

APPENDIX A2

YORK REGION ROAD DESIGN GUIDELINES

IDF CURVES

JANUARY, 2023

9.11 Intensity – Duration – Frequency (IDF) Curves

Southern Quadrant: (South of Bloomington Road)

$$I_5 = \frac{1045.41}{(t+4.9)^{0.83}} \text{ mm/hr} \quad \text{where } t = 10 \text{ minutes, then } I = 111.10 \text{ mm/hr}$$

Use 10 minutes as an initial inlet time

$$I_{10} = \frac{1331.42}{(t+5.26)^{0.84}} \text{ mm/hr}$$

$$I_{25} = \left| \frac{1045.41}{(t+4.9)^{0.83}} \right| * 1.39 \text{ mm/hr}$$

$$I_{50} = \left| \frac{1045.41}{(t+4.9)^{0.83}} \right| * 1.54 \text{ mm/hr}$$

$$I_{100} = \left| \frac{1045.41}{(t+4.9)^{0.83}} \right| * 1.69 \text{ mm/hr}$$

Assuming t=10min

Southern Quadrant	
Return Frequency	I (mm/hr)
5-Yr	111.06
10-Yr	134.94
25-Yr	154.37
50-Yr	171.03
100-Yr	187.68

Northern Quadrant	
Return Frequency	I (mm/hr)
5-Yr	94.77
10-Yr	111.83
25-Yr	131.73
50-Yr	145.94
100-Yr	160.16

Tc=10min
For 25mm Storm
I 25mm (mm/hr)
61.31

APPENDIX A3

TRCA FLOODPLAIN MAPPING PROGRAM

Hydraulic Engineering Consultant:



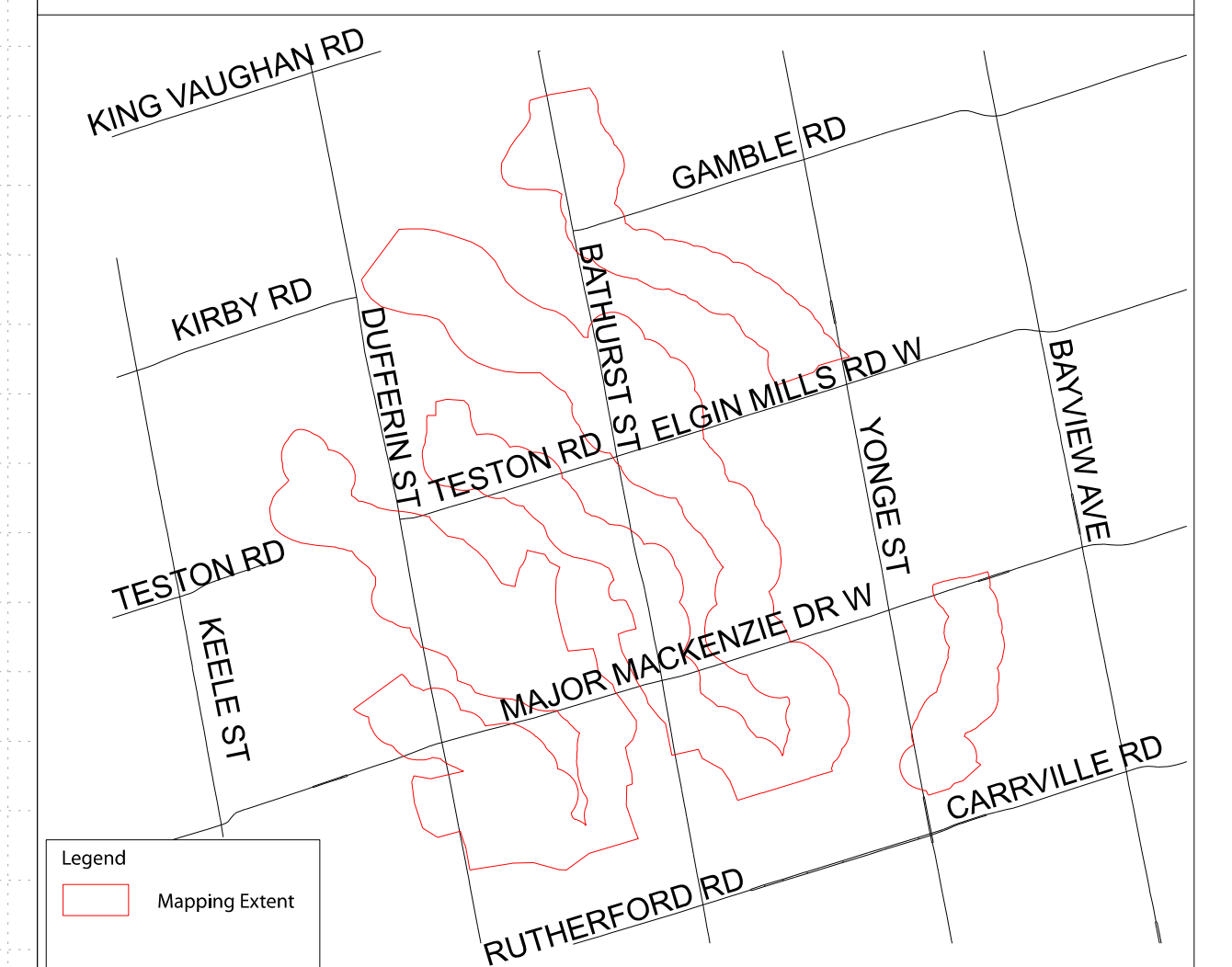
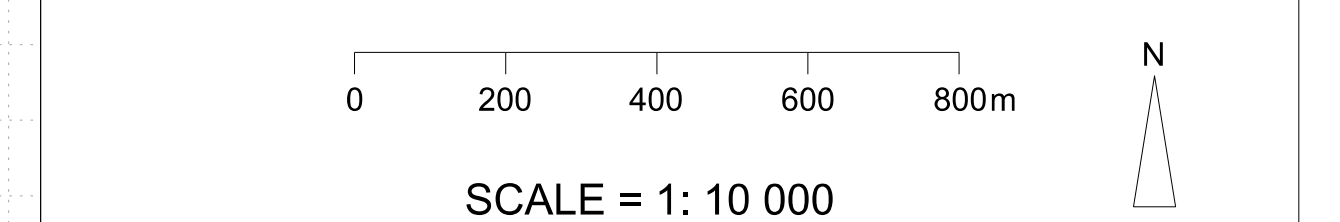
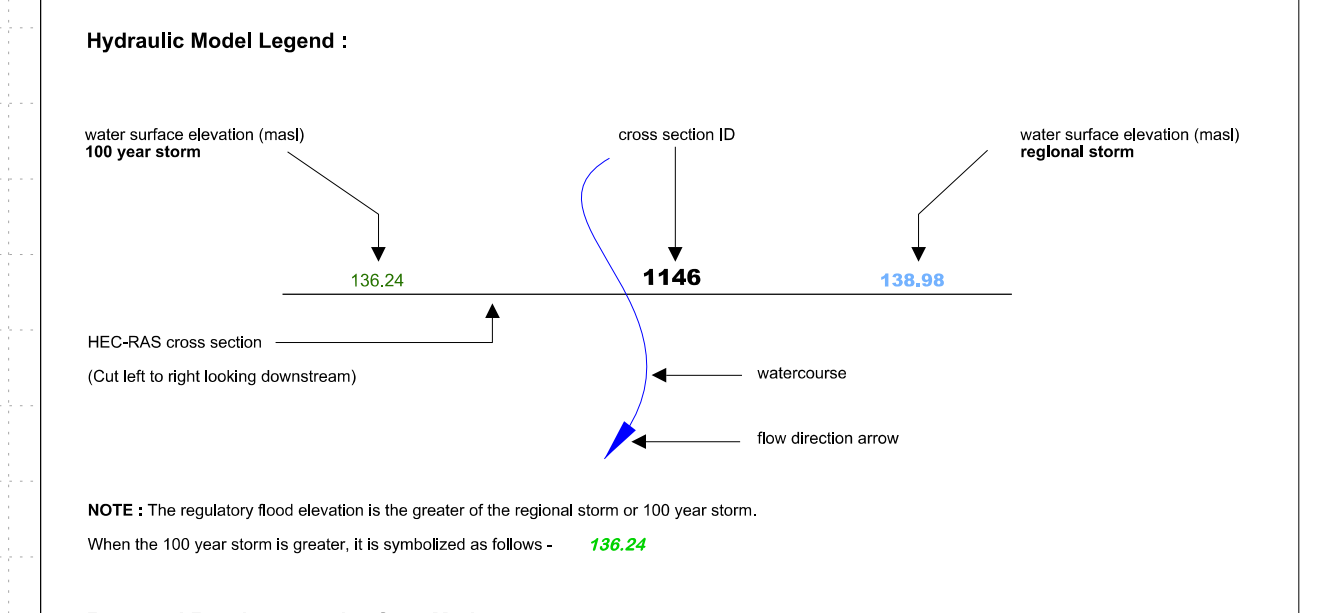
The professional engineer's seal and signature verifies the location of the floodline and associated water surface elevations only. For additional information please see CFN 61412 for the final report : Don River Floodplain Mapping Phase II.



