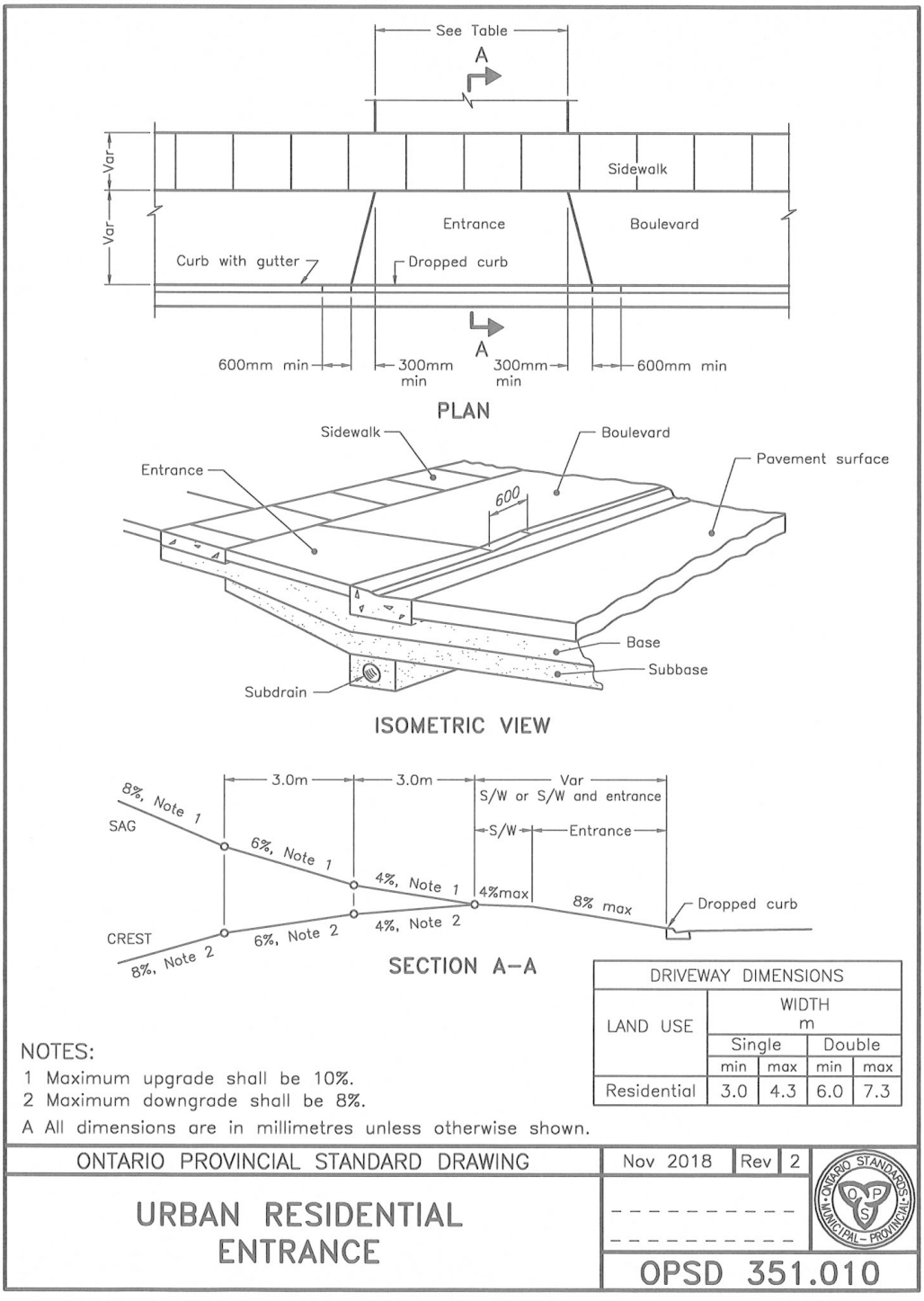
DRIVEWAY DIMENSIONS						
LAND USE	WIDTH m				RADIUS m	
	One–Way		Two–Way			
	min	max	min	max	min	max
Light Industrial, Commercial, and Apartment	4.5	7.5	7.2	12.0	4.5	12.0
Heavy Industrial	5.0	9.0	9.0	15.0	9.0	15.0

NOTES:

A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev	2
URBAN INDUSTRIAL, COMMERCIAL, AND APARTMENT ENTRANCES			
	OPSD 350.010		

f. OPSD 351.010 – URBAN RESIDENTIAL ENTRANCE



DRIVEWAY DIMENSIONS				
LAND USE	WIDTH m			
	Single		Double	
	min	max	min	max
Residential	3.0	4.3	6.0	7.3

NOTES:
1 Maximum upgrade shall be 10%.
2 Maximum downgrade shall be 8%.
A All dimensions are in millimetres unless otherwise shown.

