



**Transportation Services Department
Capital Planning & Delivery**

**MAJOR MACKENZIE DRIVE (Y.R. 25)
ROAD IMPROVEMENTS CLASS EA STUDY**

DRAFT DESIGN CRITERIA

Date: Sep 2018	Page 1 of 6		
Project No.: 85670	Municipality: REGION OF YORK	RIN:	Type of Project: CLASS EA STUDY – ROAD IMPROVEMENTS
Location: MAJOR MACKENZIE DRIVE (Y.R. 25)		Length: 1.3 km	
Project Limits: FROM HIGHWAY 400 N to E/W MMD TO JANE STREET (Y.R. 55)			

**Transportation Services Department
Capital Planning & Delivery**

**MAJOR MACKENZIE DRIVE (Y.R. 25)
ROAD IMPROVEMENTS CLASS EA STUDY**

DRAFT DESIGN CRITERIA

DESIGN PARAMETERS	PRESENT CONDITIONS (4-LANE)	DESIGN STANDARD (6-LANE)	PROPOSED STANDARDS (6-LANE)	DESIGN STANDARD SOURCE
ROAD CLASSIFICATION	4 Lane UAD	6 Lane UAD	6 Lane UAD	YR TMP
POSTED SPEED	60 km/h	60 km/h	60 km/h	YR-TGRS ⁽¹⁾ (SECTION 10)
DESIGN SPEED	80 km/h	60 km/h ⁽¹⁾	60 km/h ⁽¹⁾	YR-TGRS ⁽¹⁾ (SECTION 10)
MINIMUM STOPPING SIGHT DISTANCE	155 m	85 m (Crest) 85 m (Sag - Comfort)	155 m	TAC (Ch 2, Pg. 39, Table 2.5.3) Table 3.3.4)
EQUIVALENT MINIMUM 'K' FACTOR	35 (Crest) 30 (Sag)	11 (Crest) 18 (Sag - Headlight) 8 – 9 (Sag - Comfort)	35 (Crest) 30.6 (Sag)	TAC (Ch 3, Pg. 59, Table 3.3.2) TAC (Ch 3, Pg. 62, Table 3.3.4 & 3.3.5)
GRADES MAXIMUM	3.5 %	8 %	3.5 %	YR-RDGL (Pg. 37)
GRADES MINIMUM	0.5%	0.5 % (desirable min. along the Curb)	0.5%	YR-RDGL (Pg. 18) TAC (Ch 3, Pg. 56)
MINIMUM RADIUS Major Mackenzie Dr.	800 m	130 m – Superelevated 4% 185 m - Reverse Crown 1290 m – Normal Crown	1000 m – Superelevated 2% (Reversed Crown) 1751 m – Normal Crown	TAC (Ch 3, Pg. 14, Table 3.2.4)
APPROACH GRADES AT INTERSECTIONS	0.5 – 3.5%	8% 0.5 – 3.0%	0.5 - 3.5% ⁽²⁾	YR_RDGL (Pg. 28) TAC (Ch 9, Pg. 49)

**Transportation Services Department
Capital Planning & Delivery**

**MAJOR MACKENZIE DRIVE (Y.R. 25)
ROAD IMPROVEMENTS CLASS EA STUDY**

DRAFT DESIGN CRITERIA

DESIGN PARAMETERS	PRESENT CONDITIONS (4-LANE)	DESIGN STANDARD (6-LANE)	PROPOSED STANDARDS (6-LANE)	DESIGN STANDARD SOURCE
MAXIMUM GRADE THROUGH INTERSECTION	3.5%	0.5% (curb returns – urban) 1.0% (combined cross-slope within intersection limits) 0.5% to 3% (intersection with expected stops)	3.5%	TAC (Ch 9, Pg. 49)
MAXIMUM GRADE DRIVEWAYS	N/A	Maximum Grade = 10% Maximum Grade Transition = 4%	Maximum Grade = 10% Maximum Grade Transition = 4%	YR-RDGL (Pg. 62)
INTERSECTION SIGHT TRIANGLES	10 m x 10 m 15 m x 15 m 25 m x 25 m 30 m x 30 m	15 m x 15 m 20 m x 20 m	10 m x 10 m 15 m x 15 m 25 m x 25 m 30 m x 30 m	YR-RDGL DS-107 DS-108
INTERSECTION CURB RADIUS	10.0 m – 15.0 m (At Municipal Roads) 8.5 m – 20.0 m (At Hwy 400 off-ramps)	15.0 m (Desirable) 10.0 m – 12.0 m (At Municipal Roads)	5.0m – 15.0 m ⁽³⁾	YR-RDGL (Pg. 27)
LANE WIDTH (YR Corridor)	4 Travel Lanes @ 3.5 m – 3.7 m; Left Turn Lanes @ 3.5 m – 3.5 m; Right Turn Lanes @ 3.25 m; RT Channelization @ 4.0 m	4 Travel Lanes @ 3.3 m; 2 HOV Lanes @ 3.5 m; Left Turn Lanes @ 3.0 m; Right Turn Lanes @ 3.5 m;	4 Travel Lanes @ 3.3 m; 2 HOV Lanes @ 3.5 m ⁽⁴⁾ ; Left Turn Lanes @ 3.0 m; Right Turn Lanes @ 3.5 m;	YR-RDGL (Pg. 46) YR-TGRS (SECTION 7)

