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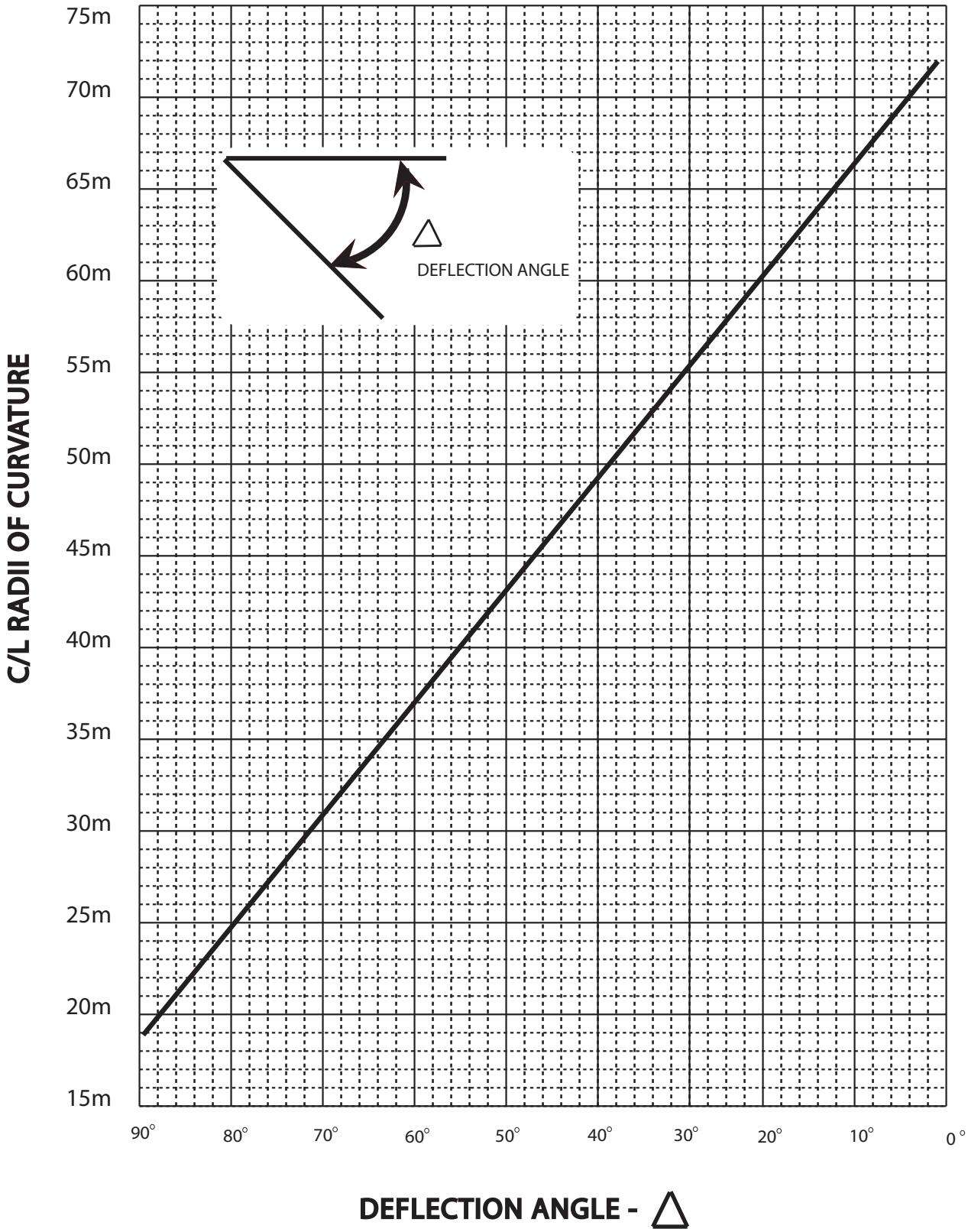
INFRASTRUCTURE DESIGN STANDARDS – FIGURES

SECTION 1 – ROADWAYS AND TRANSPORTATION



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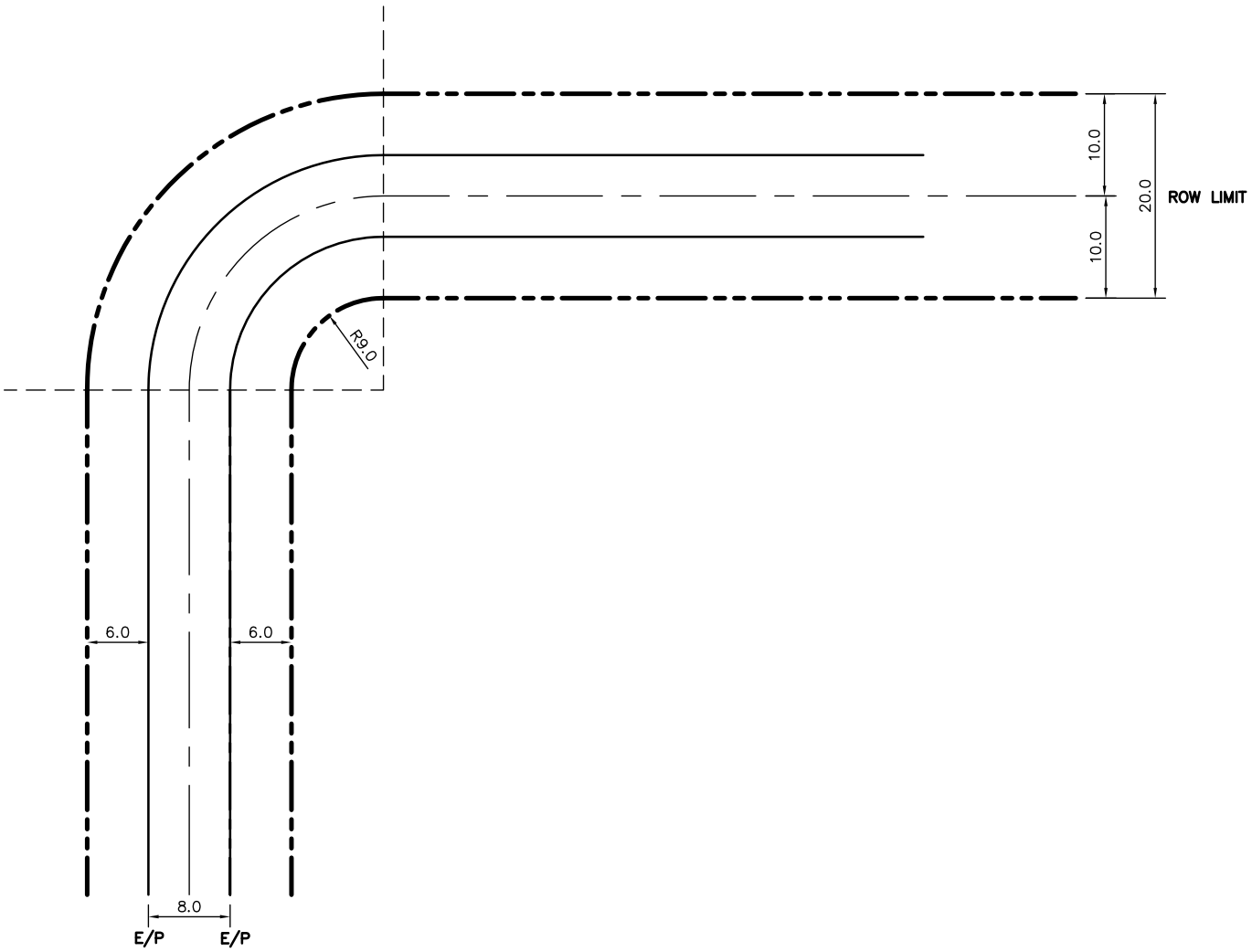
MINIMUM C/L RADII OF CURVATURE OF LOCAL ROADS IN SUBDIVISIONS

DATE: 2017-04

FIGURE 1.1



NOTE:

All dimensions shown are minimunm requirements

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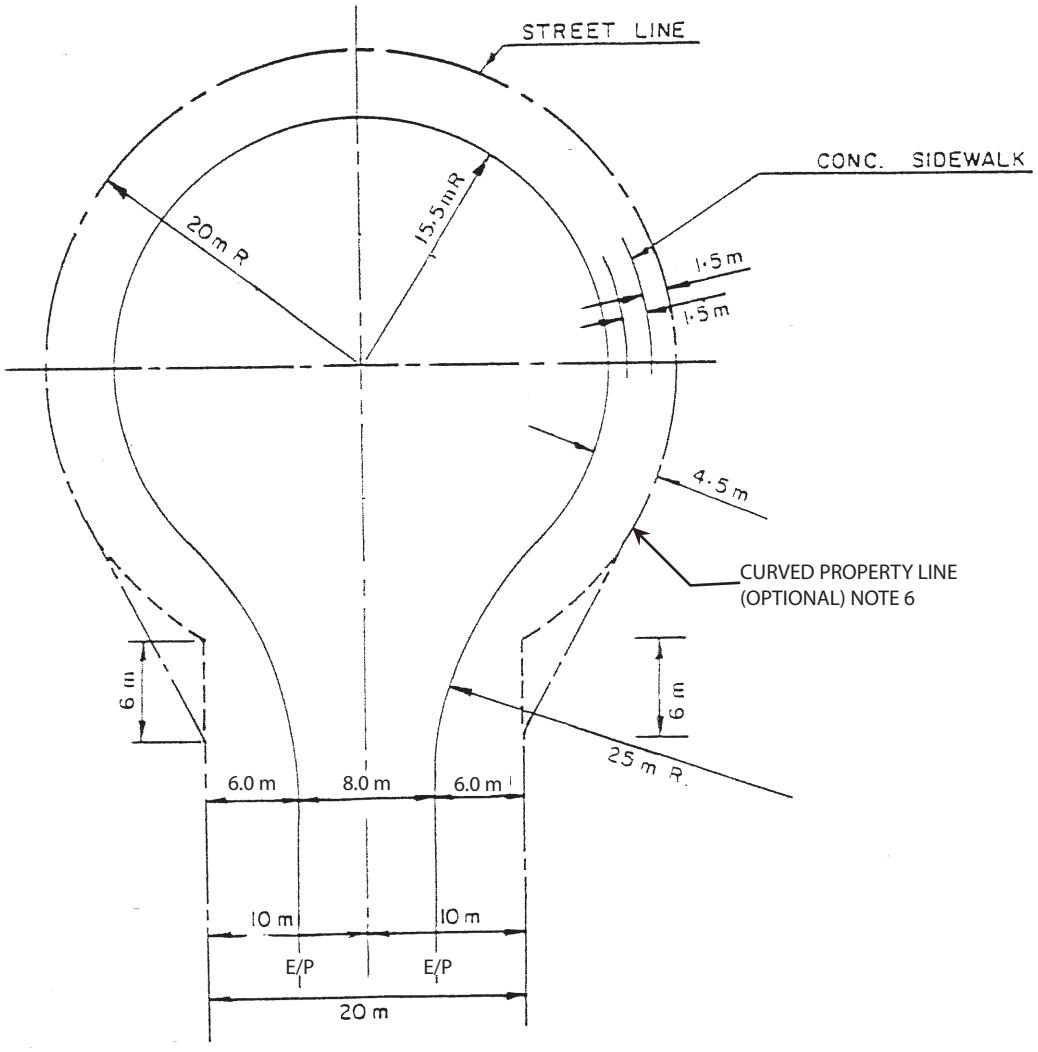
90 DEGREE STREET CURVE - LOCAL STREET

DATE: 2017-04

FIGURE 1.2



NOTES:

1. Grade of gutters in cul-de-sac to be 0.5% minimum.
2. Cul-de-sac alignment may be skewed subject to approval by the Municipal Engineer.
3. Road width dimensioned from edge of asphalt to edge of asphalt.
4. A curved property line with a minimum radius of 11.0 metres may be used as an alternative to the straight line transition from the cul-de-sac to standard right-of-way.
5. Road cross-fall within bulb portion of cul-de-sac to be a minimum 2% grade

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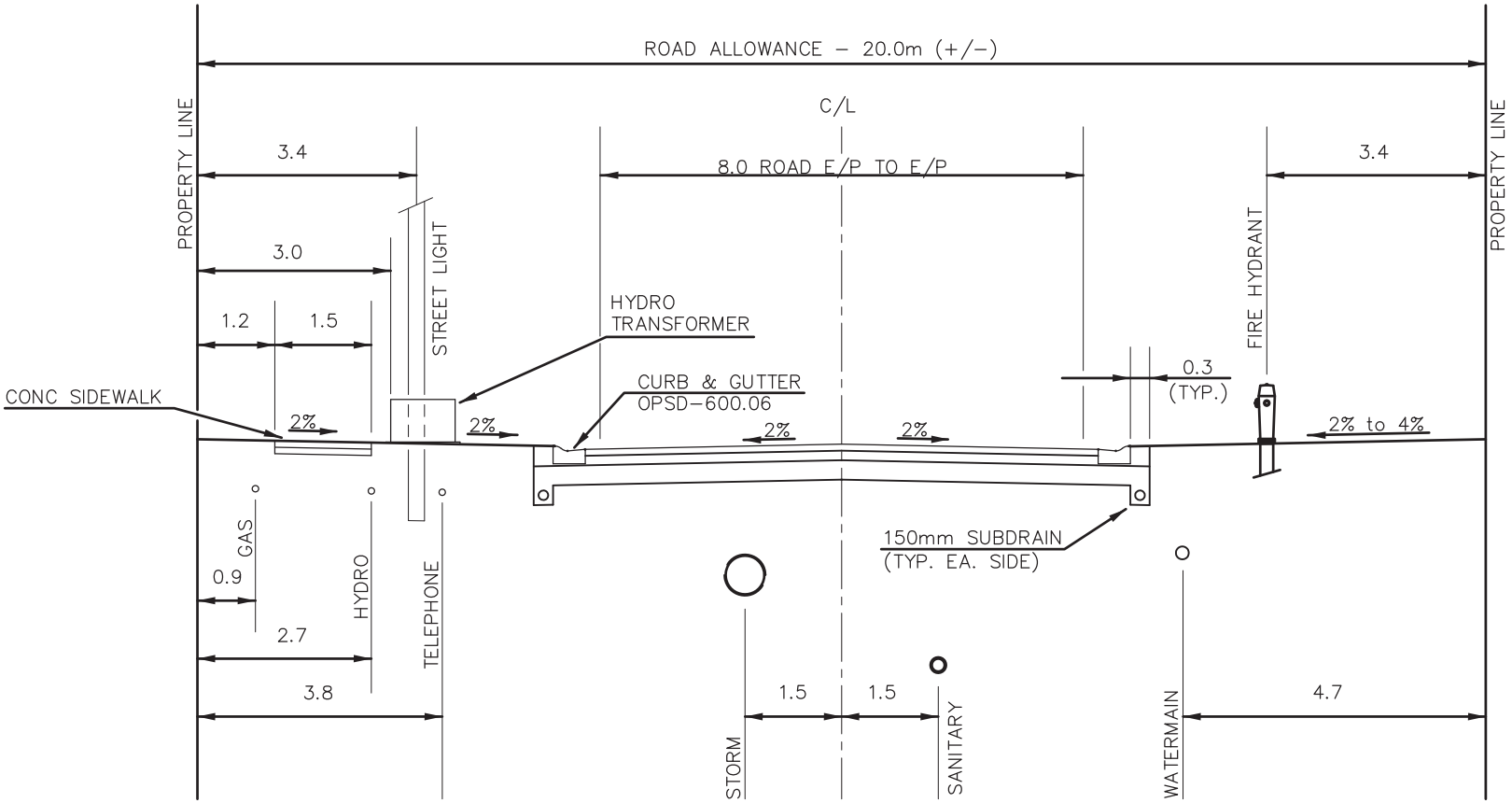
STANDARD FOR CIRCULAR CUL-DE-SAC

DATE: 2017-04

FIGURE 1.3



NOTES:

1. Minimum pavement requirement
   300mm Granular 'B' 50mm HL8
   150mm Granular 'A' 40mm HL3
   Or as per Geotechnical Report
2. Watermain shall be placed on the inside of crescents and curved drives
3. If sidewalk is required on one side only, it shall be opposite to the watermain and light standards shall be on the same as the sidewalk
4. It is preferred to place the primary hydro and transformers on the side opposite to the watermain; transformers shall be turned with the long side parallel to the R.O.W. limit
5. Gas and telephone shall be placed on both sides of the street
6. Street lights, transformers, telephone and cable pedestals and fire hydrants shall be aligned with lot lines where possible
7. Telephone and cable pedestals shall be located 0.3m inside the R.O.W. limits
8. Watermain shall be placed with a minimum 1.7m cover; other utilities shall be in accordance with the utility requirements
9. Boulevard areas shall be finsihed with 100mm topsoil and sod.

FIGURE 1.4

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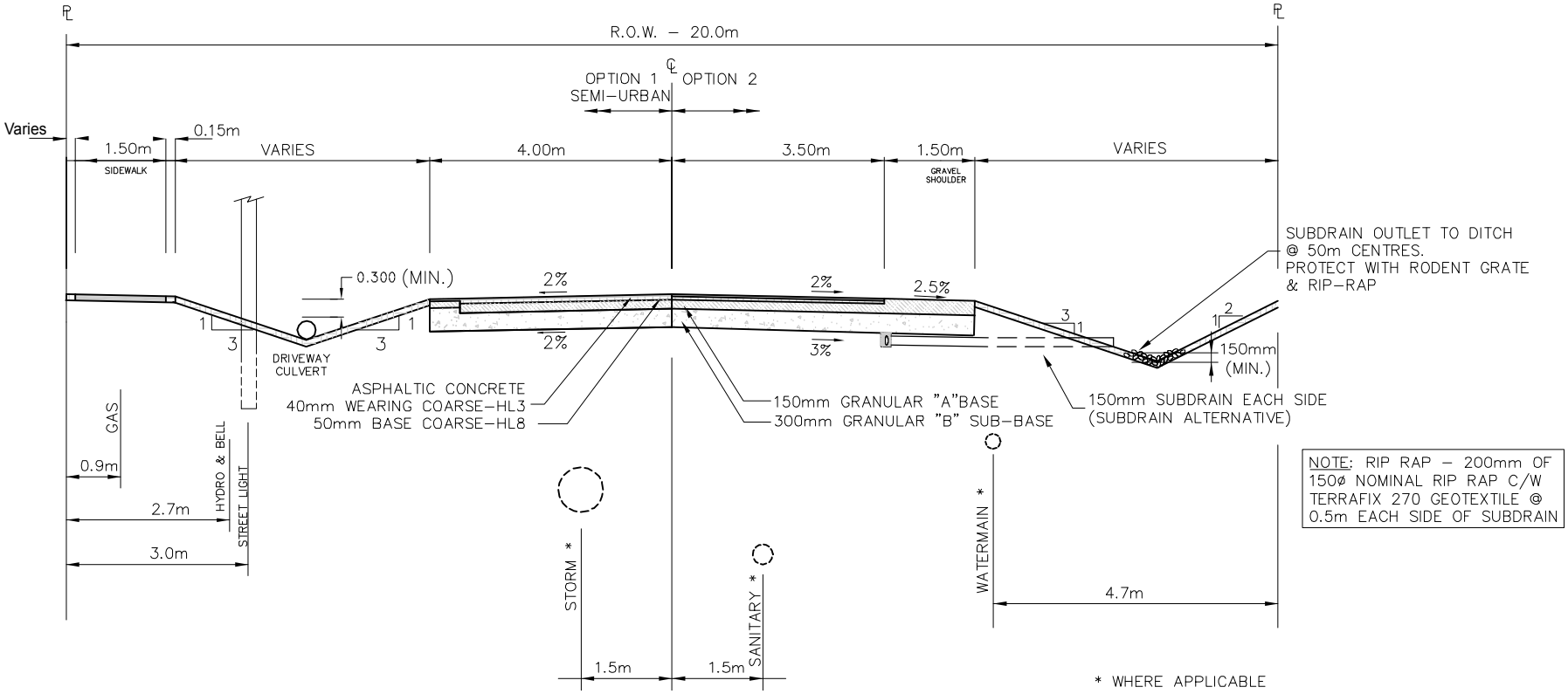
TYPICAL CROSS SECTION - LOCAL URBAN RESIDENTIAL

DATE: 2017-04

FIGURE 1.4



NOTES:

1. OPTION 1 – SEMI–URBAN FOR USE IN DELAWARE ONLY SUBJECT TO MUNICIPAL APPROVAL
2. SEMI–URBAN ROADS ARE TO BE CONSTRUCTED WITH A MINIMUM 0.5% LONGITUDINAL GRADIENT;
3. AS A GENERAL RULE, CULVERTS ARE TO BE 300MM MINIMUM WHERE THE UPSTREAM SECTION OF DITCH IS LESS THAN 100M AND 450MM DIA WHERE THE UPSTREAM DITCH IS GREATER THAN 100M IN LENGTH;
4. DITCH CROSSINGS ARE REQUIRED AT ALL DRIVEWAYS, HYDRANTS AND TRANSFORMER LOCATIONS.

FIGURE 1.5

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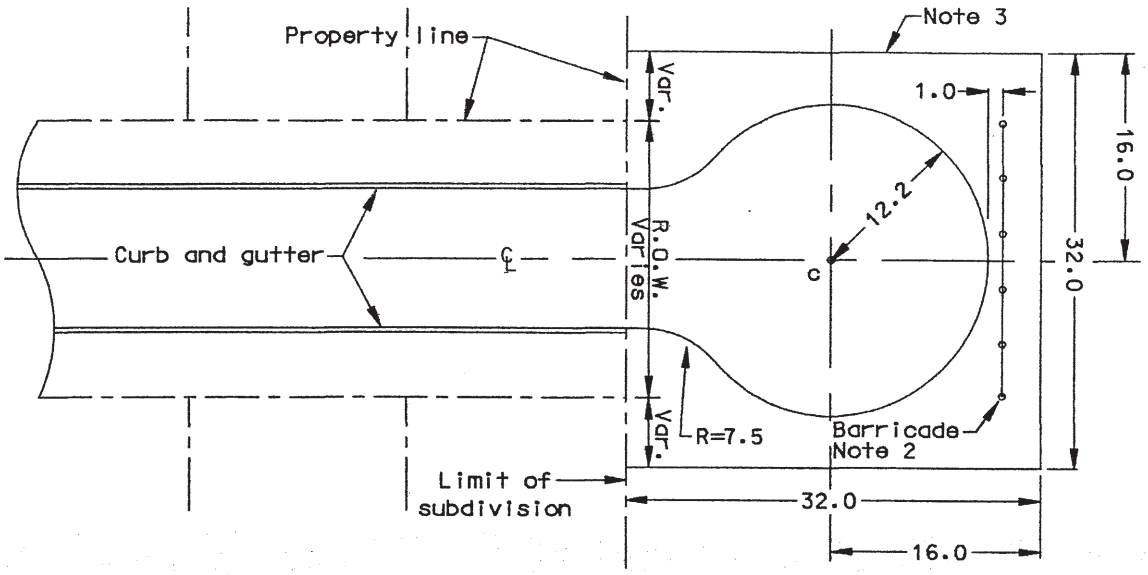
TYPICAL CROSS SECTION - RURAL ROAD

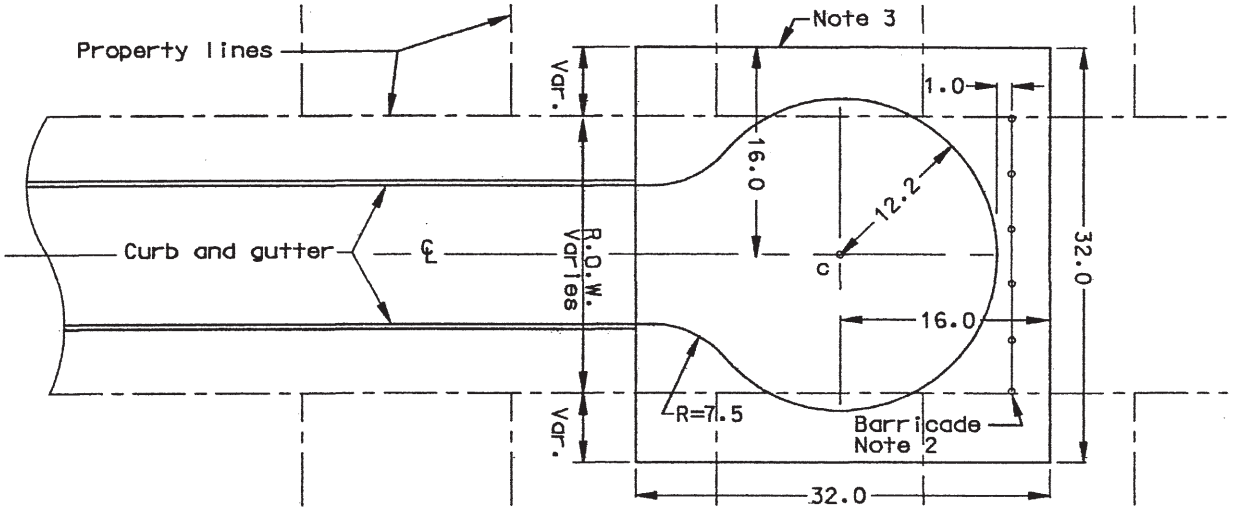
DATE: 2017-04

FIGURE 1.5
REV. 01

TYPE I : TURNING CIRCLE BEYOND THE SUBDIVISION LIMITS



TYPE II : TURNING CIRCLE WITHIN THE SUBDIVISION LIMITS



NOTES:

1. The turning circle shall be constructed from the following materials and minimum depths:
   Surface - Hot Mix H.L.3 50mm
   Granular - Granular 'A' 50mm
   Base - Granular 'B' 300mm

2. The dead end barricade shall conform to OPSD 912.532

3. Road easement or subdivision block may also be designed on a 16m radius from centre point 'c' as approved by the Contract Administrator.

4. Temporary drainage shall be provided around both Type I and Type II turning circles.

All dimensions are in metres unless otherwise shown.