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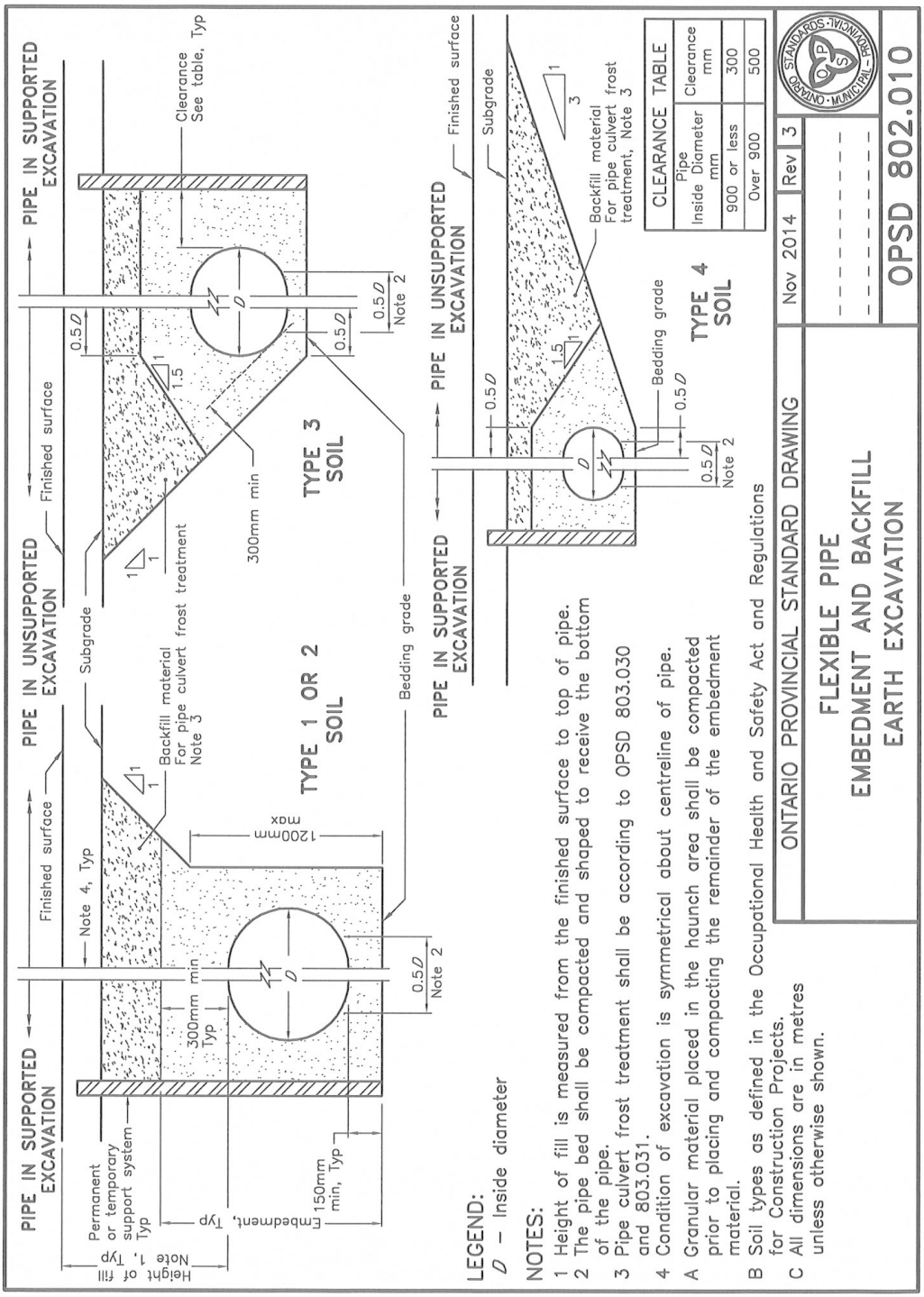
URBAN RESIDENTIAL ENTRANCE			
	OPSD 351.010		

SCHEDULE B – CULVERTS

a. OPSD 802.010 – FLEXIBLE PIPE EMBEDMENT AND BACKFILL EARTH EXCAVATION



b. OPSD 805.010 – HEIGHT OF FILL TABLE – Round corrugated steel pipe and structural plate corrugated steel pipe

Pipe Type	Corrugation Profile	Diameter	Min. Height of Fill	Area m^2	Metal Thickness									
					Corrugated Steel Pipe					Structural Plate				
					1.6	2.0	2.8	3.5	4.2	3.0	4.0	5.0	6.0	7.0
					Maximum Height of Fill Over Pipe m									
Round Corrugated Steel Pipe (Note 1)	68 x 13mm	300	300	0.07	61.3	79.7								
		400	300	0.13	45.9	59.7								
		450	300	0.16	40.8	53.1								
		500	300	0.20	36.8	47.8	69.3							
		600	300	0.28	30.6	39.8	57.8							
		700	300	0.38	26.2	34.1	49.5							
		750	300	0.44	24.5	31.9	46.5							
		800	300	0.50	23.0	29.9	43.3							
		900	300	0.64	20.4	26.5	38.5	48.9						
		1000	300	0.79	18.4	23.9	34.7	44.0	53.6					
		1200	300	1.13		19.9	28.9	36.7	44.7					
		1400	300	1.54			23.8	30.3	37.0					
		1500	300	1.77			21.3	27.2	33.2					
		1600	300	2.01			19.1	24.4	29.8					
		1800	300	2.54				19.5	23.9					
		2000	350	3.14					18.9					
	125 x 25mm	1200	300	1.13		20.4	29.6	37.6	45.8					
		1400	300	1.54		17.5	25.4	32.2	39.2					
		1500	300	1.77		16.3	23.7	30.1	36.6					
		1600	300	2.01		15.3	22.2	28.2	34.3					
		1800	300	2.54		13.6	19.7	25.0	30.5					
		2000	350	3.14		12.2	17.7	22.5	27.5					
		2200	400	3.80		11.1	16.1	20.5	25.0					
		2400	400	4.52		10.0	14.8	18.8	22.9					
		2700	450	5.73			13.1	16.7	20.3					
		3000	500	7.07			11.3	14.4	17.5					
Round Structural Plate Corrugated Steel Pipe	152 x 51mm	1500	300	1.77						26.2	39.1	49.8	60.5	70.6
		1660	300	2.16						23.7	35.3	45.0	54.6	63.8
		1810	350	2.58						21.7	32.4	41.3	50.1	58.5
		1970	350	3.04						19.9	29.8	37.9	46.0	53.8
		2120	400	3.54						18.5	27.7	35.3	42.8	50.0
		2280	400	4.07						17.2	25.7	32.8	39.8	46.4
		2430	450	4.65						16.1	24.1	30.8	37.3	43.6
		2590	450	5.26						15.1	22.6	28.8	35.0	40.9
		2740	500	5.91						14.3	21.4	27.3	33.1	38.6

NOTES:

1 Refer to manufacturer for non–standard sizes. For non–standard sizes, use the next larger standard diameter for estimating maximum height of fill over pipe.

A The table based on backfill density of 2243 kg/m^3.

B This OPSD shall be read in conjunction with OPSD 802.010, 802.013, and 802.014.

C Sizes greater than 3000mm are available subject to design by Canadian Highway Bridge Design Code (CHBDC CSA 56).

D All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 3	ONTARIO STANDARDS MUNICIPAL – PROVINCIAL
HEIGHT OF FILL TABLE ROUND CORRUGATED STEEL PIPE AND STRUCTURAL PLATE CORRUGATED STEEL PIPE			OPSD 805.010

c. OPSD 806.020 – HEIGHT OF FILL TABLE – Dual wall corrugated polyethylene gravity sewer pipe – 320 kPa and RSC 160

PIPE DIA mm	TRENCH WIDTH	MAXIMUM HEIGHT OF FILL				MINIMUM HEIGHT OF FILL	
		320 kPa		RSC 160		All Pipe Classes	
		Granular A	Granular B (Type I and II)	Granular A	Granular B (Type I and II)	Granular B (Type I and II)	
100	0.5	9.8	6.7	–	–	0.3	
150	0.6	9.8	7.6	–	–	0.3	
200	0.7	8.5	5.8	–	–	0.3	
250	0.7	10.1	6.7	–	–	0.3	
300	0.8	11.0	7.3	–	–	0.3	
375	0.9	9.8	6.4	–	–	0.3	
450	1.0	10.1	6.7	–	–	0.3	
525	1.1	9.1	6.1	–	–	0.3	
600	1.2	10.7	7.0	–	–	0.3	
750	1.4	9.8	6.4	–	–	0.3	
900	1.6	8.8	6.1	–	–	0.3	
1050	1.8	–	–	6.1	4.3	0.3	
1200	2.0	–	–	6.4	4.6	0.3	
1500	2.4	–	–	6.4	4.3	0.6	

NOTES:

A The table applies to dual wall corrugated polyethylene gravity sewer pipe according to CSA B182.6 and CSA B182.8.
B Pipe diameters 1050 to 1500mm are listed with a constant RSC 160 value for convenience. Minimum pipe stiffness values are listed in Table 3 of CSA B182.8.
C Trench width is based on Class I compacted material for Granular A and Class II compacted material to 95% of the maximum dry density for Granular B.
D The table based on backfill density of 2243 kg/m^3.
E The table presumes groundwater is at or below the springline of the pipe.
F Minimum height of fill over the pipe is measured from bottom of flexible pavement or top of rigid pavement.
G Maximum height of fill is measured from the finished surface to top of pipe.
H This OPSD shall be read in conjunction with OPSD 802.010, 802.013 and 802.014.
I For height of fill and/or pipe sizes greater than shown, or for other design conditions, the values shall be calculated from first principles.
J All dimensions are in metres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING

HEIGHT OF FILL TABLE

DUAL WALL CORRUGATED POLYETHYLENE GRAVITY SEWER PIPE – 320 kPa and RSC 160

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