Mapping Note:
 The flood line on this map was produced from hydraulic modelling software using a digital elevation model (DEM) with 1m grid resolution. The DEM was created using bare earth mass points with a vertical accuracy tolerance of +/- 0.10 m on hard flat surfaces. The mass points were collected using LIDAR flown in 2014/2015 by Airborne Imaging.
 The spot elevations shown on this map were produced by TRCA using the DEM mentioned above. The contour lines were produced by TRCA by smoothing the full resolution DEM to create smooth lines for cartographic display and should therefore be used as reference only. The river banks were produced by TRCA and are approximate, contours within close proximity are a result of interpolation from the DEM surface and should not be considered a true representation of the water surface or bathymetry.
 Contour labels and spot elevations are represented as metres above sea level (masl).
 The planimetric data on this map were acquired from various sources with different collection dates and are provided for reference only. The building footprints were acquired from York Region in 2019.
 The vertical datum is the Canadian Geodetic Vertical Datum of 1928-1978 Ontario Adjusted Version.
 The horizontal datum is North American Datum of 1983, UTM 8° projection Zone 17, Central Meridian 81° W.
 Grid Interval 100 m.

LEGEND

Contour - 5m		Bridge/Culvert	
Contour - 1m		Railway	
Contour - 0.5m		Water Feature and Drainage	
Spot Elevation		River Bank (approximate)	
Building		Regulatory Flood Line	
Road		Overland Flow Centre Line and Flow Direction Arrow	
Elevation Data from 2019			
* elevation data within this boundary was acquired in 2018 by Airborne Imaging			



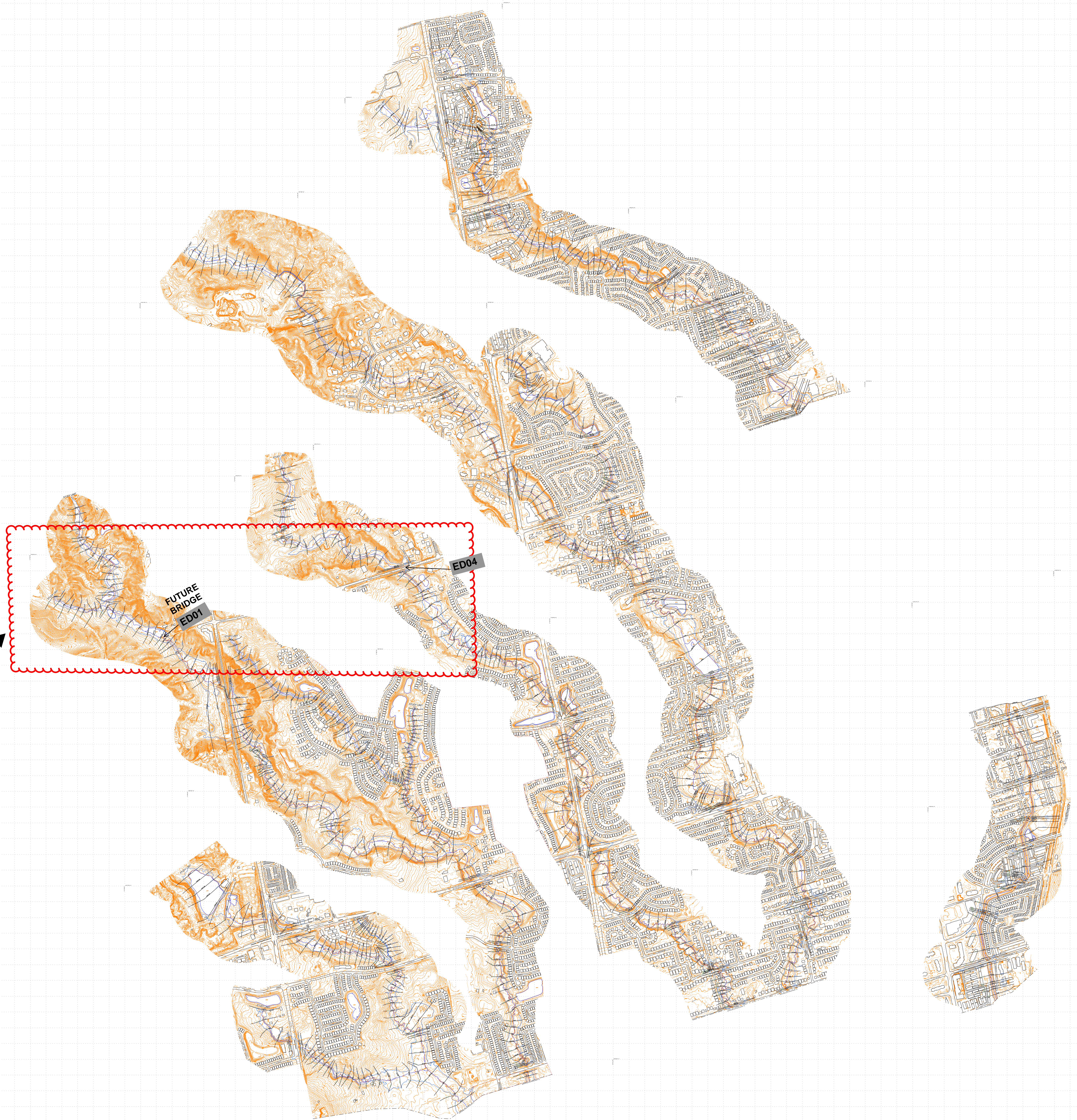
Drawn by : MDT Checked by : QIY

DON RIVER
 Sheet No. **11**



5 Shoreham Dr., Downsview, ON M3N 1S4(416)-661-6600, info@trca.on.ca

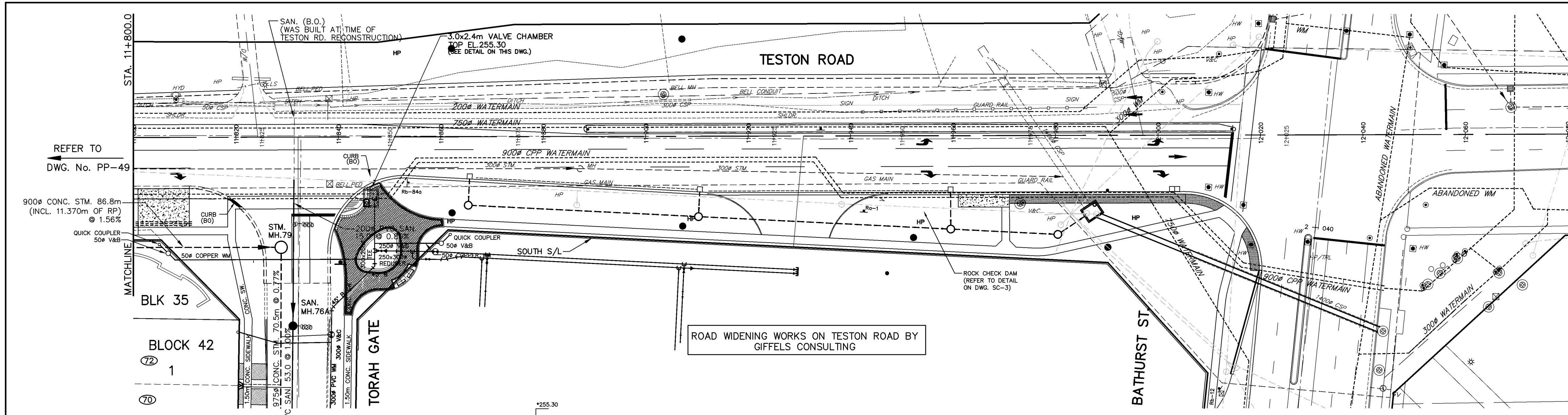
STUDY AREA



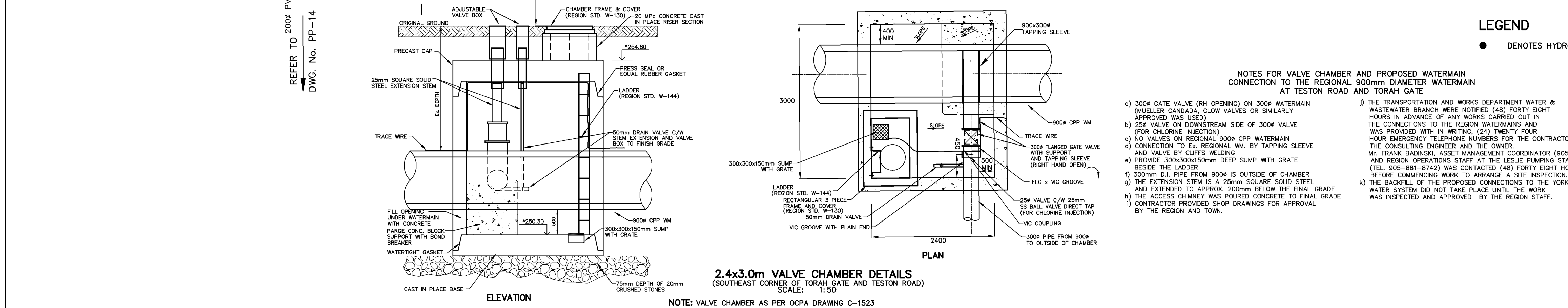
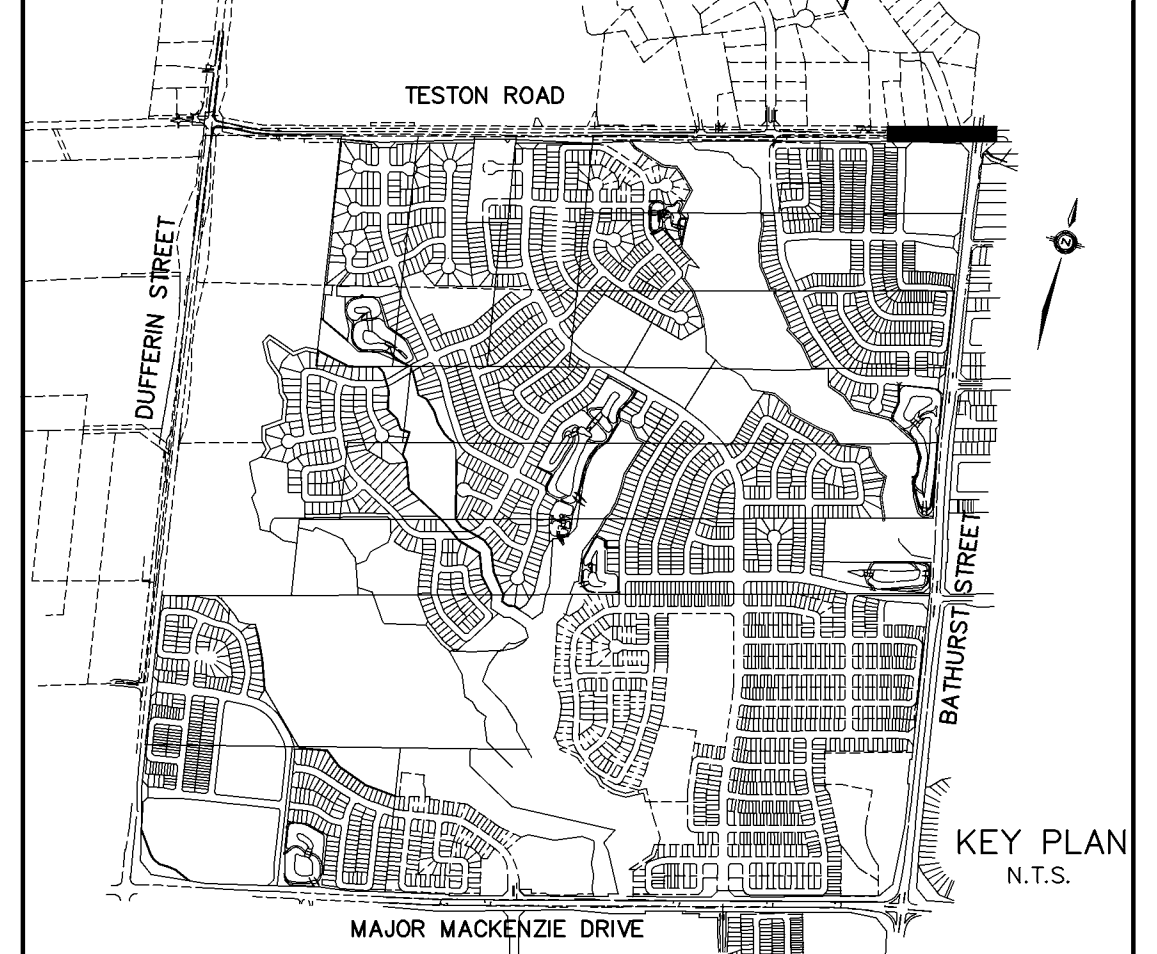
REVISIONS			
NO.	DESCRIPTION	BY	DATE
1	Removed hydraulic and topographic data upstream of German Mills Cr Reach 4 cross-section ID 9599.99. Updated data can be found on map sheet Don River 13 (don_13).	MDT	2021-01-15

APPENDIX A4

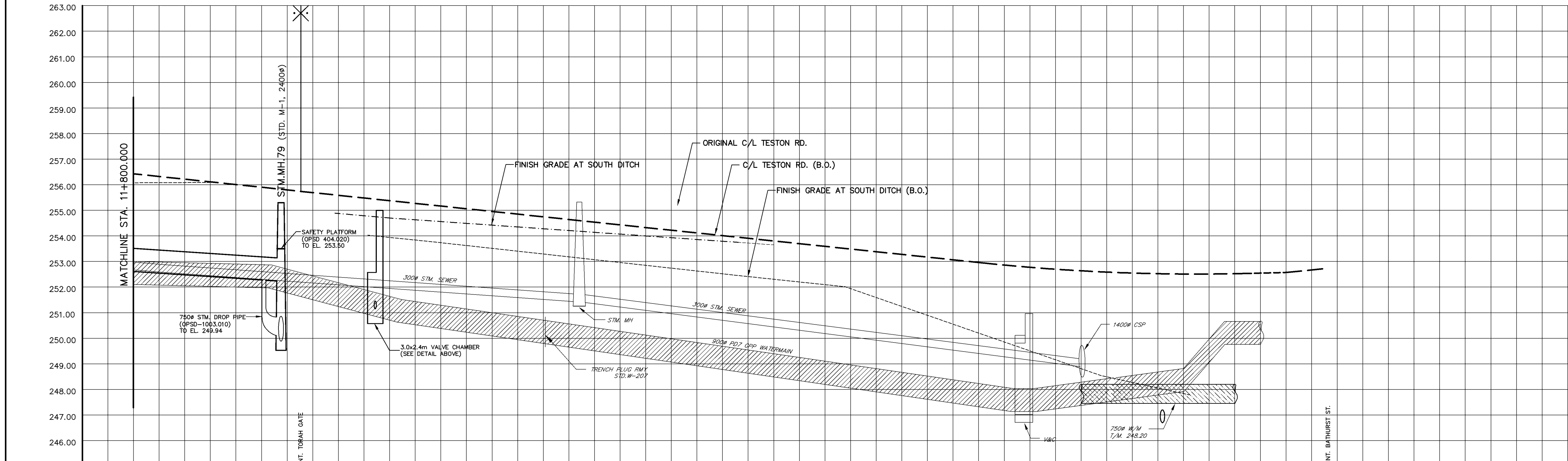
AS-BUILT DRAWINGS



REVISIONS			
No.	DESCRIPTION	By	Date
1.	GENERAL REVISIONS	TD	JUNE 15, 2005
2.	3x2.4m V&C ELEVATION REVISED, TEMP. DIGB ADDED	HT	JUNE 25, 2005
3.	TEMP. DIGB & RISER REMOVED, LOCATION OF STM. MH.79 CHANGED	HT	JULY 04, 2005
4.	REVISED AS PER REGIONS COMMENTS	HT	SEPT 29, 2005
5.	REVISED SOUTH STREETLINE ON TESTON ROAD	TD	JAN 16, 2006



- LEGEND**
- DENOTES HYDRO POLE
- NOTES FOR VALVE CHAMBER AND PROPOSED WATERMAIN CONNECTION TO THE REGIONAL 900mm DIAMETER WATERMAIN AT TESTON ROAD AND TORAH GATE**
- 300φ GATE VALVE (RH OPENING) ON 300φ WATERMAIN (MUELLER CANADA, CLOW VALVES OR SIMILARLY APPROVED WAS USED)
 - 25φ VALVE ON DOWNSTREAM SIDE OF 300φ VALVE (FOR CHLORINE INJECTION)
 - NO VALVES ON REGIONAL 900φ CPP WATERMAIN
 - CONNECTION TO EX. REGIONAL WM. BY TAPPING SLEEVE AND VALVE BY CLIFFS WELDING
 - PROVIDE 300x300x150mm DEEP SUMP WITH GRATE BESIDE THE LADDER
 - 300mm D.I. PIPE FROM 900φ IS OUTSIDE OF CHAMBER
 - THE EXTENSION STEM IS A 25mm SQUARE SOLID STEEL AND EXTENDED TO APPROX. 200mm BELOW THE FINAL GRADE
 - THE ACCESS CHIMNEY WAS POURED CONCRETE TO FINAL GRADE
 - CONTRACTOR PROVIDED SHOP DRAWINGS FOR APPROVAL BY THE REGION AND TOWN.
 - THE TRANSPORTATION AND WORKS DEPARTMENT WATER & WASTEWATER BRANCH WERE NOTIFIED (48) FORTY EIGHT HOURS IN ADVANCE OF ANY WORKS CARRIED OUT IN THE CONNECTIONS TO THE REGION WATERMANS AND WAS PROVIDED WITH IN WRITING (24) TWENTY FOUR HOUR EMERGENCY TELEPHONE NUMBERS FOR THE CONTRACTOR, THE CONSULTING ENGINEER AND THE OWNER.
 - MR. FRANK BARDOSKI, ASSET MANAGEMENT COORDINATOR (905-830-4444 ext.3047) AND REGION OPERATIONS STAFF AT THE LESLIE PUMPING STATION (TEL. 905-881-8742) WAS CONTACTED (48) FORTY EIGHT HOURS BEFORE COMMENCING WORK TO ARRANGE A SITE INSPECTION.
 - THE BACKFILL OF THE PROPOSED CONNECTIONS TO THE YORK WATER SYSTEM DID NOT TAKE PLACE UNTIL THE WORK WAS INSPECTED AND APPROVED BY THE REGION STAFF.



- NOTES:**
- THE LOCATION OF ALL UNDERGROUND AND ABOVE GROUND UTILITIES AND STRUCTURES WERE NOT NECESSARILY SHOWN ON CONTRACT DRAWINGS, AND WHERE SHOWN THE ACCURACY OF THE LOCATION AND ELEVATION OF SUCH UTILITIES AND STRUCTURES WERE NOT GUARANTEED. PRIOR TO COMMENCING CONSTRUCTION, THE CONTRACTOR VERIFIED THE EXACT LOCATION AND ELEVATION OF SUCH UTILITIES AND STRUCTURES AND ASSUMED ALL LIABILITIES OF DAMAGE.
 - ALL AREAS DISTURBED DURING CONSTRUCTION OF SEWERS AND WATERMANS WERE RESTORED TO ORIGINAL CONDITION OR BETTER, TO THE SATISFACTION OF THE CITY OF VAUGHAN AND REGION OF YORK ENGINEERING DEPARTMENT. GRASSSED AREAS WERE TOPPED WITH 100mm TOPSOIL AND SOGGED AS PER OPSD 218.01. ALL EXISTING SERVICES WERE ADJUSTED TO SUIT THE FINISH GRADES.
 - FOR GENERAL NOTES REFER TO DWG. Nos. ON-1 AND ON-2
 - FOR CLEAN WATER COLLECTOR (CWC) PIPE DETAILS, TYPICAL CWC TRENCH DETAIL, MANHOLE INSTALLATION DETAILS AND CWC PIPE PLUGS, REFER TO DWG. D-1.
 - WATERMAIN ALONG TESTON ROAD WAS CONSTRUCTED IN VERTICAL TRENCH AND BACKFILLED WITH GRANULAR FILL UNLESS SPECIFIED OTHERWISE ON THE PROFILES (SEE DETAILS ON THE DRAWING No. PP-44)

- LEGEND:**
- ②5 DENOTES MUNICIPAL HOUSE NUMBER
 - 150 DENOTES LOT NUMBER
- AS CONSTRUCTED FEBRUARY 2008**

BENCHMARK

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF VAUGHAN BENCHMARK No. 12-1 CONCRETE BENCH MARK POST WEST SIDE OF BATHURST STREET 183m NORTH OF MAJOR MACKENZIE DRIVE HAVING A PUBLISHED ELEVATION OF 232.309m

APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF SCHAEFFERS CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION (PHASE 1 SPINE ONLY)

Vaughan
The City Above Toronto

CONSTRUCTION DRAWING
June 30, 2011

DIRECTOR OF DEVELOPMENT/ TRANSPORTATION ENGINEERING DATE

BLOCK 12 SPINE SERVICES

SCHAEFFERS
CONSULTING ENGINEERS

6 Ronrose Drive, Concord, Ontario L4K 4R3
Tel: (905) 738-6100
Fax: (905) 738-6875
E-mail: design@schaeffers.com

SCHAEFFER & ASSOCIATES LTD.

CHAINAGE	C/L ELEVATION	SEWER TYPE	DESCRIPTION
11+800.000	246.00	CLEAN WATER COLLECTOR SEWER	
11+820.000	246.00	CLEAN WATER COLLECTOR SEWER	
11+832.654	246.00	CLEAN WATER COLLECTOR SEWER	
11+840.000	246.00	CLEAN WATER COLLECTOR SEWER	
11+880.000	246.00	CLEAN WATER COLLECTOR SEWER	
11+940.000	246.00	CLEAN WATER COLLECTOR SEWER	
11+920.000	246.00	CLEAN WATER COLLECTOR SEWER	
11+940.000	246.00	CLEAN WATER COLLECTOR SEWER	
11+960.000	246.00	CLEAN WATER COLLECTOR SEWER	
11+980.000	246.00	CLEAN WATER COLLECTOR SEWER	
12+000.000	246.00	CLEAN WATER COLLECTOR SEWER	
12+020.000	246.00	CLEAN WATER COLLECTOR SEWER	
12+033.167	246.00	CLEAN WATER COLLECTOR SEWER	
12+040.000	246.00	CLEAN WATER COLLECTOR SEWER	

PROJECT No. 2004-2644 DRAWING No. PP-50

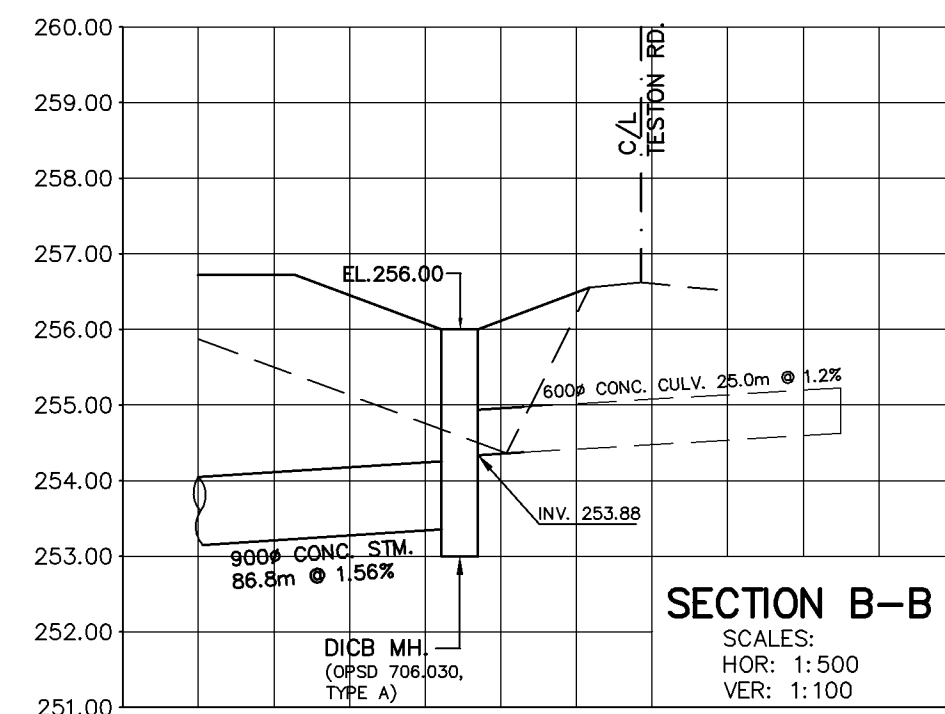
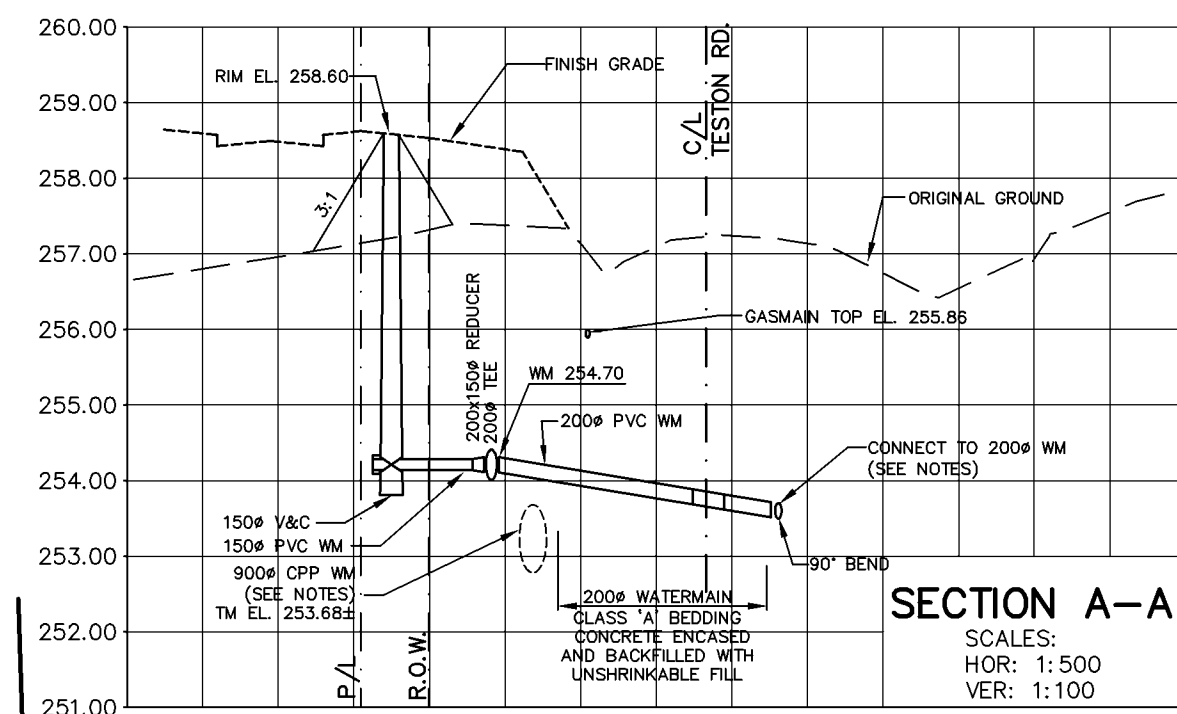
DESIGNED BY: H.T. DATE: APRIL 2007 CHECKED BY: H.T.

DRAWN BY: APPROVED BY:

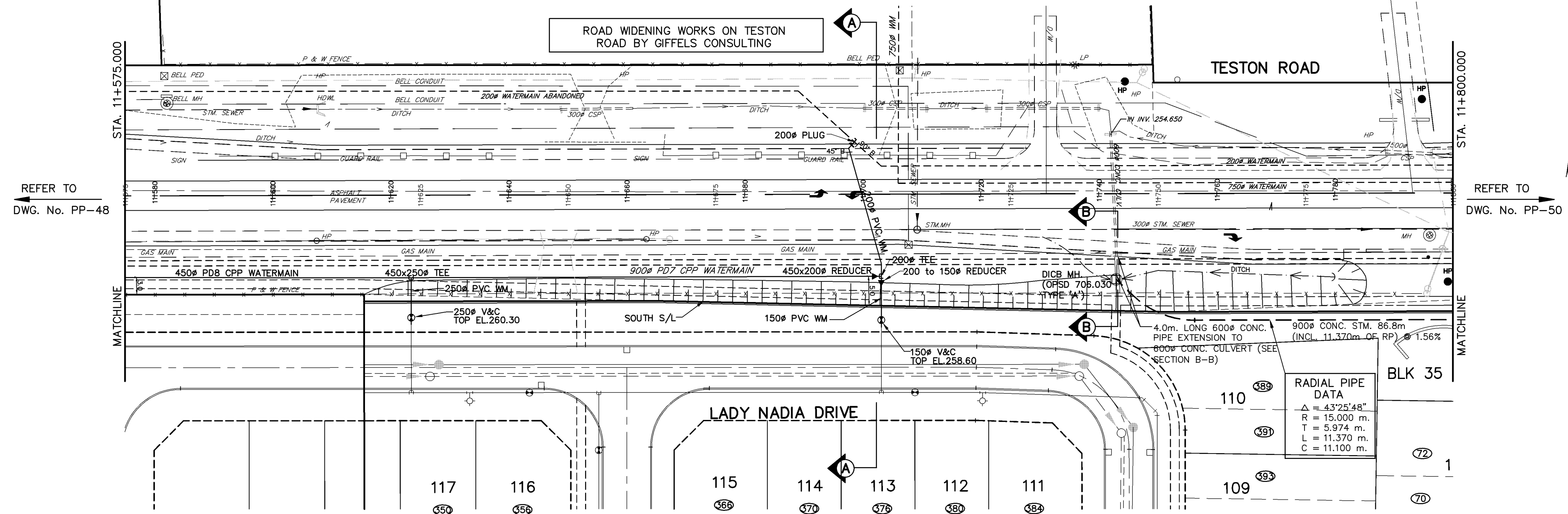
SCALE HORIZONTAL 1:50 VERTICAL 1:100 19T-99V08 DWG. No.

Vaughan
The City Above Toronto

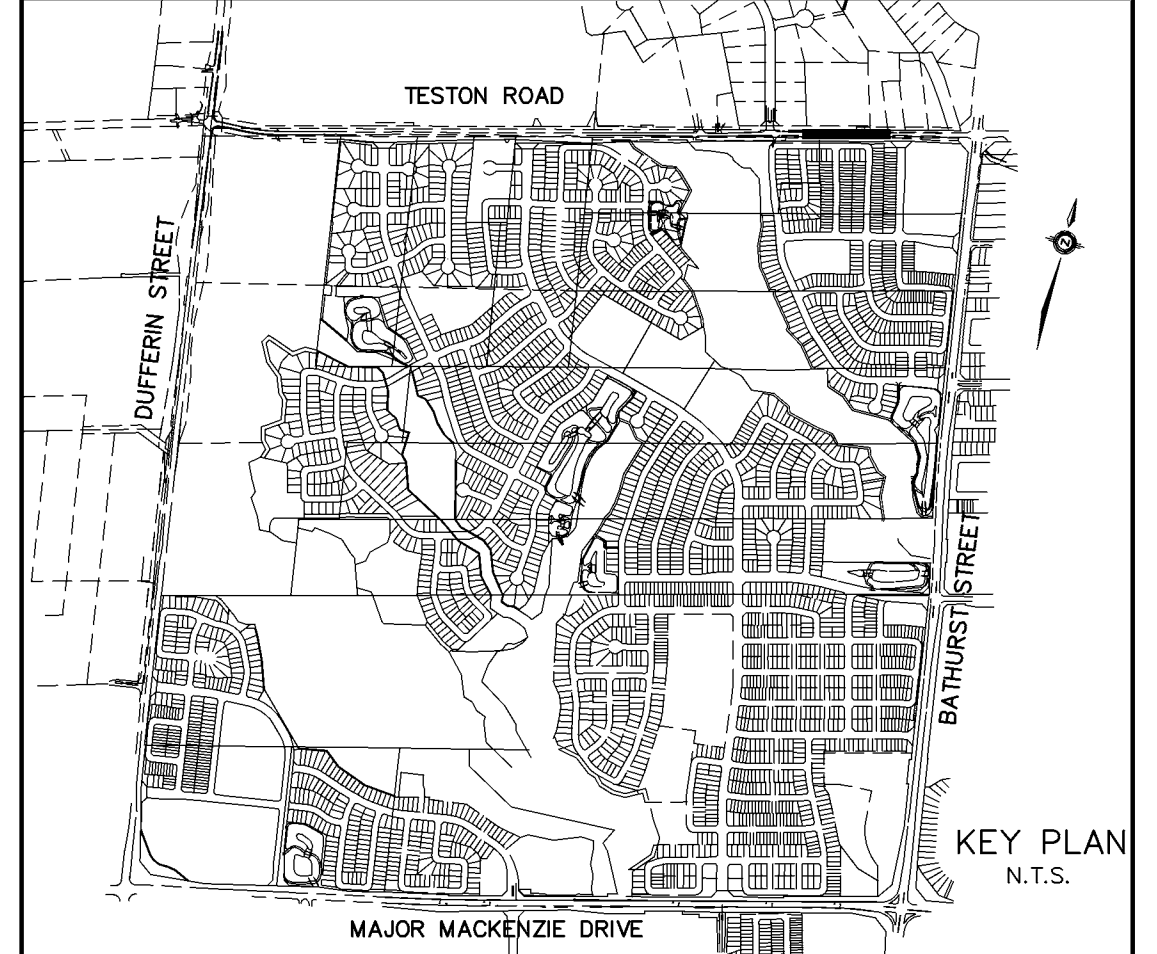
PLAN AND PROFILE OF WATERMAIN ON TESTON ROAD
FROM STA. 11+800.000 TO STA. 12+033.167



LEGEND
● DENOTES HYDRO POLE



REVISIONS			
No.	DESCRIPTION	By	Date
1.	GENERAL REVISIONS	TD	JUNE 15, 2005
2.	WM STUB ON SOUTH SIDE OF TESTON REVISED TO 150#	TD	AUG. 18, 2005
3.	REVISED AS PER REGIONS COMMENTS	HT	SEPT 29, 2005
4.	BACKFILL SPECIFICATIONS INCLUDED IN PROFILE	HT	NOV 23, 2005
5.	REVISED SOUTH STREETLINE ON TESTON ROAD	TD	JAN 16, 2006
6.	REVISED WM CROSSING TESTON ROAD AT STA. 11+700	TD	MAR 30, 2006



- NOTES:**
- THE LOCATION OF ALL UNDERGROUND AND ABOVE GROUND UTILITIES AND STRUCTURES WERE NOT NECESSARILY SHOWN ON CONTRACT DRAWINGS, AND WHERE SHOWN THE ACCURACY OF THE LOCATION AND ELEVATION OF SUCH UTILITIES AND STRUCTURES WERE NOT GUARANTEED. PRIOR TO COMMENCING CONSTRUCTION, THE CONTRACTOR VERIFIED THE EXACT LOCATION AND ELEVATION OF SUCH UTILITIES AND STRUCTURES AND ASSUMED ALL LIABILITIES OF DAMAGE.
 - ALL AREAS DISTURBED DURING CONSTRUCTION OF SEWERS AND WATERMANS WERE RESTORED TO ORIGINAL CONDITION OR BETTER, TO THE SATISFACTION OF THE CITY OF VAUGHAN AND REGION OF YORK ENGINEERING DEPARTMENT. GRASSED AREAS WERE TOPPED WITH 100mm TOPSOIL AND SODDED AS PER OPSD 218.01. ALL EXISTING SERVICES WERE ADJUSTED TO SUIT THE FINISH GRADES.
 - FOR GENERAL NOTES REFER TO DWG. Nos. GN-1 AND GN-2
 - FOR CLEAN WATER COLLECTOR (CWC) PIPE DETAILS, TYPICAL CWC TRENCH DETAIL, MANHOLE INSTALLATION DETAILS AND CWC PIPE PLUGS, REFER TO DWG. D-1.
 - WHERE REQUIRED EXISTING FENCES WERE REMOVED AND REINSTALLED UPON COMPLETION OF THE CONSTRUCTION.

LEGEND:
 (25) DENOTES MUNICIPAL HOUSE NUMBER
 150 DENOTES LOT NUMBER

AS CONSTRUCTED FEBRUARY 2008

BENCHMARK
 ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF VAUGHAN BENCHMARK No. 12-1 CONCRETE BENCH MARK POST WEST SIDE OF BATHURST STREET 183m NORTH OF MAJOR MACKENZIE DRIVE HAVING A PUBLISHED ELEVATION OF 232.309m

APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF SCHAEFFERS CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION (PHASE 1 SPINE ONLY)

Vaughan
The City Above Toronto

CONSTRUCTION DRAWING
June 30, 2011

DIRECTOR OF DEVELOPMENT/ TRANSPORTATION ENGINEERING DATE

BLOCK 12 SPINE SERVICES

SCHAEFFERS
CONSULTING ENGINEERS

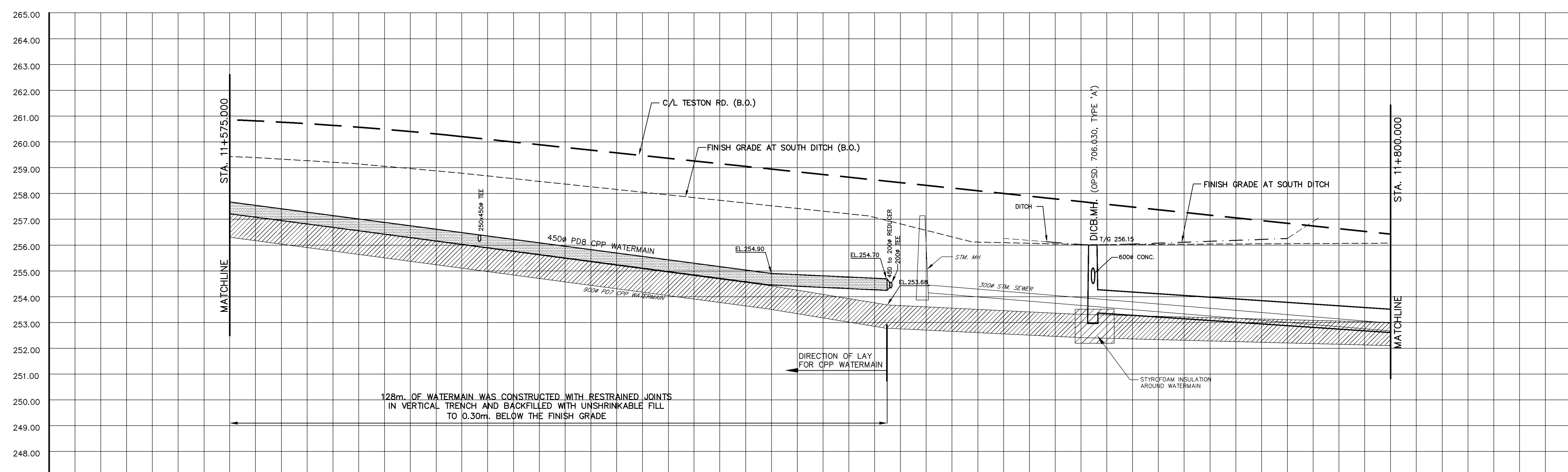
6 Ronrose Drive, Concord, Ontario L4K 4R3
Tel: (905) 738-6100
Fax: (905) 738-6875
E-mail: design@schaeffers.com

PROJECT No.	2004-2644	DRAWING No.	PP-49
SCALE	HORIZONTAL	0 5 10 15 20 25 30 35 40 45 50m	
	VERTICAL	0 1 2 3 4 5 6 7 8 9 10m	

Vaughan
The City Above Toronto

PLAN AND PROFILE OF WATERMAIN ON TESTON ROAD
FROM STA. 11+575.000 TO STA. 11+800.000

DESIGNED BY: H.T.	DATE: APRIL 2007	CHECKED BY: H.T.
DRAWN BY:		APPROVED BY:
SCALE HORIZONTAL 1:500	19T-99V08	DWG. No.
SCALE VERTICAL 1:100	19T-03V16	



CLEAN WATER COLLECTOR SEWER			
SANITARY SEWER			
STORM SEWER			
C/L ELEVATION			
C/L CHAINAGE	11+580.000	11+600.000	11+620.000
	11+640.000	11+660.000	11+680.000
	11+700.000	11+720.000	11+740.000
	11+760.000	11+780.000	11+800.000