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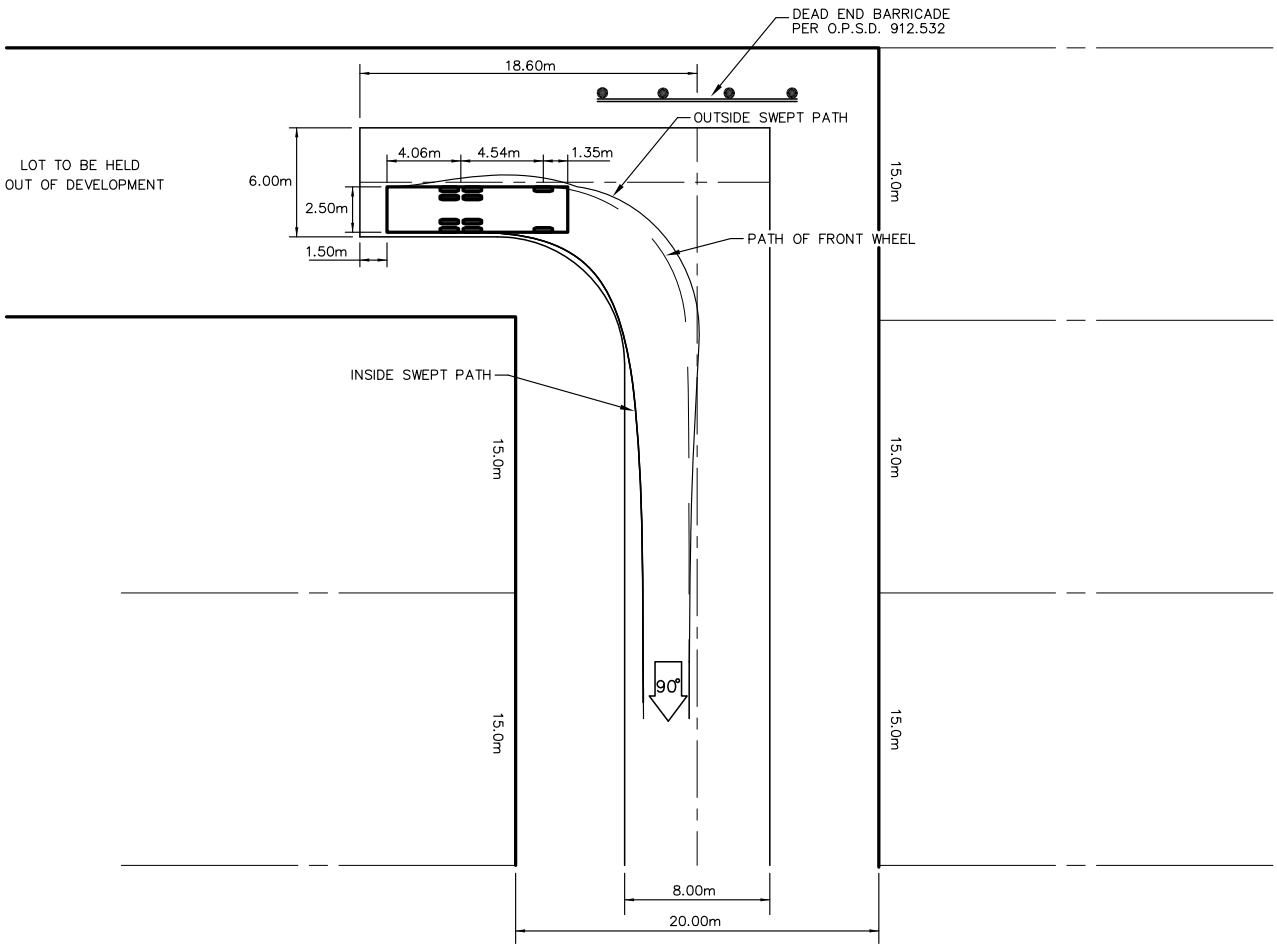
TEMPORARY TURNING CIRCLES

DATE: 2017-04

FIGURE 1.6



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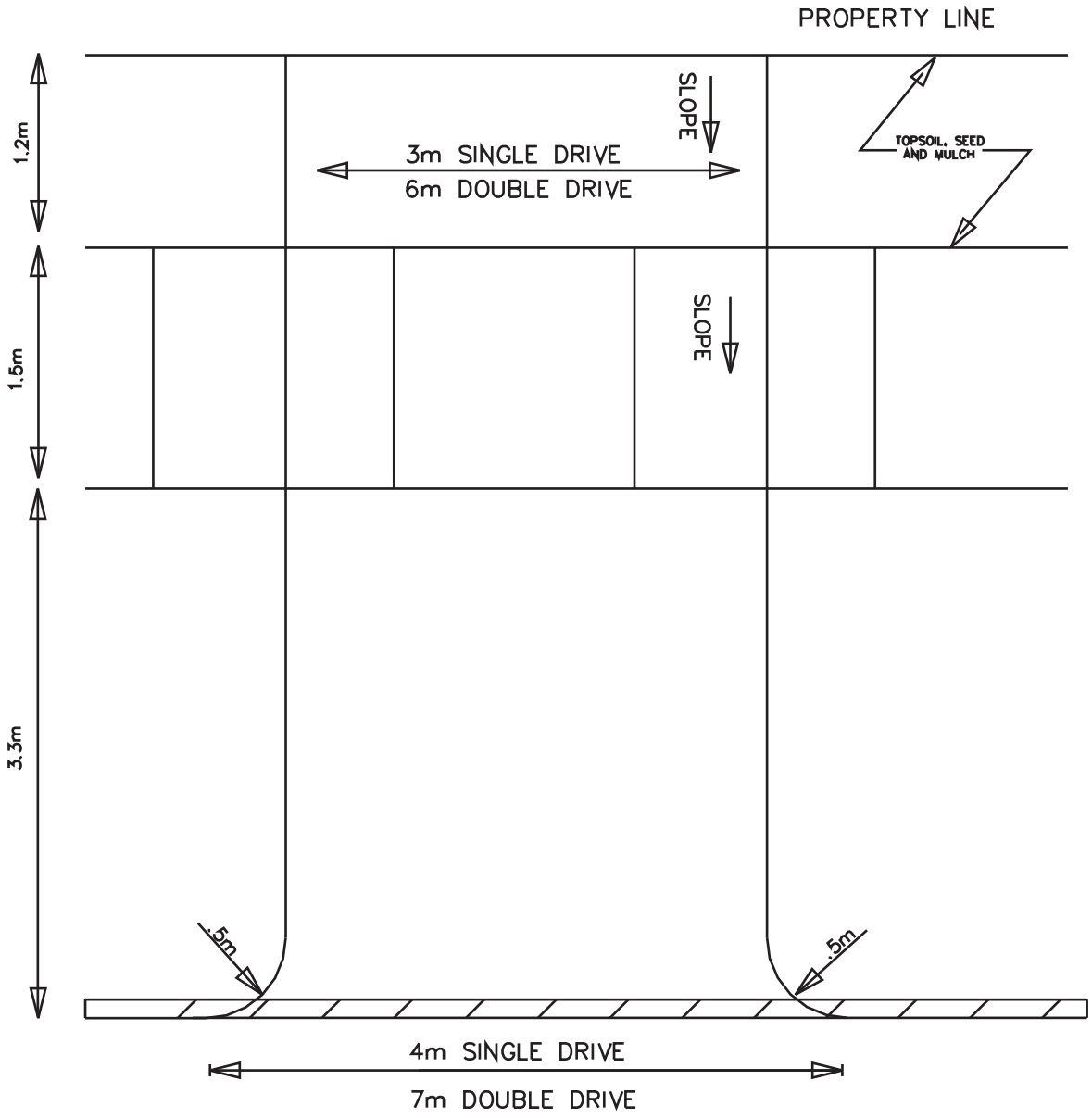
TEMPORARY DEAD END TREATMENT

DATE: 2017-04

FIGURE 1.7



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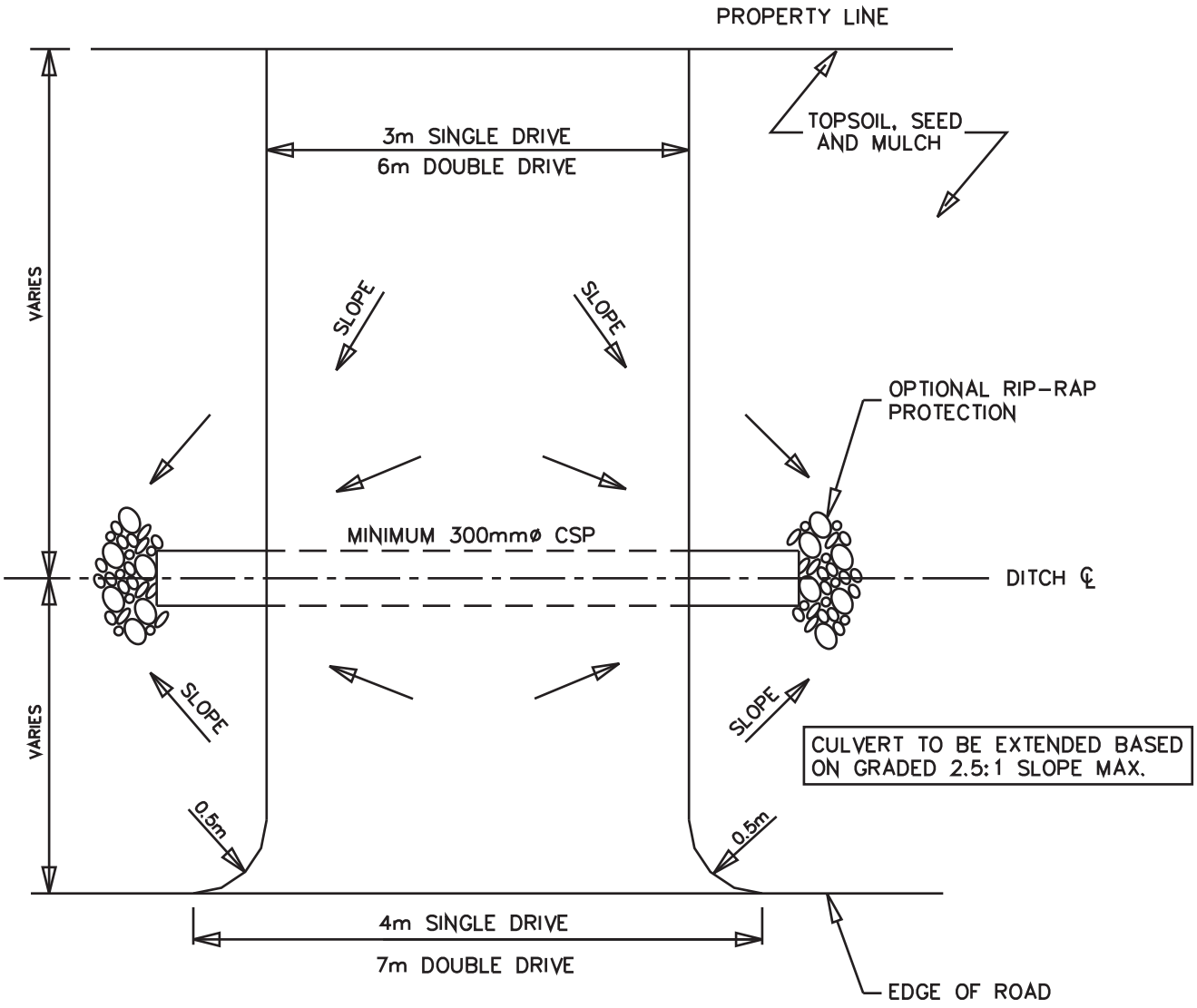
STANDARD FOR SINGLE AND DOUBLE DRIVEWAY ENTRANCE (URBAN)

DATE: 2017-04	REV 01	FIGURE 1.8a)



NOTE: CULVERT INVERTS, DITCH INVERTS AND SLOPE GRADES TO BE SHOWN ON APPLICATION DRAWING. ELEVATIONS TO BE RELATIVE TO CENTRELINE OF ROAD DATUM.

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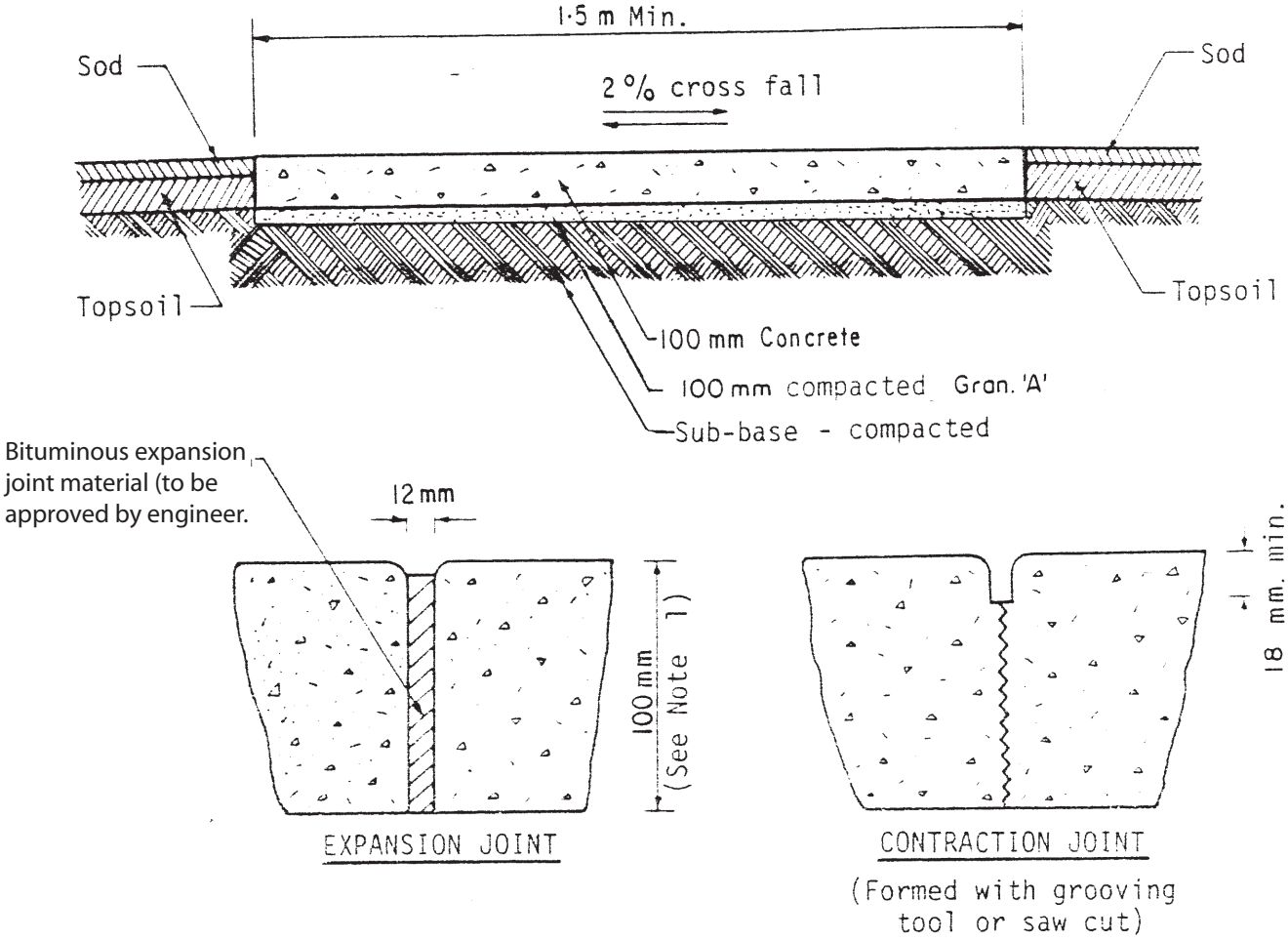
in the centre of it all

STANDARD FOR SINGLE AND DOUBLE DRIVEWAY ENTRANCE (RURAL)

DATE: 2017-04

FIGURE 1.8b)



NOTES:

1. Across industrial, commercial and multi-family ramps the concrete thickness shall be 150mm.
2. All concrete edges to be finished with an edger.
3. Contraction joints shall have a standard spacing of 1.5m, and in no case less than 1m or more than 2m.
4. Expansion joints are required at the following locations:
   - A. Between sidwalk and abutting curb.
   - B. To isolate obstructions from sidewalk, e.g. poles, hydrants, light standards, buildings, etc.
   - C. Intersections of sidewalks and driveways.
   - D. Work interruptions.
5. Class of concrete: 25 MPA
6. Sidewalk to slope towards pavement unless otherwise authorized.

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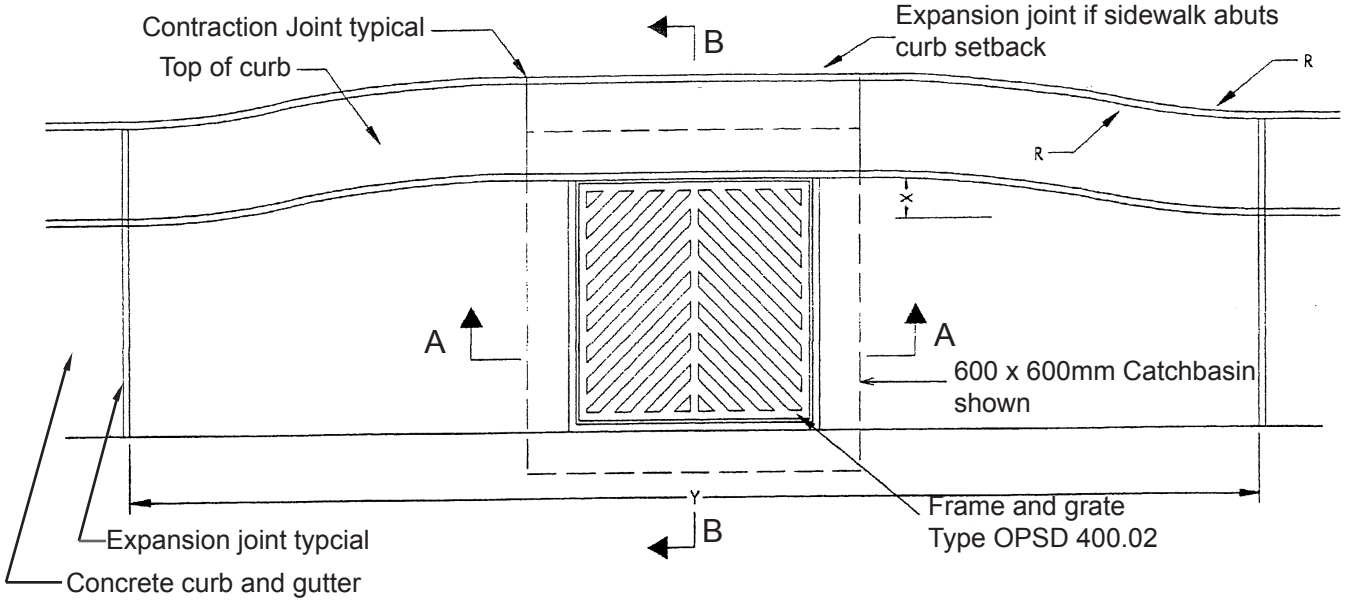
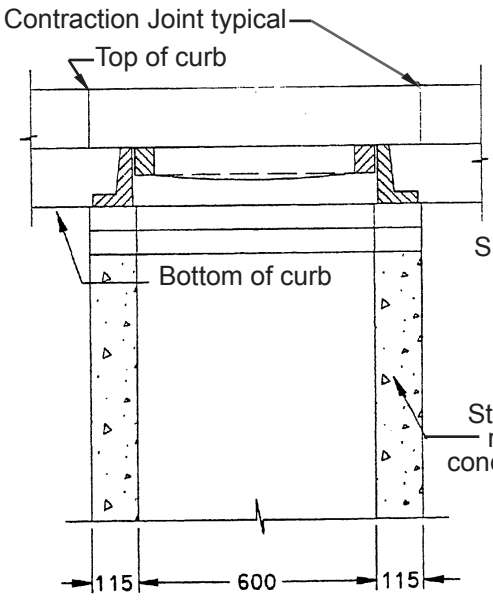
in the centre of it all

CONCRETE SIDEWALK

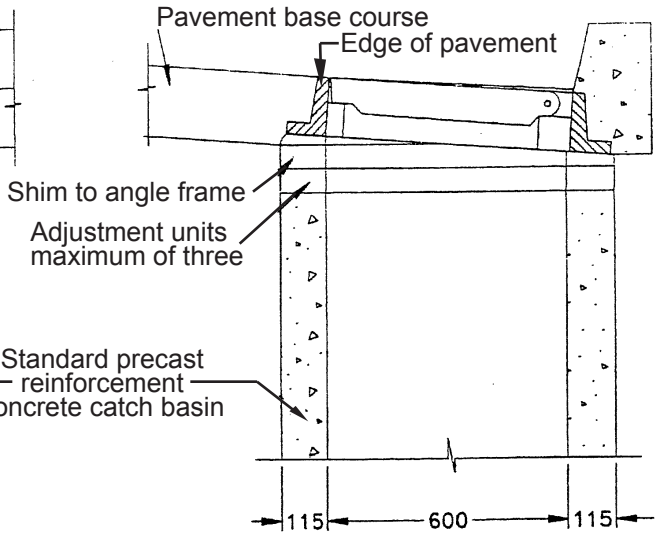
DATE: 2017-04

FIGURE 1.9





SECTION A-A



SECTION B-B

NOTES:

1. "X" Represents the offset distance required to accommodate the various Ontario Provincial Standard Drawing curb types.

   "Y" Represents the length of the concrete curb setback required to accommodate the various Ontario Provincial Standard Drawing curb types.

O.P.S.D. No.	Distance "X"	"Y"	"R"
600.01	200	2600	1500
600.04	300	3600	2000
600.06	325	3900	2000

All dimensions are in millimeters unless otherwise shown.

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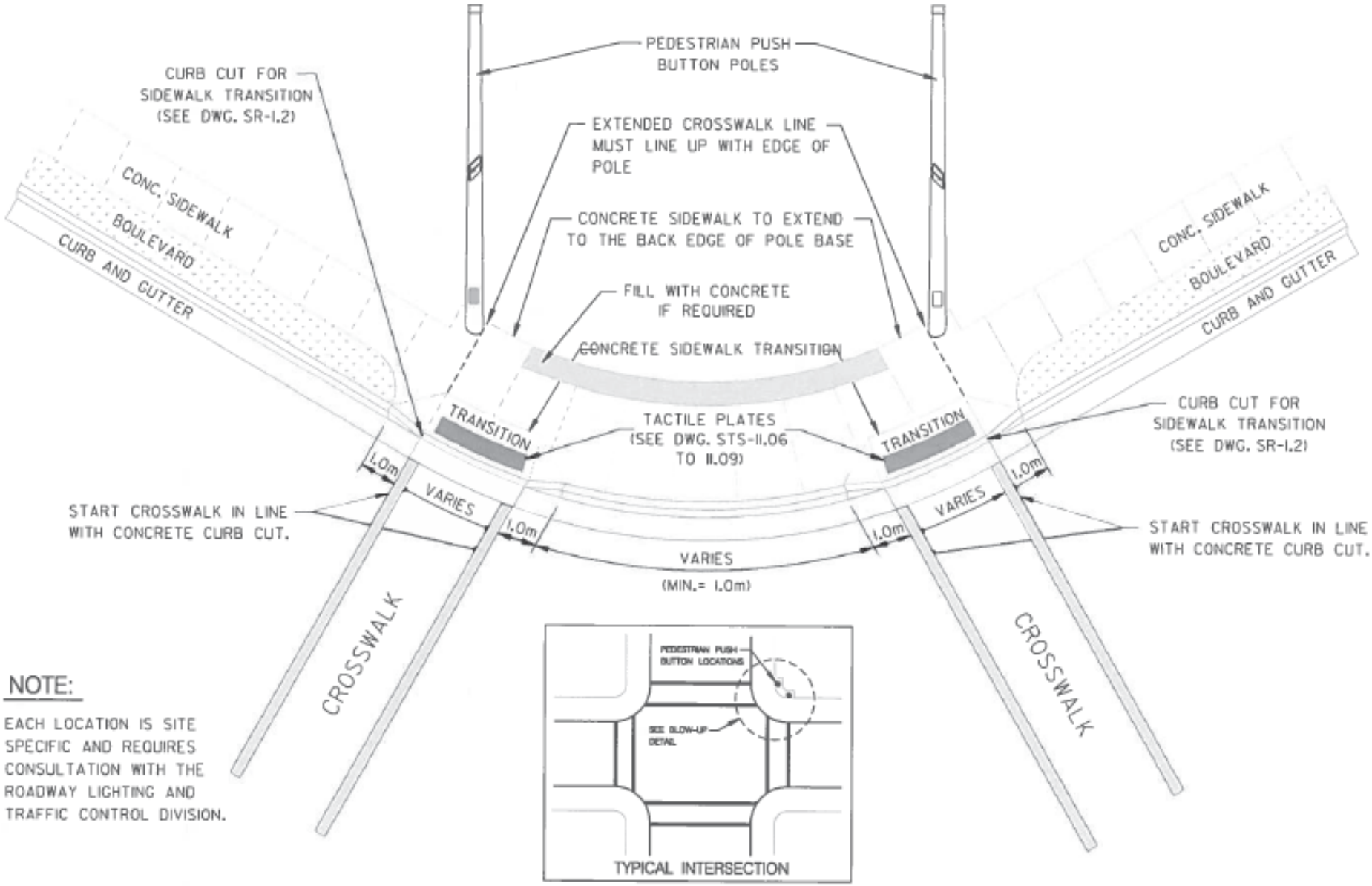
CONCRETE CURB SETBACK

DATE: 2017-04

FIGURE 1.10



NOTE:

EACH LOCATION IS SITE SPECIFIC AND REQUIRES CONSULTATION WITH THE ROADWAY LIGHTING AND TRAFFIC CONTROL DIVISION.

middlesex centre
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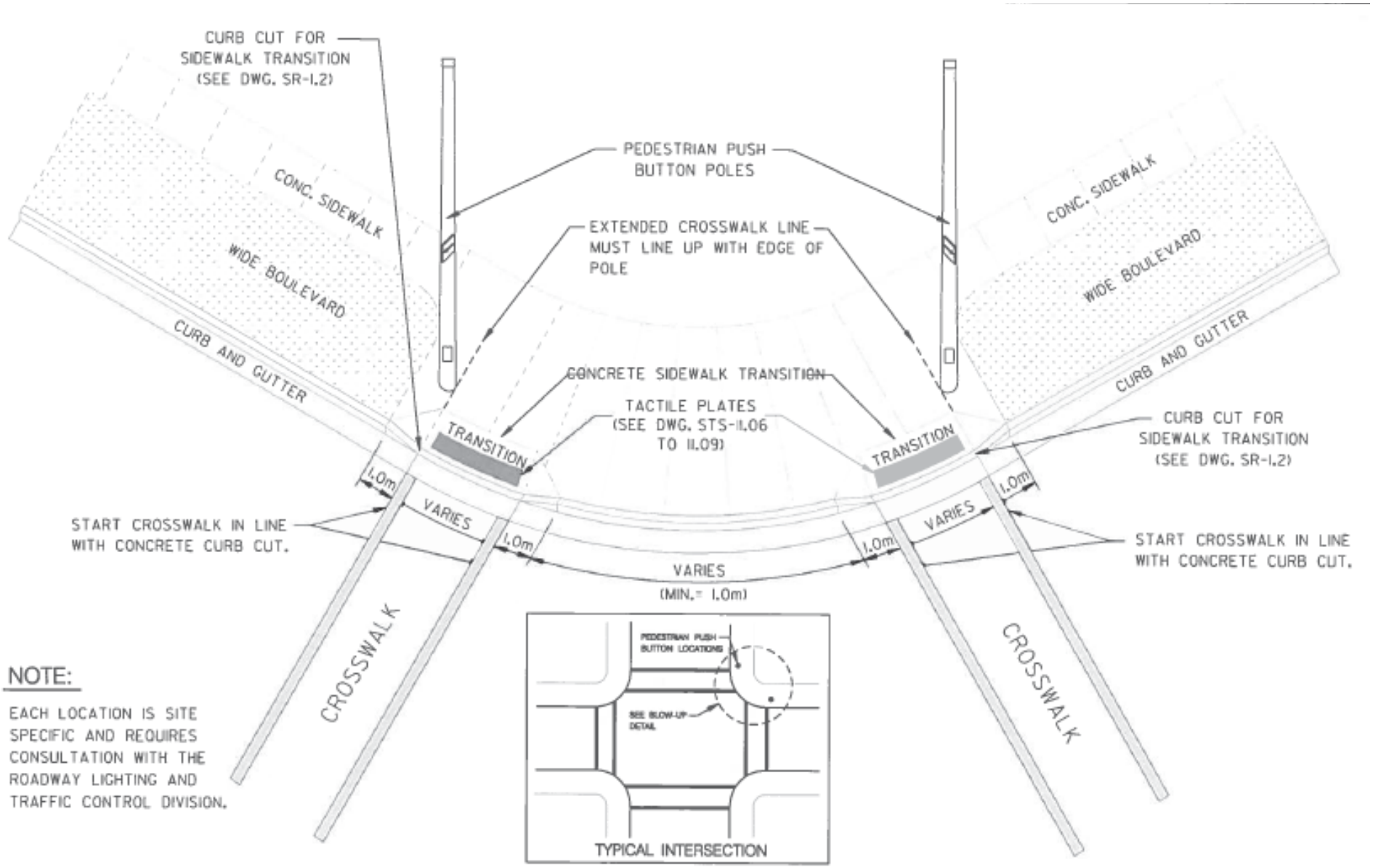
SIDEWALK TRANSITION LOCATIONS AT NEW SIGNALIZED INTERSECTIONS

DATE: 2017-04

FIGURE 1.11 a



NOTE:

EACH LOCATION IS SITE SPECIFIC AND REQUIRES CONSULTATION WITH THE ROADWAY LIGHTING AND TRAFFIC CONTROL DIVISION.

middlesex centre

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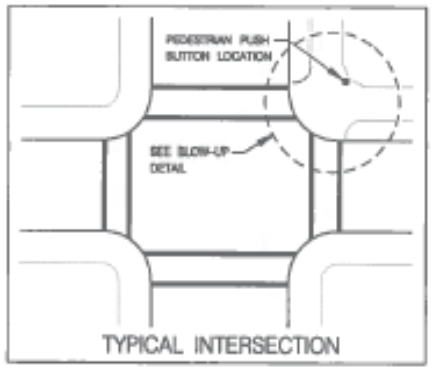
SIDEWALK TRANSITION LOCATIONS AT NEW SIGNALIZED INTERSECTIONS

DATE: 2017-04

FIGURE 1.11 b



NOTE:

EACH LOCATION IS SITE SPECIFIC AND REQUIRES CONSULTATION WITH THE ROADWAY LIGHTING AND TRAFFIC CONTROL DIVISION.

PEDESTRIAN PUSH BUTTON POLE

EXTENDED CROSSWALK LINE MUST LINE UP WITH EDGE OF POLE.

EXTEND BACK EDGE OF SIDEWALK TO BACK EDGE OF POLE BASE 1.5m EACH SIDE.

CONC. SIDEWALK

BOULEVARD

CURB AND GUTTER

1.5m

TACTILE PLATES (SEE DWG. STS-11.06 TO 11.09)

TRANSITION TRANSITION TRANSITION

CURB CUT FOR SIDEWALK TRANSITION (SEE DWG. SR-1.2)

1.0m

START CROSSWALK IN LINE WITH CONCRETE CURB CUT.

VARIES

CROSSWALK

TRANSITION LENGTH (VARIES) MIN.= 3.0m

MAY OR MAY NOT HAVE RAISED CURB IN BETWEEN CROSSWALKS.

TACTILE PLATES SHALL EXTEND THE FULL LENGTH OF THE TRANSITION IF THERE IS NO RAISED CURB BETWEEN TRANSITIONS.

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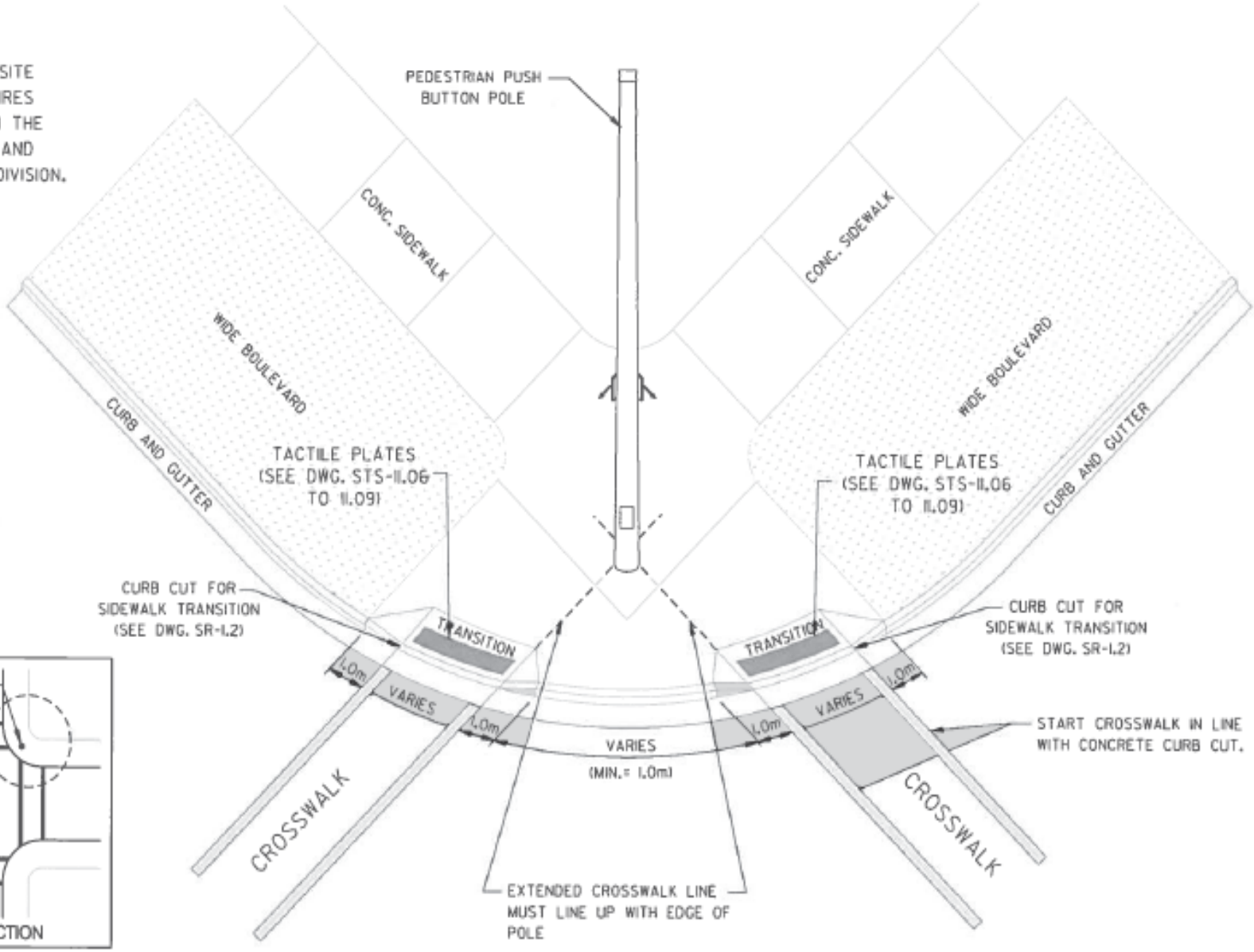
SIDEWALK TRANSITION LOCATIONS AT NEW SIGNALIZED INTERSECTIONS

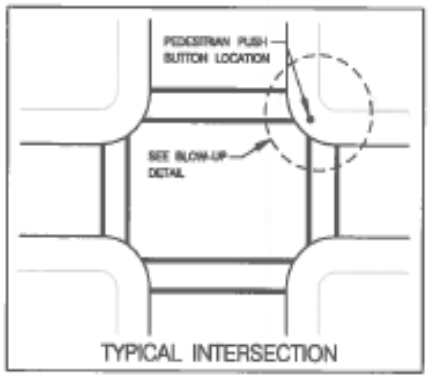
DATE: 2017-04

FIGURE 1.11 c

NOTE:

EACH LOCATION IS SITE SPECIFIC AND REQUIRES CONSULTATION WITH THE ROADWAY LIGHTING AND TRAFFIC CONTROL DIVISION.





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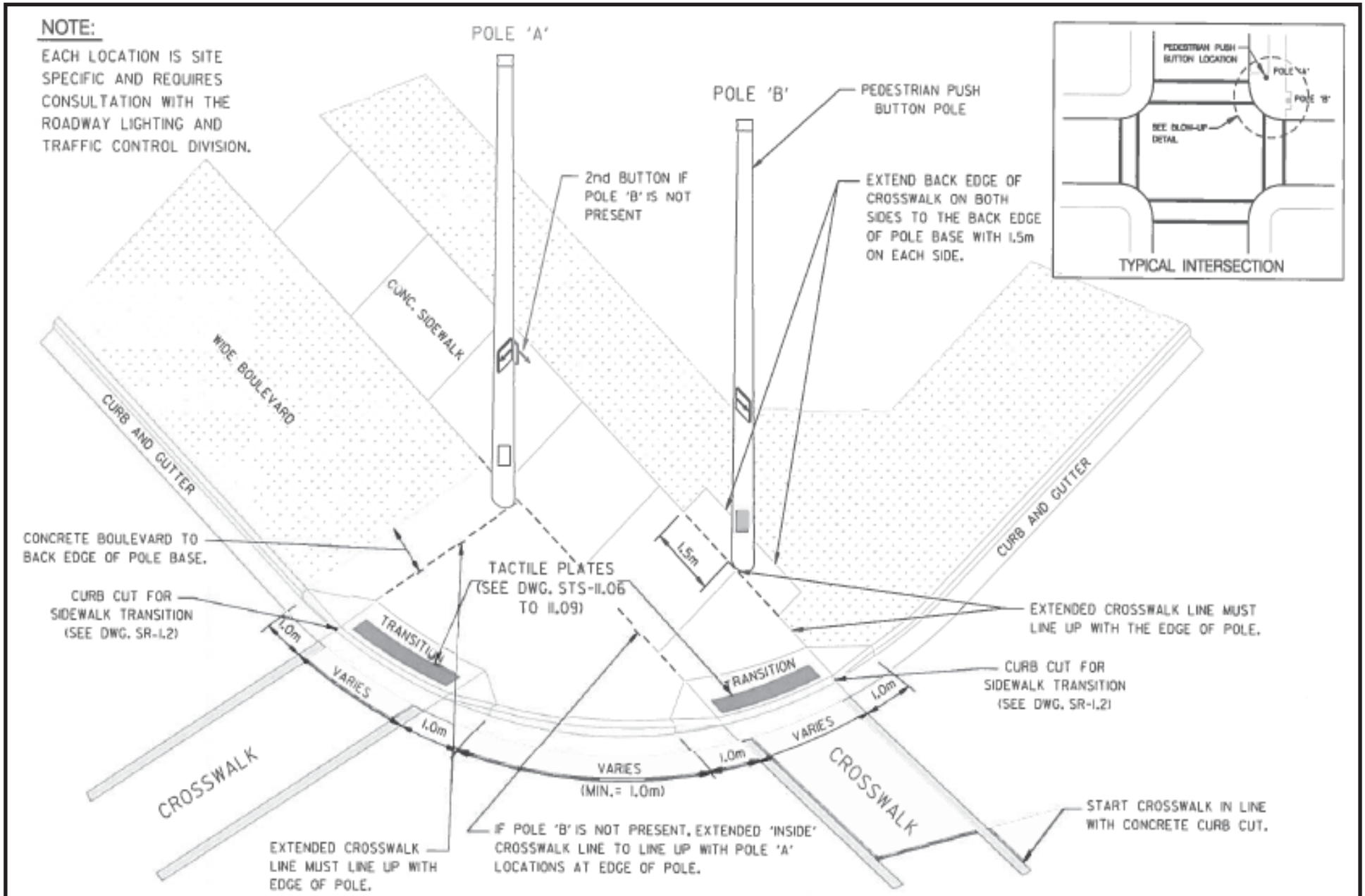
SIDEWALK TRANSITION LOCATIONS AT NEW SIGNALIZED INTERSECTIONS

DATE: 2017-04

FIGURE 1.11 d



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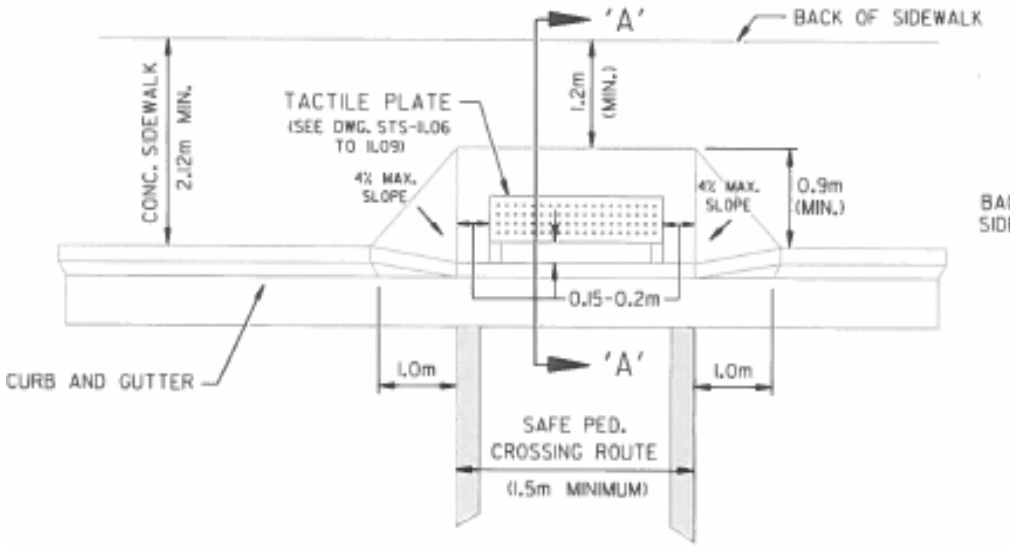
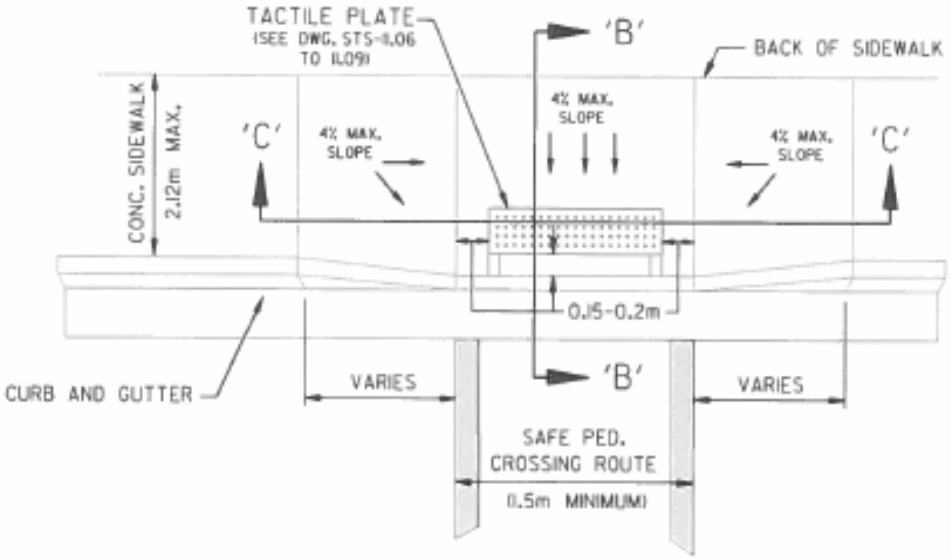
SIDEWALK TRANSITION LOCATIONS AT NEW SIGNALIZED INTERSECTIONS

DATE: 2017-04

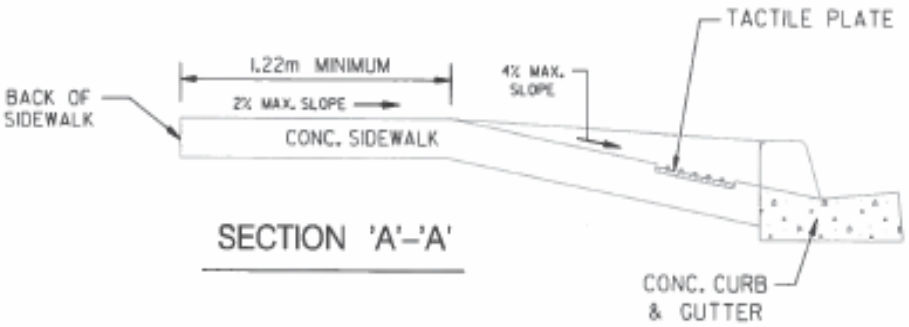
FIGURE 1.11 e



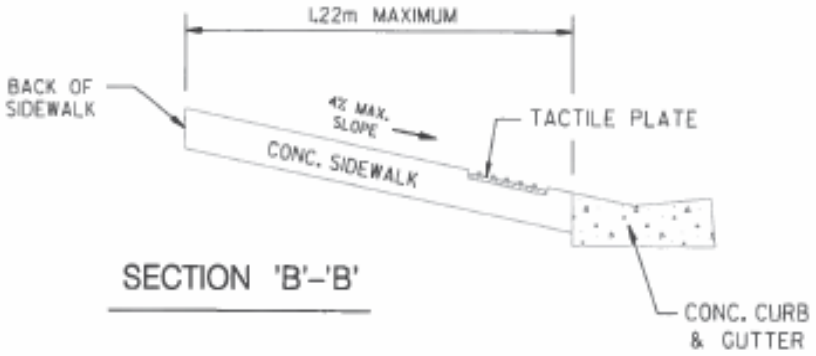
MID-BLOCK TRANSITION DETAIL



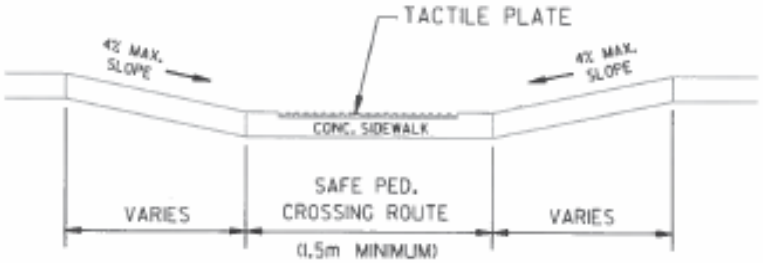
NARROW SIDEWALK DETAIL



SECTION 'A'–'A'



SECTION 'B'–'B'



SECTION 'C'–'C'

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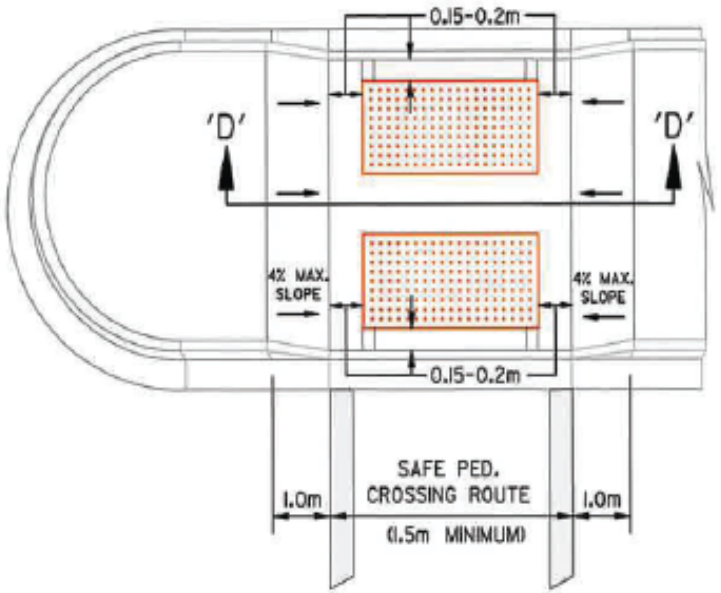
TACTILE PLATE LOCATION DETAILS AND CROSS-SECTIONS

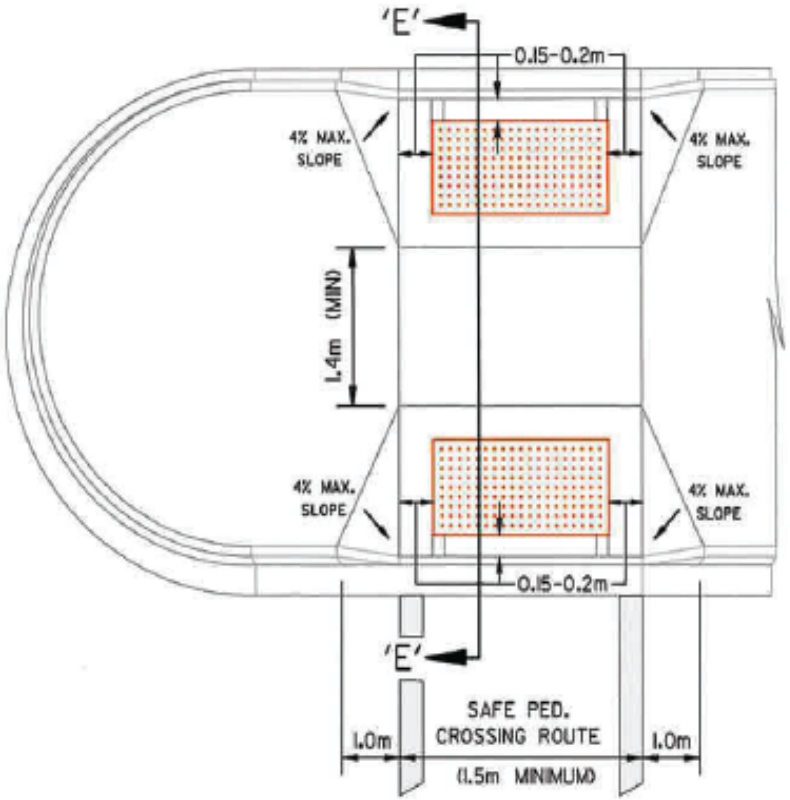
DATE: 2017-04

FIGURE 1.11 f



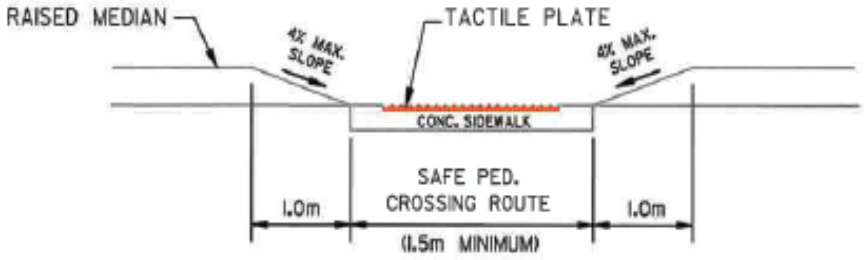
CURB RAMP AT MEDIAN

(NARROW ISLAND)

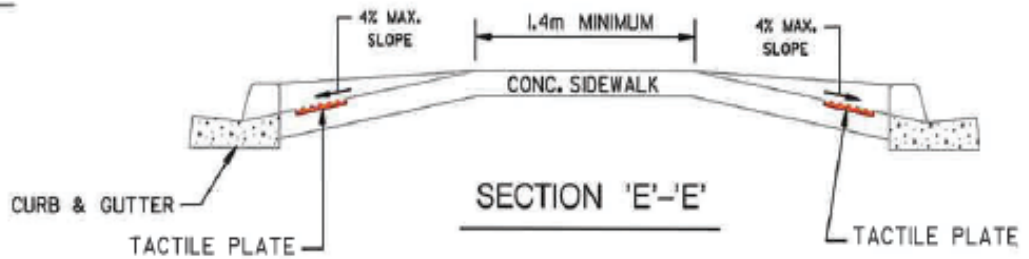


CURB RAMP AT MEDIAN

(WIDE ISLAND)



SECTION 'D'–'D'



SECTION 'E'–'E'

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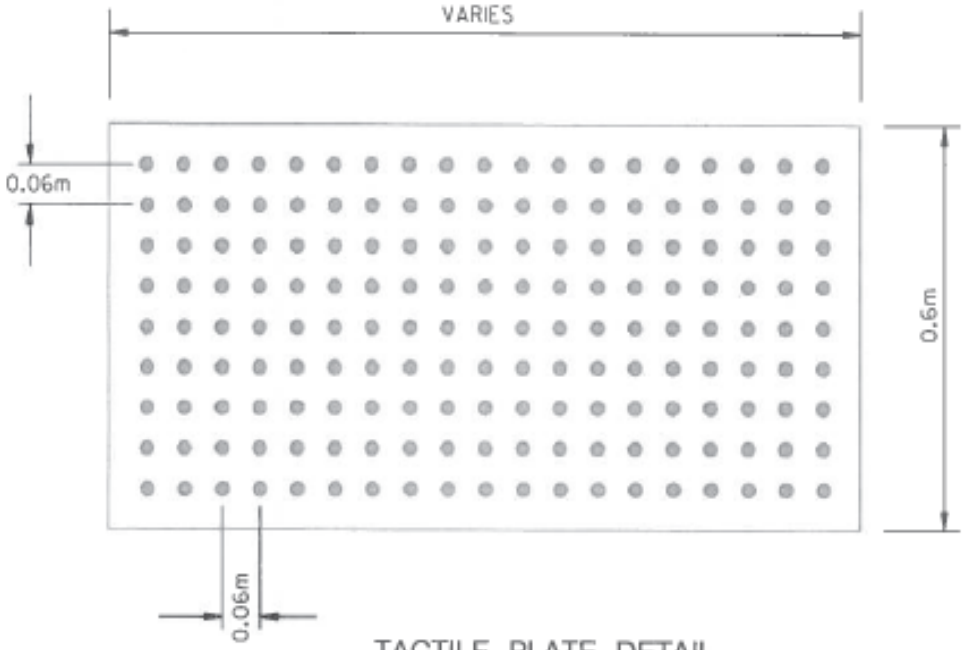
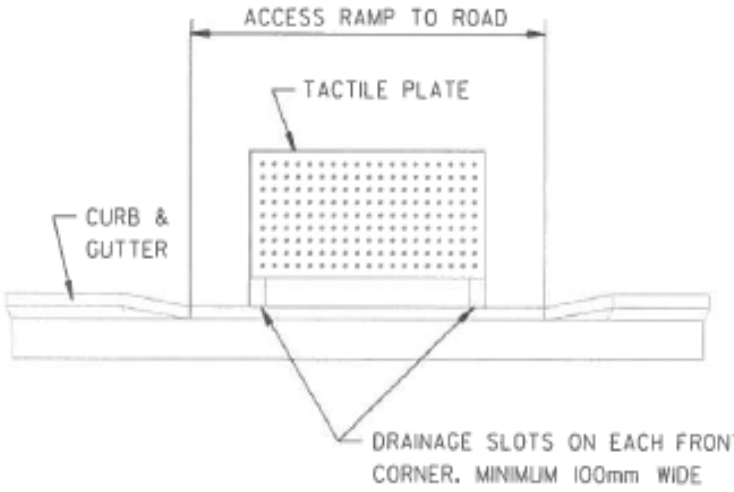
TACTILE PLATE - ISLAND LOCATIONS AND CROSS-SECTIONS

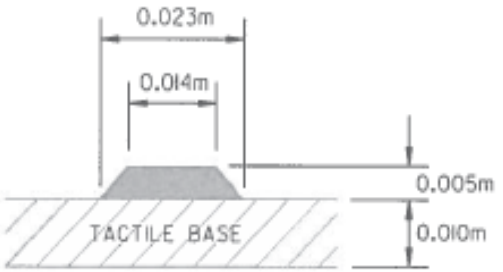
DATE: 2017-04

FIGURE 1.11 g

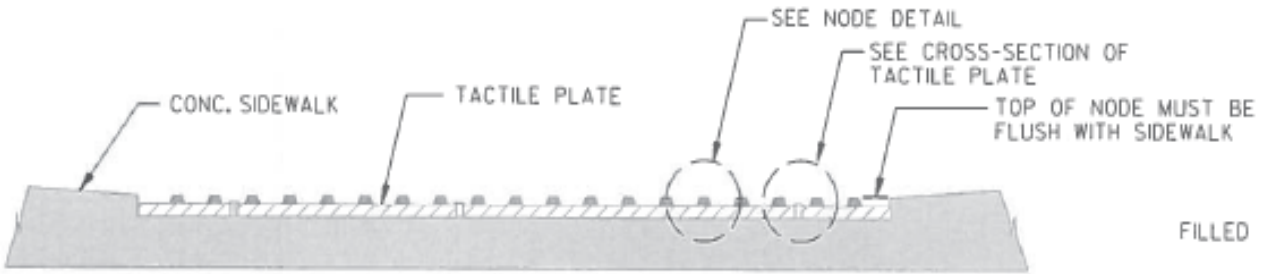


TACTILE PLATE DETAIL



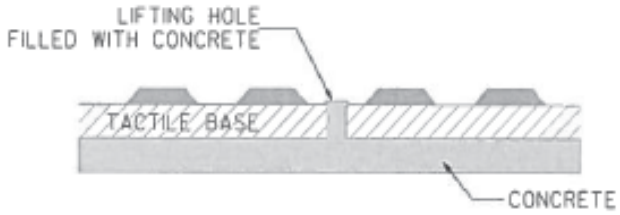


NODE DETAIL



SECTION THROUGH TACTILE PLATE

NOTE: CONCRETE MUST PROTRUDE THROUGH ALL LIFTING HOLES AND BE WIPED FLUSH. ANY HOLES SHALL BE FILLED WITH CONCRETE CAULKING.



CROSS-SECTION OF TACTILE PLATE

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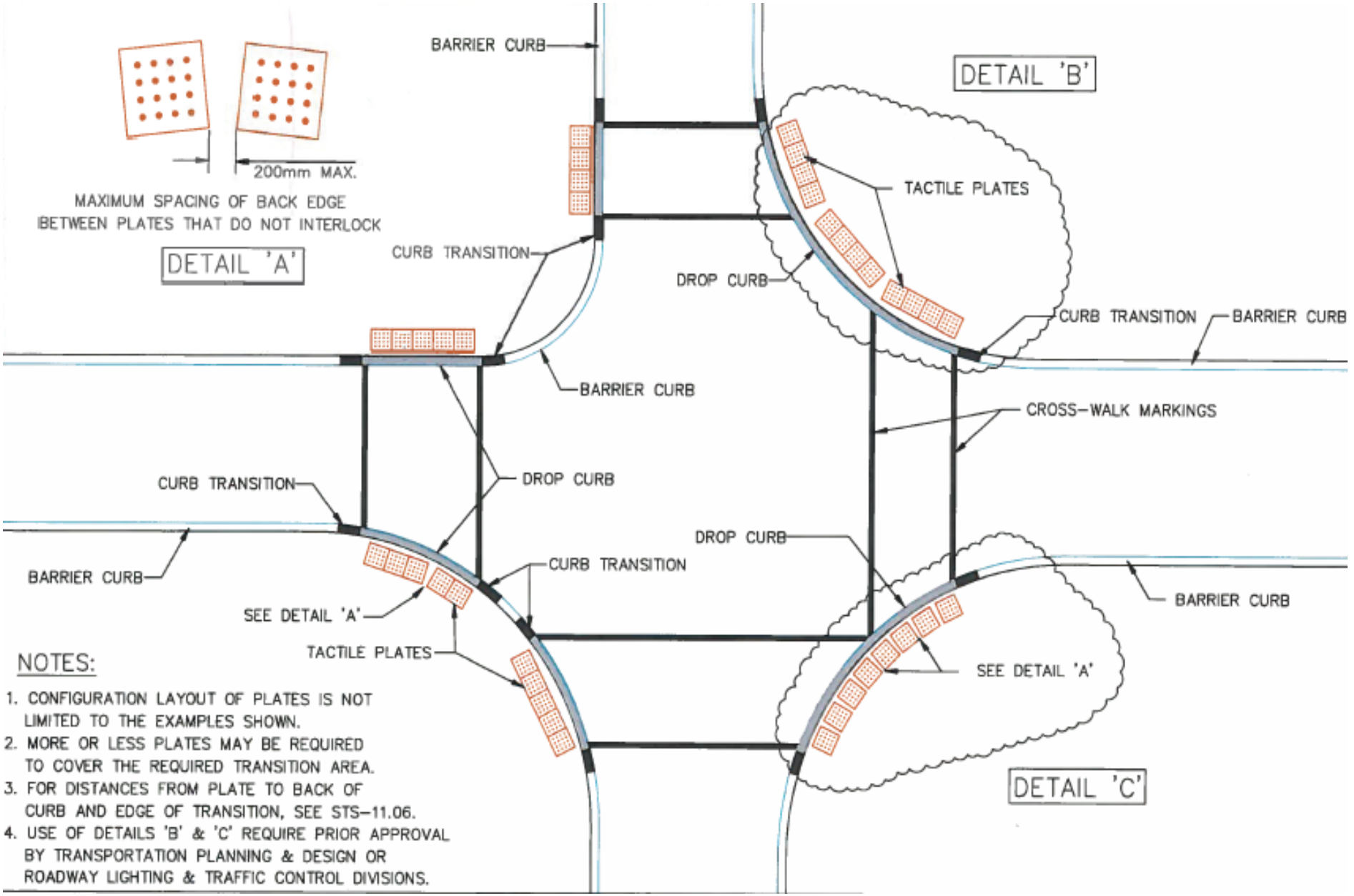
TACTILE PLATE - DETAILS AND SECTIONS

DATE: 2017-04

FIGURE 1.11 h



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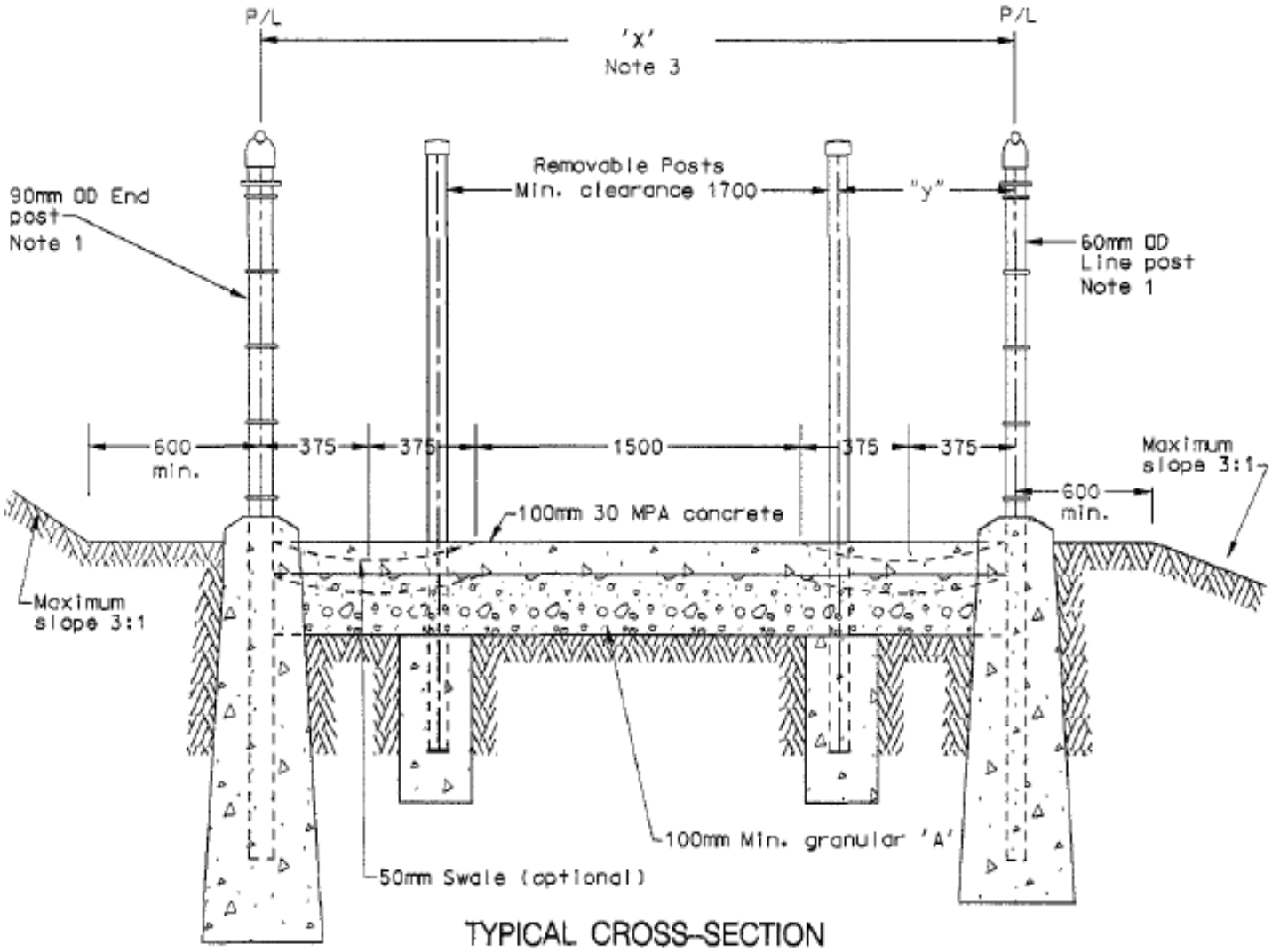
TACTILE PLATE LAYOUT

DATE: 2017-04

FIGURE 1.11 i



TYPICAL CROSS-SECTION

NOTES:

1. Chain link fence detail shall comply with the requirements of OPSS-541 and OPSD 972.130 except for the following amendments. The height of the fence shall read 1.2 m and the footing detail, part a: in earth is amended to read a: in concrete. In lieu of a chain link fence, an approved wooden fencein accordance with Middlesex Centre fencing By-laws can be constructed adjacent to the walkway/access entirely on private property. The wooden fence is to terminate 6.0 m from the street line and continue with a 1.2 m wooden fence or a 1.2 m chain link fence to the street line. All wooden fence details are to be reviewed and/or approved by the Director of Public Works and Engineering.

2. In new subdivisions where walkway grades exceed 10% stairs are to be constructed. Walkways constructed with grades between 8% and 10% require pedestrian handrails on one side of the walkway in line with the Removable posts with approval of the Director of Public Works and Engineering. The pedestrian handrail shall conform to OPSD 980.101

3. 'x' varies for 3 m and 4.6 m cross sections. 'y' = 620 for 3 m cross-sections. 'y' = 1420 for 4.6 m cross sections.

4. A crossfall of 2% or alternative swales.

5. Removable posts to be installed in locations indicated on approved drawings.

6. Walkway Lighting to be in accordance with current Middlesex Centre specifications

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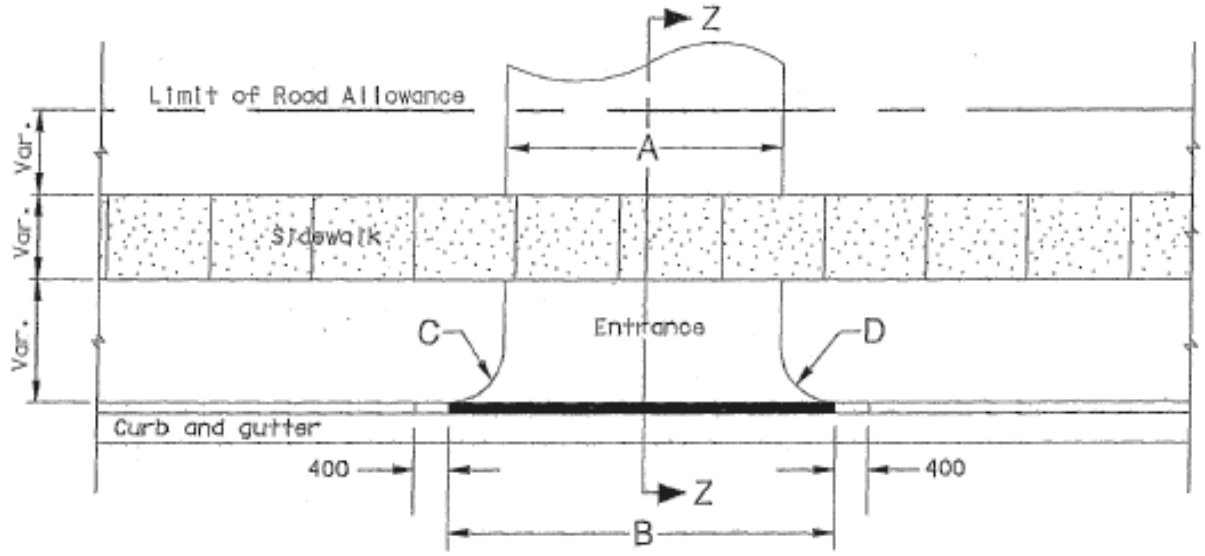
STANDARD PEDESTRIAN WALKWAY

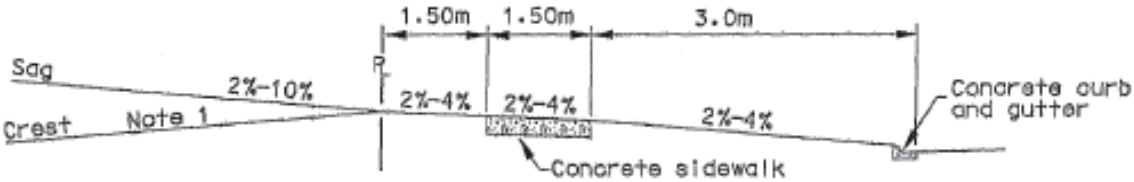
DATE: 2017-04

FIGURE 1.12

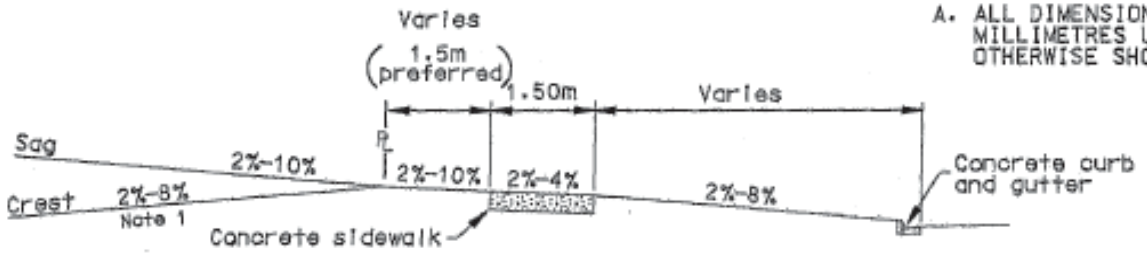


Driveway Entrance Type	Dimension (max/m)			
	A	B	C rad.	D rad.
Single Family (Local & Secondary ROW's)	6.0	7.0	0.5	0.5
Single Family (Other ROW's)	6.0	8.0	0.5	1.5
Multi-family	6.7	12.7	3.0	3.0

Driveway Structure			
Type	HL3 (Note 2)	Gran. 'A'	Gran. 'B'
Single Family	50	150	-
Multi-family	50	300	-



SECTION Z-Z FOR NEW SUBDIVISIONS



A. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN

SECTION Z-Z FOR EXISTING R.O.W.s

NOTES:

1. For developments with commercial or multi-family driveway entrances; the vertical grades of access driveways shall be 2% for a minimum distance of 6.0 m back of property line.

2. HL3 can be substituted with othe rhard surfaces (ie paving stone, concrete) as approved by the Engineer.

3. The maximum driveway width leading to all or a portion of a parking area, shall not exceed 6.0 m or for a lot with a frontage of 12.0 m or less, 50% of the lot frontage.

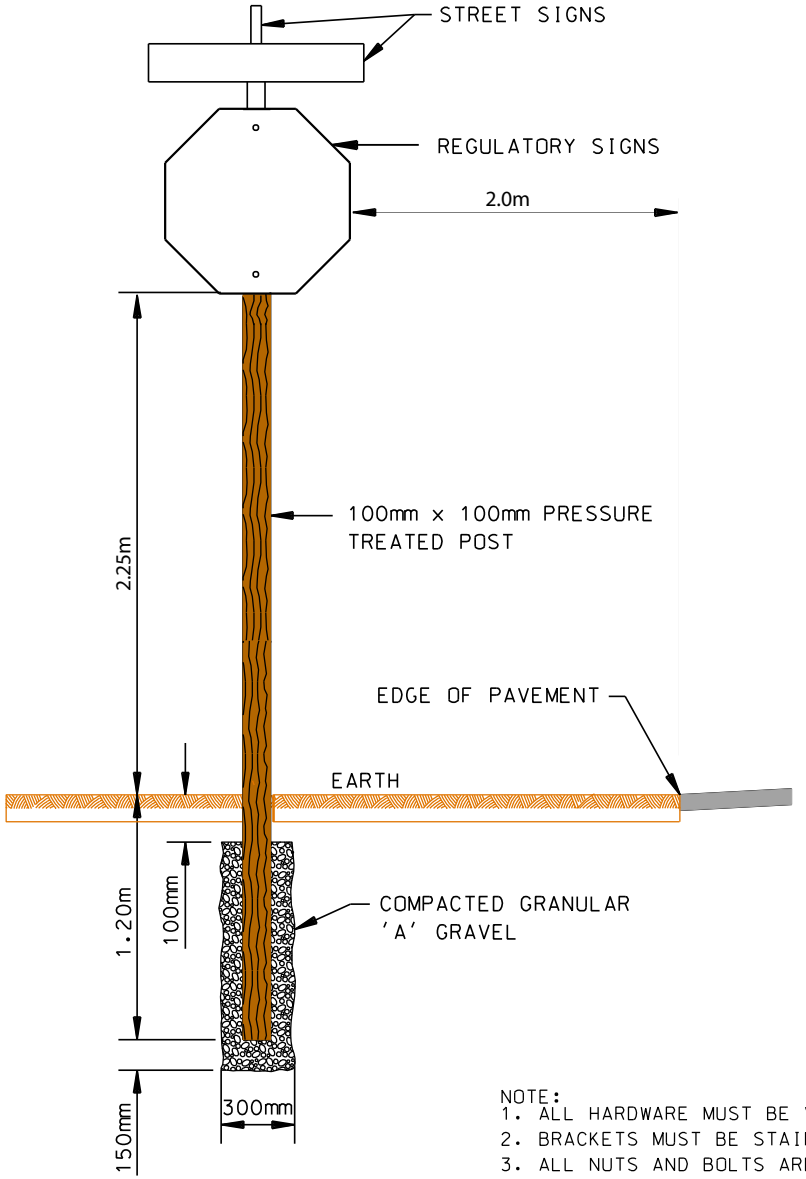
4. Grades on reconstructed driveways will vary based on matching existing driveway topography.

middlesex centre
in the centre of it all

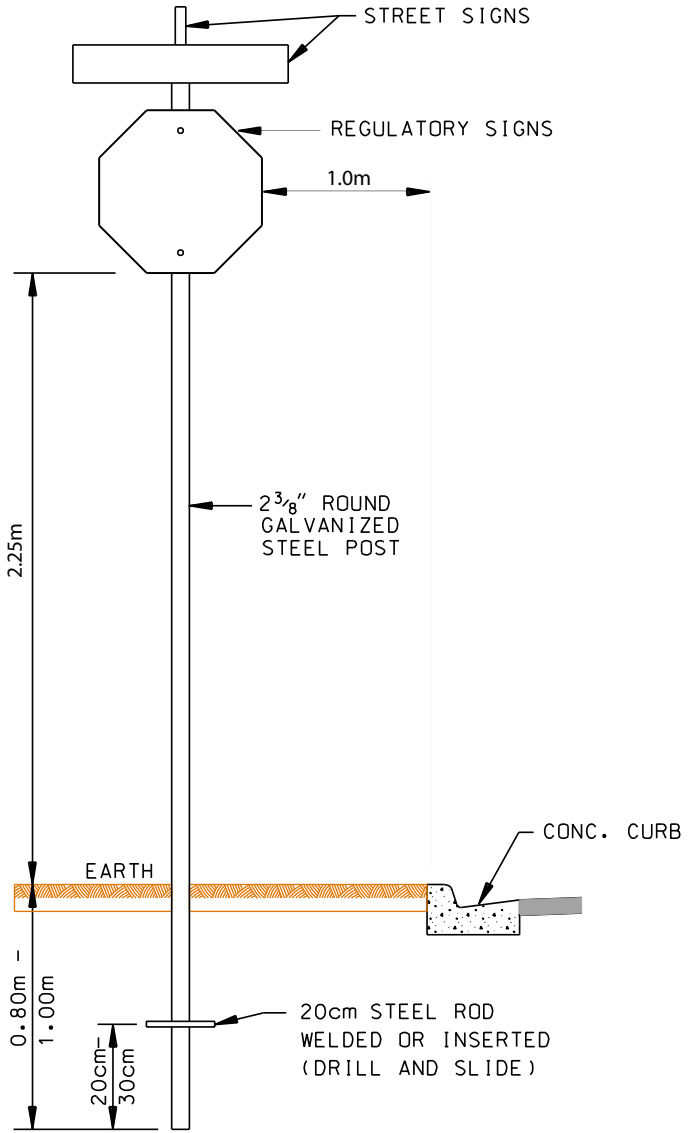
SINGLE FAMILY AND MULTI-FAMILY DRIVEWAY ENTRANCES WITH BOULEVARD

DATE: 2017-04

FIGURE 1.13



RURAL DETAIL



URBAN DETAIL

NOTE:
1. ALL HARDWARE MUST BE VANDAL PROOF.
2. BRACKETS MUST BE STAINLESS STEEL.
3. ALL NUTS AND BOLTS ARE BREAKAWAY ALUMINUM
4. ALL DIMENSIONS ARE APPROXIMATE. REFER TO ONTARIO TRAFFIC MANUAL FOR PROPER INSTALLATION DETAILS.

FIGURE 1.14

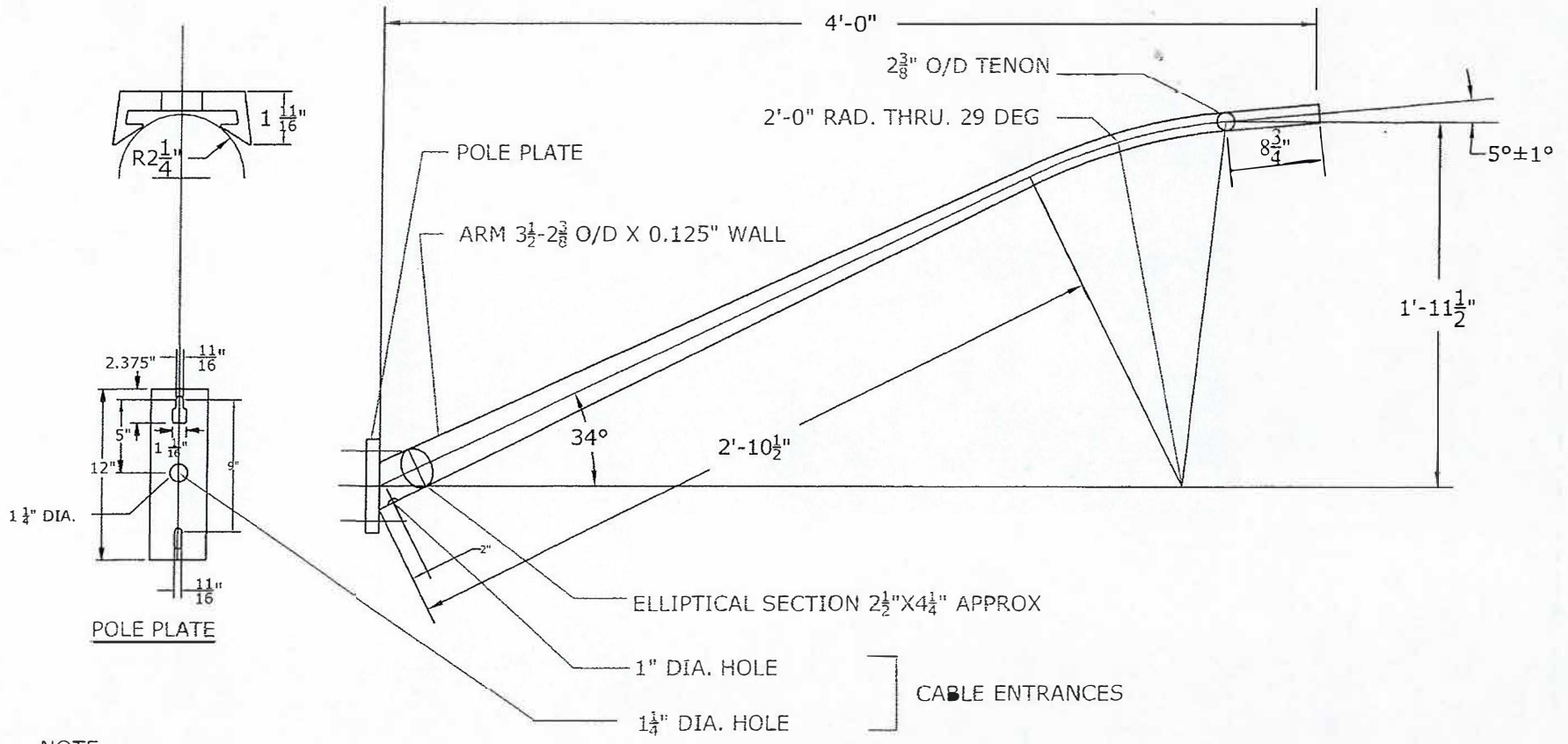
middlesex centre
in the centre of it all

TYPICAL STOP SIGN INSTALLATION

DATE: 2018-01

FIGURE 1.14

4' Elliptical Bracket (Street Light Arm)



NOTE

1. ALL WELDING AS PER CSA 47.2
2. TEMP: T6
3. FINISH: NATURAL BRUSH FINISH

FIGURE 1.15

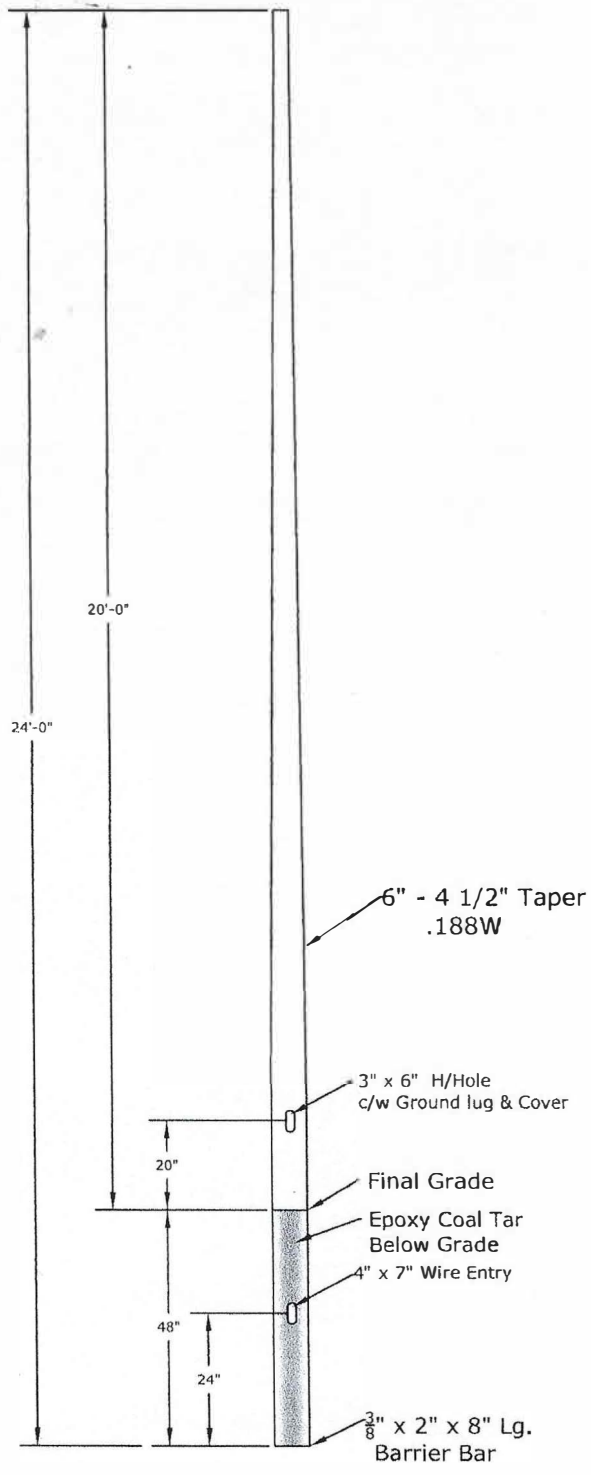
middlesex centre
in the centre of it all

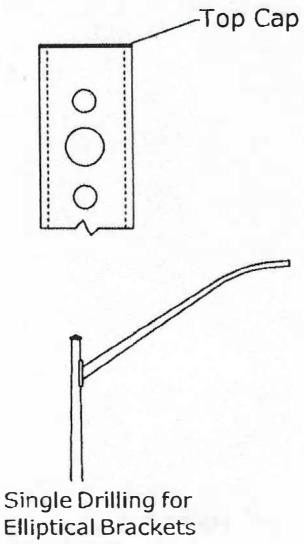
TYPICAL 4.0' STREET LIGHT ARM

DATE: 2018-01

FIGURE 1.15

20' DIRECT BURIED ALUMINUM ELLIPTICAL POLE





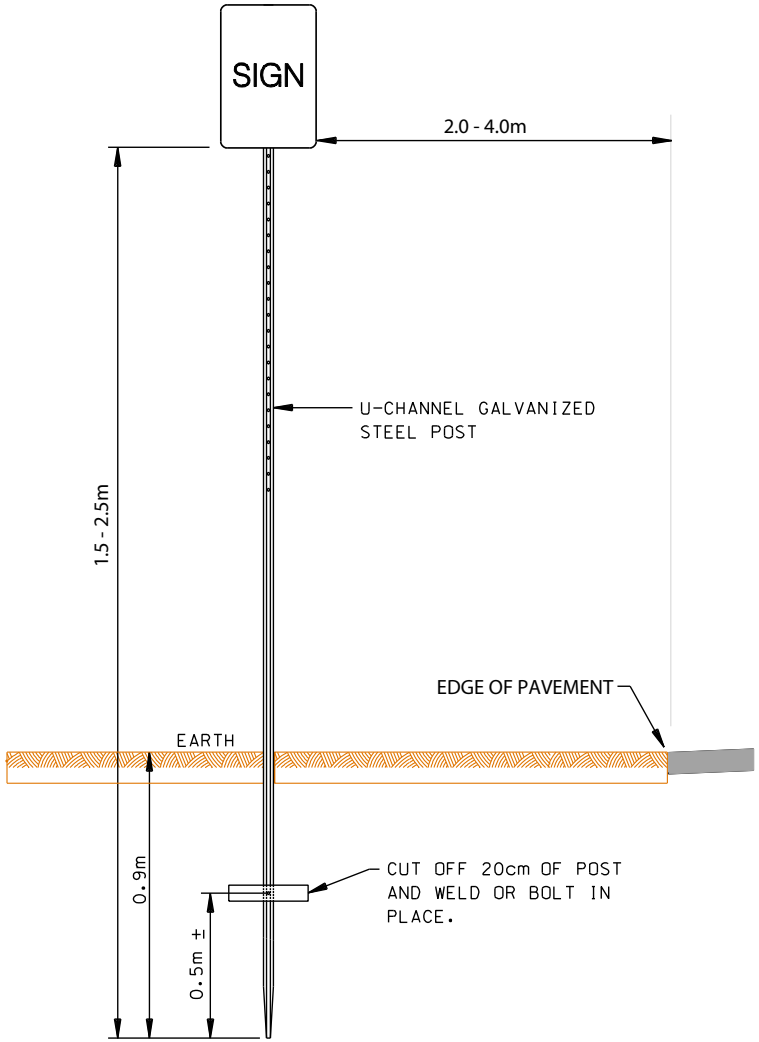
FINISH: Rotary Polished
Epoxy Coal Tar Below Grade

middlesex centre
in the centre of it all

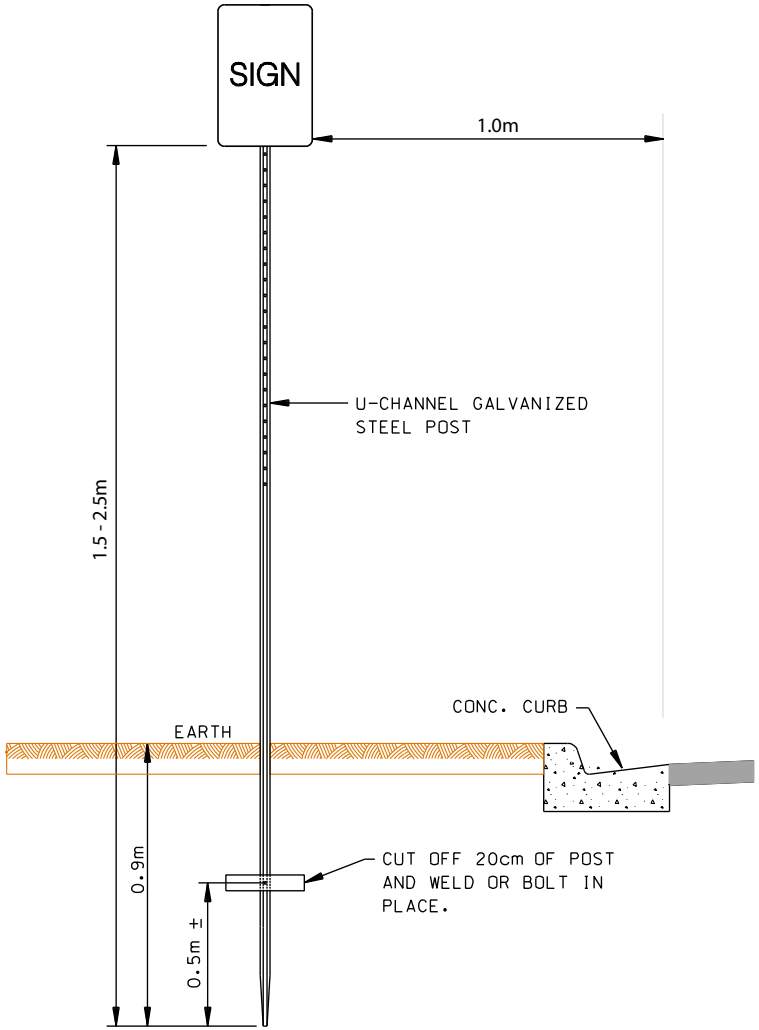
TYPICAL 20.0' ALUMINUM STREET LIGHT POLE

DATE: 2018-01

FIGURE 1.16



RURAL DETAIL



URBAN DETAIL

NOTE:
1. ALL HARDWARE MUST BE VANDAL PROOF.
2. BRACKETS MUST BE STAINLESS STEEL.
3. ALL NUTS AND BOLTS ARE BREAKAWAY ALUMINUM.
4. ALL DIMENSIONS ARE APPROXIMATE, REFER TO ONTARIO TRAFFIC MANUAL FOR PROPER INSTALLATION DETAILS.

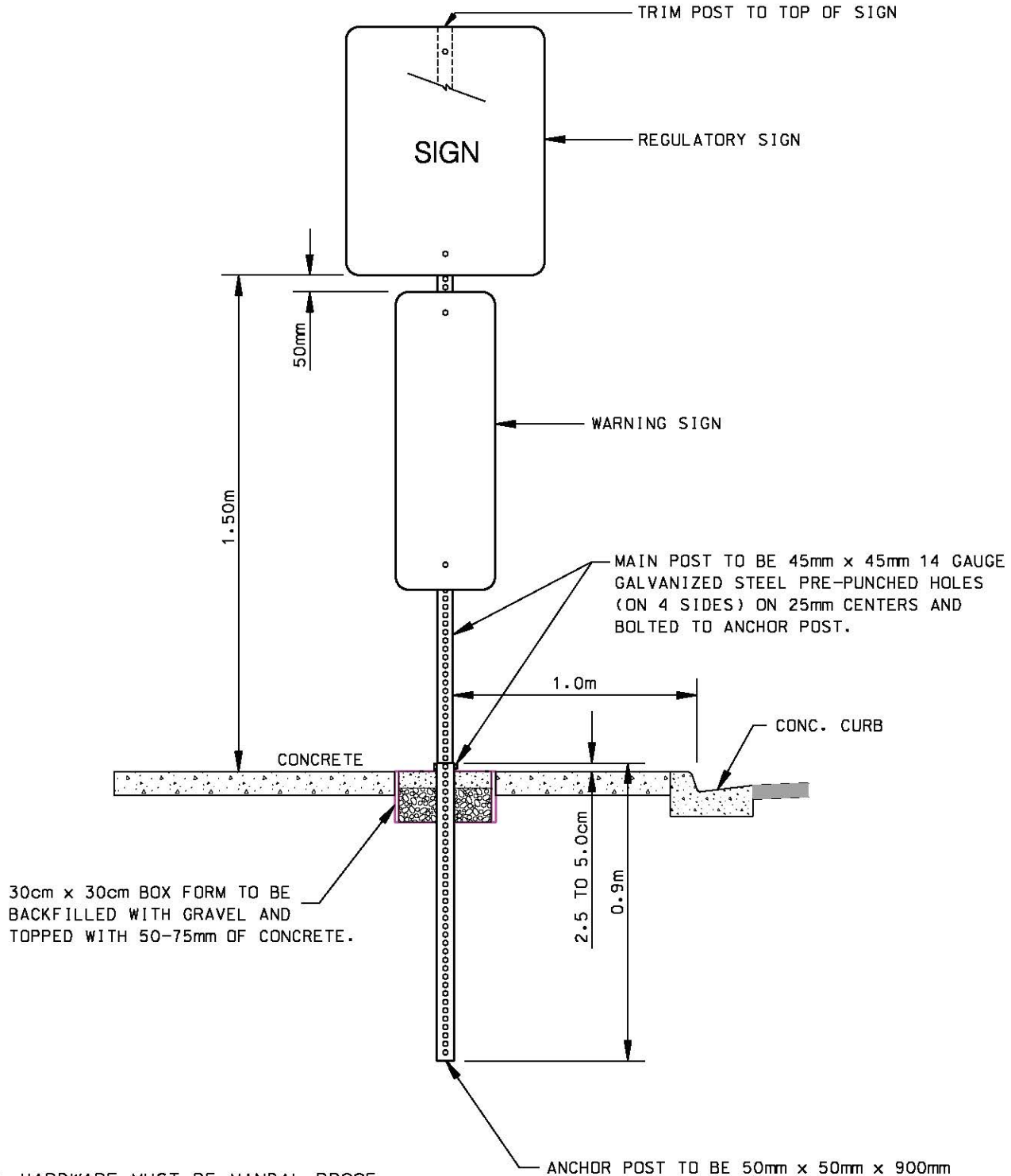
FIGURE 1.17

middlesex centre
in the centre of it all

TYPICAL RURAL & URBAN U-CHANNEL POST

DATE: 2018-01

FIGURE 1.17



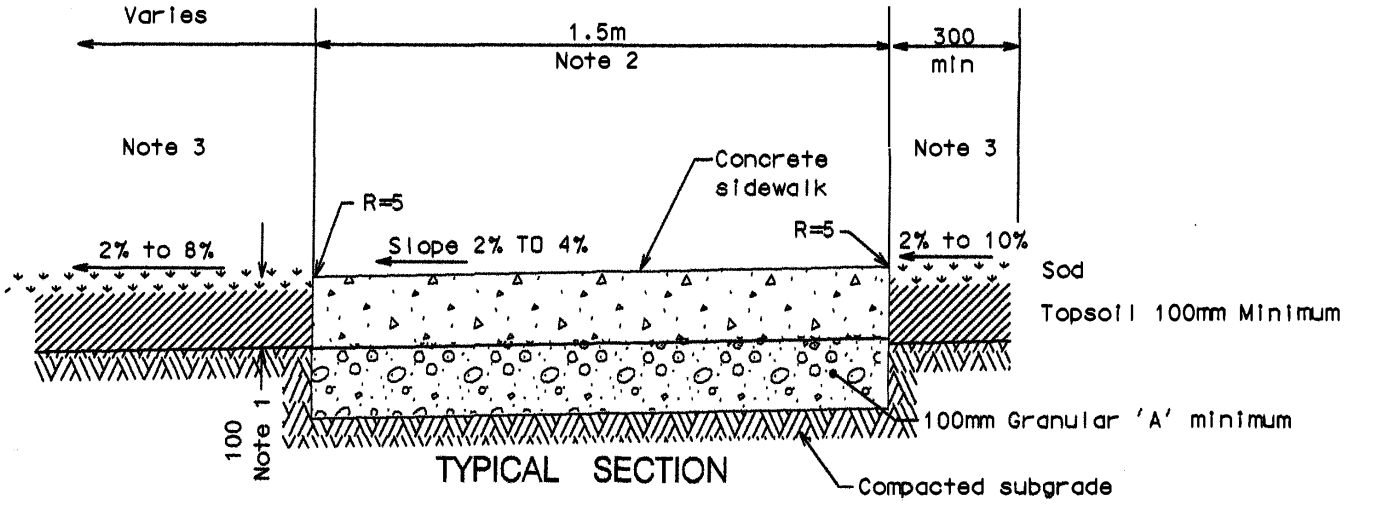
NOTE:
1. ALL HARDWARE MUST BE VANDAL PROOF.
2. BRACKETS MUST BE STAINLESS STEEL.
3. ALL NUTS AND BOLTS ARE BREAKAWAY ALUMINUM.
4. ALL DIMENSIONS ARE APPROXIMATE. REFER TO ONTARIO TRAFFIC MANUAL FOR PROPER INSTALLATION DETAILS.

middlesex centre
in the centre of it all

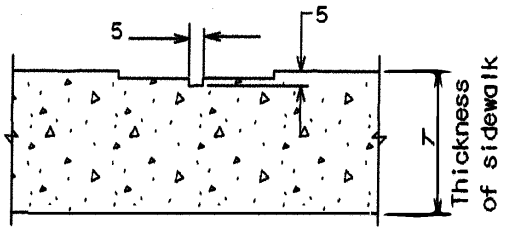
TYPICAL SQUARE POST AND ANCHOR POST INSTALLATION DETAIL

DATE: 2018-01

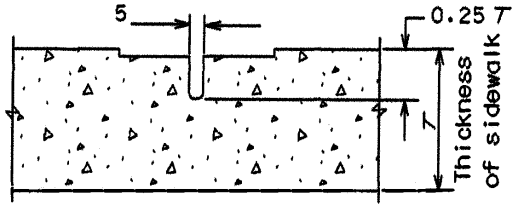
FIGURE 1.17a



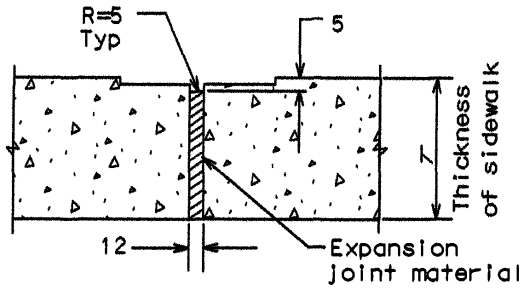
TYPICAL SECTION



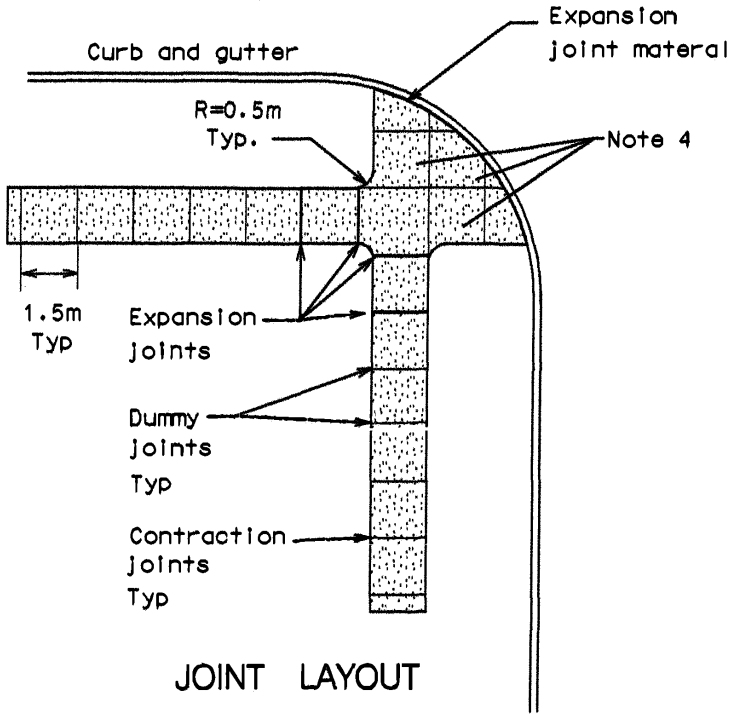
DUMMY JOINT



CONTRACTION JOINT



EXPANSION JOINT



JOINT LAYOUT

NOTES:

1. Sidewalk thickness shall be 100 mm. At commercial and industrial driveways the thickness shall be 150mm unreinforced unless otherwise specified.

A. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

2. Sidewalk width shall be increased to 2.4m at schools, bus stops and other high pedestrian areas.

3. For NEW subdivisions, maximum boulevard grade shall be 4%

4. Refer to drawing 1.18b for concrete sidewalk ramp detail.

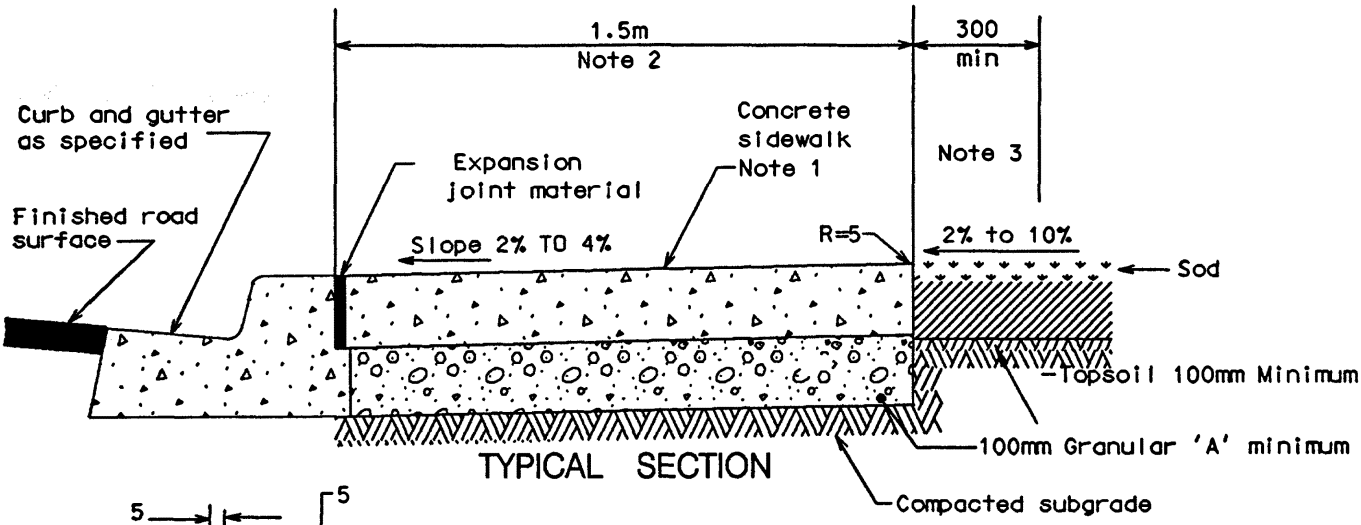
All dimensions are in millimetres unless otherwise shown.

middlesex centre
in the centre of it all

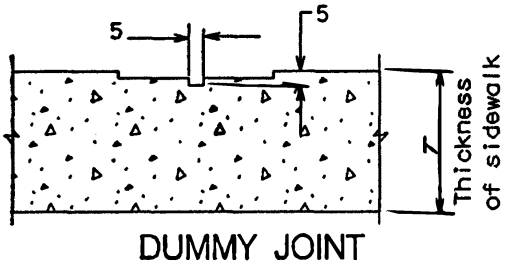
TYPICAL CONCRETE SIDEWALK

DATE: 2018-01

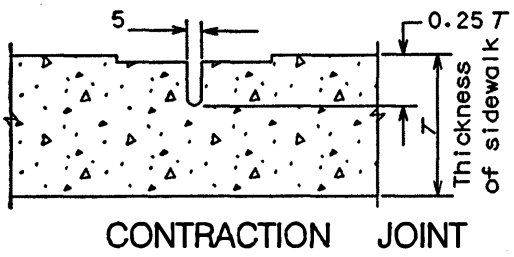
FIGURE 1.18



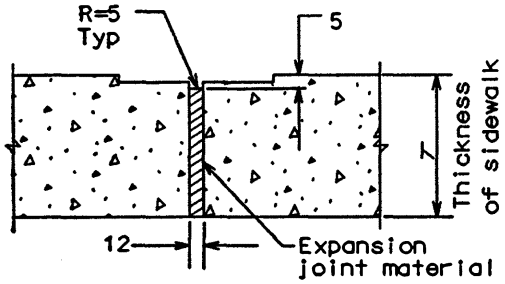
TYPICAL SECTION



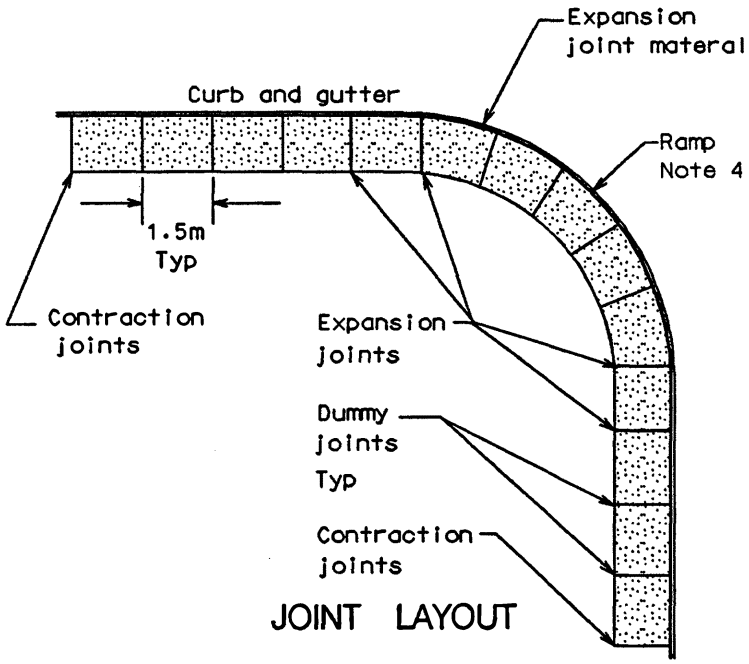
DUMMY JOINT



CONTRACTION JOINT



EXPANSION JOINT



JOINT LAYOUT

NOTES:

1. Sidewalk thickness at residential driveways and adjacent to curb shall be 100 mm. At commercial and industrial driveways the thickness shall be 150mm unreinforced unless otherwise specified.

A. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

2. Sidewalk width shall be increased to: 1.8m when adjacent to curb on major roadways 2.4m at schools, bus stops and other high pedestrian areas.
3. For NEW subdivisions, maximum boulevard grade shall be 4%.
4. Refer to drawing 1.18b for concrete sidewalk ramp detail.

All dimensions are in millimetres unless otherwise shown.

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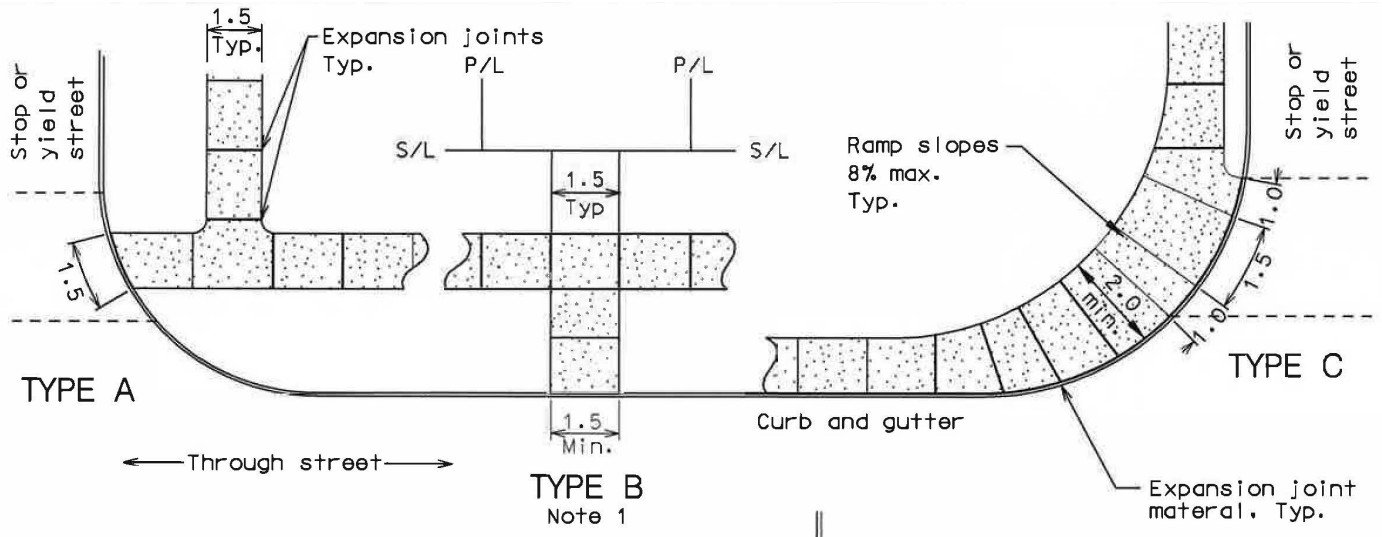
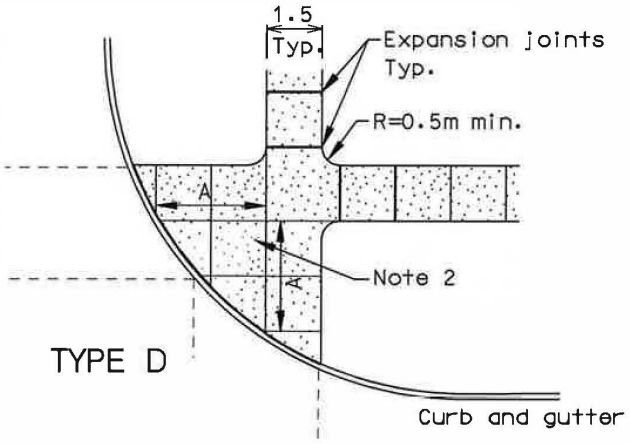
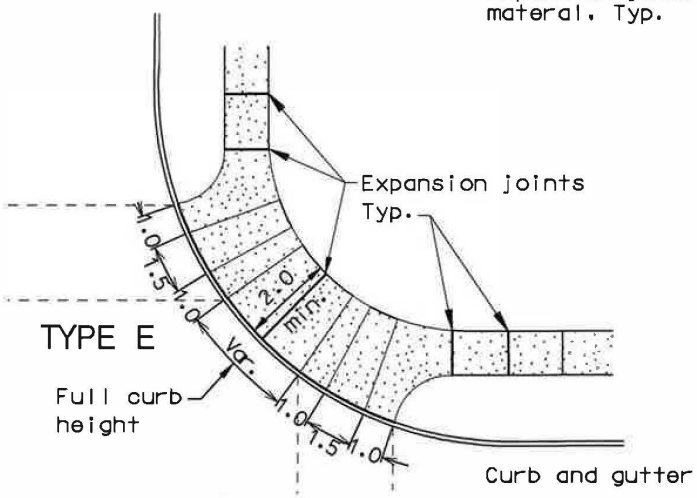
TYPICAL CONCRETE SIDEWALK ABUTTING CURB AND GUTTER

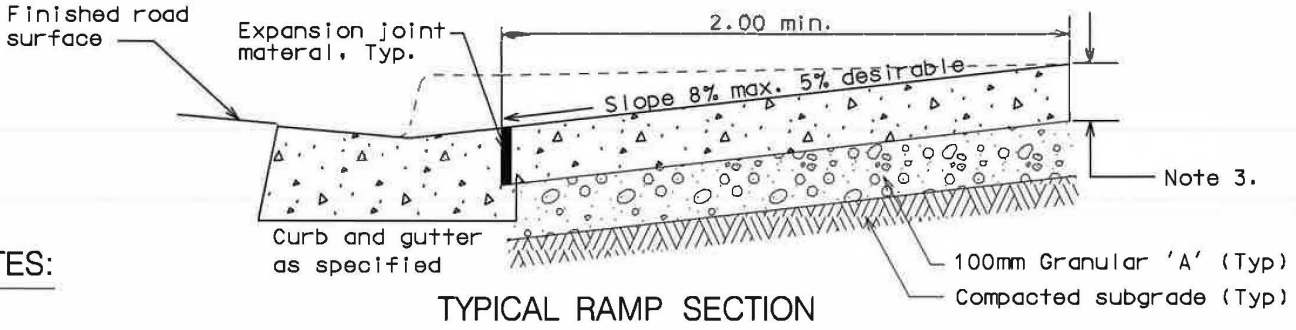
DATE: 2018-01

FIGURE 1.18a









TYPICAL RAMP SECTION

NOTES:

A. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SHOWN

1. To be constructed for use at Tee intersections and walkways.
2. When the area noted exceeds 3m X 3m, topsoil and sod can be used as a substitute.
3. All ramps at radii to be constructed using 150mm concrete, except Type B will be constructed using 100mm min. concrete.
4. For pavement marking requirements at crosswalk ramps see Dwg's 1.31 to 1.31a

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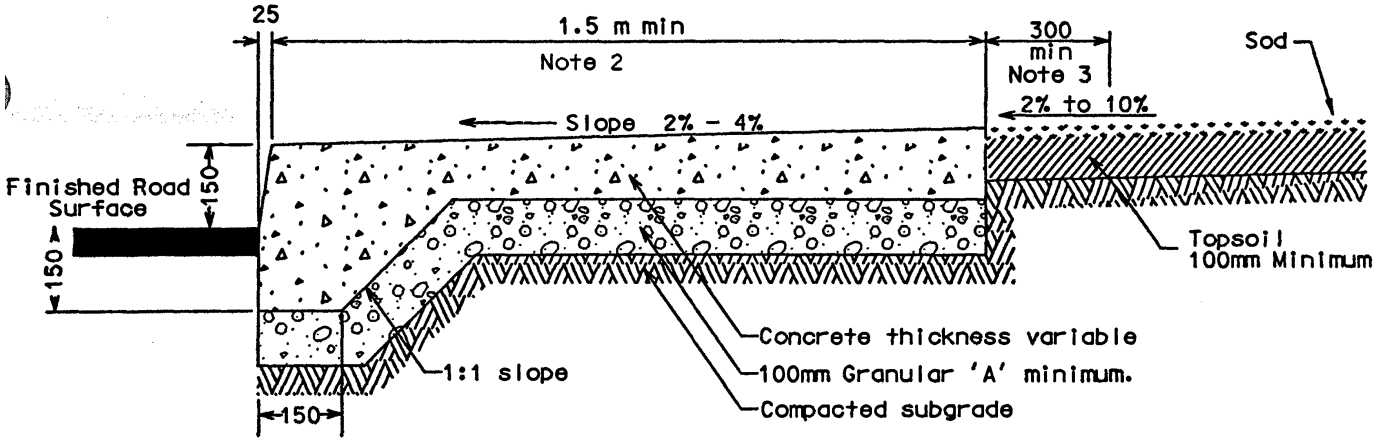
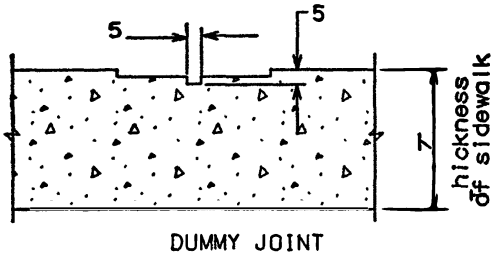
CONCRETE SIDEWALK RAMPS

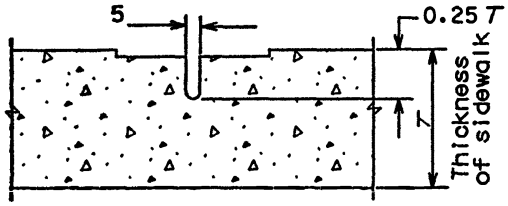
DATE: 2018-01

FIGURE 1.18b

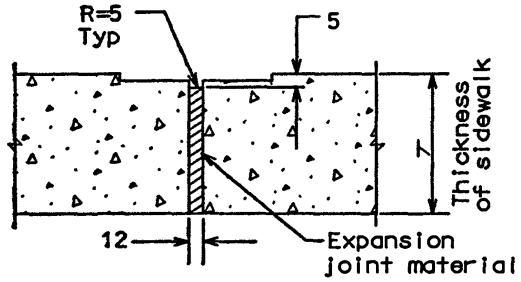




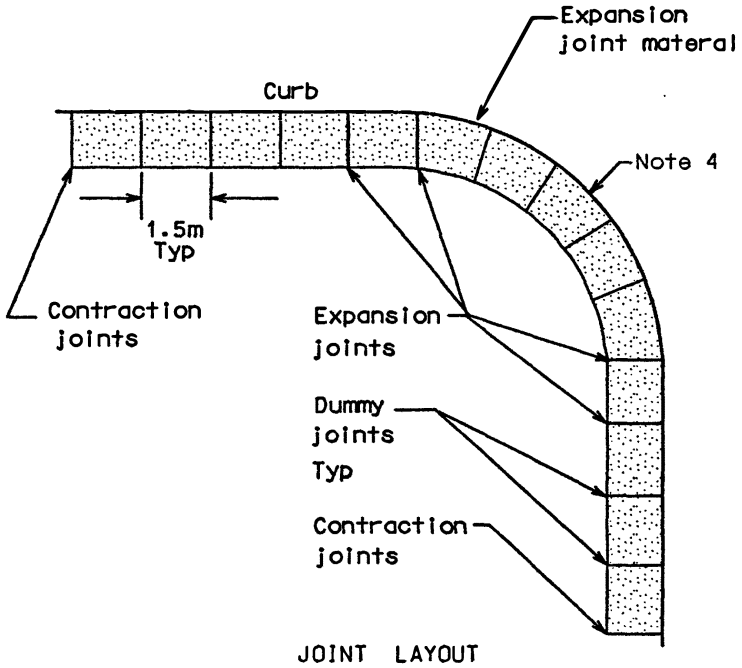
DUMMY JOINT



CONTRACTION JOINT



EXPANSION JOINT



JOINT LAYOUT

NOTES:

1. Sidewalk thickness at residential driveways and adjacent to curb, shall be 100mm. At commercial and industrial driveways the thickness shall be 150mm unreinforced unless otherwise specified.
2. Sidewalk width shall be increased to:
   1.8m when adjacent to curb on major roadways
   2.4m at schools, bus stops and other high pedestrian areas.
3. For NEW subdivisions, maximum boulevard grade shall be 4%.
4. Refer to drawing 1.18b for sidewalk ramp details.

All dimensions are in millimetres unless otherwise shown.

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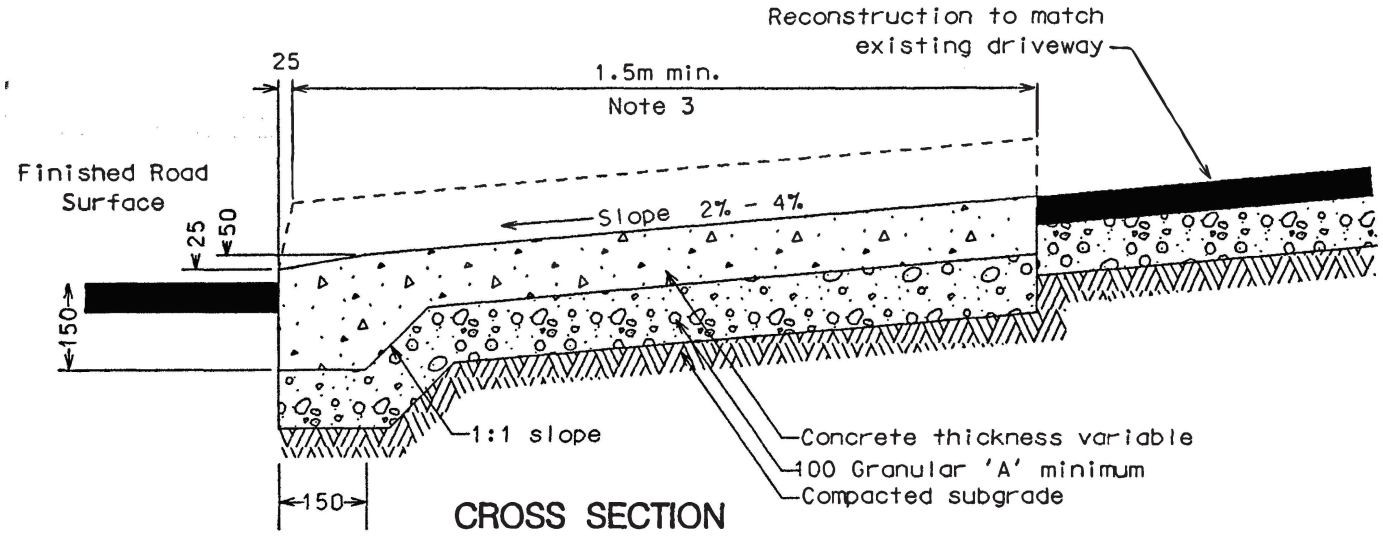
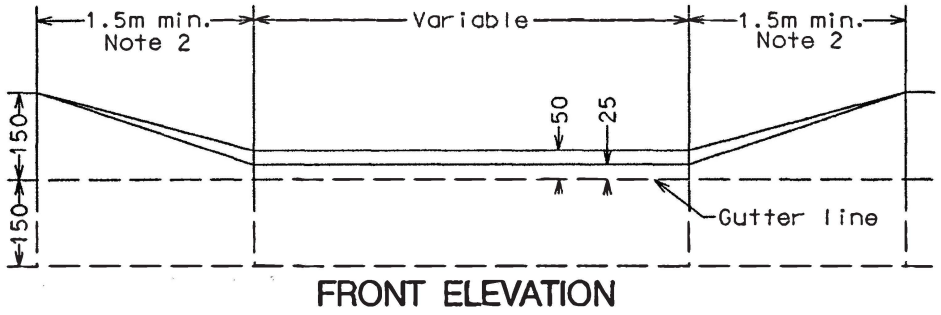
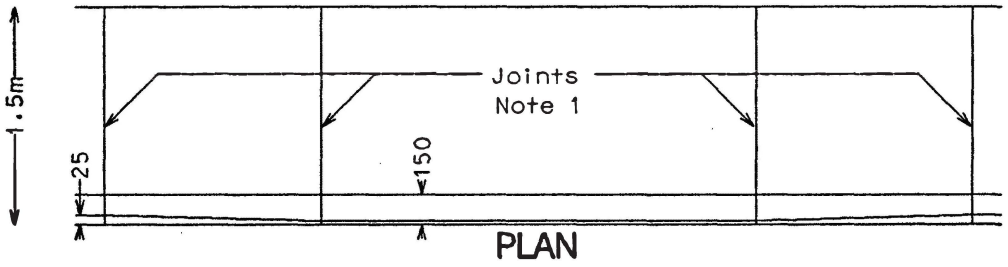
COMBINATION CURB-FACE SIDEWALK

DATE: 2018-01

FIGURE1.18c







NOTES:

1. To be used in conjunction with detail on drawing 1.18
2. Length as required for a max. grade of 8% over 1.5 min.
3. Sidewalk width shall be increased to: 2.4m at schools. bus stops and other high pedestrian areas.

A. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

4. Max. sidewalk gradient 8% or as directed by the **Director of Public works and Engineering.**

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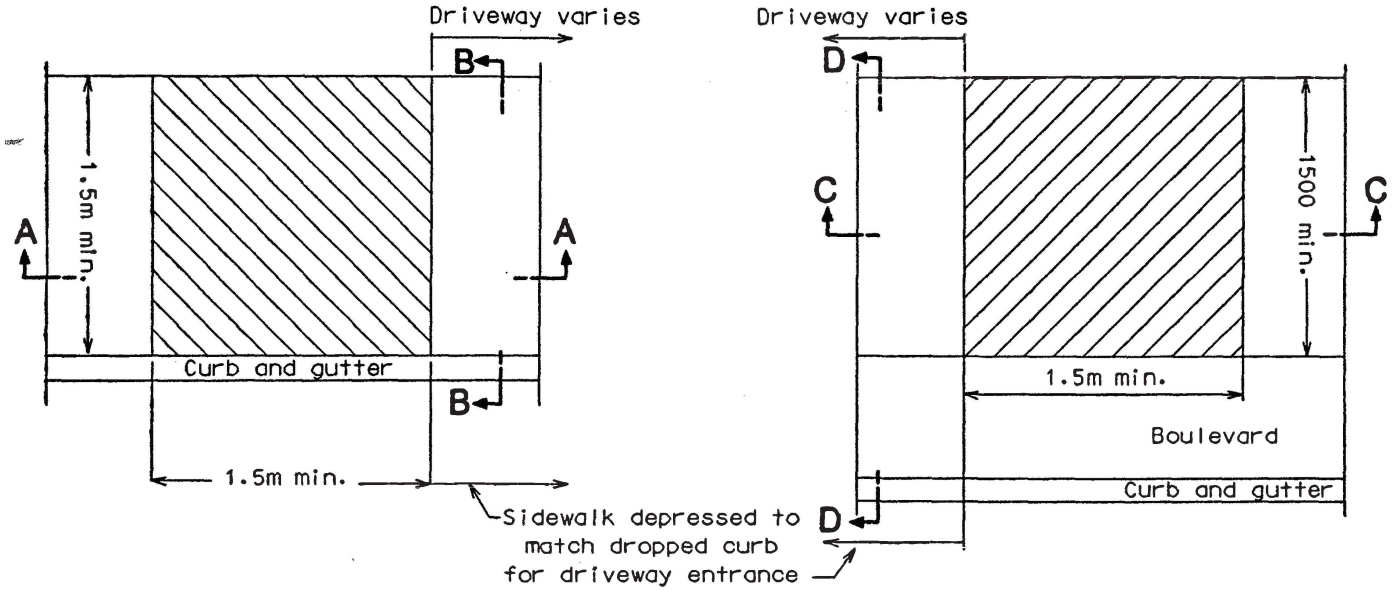
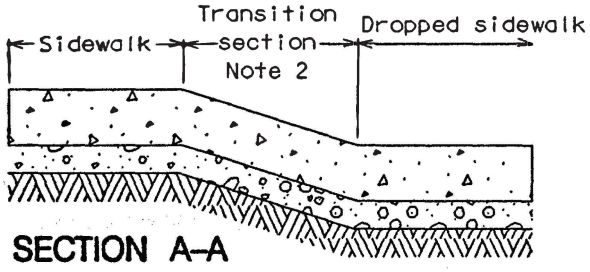
COMBINATION CURB-FACE SIDEWALK AT DRIVEWAY ENTRANCES

DATE: 2018-01

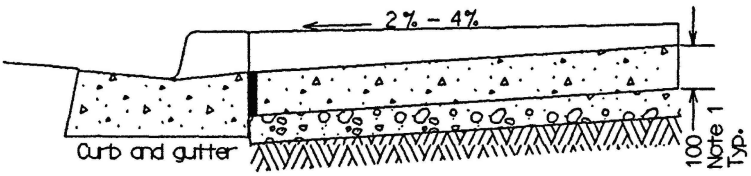
FIGURE 1.18d



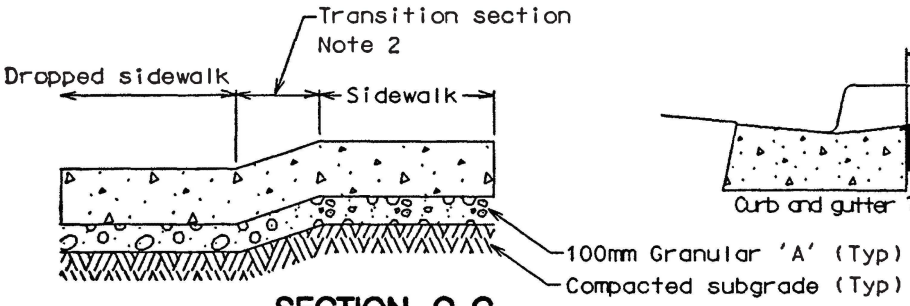
SIDEWALK AT DRIVEWAY ENTRANCE-PLAN



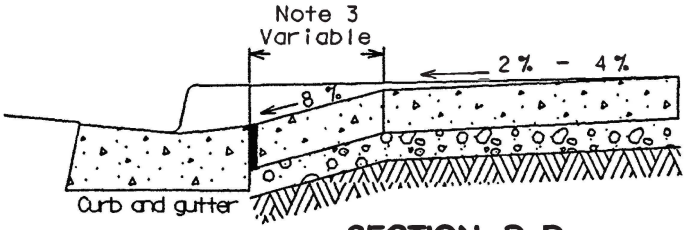
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

NOTES:

1. At commercial and industrial driveways the sidewalk thickness shall be 150mm unreinforced unless otherwise specified.
2. Length as required for a maximum grade of 8%

A. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

3. For NEW subdivisions, maximum upgrade shall be 4%.

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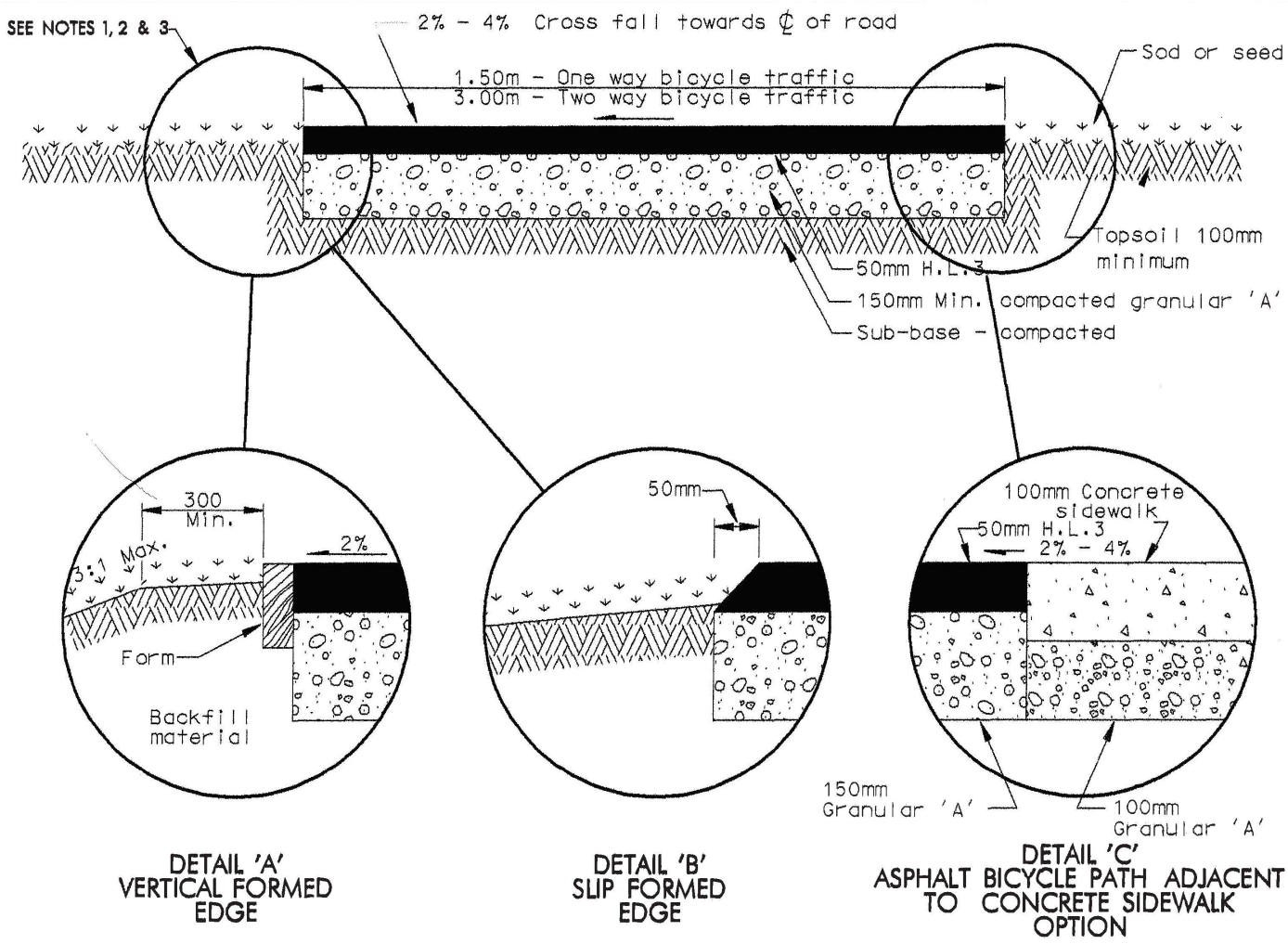
SIDEWALK DRIVEWAY ENTRANCE DETAILS

DATE: 2018-01

FIGURE 1.18e



DETAIL 'A'
VERTICAL FORMED EDGE

DETAIL 'B'
SLIP FORMED EDGE

DETAIL 'C'
ASPHALT BICYCLE PATH ADJACENT TO CONCRETE SIDEWALK OPTION

A. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

NOTES:

1. Vertical edge of asphalt sidewalk to be constructed using forms.
2. Slip forming may be permitted if approved by the Director of Public Works and Engineering
3. Backfill material adjacent to the asphalt edge shall be well compacted.
4. Landscaping to blend with contour of existing ground.
5. In a fill condition, asphalt bicycle path must be constructed using forms. Forms shall be supported by well compacted backfill material, as shown in detail 'A'.
6. Depths of asphalt & granular base may be modified at the discretion of the Director of Public Works and Engineering.

All dimensions are in millimetres unless otherwise shown.

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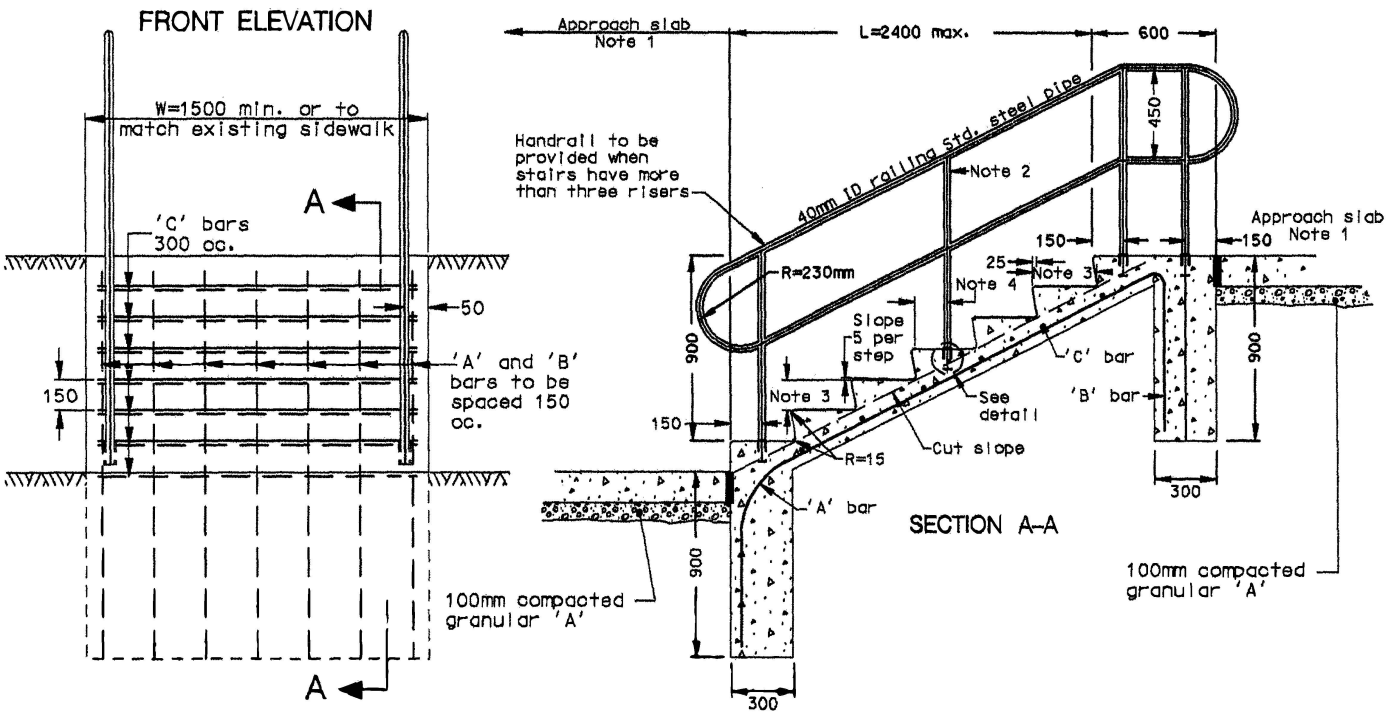
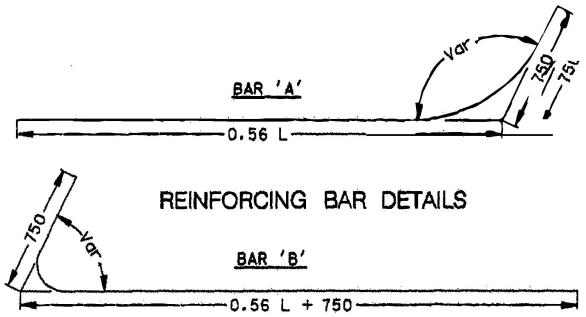
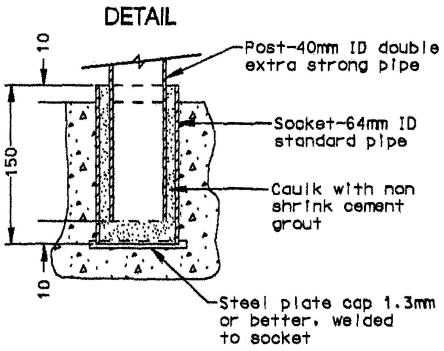
ASPHALT BICYCLE PATH

DATE: 2018-01

FIGURE 1.19







A. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN

NOTES:

1. Expansion joint for approach slab as per drawing 1.18
2. Centre post not required for L less than 2.1m
3. Rise and run dimensions shall comply with the following:
   - Minimum rise - 125mm
   - Maximum rise - 200mm
   - Minimum run - 255mm
   - Maximum run - 380mm
4. Dimension equals $^1/_2$ width of run
5. Number of steps varies with location and will be determined by the Director of Public Works and Engineering
6. All reinforcement shall be size 15mm bars.
7. Reinforcing bars to have 40mm cover.
8. Class of concrete to be 20 MPA.
9. Hand rail to be hot dipped galvanized after fabrication in conformance with CSA G-164
10. For concrete steps constructed without approach slabs: the termination of handrail shall comply with detail 'H' on drawing 1.20a

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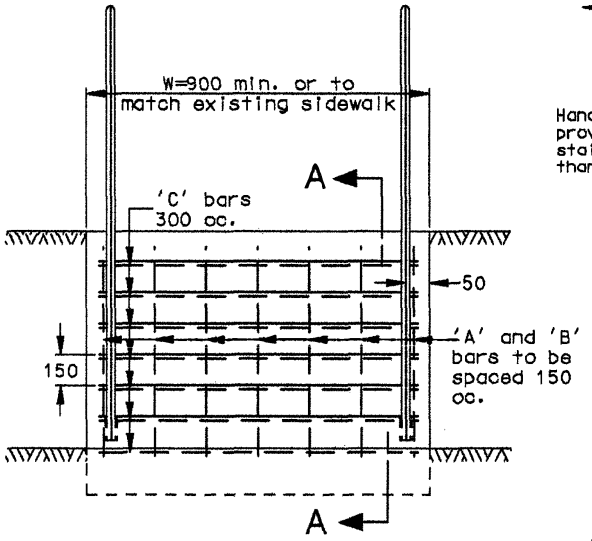
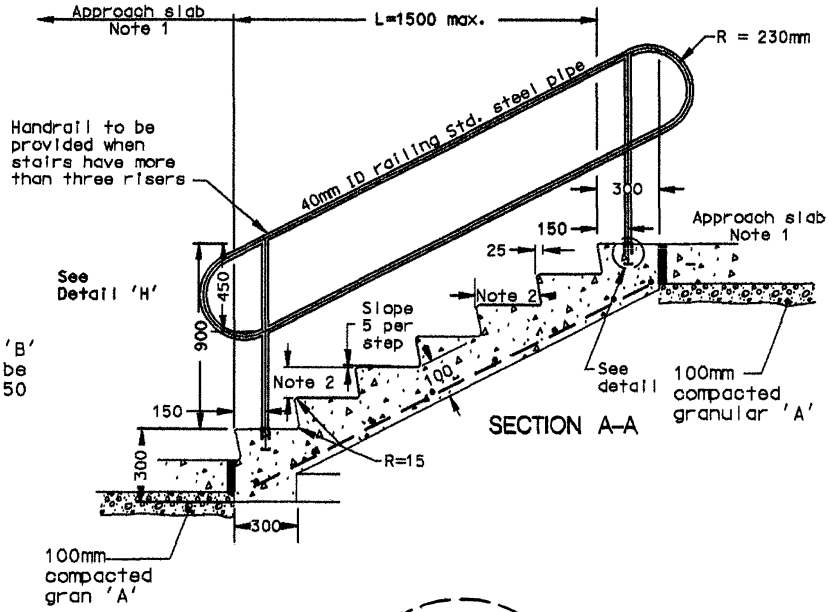
CONCRETE STEPS WITH FOOTINGS

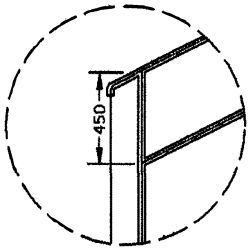
DATE: 2018-01

FIGURE 1.20

FRONT ELEVATION

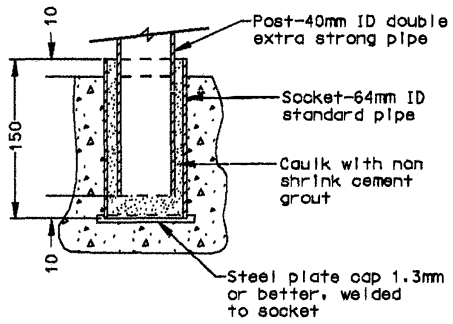






DETAIL 'H'

DETAIL



NOTES:

1. Expansion joint for approach slab as per drawing 1.18
2. Rise and run dimensions shall comply with the following:
   - Minimum rise - 125mm
   - Maximum rise - 200mm
   - Minimum run - 255mm
   - Maximum run - 380mm
4. Number of steps varies with location and will be determined by the Director of Public Works and Engineering.
5. All reinforcement shall be size 15mm bars.
6. Reinforcing bars to have 40mm cover.
7. Class of concrete to be 20 MPA.
8. Hand rail to be hot dipped galvanized after fabrication in conformance with CSA G-164
9. This drawing is not applicable for design and construction in NEW subdivisions
10. For concrete steps constructed without approach slabs; the termination of handrail shall comply with detail 'H'.

A. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN

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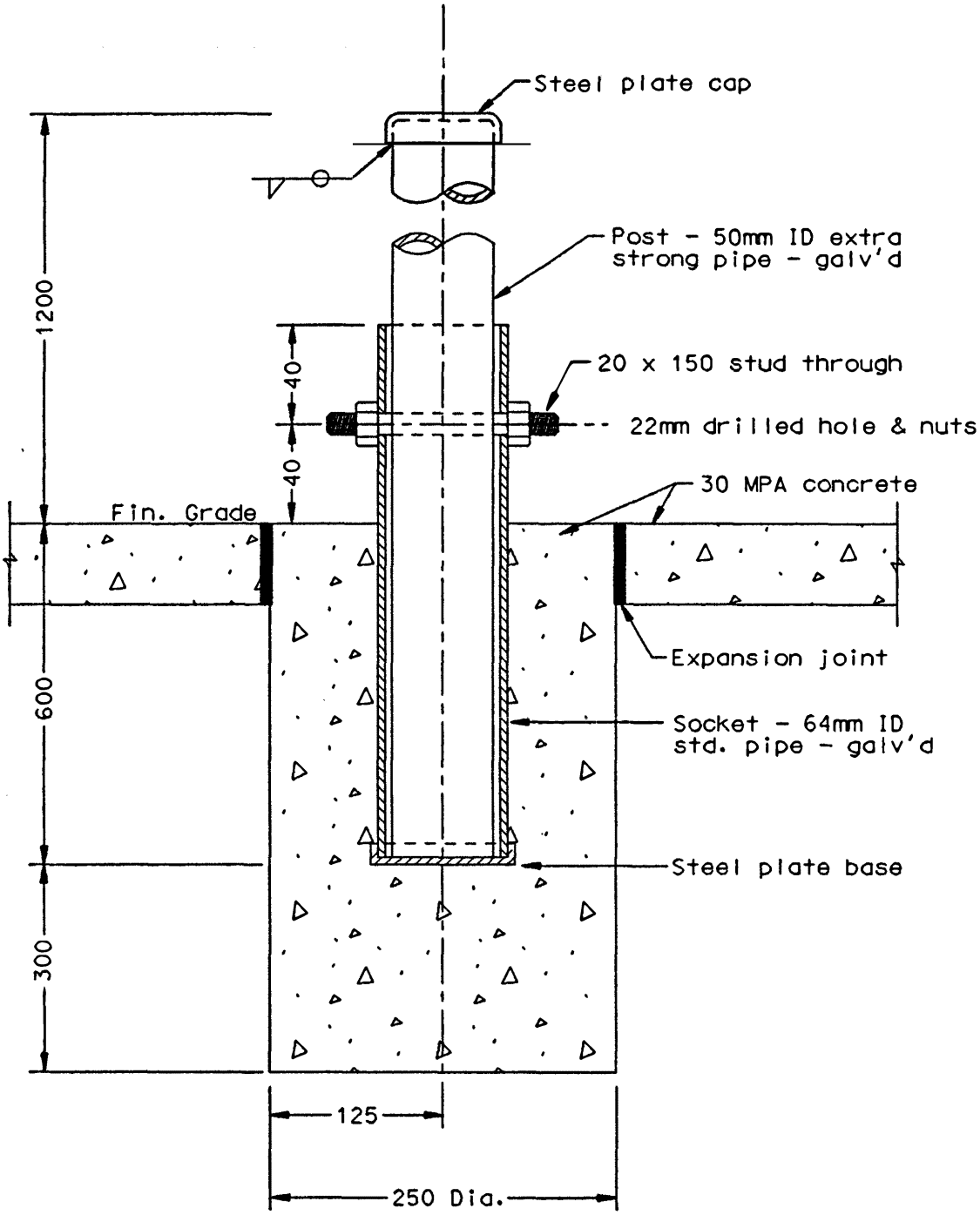
CONCRETE STEPS WITHOUT FOOTINGS

DATE: 2018-01

FIGURE 1.20a



DETAIL

NOTES:

A. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

1. Removable post shall be of galvanized steel pipe.

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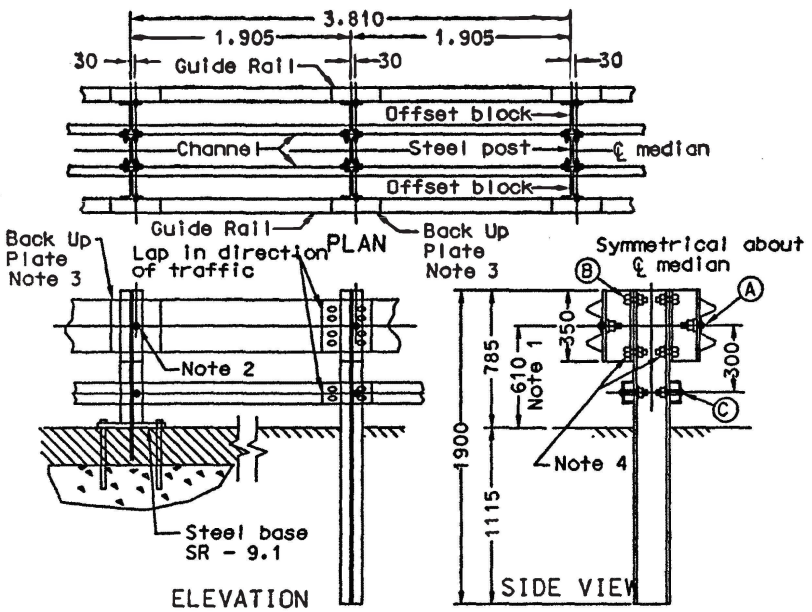
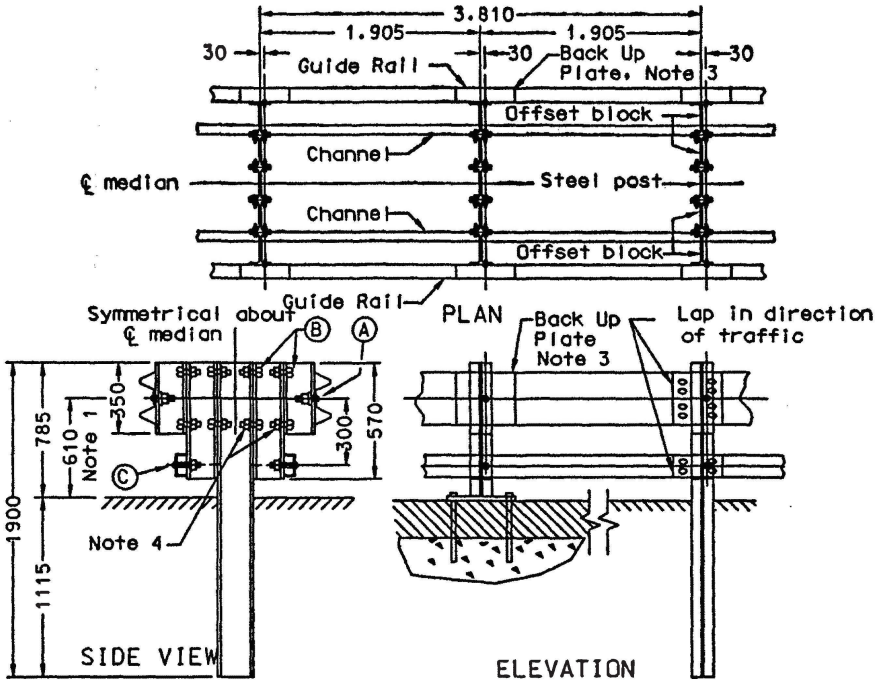
REMOVEABLE POST DETAIL

DATE: 2018-01

FIGURE 1.21



DOUBLE RAIL WITH CHANNEL



DOUBLE OFFSET RAIL WITH CHANNEL

NOTES:

1 Where guide rail is adjacent to curb, mounting height shall be measured:
   a Vertically at face of guide rail when face of guide rail is more than 300mm beyond gutter line.
   b Vertically at gutter line when face of guide rail is 300mm or less beyond gutter line.
2 Washer not required at face of rail.
3 Back up plate shall be installed at intermediate posts, only.
4 2 bolts at each connection located at opposing upper and lower holes.

Abbreviations:

*BH-Button head bolt
*HB-Hex bolt
*CB-Carriage bolt

A To produce an even alignment, shim beam element where necessary.

B This standard to be read in conjunction with OPSD-902.01, 902.02, and Figure 1.22a

C All dimensions are in millimetres or metres unless otherwise shown.

	POST BOLT AND HOLE		
	Hole Dia mm	Post bolt and nut mm	Washer
Ⓐ	20	16x50 *BH	Plate
Ⓑ	20	16x38 *HB	Plate
Ⓒ	20	16x100 *CB	Plate

FIGURE 1.22

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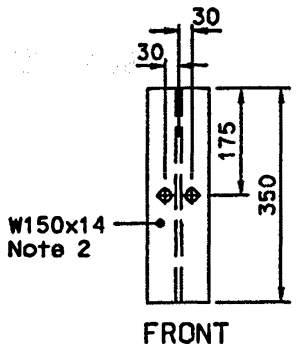
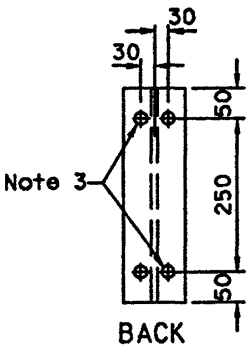
STEEL BEAM GUIDE RAIL & STEEL POST ASSEMBLY DETAIL

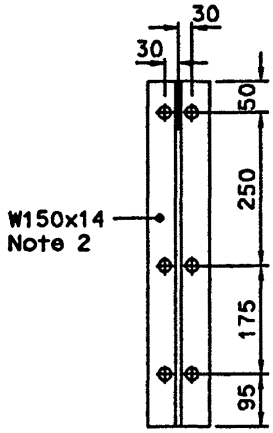
DATE: 2018-01

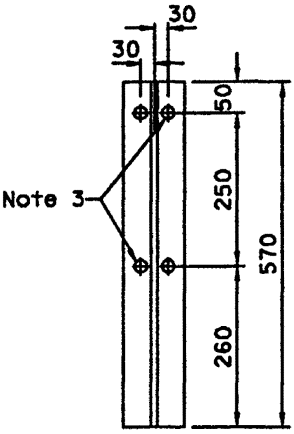
FIGURE 1.22



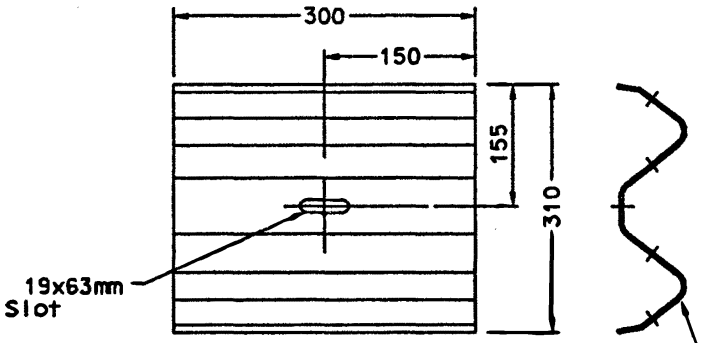


STANDARD OFFSET BLOCK

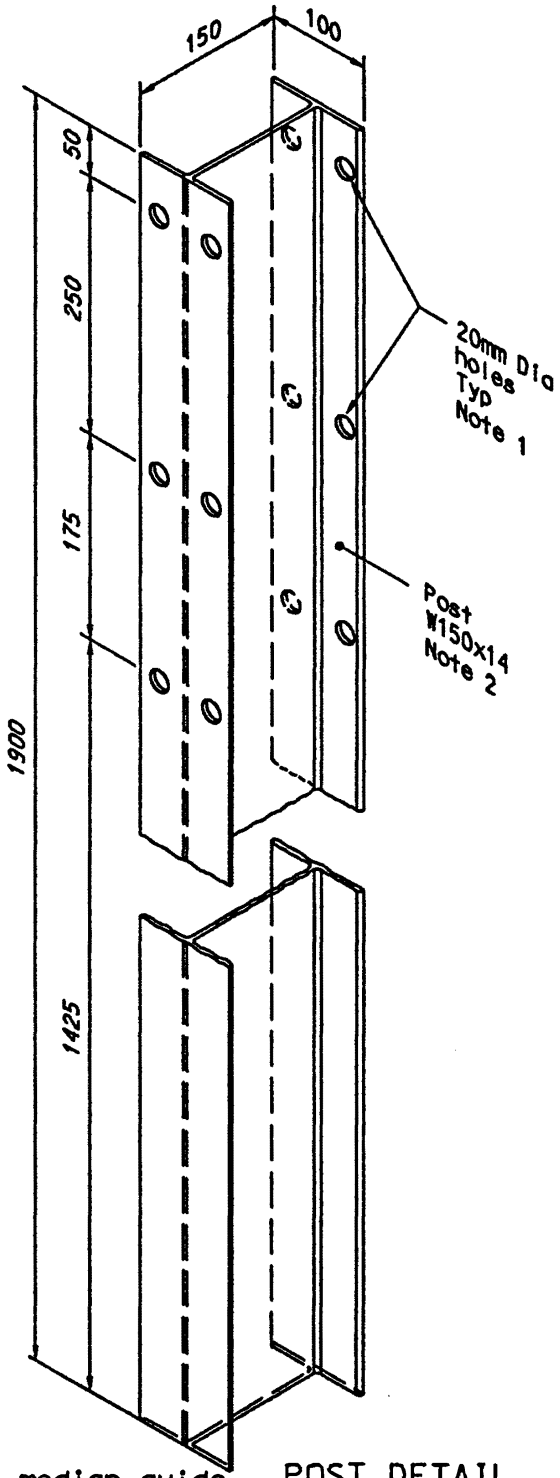




OFFSET BLOCK FOR DOUBLE OFFSET RAIL WITH CHANNEL



BACK UP PLATE



POST DETAIL

NOTES:

1 Holes on back of post are required for median guide rail installations only.
2 Imperial size steel sections W6x9 and W6x8.5 are acceptable.
3 2 bolts located at opposing upper and lower holes shall be used for offset block connection.
A All dimensions are in millimetres or metres unless otherwise shown.

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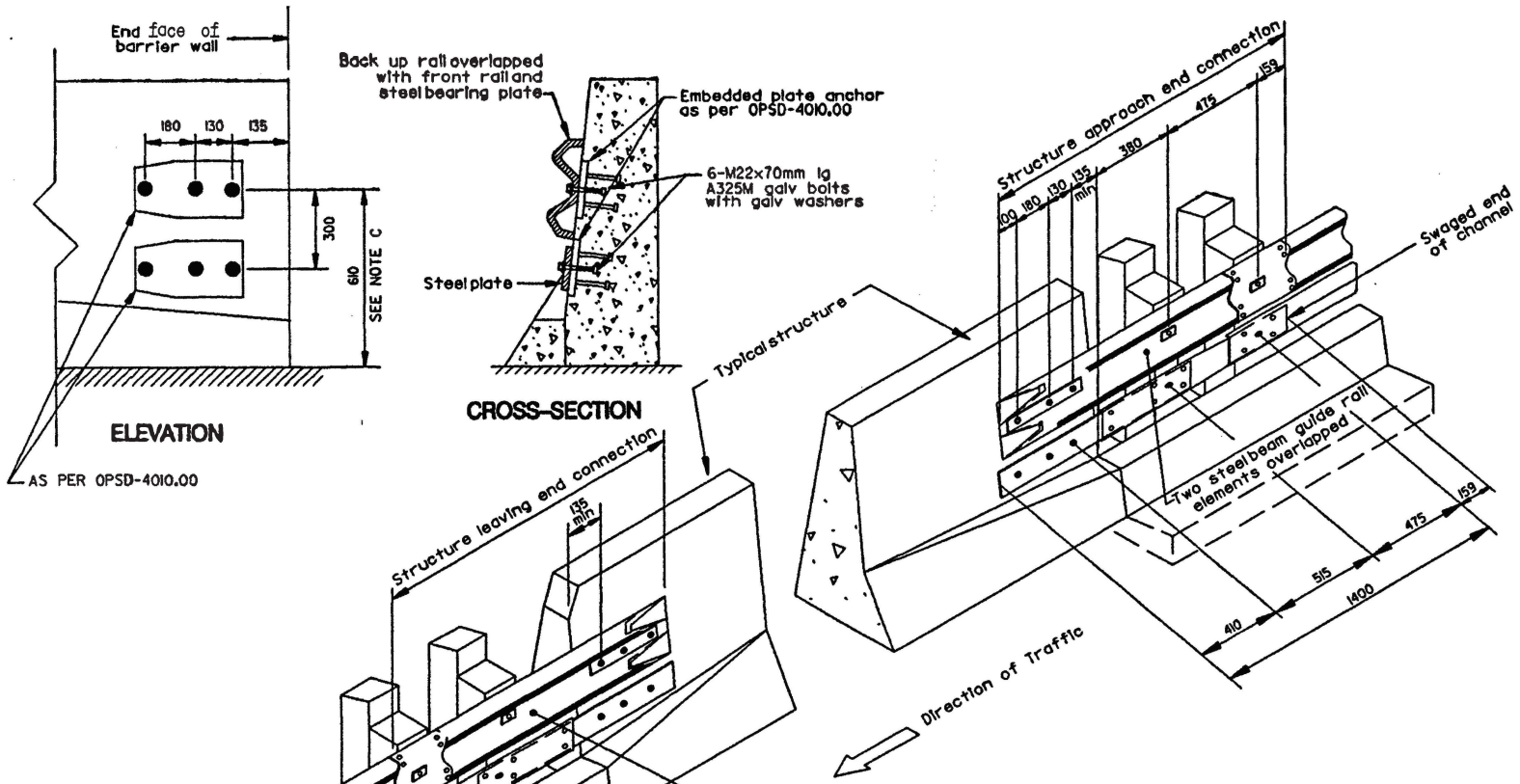
STELL BEAM GUIDE RAIL
POST AND OFFSET BLOCK DETAILS

DATE: 2018-01

FIGURE 1.22a



NOTES:

A This standard to be read in conjunction with OPSD-902.07 and OPSD-4010.00.

B All dimensions are in millimetres unless otherwise shown.

C Where guide rail is adjacent to curb, mounting height shall be measured
a. Vertically at face of guide rail when face of guide rail is more than 300mm beyond gutter line.
b. Vertically at gutter line when face of guide rail is 300mm or less beyond gutter line.

FIGURE 1.23

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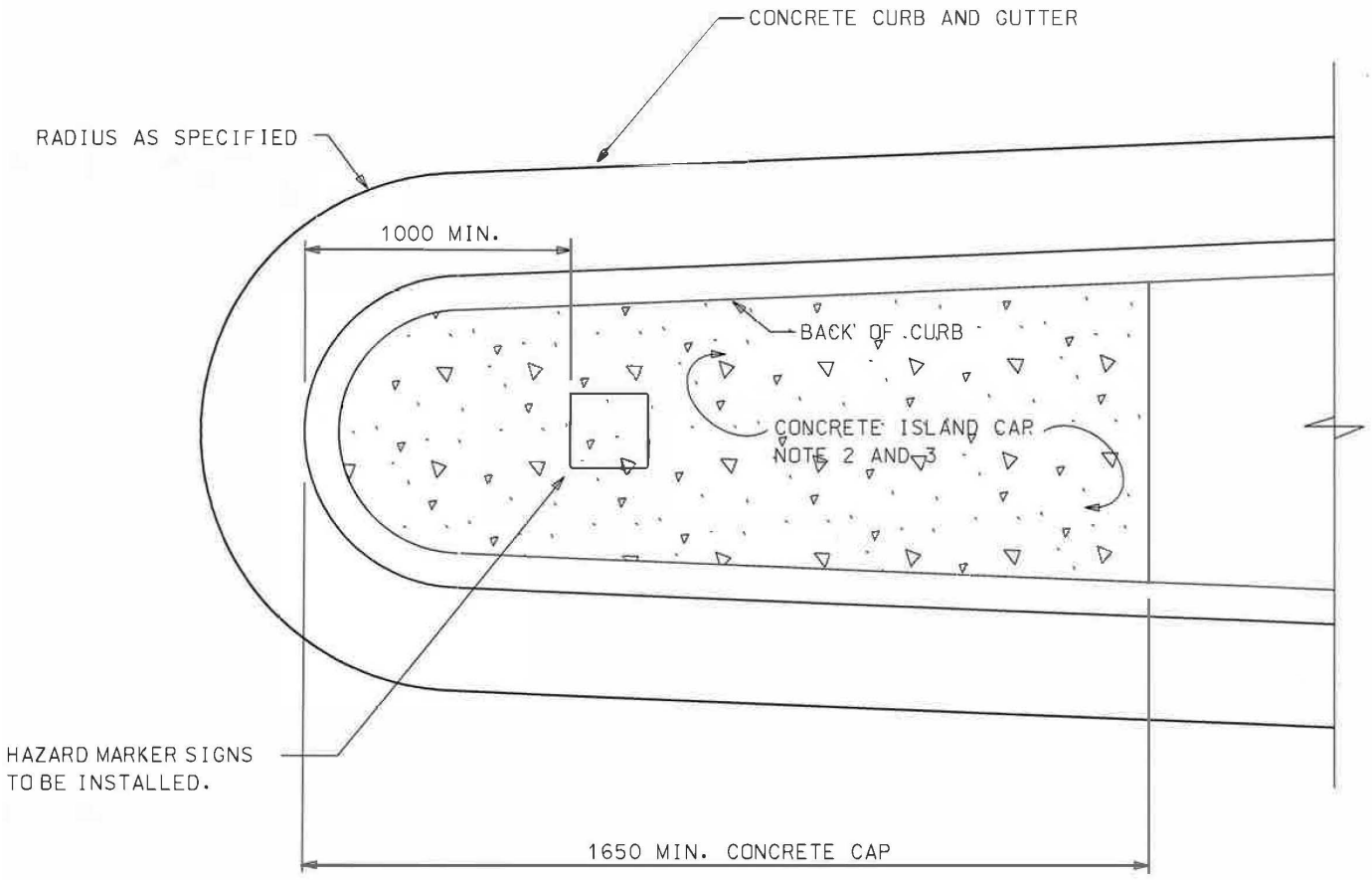
STEAL BEAM GUIDE RAIL
EMBEDDED CONNECTION FOR NEW STRUCTURES

DATE: 2018-01

FIGURE 1.23



NOTES:

1. THIS DRAWING TO BE READ TOGETHER WITH THE APPLICABLE ONTARIO PROVINCIAL STANDARD DRAWING (OPSD) 606.02 THROUGH 607.02 INCLUSIVE.
2. CONCRETE ISLAND CAP TO COMPLY WITH THE REQUIREMENTS OF ONTARIO PROVINCIAL STANDARD SPECIFICATIONS (OPSS) 351.
3. THICKNESS OF CONCRETE ISLAND CAP SHALL BE A MINIMUM 100mm.
4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

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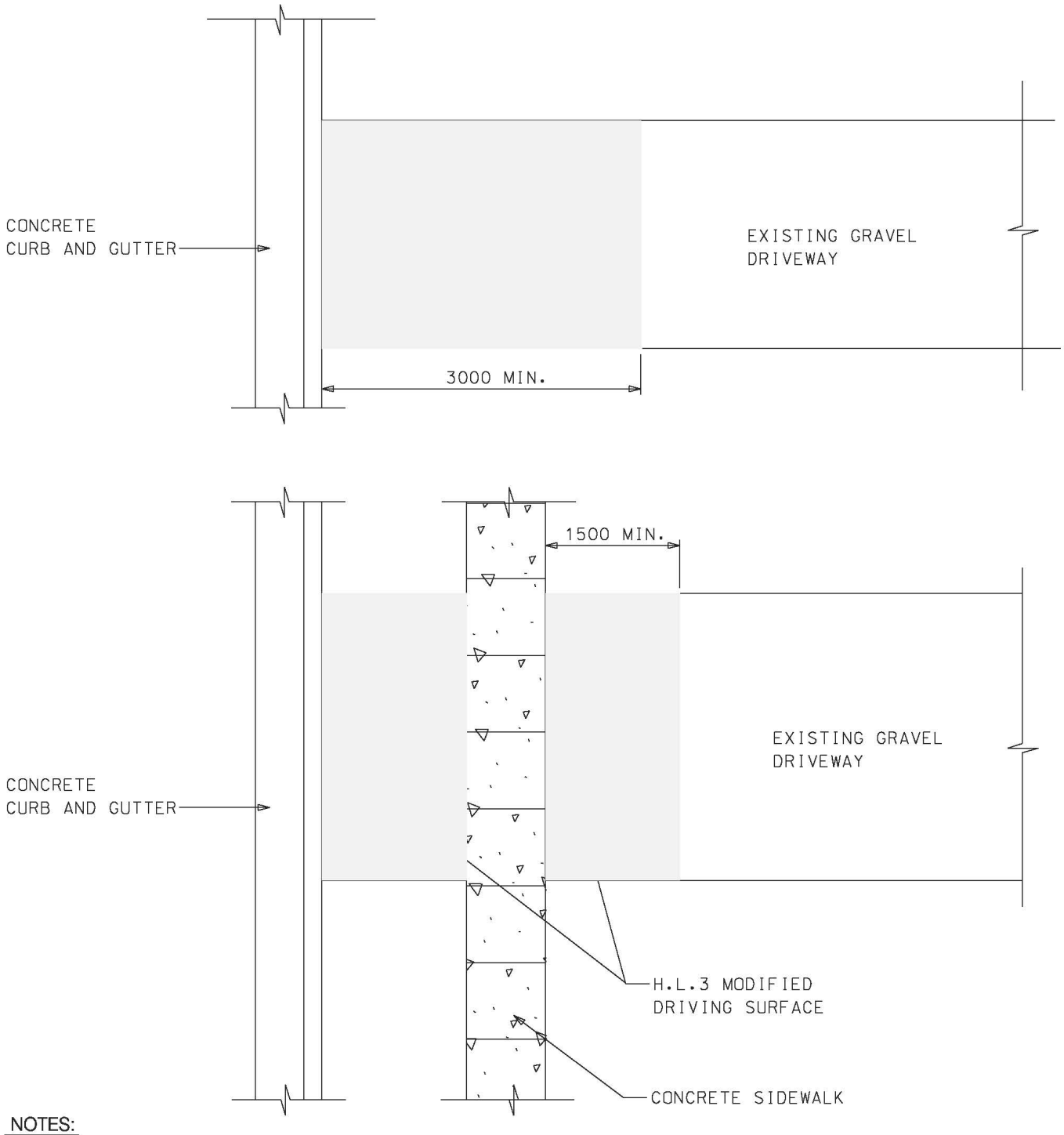
CONCRETE ISLAND BULLNOSE

DATE: 2018-01

FIGURE 1.24



NOTES:

A. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

B. COMPACTION OF ASPHALT SURFACE MUST BE DONE BY MECHANICAL COMPACTORS.

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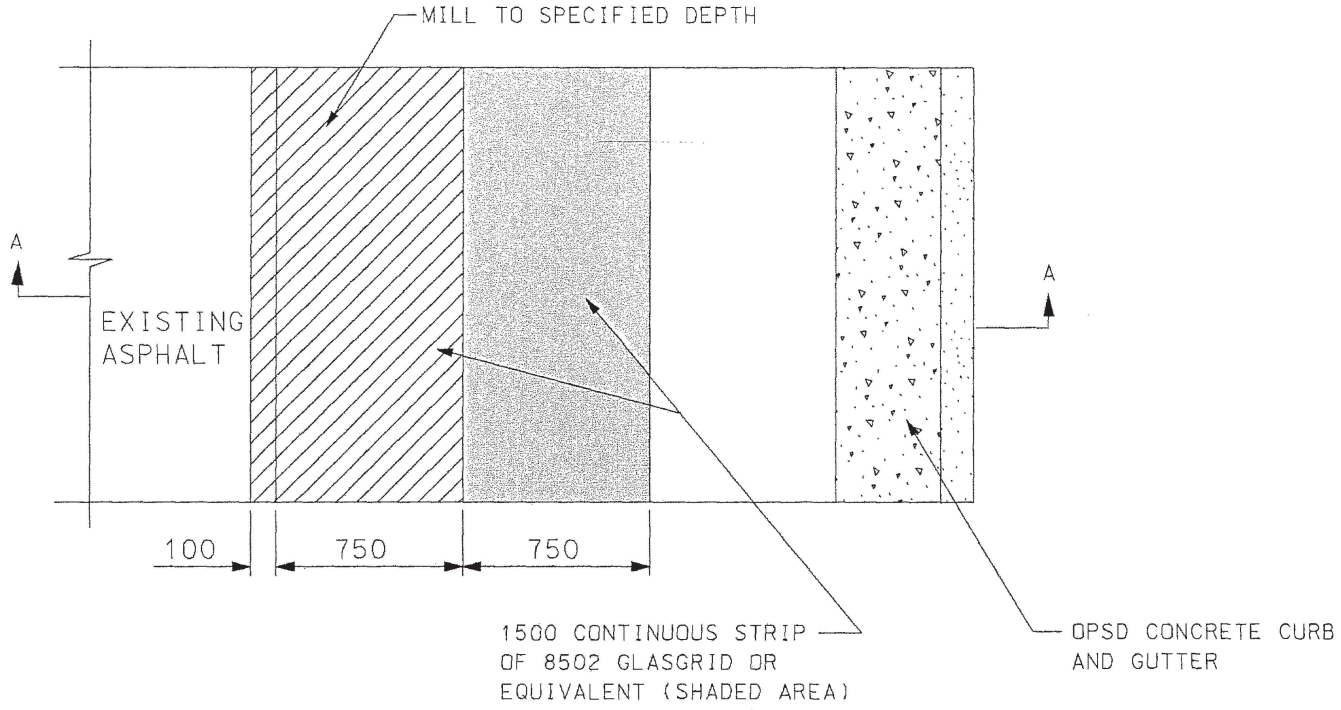
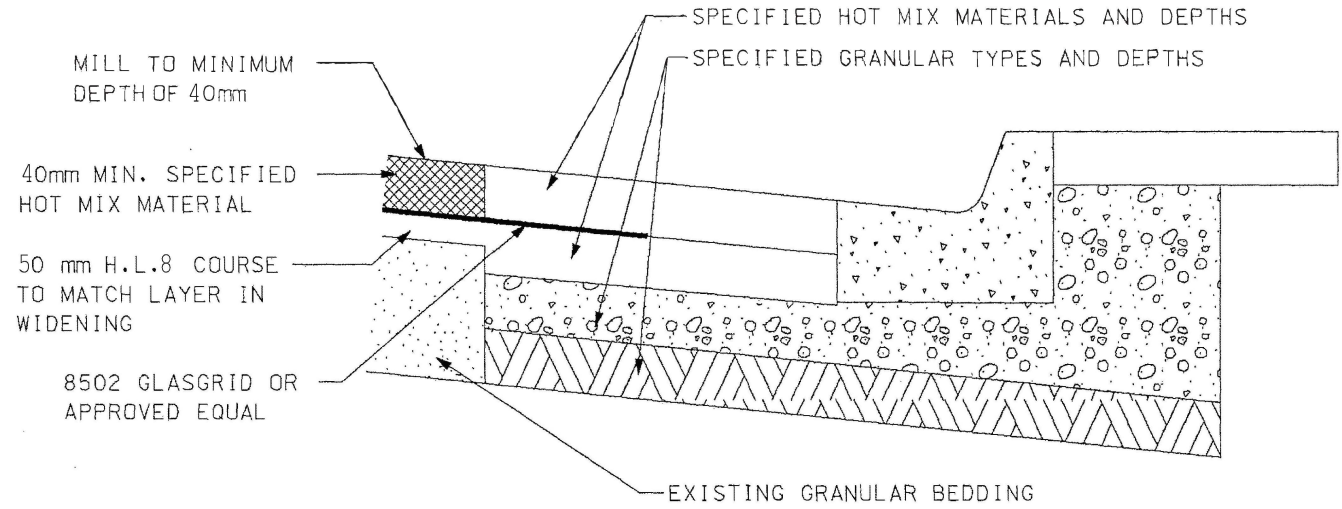
EXISTING GRAVEL DRIVEWAY RESTORATION

DATE: 2018-01

FIGURE 1.25



PLAN VIEW



SECTION A-A

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN

2. MIN. DEPTH OF EXISTING ASPHALT MUST BE 90mm

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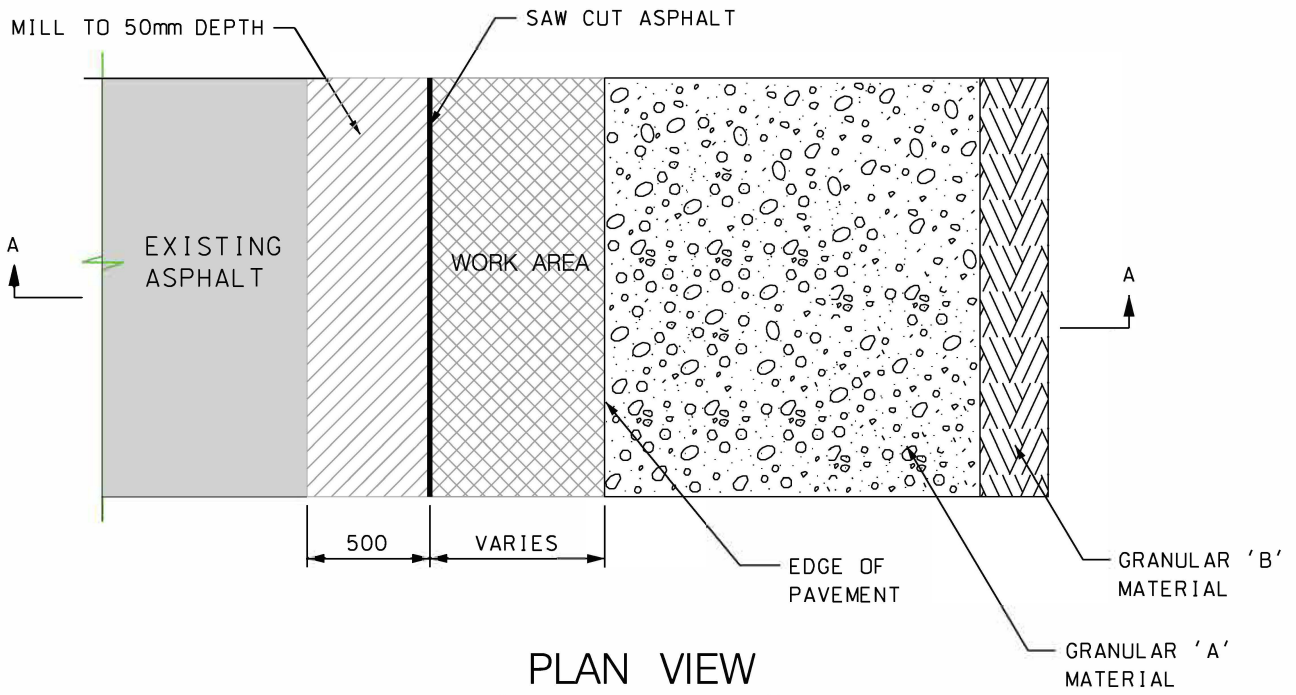
in the centre of it all

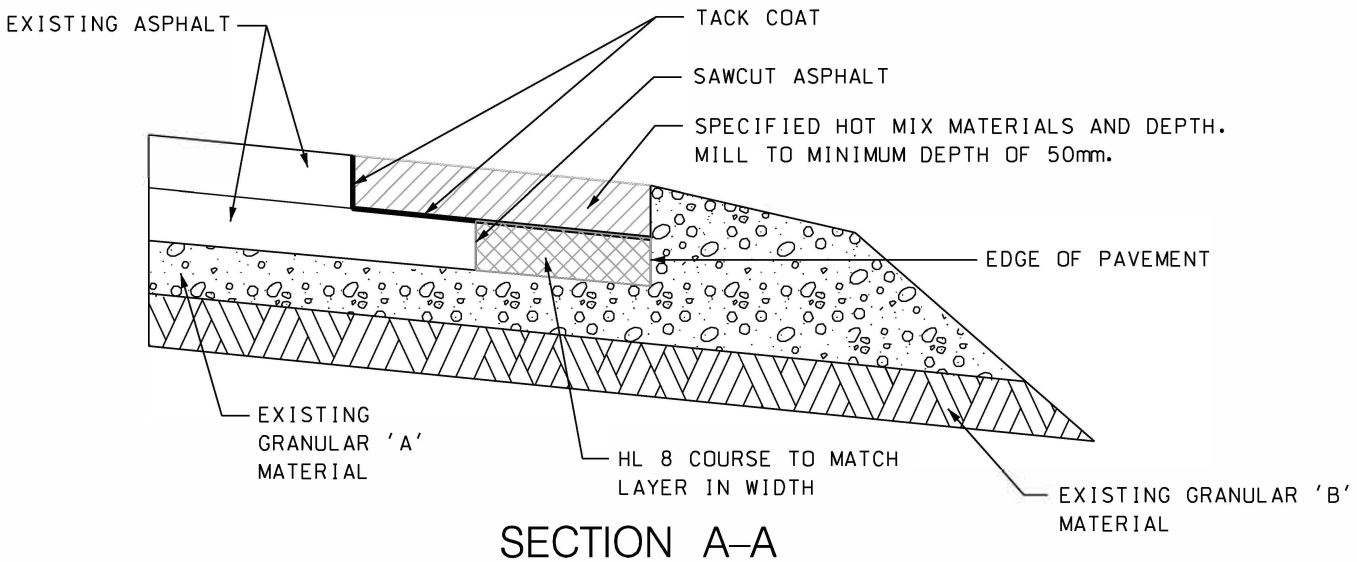
PAVEMENT REINFORCEMENT DETAIL FOR ROAD WIDENING

DATE: 2018-01

FIGURE 1.26



PLAN VIEW



SECTION A–A

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN
2. MIN. DEPTH OF EXISTING ASPHALT MUST BE 90mm.
3. STEPPED JOINT MUST BE PROVIDED AROUND THE ENTIRE PERIMETER OF THE WORK AREA WHERE THE WORK ZONE IS EXPANDING TO THE MIDDLE OF THE ROAD.
4. SAME DETAIL APPLIES FOR THE URBAN CROSS-SECTION.

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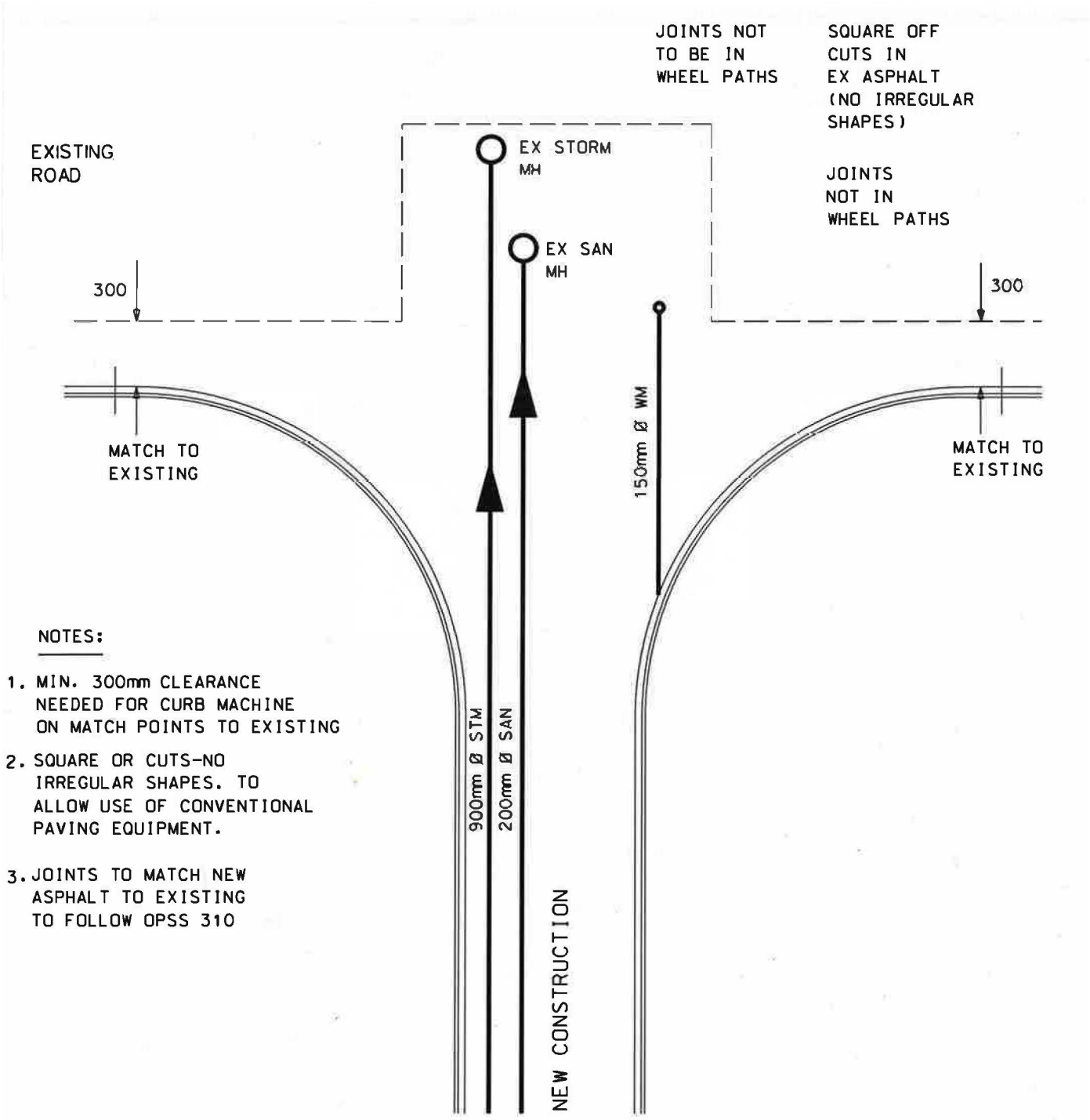
STEPPED MILLED JOINT PAVEMENT DETAIL

DATE: 2018-01

FIGURE 1.26a



NOTES:

1. MIN. 300mm CLEARANCE NEEDED FOR CURB MACHINE ON MATCH POINTS TO EXISTING
2. SQUARE OR CUTS-NO IRREGULAR SHAPES. TO ALLOW USE OF CONVENTIONAL PAVING EQUIPMENT.
3. JOINTS TO MATCH NEW ASPHALT TO EXISTING TO FOLLOW OPSS 310

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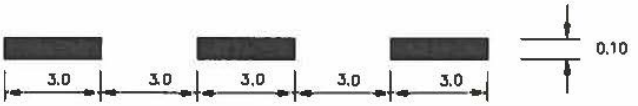
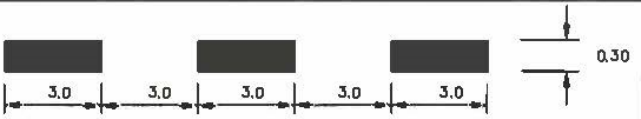
PAVEMENT CUT GUIDELINES
MATCHING NEW CONSTRUCTION TO EXISTING ASPHALT

DATE: 2018-01

FIGURE 1.27

	NAME OF LINE	DIMENSIONS (m)	SYMBOL	USE
LONGITUDINAL	SOLID		1	EDGE, DIRECTIONAL DIVIDING LINES (YELLOW)
	DOUBLE SOLID		2	DIRECTIONAL DIVIDING LINES (YELLOW)
	BROKEN		3	DIRECTIONAL DIVIDING LINES (YELLOW)
	SOLID		5	EDGE, LANE LINE PROHIBITING LANE CHANGES (WHITE)
	BROKEN		6	URBAN LANE LINES, LOW SPEED (WHITE)
	BROKEN		7	URBAN LANE LINES, LOW SPEED (WHITE)
	BROKEN		8	LANE LINES HIGH SPEED HIGHWAY (WHITE)
	CONDENSED BROKEN		10	GUIDING LINES (E.G. INTERSECTION MOVEMENTS) (WHITE)
			10A	
	WIDE BROKEN		11	CONTINUITY LINES (WHITE)
			12	

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TYPES OF PAVEMENT MARKINGS

DATE: 2018-01

FIGURE 1.28

NAME OF LINE		DIMENSIONS (m)	SYMBOL	USE
TRANSVERSE	LADDER		15	LADDER CROSSWALKS (WHITE)
	STOP		16	INTERSECTION STOP LINES (WHITE)
	CROSSWALK		17	CROSSWALKS (WHITE)
	CROSSWALK		18	CROSSWALKS (WHITE)
	SYMBOLS		20	VARIOUS
	LIMIT OF MARKINGS	] [		

NOTES:

1. Use ① to Denote PAVEMENT MARKING
2. Use [1] to Denote PAVEMENT MARKING, TEMPORARY
3. Use ⚠1 to Denote PAVEMENT MARKING, TEMPORARY–REMOVABLE
4. Use ◇1 to Denote PAVEMENT MARKING, DURABLE

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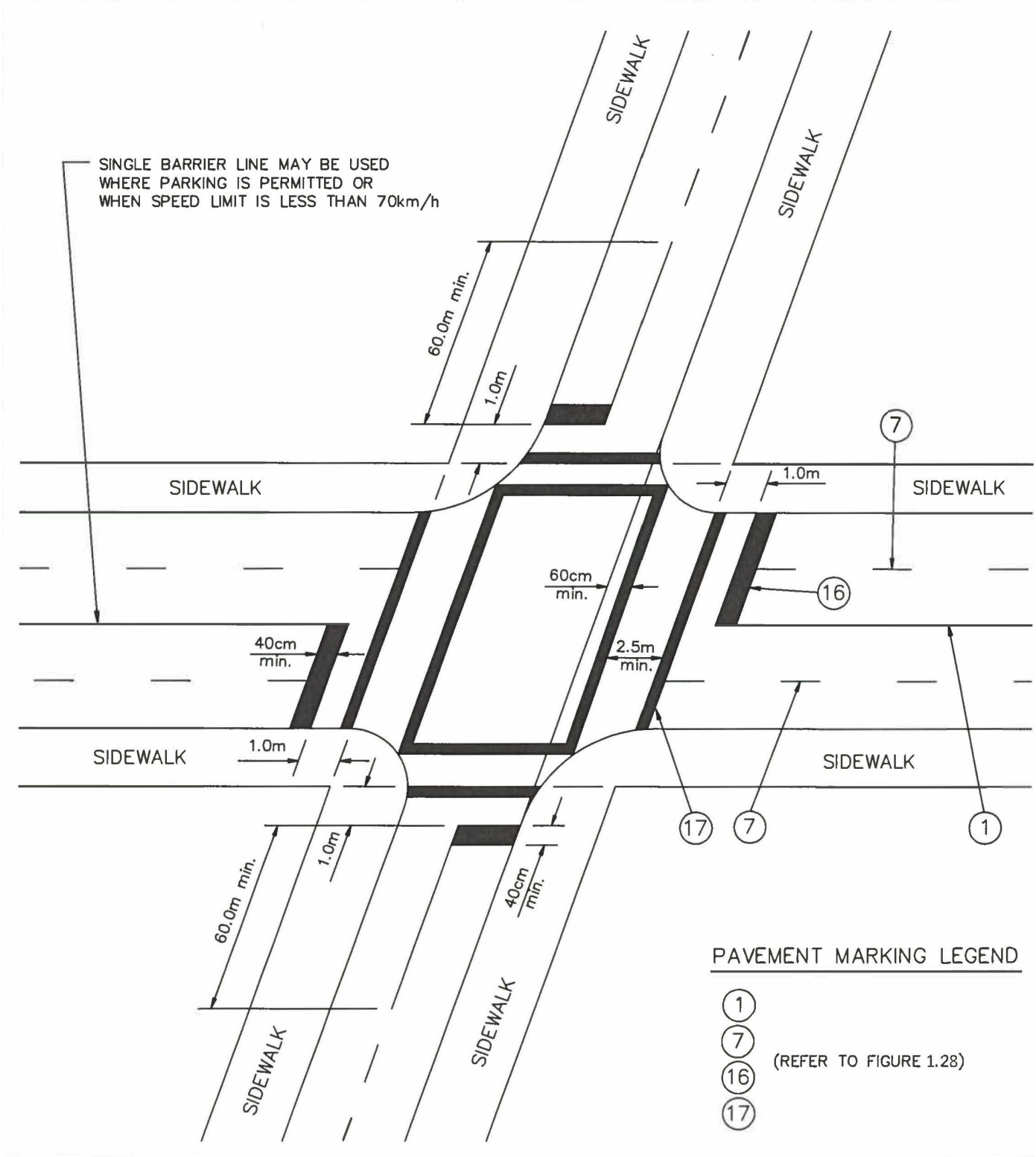
TYPES OF PAVEMENT MARKINGS

DATE: 2018-01

FIGURE 1.28a



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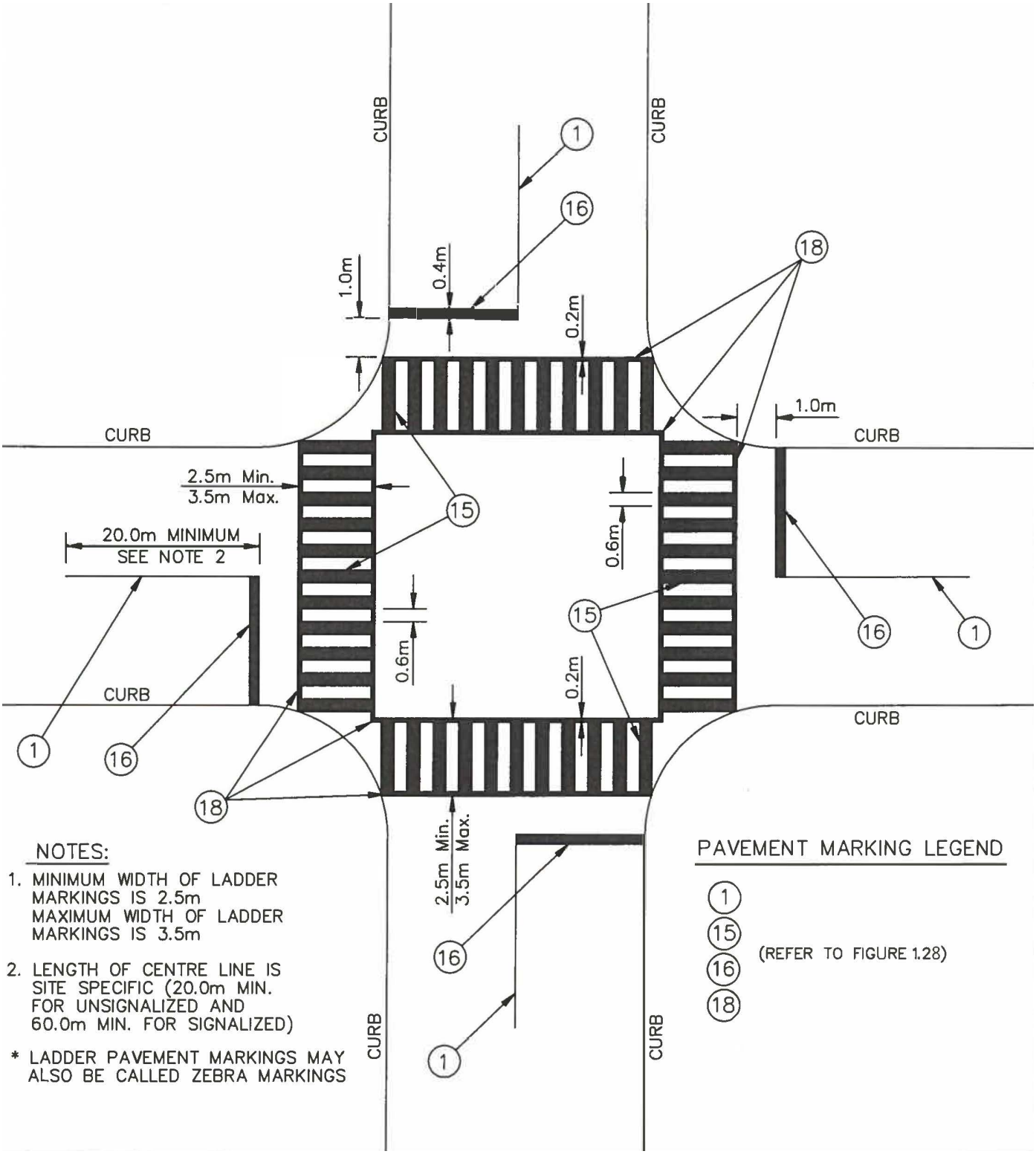
SIGNALIZED INTERSECTION MARKINGS

DATE: 2018-01

FIGURE 1.29



NOTES:

1. MINIMUM WIDTH OF LADDER MARKINGS IS 2.5m MAXIMUM WIDTH OF LADDER MARKINGS IS 3.5m
2. LENGTH OF CENTRE LINE IS SITE SPECIFIC (20.0m MIN. FOR UNSIGNALIZED AND 60.0m MIN. FOR SIGNALIZED)

* LADDER PAVEMENT MARKINGS MAY ALSO BE CALLED ZEBRA MARKINGS

PAVEMENT MARKING LEGEND

1
15
16
18

(REFER TO FIGURE 1.28)

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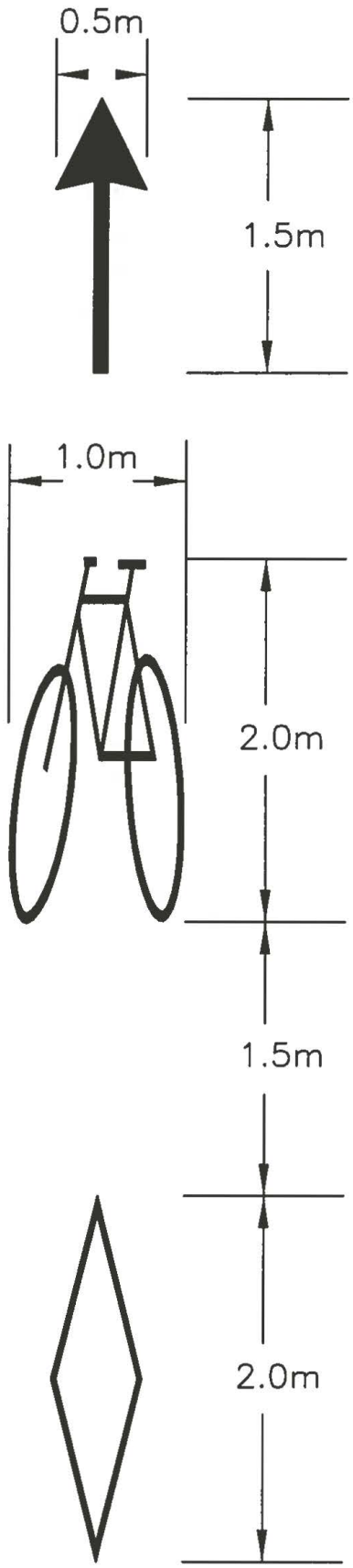
in the centre of it all

LADDER PAVEMENT MARKING DETAIL

DATE: 2018-01

FIGURE 1.29a



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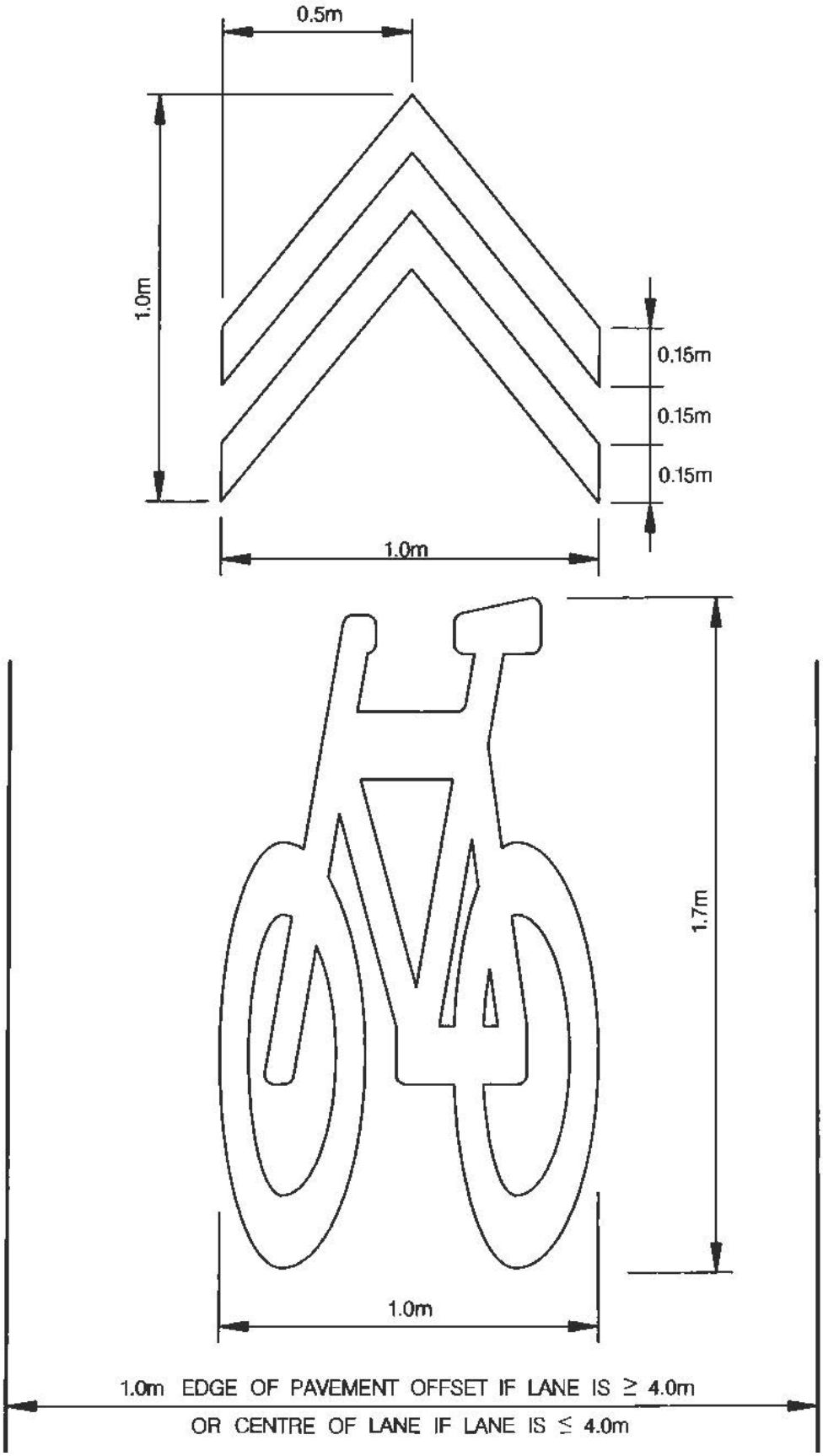
ARROW AND PAVEMENT MARKING FOR BICYCLE LANES

DATE: 2018-01

FIGURE 1.29b



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BICYCLE SHARROW PAVEMENT MARKING

DATE: 2018-01

FIGURE 1.29c