**Transportation Services Department
Capital Planning & Delivery**

**MAJOR MACKENZIE DRIVE (Y.R. 25)
ROAD IMPROVEMENTS CLASS EA STUDY**

DRAFT DESIGN CRITERIA

DESIGN PARAMETERS	PRESENT CONDITIONS (4-LANE)	DESIGN STANDARD (6-LANE)	PROPOSED STANDARDS (6-LANE)	DESIGN STANDARD SOURCE
LANE WIDTH (MTO Corridor)	4 Travel Lanes @ 3.5 m – 3.75 m; Left Turn Lanes @ 3.5 m – 3.75 m; Right Turn Lanes @ 3.5 m – 3.75 m Parallel Lanes @ 3.75 m On-Ramps @ 4.75 m	6 Travel Lanes @ 3.3 - 3.7 m; Left Turn Lanes @ 3.3 - 3.7 m; Right Turn Lanes @ 3.3 - 3.7 m Parallel Lanes @ 3.3 - 3.7 m On-Ramps @ 4.75m (single lane) 3.75m (two lanes)	6 Travel Lanes @ 3.5 m; Left Turn Lanes @ 3.5 m; Right Turn Lanes @ 3.5 m MIN. Parallel Lanes @ 3.5 m On-Ramps @ 4.75 m	TAC (Ch 4, Pg. 9, Table 4.2.3, Pg. 13-14) MTO-DS (Ch 4, Pg. 7-8, Exhibit 4-B & 4-C, Pg. 16)
SHOULDER WIDTH	Varies 0.5 m – 3.0 m	1.0 m (LS) - 2.5 m (RS) (Ramps) 0.5m (YR Bridges) 1.5 m (MTO Bridge) 2.5 m (YR Roads)	1.0 m (LS) - 2.5 m (RS) (Ramps) 1.5 m (MTO Bridges) 0.5 m min. (YR Bridges)	MTO-DS (Ch 4, Pg. 17 & 18) TAC (Ch 4, Pg. 54, Table 4.10.1) YR-RDGL (Pg. 47)
SHOULDER ROUNDING	N/A	0.5 m beyond sidewalk 1.0 m with Steel Beam Guide Rail	N/A	YR-RDGL (Pg. 47)
MEDIAN WIDTH	2.0 m (Curbed Median) 1.4m (Slab Median)	2.0 m Minimum (Curbed Median) 1.4m Minimum (Slab Median)	2.0 m Minimum (Curbed Median)	YR-RDGL (Pg. 21)
SIDEWALK	1.5 m	1.5 m Minimum	1.5 m Minimum	YR-RDGL (Pg. 57)
MULTI-USE PATH	N/A	3.0 m	3.0 m (YR Corridor) 3.6 m (MTO Bridge)	YR-RDGL (Pg. 57)

**Transportation Services Department
Capital Planning & Delivery**

**MAJOR MACKENZIE DRIVE (Y.R. 25)
ROAD IMPROVEMENTS CLASS EA STUDY**

DRAFT DESIGN CRITERIA

DESIGN PARAMETERS	PRESENT CONDITIONS (4-LANE)	DESIGN STANDARD (6-LANE)	PROPOSED STANDARDS (6-LANE)	DESIGN STANDARD SOURCE
ROW WIDTH	Varies 29 m to 51 m	43 m	45 m to 51 m	YR Official Plan Map 12 YR-TGRS (SECTION 6.3)
SIGNALS & ILLUMINATION	Signalized Intersections at: Jane Street, Amusement Drive, Hwy 400 S-EW, Hwy 400 N-EW	N/A	Signalized Intersections at: Jane Street, Amusement Drive, Hwy 400 S-EW, Hwy 400 N-EW	Transportation and Traffic Analysis Report

Notes:

- (1) York Regions' practice is to design the road for a speed 20km above the posted speed. However, the 60km/h proposed design speed follows the Towards Great Regional Streets – A Path to Improvement (TGRS) for an urban 6-lane cross section recommending both the posted and design speed limit to be 60km/h.
- (2) Substandard approach grades at intersection but matches existing conditions.
- (3) Substandard curb radii at intersection but only for one-way roads.
- (4) The HOV lanes are not recommended for implementation at this time and will be considered in the future.

Design Standard References:

City of Vaughan – Engineering Design Criteria & Standard Drawings – May 2004
 York Region – Geometric Design Standard for Roads (YR – GDSR)
 York Region – York Region Design Guidelines (YR-RDGL) v.1.20
 York Region- Towards Great Regional Streets Design Guidelines (TGRS)
 York Region- Pedestrian & Cycling Master Plan (PCMP)
 York Region – Access Guideline for Regional Roads (AGRR)
 Transportation Association of Canada Geometric Design Guide (TAC)
 Ministry of Transportation – Design Supplement for TAC Geometric Design Guide for Canadian Roads (MTO – DS) – June 2017

**Transportation Services Department
Capital Planning & Delivery**

**MAJOR MACKENZIE DRIVE (Y.R. 25)
ROAD IMPROVEMENTS CLASS EA STUDY**

DRAFT DESIGN CRITERIA

Recommended by: Consulting Firm's PM	Name: Signature:	Date:
Reviewed by: PM, CPD	Name: Signature:	Date:
Reviewed by: Manager Engineering, CPD	Name: Signature:	Date:
Reviewed by: Manager Electrical & Traffic, CPD	Name: Signature:	Date:
Reviewed by: Manager Road Maintenance, Roads & Traffic Operations	Name: Signature:	Date:
Approved by: Director, Capital Planning and Delivery	Name: Signature:	Date:
Approved by: Director, Roads and Traffic Operations	Name: Signature:	Date: