

PUBLIC WORKS DESIGN, SPECIFICATIONS & PROCEDURES MANUAL

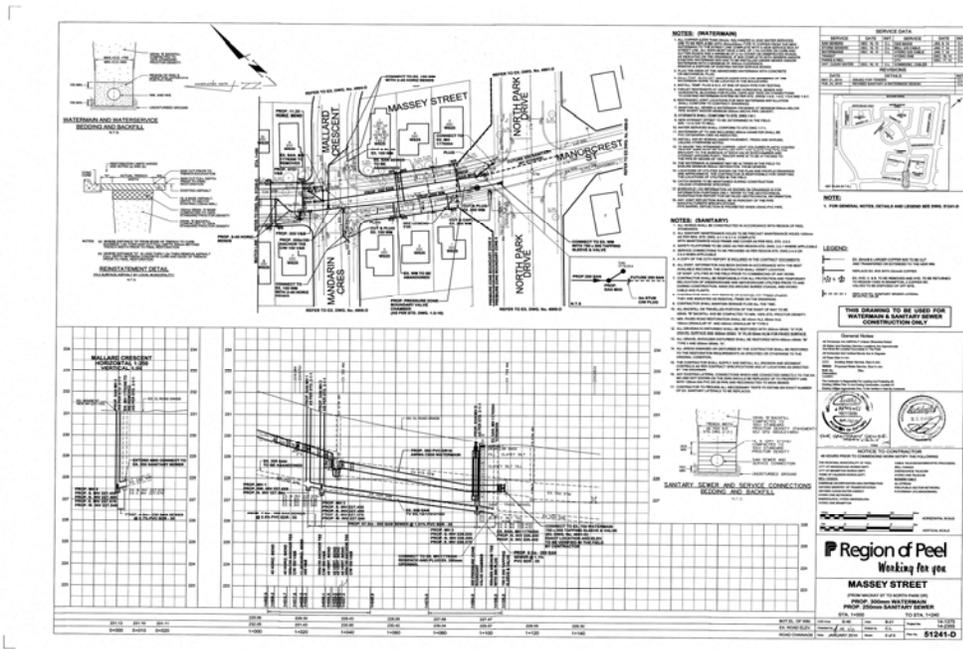
LINEAR INFRASTRUCTURE

Public Works

CAD Submission Requirements

Capital Works

June 2015



**PUBLIC WORKS
CAD SUBMISSION REQUIREMENTS – CAPITAL WORKS**

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1.0 CAD Drawing Submission

The Region of Peel's Public Works (PW) Department's policy mandates that all CAD submissions shall be submitted in Bentley MicroStation V8 or V8i (*.dgn) file format and conform to the structure and standards of the PW Department.

All CAD data supplied to Consultants by the Region of Peel shall be in MicroStation (.dgn) format.

The current platform in use in the PW Department is MicroStation V8, V8i Select Series 3 (SS3) edition by Bentley Systems Incorporated.

It is not the intent of the Region of Peel to restrict Consultants choice of CAD platforms, however, should a Consultant choose to use AutoCAD or a similar product, it will be the Consultant's responsibility to ensure that all deliverable CAD data shall be provided in MicroStation format, as per the standards of the PW Department.

2.0 Capital Works Infrastructure CAD Graphic Requirements

2.1 Datum Requirements

All submitted CAD files will be spatially correct and/or geo-referenced to meet Region of Peel Geodetic Datums.

Horizontal: Coordinates are based on 6 degree Universal Transverse Mercator (UTM) zone 17, Central Meridian 81 degrees west, North American Datum 1983 adjustment (NAD 83 ORG).

Elevations: GSC Datum, 1978 Southern Ontario Adjustment.

2.2 File Format

All CAD submissions will use the Region of Peel PW Department Microstation seed files as the base for all submissions (provided on a CD by the Region of Peel).

The files are as follows:

2015 Peel2d PW Seed.dgn
2015 Peel3d PW Seed.dgn

Consultants may submit either two dimensional (2d) or three dimensional (3d) file submissions.

2.3 Level Structure

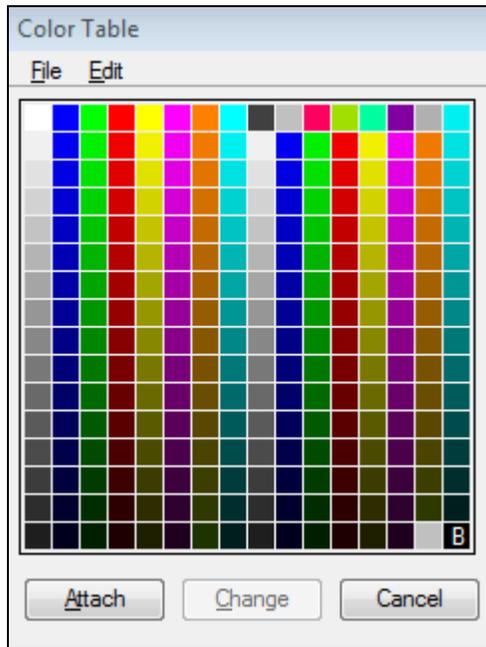
All CAD files shall conform to the PW CAD Level Structure Table (Schedule A) of this document, and are based on MicroStation Default Tables. All cells used will be from the Region of Peel PW cell library, and will be supplied upon request from;

Supervisor – CAD & GIS
Engineering Technical Services
Operations Support Division
10 Peel Centre Dr, Suite B, 4th Floor
Brampton ON, L6T 4B9

Proposed infrastructure text and notes will be prepared using Arial Font, as per the Level Structure Table (Schedule A) along with the general text settings as illustrated on the applicable drawing format template (Schedule G & Schedule H).

Existing base plan text will be prepared using Font-1 Working as per the Level Structure Table (Schedule A)

The MicroStation default colour table “**colour.tbl**” shall be used at all times.



Colour.tbl

2.4 Seed Files

All CAD files shall be created using the Region of Peel PW Department's Microstation seed files. These files are as follows:

Peel 2d PW Seed.dgn

The main parameters of the file are:

Global Origin: 0.000, - 4,600000.000
Master Units: Metres
Sub Units: Metres
Coordinate Readout: Coordinates → Format: Master units
Accuracy: 0.123
Angles → Format: DD MM SS
Mode: Conventional
Accuracy: 0

Peel 3d PW Seed.dgn

The main parameters of the file are:

Global Origin: 0.000, - 4,600000.000, 800000.000
Master Units: Metres
Sub Units: Metres
Coordinate Readout: Coordinates → Format: Master units
Accuracy: 0.123
Angles → Format: DD MM SS
Mode: Conventional
Accuracy: 0

2.5 Drawing Sets

Drawings shall be plotted at a ratio of 1:500, monochrome only, and at a minimum resolution of 600 DPI. All drawing sets will use the following:

Plan and Profile – 2015 Peel PW Plan & Profile Border.dgn (Schedule B)
Cover Sheet – 2015 Peel PW Cover Sheet.dgn (Schedule C)
Site Plan – 2015 Peel Site Plan Border.dgn (Schedule D)

Prior to final tender submission, the Region of Peel must assign Region drawing numbers to all drawings in the tender set. This process must be done prior to final tender sets being delivered. Once numbered, the drawings will be returned for final tender drawing set production after the related drawing references have been updated.

- Seven (7) sets of full sized drawings and specifications shall be submitted for Tender (draft)

Once the tendered drawings have been reviewed and accepted;

- Fifty (50) sets of full sized drawings and specifications shall be supplied to the Region's Project Manager, along with Five (5) sets of reduced sized drawings (tabloid/11x17)
- Two (2) sets of electronic tender documents (drawings and specifications) shall be provided on CD/DVD. Digital versions of drawings must be in Microstation format in accordance with the Region of Peel's Standards
- All drawings are to be named as per the assigned Region of Peel drawing numbers and saved accordingly on CD/DVD

Issued for construction (IFC) drawings and specifications (incorporating all drawing modifications undertaken via addenda) will be required for each project. All requirements below will be supplied within two weeks of the Tender Period closing.

Following completion of the IFC drawings and specifications, the Vendor will supply:

- Five sets of A2 sized IFC drawings, five sets of full-size IFC drawings (both signed and stamped) and five sets of IFC specifications for the Contractor's use
- Two CDs/DVD containing the PDF version of full sized, signed and stamped IFC drawings
 - Final issued for construction drawings must be named as per the assigned Region drawing number and follow the following naming convention:
 - MicroStation Files: **XXXXX-D_IFC.dgn**
 - PDF Format: **XXXXX-D_IFC.pdf**
 - **Example: 50000-D_IFC.dgn, 50000-D_IFC.pdf**
 - Drawings at this stage must be fully compliant with the Region of Peel's Public Works CAD Standards
 - Each CAD file must be unique and have no reference files of any type and must be in true model space
- 10 sets of A2 drawings, 10 sets of full-sized IFC drawings (both signed and stamped), and five sets of IFC specifications must be supplied to the Region's Project Manager

All other deliverables related to the Tender documents are per the PIPM (Project Implementation Procedures Manual).

2.6 Plan and Profile Drawings

Plan and Profile Drawings are to follow The Region of Peel's existing Water and Wastewater infrastructure templates (Schedule G & Schedule H)*. All existing infrastructure must be illustrated in both the plan and profile of each drawing unless exempted by condition by the Region of Peel's Project Manager (i.e. deep tunnel work).

GENERAL TEXT SETTINGS DESCRIPTION ON THE DRAWING

	STYLE	WEIGHT	WIDTH/ HEIGHT	LINE SPACING
TEXT FOR ALL EXISTING UTILITIES (BY OTHERS) IN PLAN AND PROFILE	WORKING	0.0	0.8/0.8	0.4
TEXT FOR EXISTING WATERMAIN, SANITARY, STORM IN PLAN AND PROFILE	WORKING	1.0	1.0/1.0	0.5
TEXT FOR PROPOSED WATERMAIN, IN PLAN AND PROFILE	ARIAL ROUNDED MT BOLD	3.0	1.25/1.25	0.625
DIMENSION FOR EXISTING STYLE - EXISTING	WORKING	1.0	1.0/1.0	
DIMENSION FOR PROPOSED: STYLE - PROPOSED DIM TEXT STYLE - PROPOSED	ARIAL ROUNDED MT BOLD	3.0	1.25/1.25	
TEXT FOR STREET NAME IN KEY PLAN	ARIAL	1.0	0.7/0.7	0.35

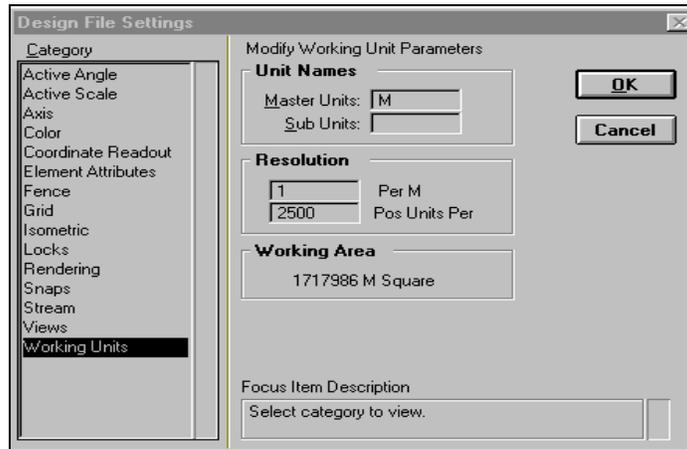
* Drawing templates for Transportation related projects estimated to be complete by Q4, 2015

3.0 Bridge/Concrete Box Culvert Structures Submission Requirements

3.1 Structures CAD Graphic Requirements

3.1.1 Working Units

Working units set the design file scale and accuracy. For reference file sharing, the scale and accuracy of all drawings must be equal. All projects in Metric Units (SI) unless prior approval has been given from the Region.



Metric Working Units

Master units (mu)	MU	M
Sub units	SU	-
Per M	/M	1
Positional unit per	PU	2500
Working area		1,717,986 m ²

* Global origin - lower left (0,-4,600,000)

3.1.2 Global Origin

Use the Region of Peel's standard Global Origin located in the lower left corner of the design plane with grid coordinates of:

N 4,600,000 E 0

which translates to read as:

X=0 Y=4,600,000

all coordinate readouts are therefore positive real values.

GO= 0, -4,600,000

3.1.3 Level Structure

All design files must be created using a level structure to separate data

Levels should be used to separate data, not line weights, line types or colours

The dedicated level structure for all contract drawings (structures) shall conform to the Structures CAD Level Symbology Table, being Schedule E of this document

3.1.4 Colour Structure

The MicroStation default colour table is to be used, this ensures that the colours of reference file elements can be viewed consistently

3.1.5 Line Style Structure

The MicroStation default line style shall be used

3.1.6 Reference Files

- The reference file feature makes it possible to incorporate the work of other disciplines. Attaching a reference file allows for a comparison with the active design.
- Reference files are design files that are actively linked to the working design. The attached files are not copied into the design, but are displayed in the background. These files are always drawn to true coordinates and should never be manipulated, scaled, rotated, masked or copied. They cannot be modified, but can be displayed differently than the original by applying "level symbology"
- The effective and proper use of reference files will greatly reduce the time and effort required to prepare drawings. Using reference files also improves the coordination of the design between disciplines and increases the accuracy of the design. To ensure the success of using reference files, logical names and documentation should be used.

3.1.7 Professional Seal

- The use of electronically created seals is not a mandatory requirement. However, if used, then drawings bearing the unsigned engineer's seal should be clearly marked "For Information Only". This marking is to be located directly above the Title Block.
- "Signatures and Seals" shall only be applied to the hard copy of finalized master drawing originals which are intended to be used for "Tendering Document" and subsequently "Contract Document" purposes.
- Both signature and seal must be legible.

NB: The procedure suggested in this section 3.1.7 is not intended to contradict or take precedence over:

- i. Guideline Professional Practice, 1988 (Revised 1996) published by Professional Engineers Ontario
- ii. Project specific "Agreement" between the Region and the Engineer

3.1.8 Plotting Parameters

- All drawings are to be plotted on paper size A1
- All final submission Contract drawings are plotted A1 size on standard paper
- The file name and plot date in appropriate text node, are to appear in the bottom left of the drawing border before plotting

3.2 Structures Drawing Requirements

3.2.1 Orientation of Drawing

- All drawings are to be created as 2D files except where required and with prior approval
- The standard north arrow or north for construction arrow are to be inserted in the top left corner of the drawing (peel_str.cel)
- Design files should not be moved from real world coordinates or from the global origin
- All details should be drawn within the working area, as specified in section 4.1
- Views should be rotated to fit the standard border file

3.2.2 Scale

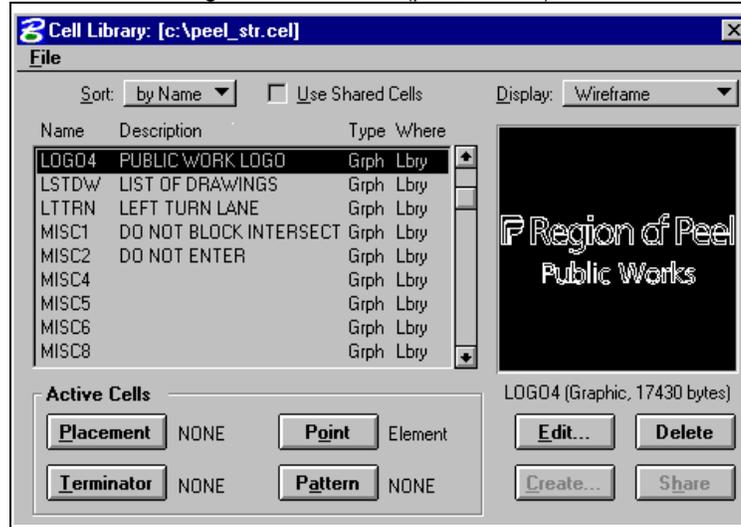
All MicroStation files should be drawn at 1:1 true scale

For structural drawings, the following scales are preferred:

Type of drawing	Preferred scale
Plans and elevations:	1:100
	1:150
	1:200
	1:250
	1:500
Sections:	1:10
	1:20
	1:25
	1:50
Details:	1:5
	1:10
	1:20

3.2.3 Cells

Use standard Region of Peel cells (peel_str.cel)



3.2.4 Line Format

- There must be a clearly visible difference in plotted line weights with no more than 5 line weights on any one drawing
- Refer to Schedule E “Structures - CAD Level Symbology” for appropriate line weights
- Line thickness given are specified to ensure legibility after drawing reduction
- Line weights to be used are 0, 1, 3, 5, 7 and 9

3.2.5 Line Styles

MicroStation default line styles shall be used

3.2.6 Texts and Fonts

All project specific text (other than dimension text) must be placed on level 51 with weight 3 and size as per level symbology table (Schedule “E”).

Font

Text shall be placed as MicroStation Font 43. (LOW_RES_FILL)

Text

- All text must be placed in upper case
- Underline should not be used except for the sub-title
- Text within charts and tables must be individually placed and not placed as a multi line text
- All text sizes will be as per the standard structural drawing provided. (str_base.dgn)
- Text within leaders shall be placed as separate text
- Text is to be top left justified
- Space between text is to be 50 per cent of text height. (see Fig. 1)
- Text is to be placed $\frac{1}{2}$ the text height above or below all line work. (see Fig. 2)
- Chart and table row lines are to be 2x the text height.

Figure 1

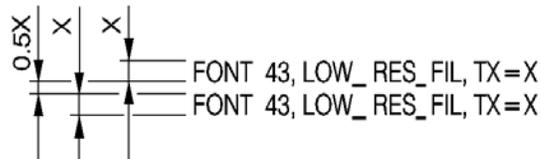
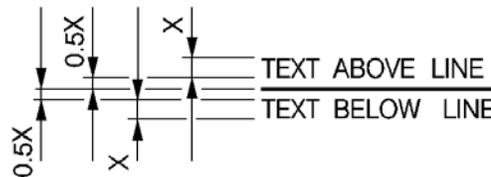


Figure 2



3.2.7 Title Block

The title block is to be as illustrated below (fig. 3, 4 and 5);

Figure 3

REVISIONS		
DATE	DETAILS	INIT.

Figure 4

Seal	Seal
Consultant Logo	

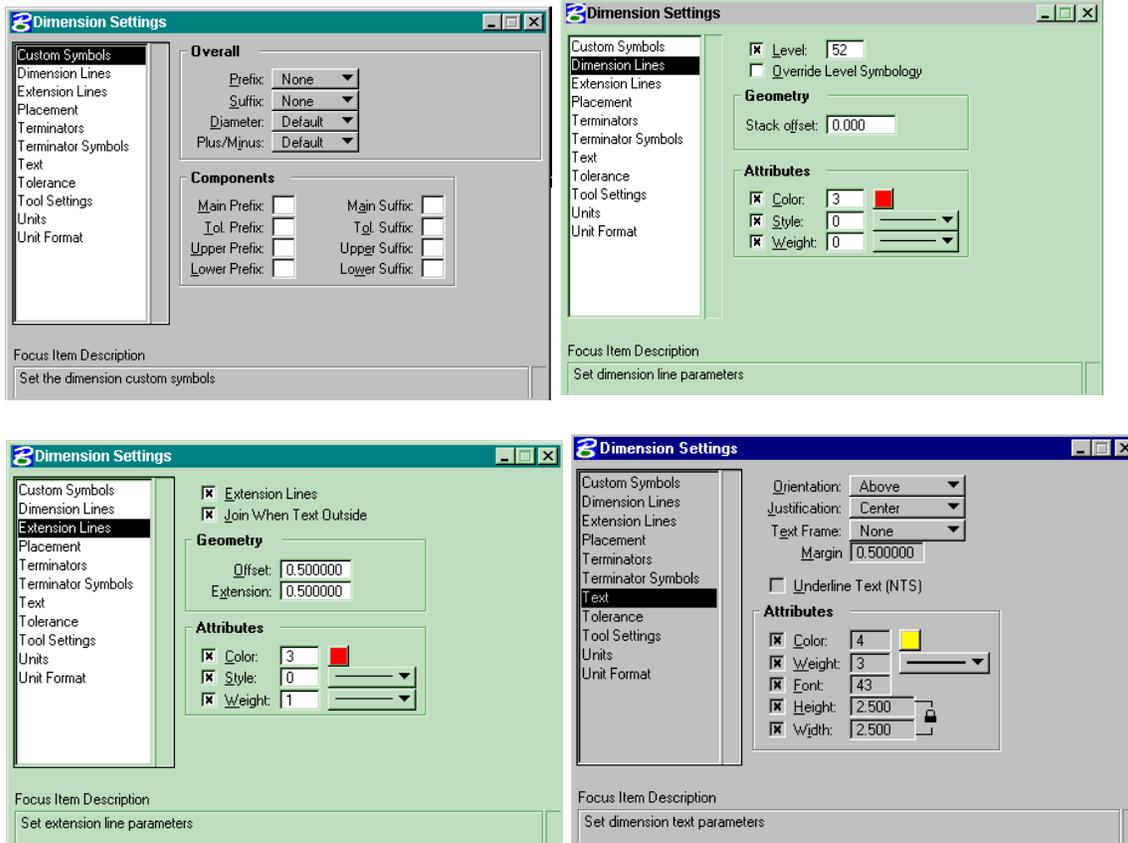
Figure 5

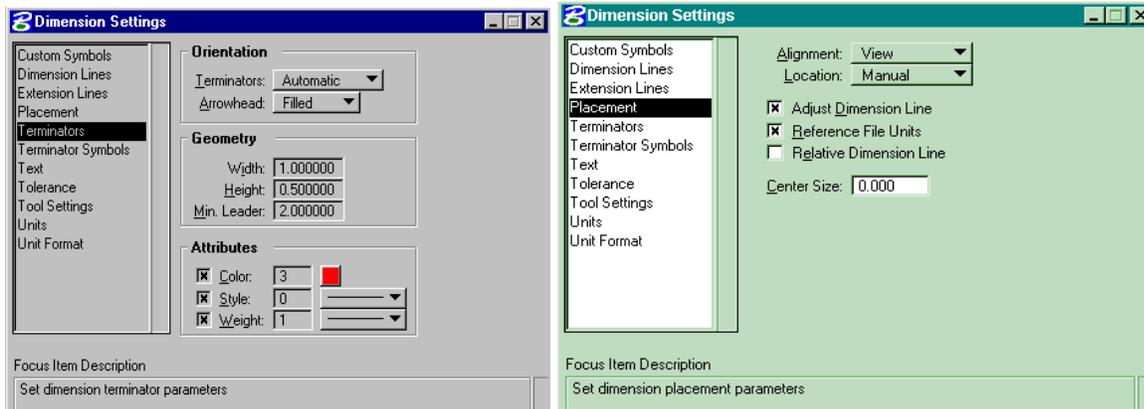
 Region of Peel <i>Working for you</i>			
PROJECT TITLE PROJECT TITLE			
CAD Area	X-XX	Area	X-XX
Checked by		Drawn by	X.X.
Date	MONTH YEAR	Sheet	X of X
Project No.		XX-XXXX	
Plan No.		XXXXX-D	

3.2.8 Dimensioning

- All dimension text must be placed on level 52
- Arrow heads are to be filled with a length of 1x the text height and a height of 0.5x the text height (see Fig. 6)
- All leaders are to be placed with the native MicroStation leader command and not with user commands. Curved leaders are not to be used.

Figure 6





3.2.9. Cell Library and Symbol Call Outs

To ensure a consistent appearance of all drawings, symbol cells must be placed from the structural cell library “peel-str.cel”

3.3.0 Legend Items

When completing traffic signal design, legend items can be copied from the legend and placed in the appropriate location at the intersection; the items have the correct attributes.

4.0 Traffic Signal Transportation Division CAD Graphic Requirements

4.1 Datum Requirements

All submitted CAD files will comply with Section 2 of this document to meet Region of Peel Geodetic Datums

Horizontal: Coordinates are based on 6 degree Universal Transverse Mercator (UTM) Zone 17, Central Meridian 81 degrees west, North American Datum 1983 adjustment (NAD 83)

Elevations: GSC Datum, 1978 Southern Ontario Adjustment

4.2 File Format

All CAD submissions of traffic control signal installations shall use the latest traffic signal plan provided by the Region (Schedule F). All intersection signal design drawings shall be an individual file with no referenced drawings attached.

4.3 Level Structure

All CAD files shall conform to the PW Level StructureTable, being Schedule A of this document, for traffic control signal design drawings. For ease of use, the traffic signal base plan legend symbols have their attributes set up for the appropriate level, colour, line style and line weight. The consultant should copy and place the symbols as required by the signal design.

4.4 Seed Files

All CAD files shall be created using the Region of Peel PW Department Micro Station seed files as noted below:

2015 TSS Drawing Template.dgn

The main parameters of the file are:

Global Origin:	0.000, - 4,600000.000
Master Units:	Metres
Sub Units:	Metres
Coordinate Readout:	Coordinates → Format: Master units Accuracy: 0.123
	Angles → Format: DD MM SS Mode: Conventional Accuracy: 0

Note - 3D Format Files are **Not** Permitted

4.5 Drawing Sets

Drawings shall be plotted at a ratio of 1:250, monochrome only, at a resolution of 1:600 DPI

4.6 TSS Drawing Composition

TSS Traffic Signal Drawings are to follow the 2015 TSS Drawing Template and Legend for specific level, line weights, line styles, colours, and symbols

4.7 Detailed Drawing Creation Notes

Refer to the 2015 TSS Drawing Template Instructions Document for detailed drawing creation notes

5.0 Record Drawings

5.1 Capital Works Projects

5.1.1 General

All digital Record drawings shall be completed and delivered on DVD/CD within **90 days of substantial performance to:**

Supervisor – CAD & GIS
Engineering Technical Services
Operations Support Division
10 Peel Centre Dr, Suite B, 4th Floor
Brampton ON, L6T 4B9

A copy of the transmittal shall be sent to the Region of Peel's Project Manager.

Six (6) hardcopy sets will be submitted in total to the PM – Four (4) sets shall be full-sized, scaled drawings named as per section 5.1.2, and two (2) sets shall be tabloid (11x17) size. Record drawings shall also be issued in .pdf format on a compact disc. Digital versions of drawings must be in MicroStation format in accordance with the Region of Peel's CAD standards.

Verification of Line and Grade of All Work

The Vendor's inspection forces shall independently verify (independently of the Contractor's Quality Control) all critical vertical and horizontal portions of the work. As a minimum independent verification of line and grade must occur for the following items:

Storm and Sanitary Sewers:

- Line and grade verification at all manhole inverts; and
- Line and grade checks at all service tee locations (at mainline and property line)

Watermains:

- Line and grade verification at all point of interest (P.I.) points (horizontal and vertical);
- Line and grade verification at all future tie-in locations;
- Line and grade verification at all hydrant lead, service tap locations etc.; and
- Vendors are to note that for all Concrete Pressure Pipe (CPP) installations Vendors shall be required to record horizontal and vertical (x,y,z) record data for all pipe joints, closures, fittings, tees etc.

All other underground utilities, including but, not limited to:

- Hydro Duct Banks;
- Sanitary Forcemains;
- Water Service locations; and
- Communication and Instrumentation conduits

Structures:

- Line and grade for all foundation corners;
- Line and Grade for all critical elements of the structure in question for example, top of pier elevations, top of deck elevations, bearing surfaces etc.; and
- Location and grades for all piles, caissons, rock anchors, shoring systems, etc.

Roads:

- Verify elevation of all critical layers of the pavement structure for example, top of subgrade, top of granular sub-base, top of granular base, top of all asphalt layers, etc.

5.1.2 File Names

All CAD files will be named as per the assigned Region of Peel drawing number, such as 50000-D.dgn. If a drawing was not assigned a number, it must be included in the final submission and the consultant's file name can be retained.

5.1.3 File Structure

Final CAD files must be Version 8 format as per the requirements of Section 1, 2, and 3 and 4. All drawings must be in model space. Viewports are not to be used.

All final CAD Record drawings will be delivered on compact disc (CD), labeled with the Peel project number (see 5.1.2).

Each submitted CAD drawing file must be named correctly and be a unique single MicroStation design model file. **Reference files will not be accepted as part of any CAD file submitted.** Reference files, if used during design, are to be merged or fence filed into the final CAD drawing file prior to final submission, and conform to the Public Works CAD Standards.

The application of level symbology is not allowed on Final Record Drawing Submissions. Level symbology and structure must adhere to Region of Peel standards.

5.1.4 Sewer Requirements

- All “As Built” invert elevations are to be shown. If the difference is greater than 150mm, the affected portions of sewer (in the profile) are to be redrawn
- Any maintenance hole location which differs by more than 750mm from the proposed location is to be redrawn in both the plan and profile
- Type of maintenance hole constructed must be indicated
- Pipe size used on both plan and profile along with each length is to be specified
- All “As B” sewer grades are to be shown on the plan and profile
- Type of pipe material used –once per plan and at point of change is to be indicated
- Class of pipe used – to be shown once per plan and at each point of change in the profile
- Type of pipe bedding used to be indicated on all profiles
- Native soil type stated (if available)
- The name of the manufacturer of all appurtenances (i.e. maintenance holes, catchbasins etc.) must be noted in the design file where known
- The Region of Peel may provide a post construction survey for state of good repair for local trunk collectors ($\geq 375\text{mm}$ $< 750\text{mm}$). This survey shall be used in the preparation of final Record drawings to update the true location of the related appurtenances

5.1.5 Watermain Requirements

- If the alignment or profile of the watermain differs by more than 150mm, the new offsets are to be indicated on both the plan and profile, and also redrawn
- All valves on all plans require two (2) swing ties (indicated at ninety (90) degrees +/-, and to 1 decimal place in distance) to all mainline valves tied to permanent features such as maintenance holes, catch basins, or buildings
- Ties and elevations to all stubs (ends) that will require future extension (ties to maintenance holes, etc.) must be illustrated
- Type and class of pipe must be shown on all profiles
- All fittings; bends, reducers, blocking, etc., are to be shown on both plans and profiles (see chart below)
- Each main line valve, and hydrant and valve, are to be labeled (type and make) on the plan portion of each plan and profile sheet, or by chart inserted into one of the watermain drawings
- Original ground profile over watermain (if applicable) is to remain
- The name of the manufacturer, the make, and type(s) of all hydrants and valves must be displayed in the final CAD file
- Native soil type must be provided (if available)
- Concrete Pressure Pipe (CPP) shop drawings are to be submitted in electronic format (.pdf)
- Swing ties are to be provided for horizontal bends if not GPS Coordinated
- All appurtenances (i.e. valves, hydrants etc.) will be represented using the appropriate MicroStation cell symbol found in the Region of Peel Cell Library provided
- The name of the manufacturer of all appurtenances (valves, hydrants etc) must be noted similar to the sample below, on at least one of the watermain plan and profile drawings
- The Region of Peel may provide the As Built survey for state of good repair for local distribution feeder mains ($\geq 350\text{mm}$ $\leq 600\text{mm}$). This survey may be used in the preparation of final Record drawings to update the true location of the related appurtenances

NOTE

SPECIFICATION FOR HYDRANTS, MAINLINE VALVES, AIR VALVES, AND PRESSURE RELEASE VALVES

1. FIRE HYDRANTS-CLOW CANADA McAVITY BRIGADIER MODEL M67
2. MAINLINE VALVES-VALMATIC BUTTERFLY VALVE CLASS 250B MODEL VM2004
3. MAINLINE/BYPASS GATE VALVES-CLOW VALVE COMPANY MODEL 2638
4. AIR VALVE-VALMATIC COMBINATION AIR VALVE MODEL 202C.2
5. FLOODSAFE-VALMATIC FLOODSAFE MODEL 1302 WITH 50mm NTP
6. PRESSURE RELEASE VALVE-SINGER MODEL 106-PR

6.0 Legal Survey Requirements

If for any reason a Legal Survey is required, either for the purpose of defining an unknown right-of-way or for property acquisition, then these requirements will be forwarded to the Project Manager. The requirements must include the following:

- A digital file clearly identifying the proposed requirements as per the Region of Peel's Property Acquisition Standards
- A set of white prints as per the digital file identifying the proposed requirements

The Region of Peel is solely responsible for preparing and issuing quotations to Ontario Land Survey Companies. This ensures consistency in established Region of Peel standards on all returned legal plans as well as cost control.

All legal surveys are considered preliminary only until approved by the Project Manager, the Supervisor of CAD & GIS, and Realty Services. Upon approval, the plans will be deposited if required, and copies of mylars, prints, and final digital files, will be circulated to all concerned parties.

6.1 Title Records/Property Plan

This plan identifies the existing limits (per the current data available from Teranet) of a road allowance where there is limited information on file for determining the extent of the existing road allowance and any widening previously taken. These plans are coordinated as per Region of Peel standard and a digital file is supplied as well as a PDF. In addition to defining the existing road allowance, this plan also identifies the owners of all subject and abutting properties at the time of issue.

6.2 Reference Plan

This plan is used to precisely identify new and specific property requirements for acquisition of permanent or temporary easements.

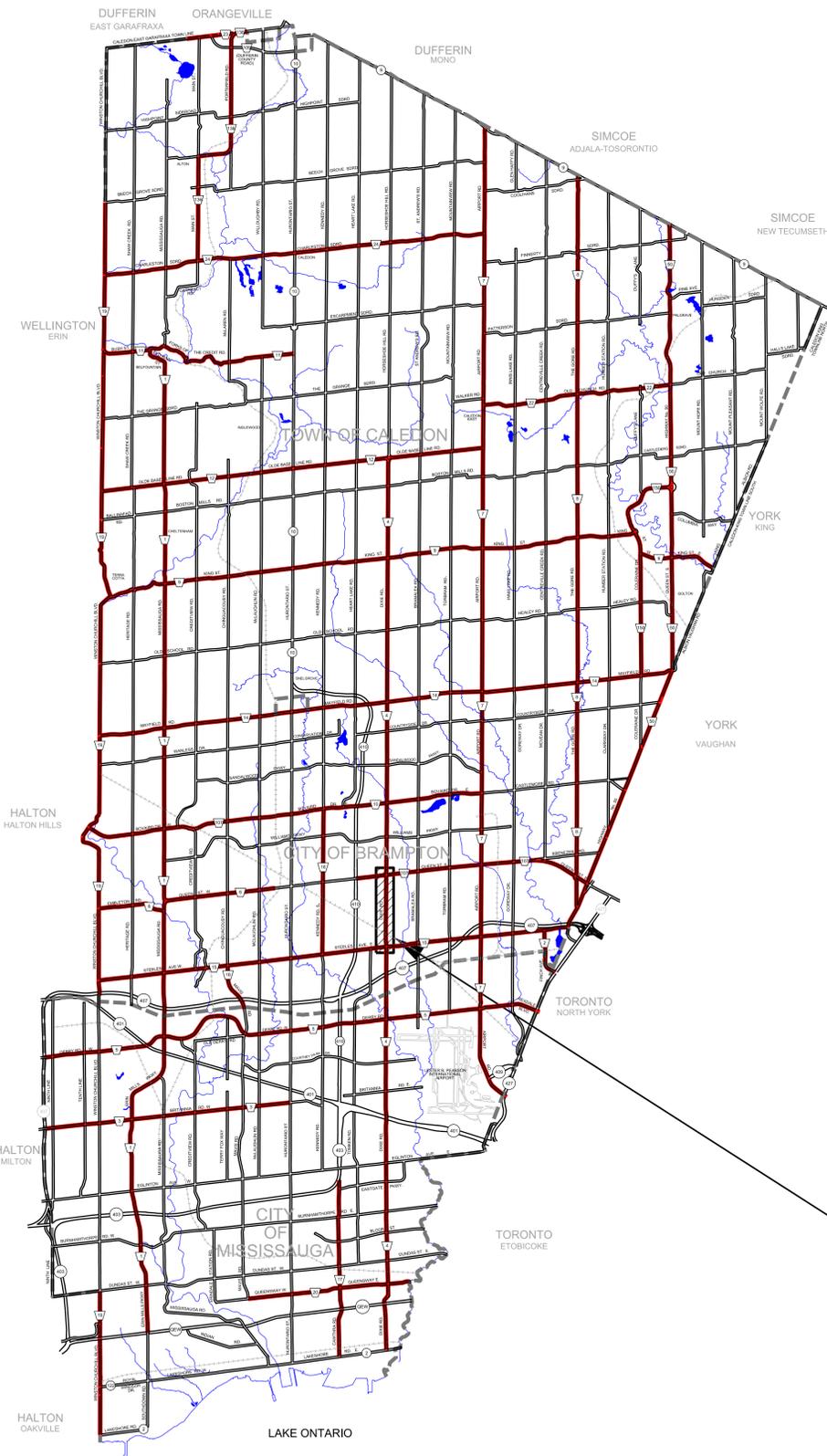
6.3 Expropriation Plan

This plan is used for the purpose of expropriating property required for Municipal purposes.

Level Number	Level Name	DESCRIPTION	EXISTING								PROPOSED							
			PLAN				PROFILE				PLAN				PROFILE			
			Colour	Weight	Line Style	Text SZ/WT	Colour	Weight	Line Style	Text SZ/WT	Colour	Weight	Line Style	Text SZ/WT	Colour	Weight	Line Style	Text SZ/WT
1	ROW	RIGHT OF WAY (R.O.W.)	0	7	0					99	7	2						
2	PROPERTY	EXISTING PROPERTY LINES	0	1	0													
2	PROPERTY	EXISTING EASEMENTS	3	1	4									0	5	0	1.25	
3	ALIGNMENT	ALIGNMENTS	0	1	4	1/1	0	2	0	1/1	0	2	4	1/1				
4	4	POINT CODE FROM SURVEY																
5	5	ELEVATION FROM SURVEY																
6	6	POINT NUMBER FROM SURVEY																
7	7	TITLES/CHAINAGES/NORTH ARROW, KEY MAP	0	1	0													
7	7	STREET NAMES	0	7	0	3/7					0	7	0	3/7				
7	7	MATCH LINE	0	5	0	1.25/5								1.25/5				
8	SURROUND	PEEL SURROUND:PEEL PW P&P BORDER.DGN																
9	WALKWAYS	ALL WALKWAYS, PATHS, ETC	4	0	0	0.8/0					4	3	0					
9	WALKWAYS	BUS PADS/BUS SHELTER, BUS STOP	0	2	0	0.8/0												
10	SURVEY MONUMENTS	PROPERTY BARS/PI,HOT,PC, BM, TRAV	0	0	0	0.8/0												
11	CROWN	CROWN OF TRAVELLED ROAD	5	0	0	1/1	0	2	0		0	2	0		0	5	0	1.25
12	ROAD	E/P & CURB	0	0	0													
12	ROAD	EDGE UNPAVED ROAD	0	0	5						0	1	0					
13	DRIVEWAYS	EDGE OF D/W - PAVED	2	0	0	0.8/0												
13	DRIVEWAYS	EDGE OF D/W - UNPAVED	2	0	5	0.8/0												
14	HYDRO	HYDRO UTILITIES	3	0	0	0.8/0												
15	GAS	GAS UTILITIES	10	0	0	0.8/0												
16	BELL	BELL UTILITIES	6	0	0	0.8/0												
17	CABLE	CABLE TV UTILITIES	5	0	0	0.8/0												
18	18																	
19	SANITARY	SANITARY INFRASTRUCTURE	5	1	0	1/1	5	2	3	1/1	5	7	0	1.25/3	5	7	0	1.25/3
20	STORM	STORM WATER INFRASTRUCTURE	4	1	0	1/1	4	2	3	1/1	4	7	0		4	7	0	1.25/3
21	21																	
22	MEASUREMENTS	MEASUREMENTS (ROADS)									0	2	0	1.25/3				
23	ROAD REMOVALS	REMOVALS & ADJUSTMENTS (ROADS)									0	2	0	1.25/3				
24	PAVEMENT ELEVATIONS	PAVEMENT ELEVATIONS (ROADS)									0	2	0	1.25/3				
25	FENCES	ALL FENCES/RET. WALLS/GUARD RAILS ETC	6	1	0	0.8/0					0	5	0	1.25/3				
26	PROP SHOULDER	PROPOSED SHOULDER/PAVED STRIP (ROADS)									0	3	0	1.25/3				
27	PROP CURB	PROPOSED CURB & GUTTER (ROADS)									0	5/2	0					
28	PROP EP	PROPOSED. EDGE PAVEMENT - NO CURB									0	5	0		0	3	0	
29	SHADING	SHADING AND PATTERNS																
30	WATERMAIN	WATERMAIN INFRASTRUCTURE	7	1	0	1/1	7	2	2	1/1	0	7	0	1.25/3	0	7	0	1.25/3
31	31																	
32	32	GRADE OVER W/M, STM, & SAN					0	2	4	1/1								
33	GRADING LIMIT	LIMIT OF GRADING / EXCAVATION									5	5	0	1.25/3				
34	PROP MARKINGS	PROPOSED PAVEMENT MARKINGS									0/4	5	0	1.25/3				
35	VEGETATION	ALL VEGETATION	2	0	0	0.8/0												
36	DIAMETERS	ALL DIAMETERS	2	0	0	0.8/0												
37	37																	
38	VEG REMOVALS	VEGETATION REMOVALS									5	0	0	1.25/3				
39	DATA TEXT	VERTICAL CURVE OR C/L DATA													0	2	0	1.25/3
40	SLOPES	SLOPE STRUCTURE LINES	2	0	0	0.8/0												
41	WATER COURSES	WATER COURSES (CREEKS, STREAMS, RIVERS)	1	0	7	0.8/0					22	3	6	1.25/3	22	3	6	1.25/3
42	CULVERTS	CULVERTS/HEADWALLS, CSP'S ETC	7	1	2	0.8/0	7	1	2		0	2	0	1.25/3				
43	CONTOURS	CONTOURS	12	0	0	0.8/0												
44	TRAFFIC ARROWS	TRAFFIC ARROWS									4							
45	STRUCTURES	BRIDGES/CONCRETE CULVERT STRUCTURES	0	2	0	1/1					0	5	0					
46	BUILDINGS	BUILDING/PORCH/DECK ETC & NUMBERS	0	5	0	1/1												
47	47	OTHER PROPOSED GRADING TYPES									0	2	0	1.25/3				
48	RAILWAY	ALL RAILWAY FEATURES	6	1	0	0.8/0												
49	PARKING LOTS	PARKING LOT OUTLINES/POOLS	2	0	0	0.8/0					0	3	0					
50	SIGNS	TRAFFIC SIGNS/MAILBOXES/PARKING METERS	2	0	0	0.8/0												
51	51	GEOTECHNICAL INFO, OBSERVATION WELLS	3	0	0	1/1	3	0	0	1/1								
52	52																	
53	53	RESERVED FOR SURVEY NOTES																
54	54	RESERVED FOR SURVEY NOTES																
55	PTE	PROPOSED PERMISSION TO ENTER									52	5	7					
56	56	TRAFFIC-ABOVE GROUND UTILITIES				0.8/0					As per 2015 TSS Drawing Template							
57	57	TRAFFIC- BELOW GROUND UTILITIES				0.8/0					As per 2015 TSS Drawing Template							
58	58	TRAFFIC PAVEMENT MARKINGS				0.8/0					0	1	0					
59	PROP PROPERTY	PROPOSED FEE PROPERTY ACQUISITIONS									99	7	2					
60	PERM EASEMENT	PROPOSED PERMANENT EASEMENTS									97	5	6					
61	TEMP EASEMENT	PROPOSED TEMPORARY EASEMENTS									98	5	4					
62	62	MATERIAL LABELS				0.8/0												
63	63	GROUND SHOTS/UNDEFINED CODES	10	0	0	0.8/0												

All existing topographic survey font to be Font 1 - Working

Proposed Plan and Profile font to be Arial and Arial Rounded MT Bold as per Water and Sanitary Drawing Templates



PROJECT No. XX-XXXX
PROJECT NAME
PROP. PROJECT DESCRIPTION

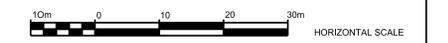
WORK AREA

Schedule D

REVISIONS		
DATE	DETAILS	INIT.
MAY 00, 2014	ISSUED FOR PLCC	X.X.
MAY 00, 2014	ISSUED FOR TENDER	X.X.
MAY 00, 2014	ISSUED FOR CONSTRUCTION	X.X.
MAY 00, 2014	AS RECORDED	X.X.



KEY PLAN (N.T.S.)



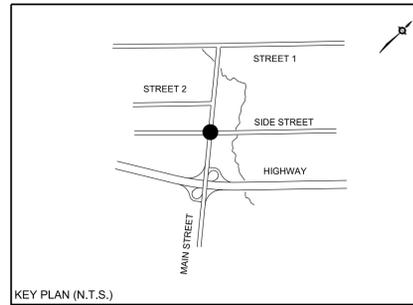


PROJECT TITLE

PROJECT TITLE

CAD Area	X-XX	Area	X-XX	Project No.	XX-XXXX
Checked by	X.X.	Drawn by	X.X.	Plan No.	XXXXX-D
Date	MONTH YEAR	Sheet	X of X		

Level	DESCRIPTION	WT	COLOUR	LC
1	User definable			
2	User definable			
3	User definable			
4	User definable			
5	User definable			
6	User definable			
7	User definable			
8	User definable			
9	User definable			
10	Asphalt	1	RED	0
11	Concrete - Thick Outline	5	GREEN	0
12	Concrete - Thin Outline	3	GREEN	0
13	Concrete - Hidden Outline	3	YELLOW	5
14	Concrete - Existing	0	GREEN	0
15	User definable			
16	User definable			
17	User definable			
18	User definable			
19	User definable			
20	Reinforcing - Thick Lines	5	CYAN	0
21	Reinforcing - Thin Lines	3	CYAN	0
22	Reinforcing - Dots	1	RED	0
23	User definable			
24	User definable			
25	User definable			
26	User definable			
27	User definable			
28	User definable			
29	User definable			
30	Steel - Section, beam and column	3	GREEN	0
31	Steel - Thick Line	5	GREEN	0
32	Steel - Thin Line	3	GREEN	0
33	Steel - Hidden Line	0	YELLOW	5
34	User definable			
35	User definable			
36	User definable			
37	User definable			
38	User definable			
39	User definable			
40	Rehabilitation - Removal Concrete	3	WHITE	0
41	Rehabilitation - Proposed Concrete - Thick	5	GREEN	0
42	Rehabilitation - Proposed Concrete - Thin	3	GREEN	0
43	Rehabilitation - Proposed Concrete -	0	YELLOW	5
44	Rehabilitation - Proposed Reinforcing	5	YELLOW	0
45	Rehabilitation - Existing Reinforcing	0	RED	5
46	User definable			
47	Standards	3	WHITE	0
48	Profile	3	YELLOW	0
49	Contours	1	WHITE	5
50	Large Text	3	GREEN	0
51	Notes and Text	3	YELLOW	0
52	Dimension Text, Leader Text	3	YELLOW	0
53	Tables	3	YELLOW	0
54	Hatching	3	WHITE	0
55	Centre Lines and Control Lines	1	RED	4
56	General Hidden Lines	0	RED	5
57	Grid Reference	1	WHITE	0
58	Revision Notes	3	YELLOW	0
59	Text Node	3	YELLOW	0
60	Call Out Instructions	3	WHITE	0
61	Call Out Symbols and Call Out Texts	3	WHITE	0
62	Border File - Instruction	3	RED	0
63	Border Text Copied into Active Design File	3	WHITE	0

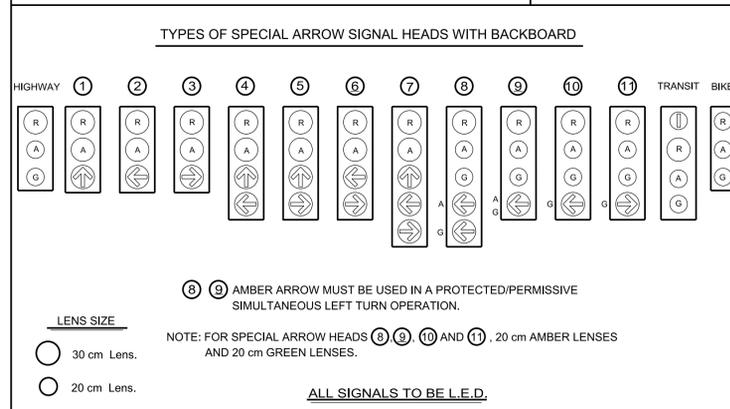


REVISIONS		
DATE	DETAILS	INIT.
MAY 09, 2014	ISSUED FOR PUCC	XX
DATE	ISSUED FOR TENDER	XX
DATE	ISSUED FOR CONSTRUCTION	XX
DATE	AS RECORDED	XX

LEGEND	
	EXISTING 600X600MM ELECTRIC MAINTENANCE CHAMBER
	PROPOSED 600X600mm ELECTRIC MAINTENANCE CHAMBER
	EXISTING 460mm I.D. TYPE I HANDWELL
	PROPOSED 460mm I.D. TYPE I HANDWELL
	EXISTING 300mm I.D. TYPE II HANDWELL
	PROPOSED 300mm I.D. TYPE II HANDWELL
	COMMENCEMENT OF NEW CONDUIT RUN
	EXISTING CONDUIT
	PROPOSED UNDERGROUND RIGID P.V.C. DUCTS NUMBER AND SIZE AS SHOWN
	QUADRAPOLE LOOP DETECTOR
	PROPOSED VEHICLE LOOP DETECTOR WITH LEAD (TO SCALE)
	EXISTING VEHICLE LOOP DETECTOR WITH LEAD (TO SCALE)
	VIDEO / MICROWAVE DETECTION ZONE
	HIGHWAY SIGNAL HEAD WITH BACKBOARD AND MAST ARM
	AS PER SIGNAL HEAD CHART THE NUMBER INDICATES TYPE OF SIGNAL HEAD WITH BACKBOARD AND MAST ARM
	HIGHWAY SIGNAL HEAD WITH BACKBOARD SUPPORTED BY DOUBLE SPAN WIRE
	HIGHWAY SIGNAL HEAD COVERED FOR STAGING
	PEDESTRIAN COUNTDOWN SIGNAL HEAD
	PEDESTRIAN PUSH BUTTON WITH SYMBOLIZED SIGN
	EXISTING CONCRETE POLE
	EXISTING STEEL POLE
	EXISTING WOOD POLE
	PROPOSED OR RELOCATED CONCRETE POLE
	PROPOSED OR RELOCATED STEEL POLE
	PROPOSED OR RELOCATED WOOD POLE
	LUMINAIRE WITH BRACKET (WATTAGE AS SHOWN) FOR EXISTING USE "E", FOR PROPOSED USE "P"
	EXISTING BASE MOUNTED CONTROLLER AND CABINET
	PROPOSED BASE MOUNTED CONTROLLER AND CABINET
	POWER SERVICE PEDESTAL
	POWER SERVICE MOUNTED ON POLE
TS - #	TRAFFIC SIGNAL POLE IDENTIFICATION
	PROPOSED GALVANIZED STEEL BACK GUY WITH ANCHOR
	EXISTING GALVANIZED STEEL BACK GUY WITH ANCHOR
	RIGHT OF WAY (R.O.W.)
	CURB WITH DEPRESSION
	ROLL THROUGH CURB
	TRUNCATED DOME PAD
	COMMUNICATION CABLE
	TRAFFIC SIGNAL CABLES (OVERHEAD)
	POWER FEED CABLE (OVERHEAD)
	TRAFFIC SIGNAL CABLES (OVERHEAD) ON SPAN WIRES
	RUN WIRES OVERHEAD WITH MESSENGER CABLE
	SPREAD SPECTRUM RADIO ANTENNA
	EMTRAC ANTENNA
	FIRE PREEMPTION DETECTOR HEAD
	OVERHEAD VEHICLE DETECTOR
	WIRELESS VEHICLE DETECTOR IN ASPHALT
	SCHOOL ZONE BEACON / FLASHING BEACON
	CCTV CAMERA
	OVERSIZE STREET NAME SIGN
	PROPOSED TRAFFIC SIGN



LADDER CROSSWALK PAVEMENT MARKINGS



TRAFFIC SIGNAL CONTROLLER PHASING	SIGNAL POLE, MAST ARM AND SIGNAL HEAD DETAILS								
	POLE No.	POLE TYPE	POLE HEIGHT (mm)	MAST ARM OR BRACKET LENGTH (mm)	SIGNAL HEAD MOUNT HEIGHT (mm)	SIGNAL HEAD DIRECTION	SIGNAL HEAD TYPE	BACKBOARD	REMARKS
8 1	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
8 2									
8 3									
8 4									
8 5									
8 6									
8 7									
8 8									

Designed By _____

Approved By _____

THE REGIONAL MUNICIPALITY OF PEEL

SIGNAL INSTALLATION APPROVED AS PER SECTION 144 (31) H.T.A., RSO 1990:

APPROVAL DATE: _____

NOTE:
 SYMBOLS CROSSED OUT WITH AN "X" INDICATES FOR REMOVAL.
 THE SIZE OF CONDUIT REQUIRED FROM MANHOLE/HANDWELL TO THE SIGNAL POLE SHALL BE 1X75mm. UNLESS A LUMINAIRE IS REQUIRED THEN 2X75mm SHALL BE INSTALLED.
 LAYOUTS ARE SCHEMATIC ONLY. LOCATIONS FOR ALL STRUCTURES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER OR DESIGNATE.

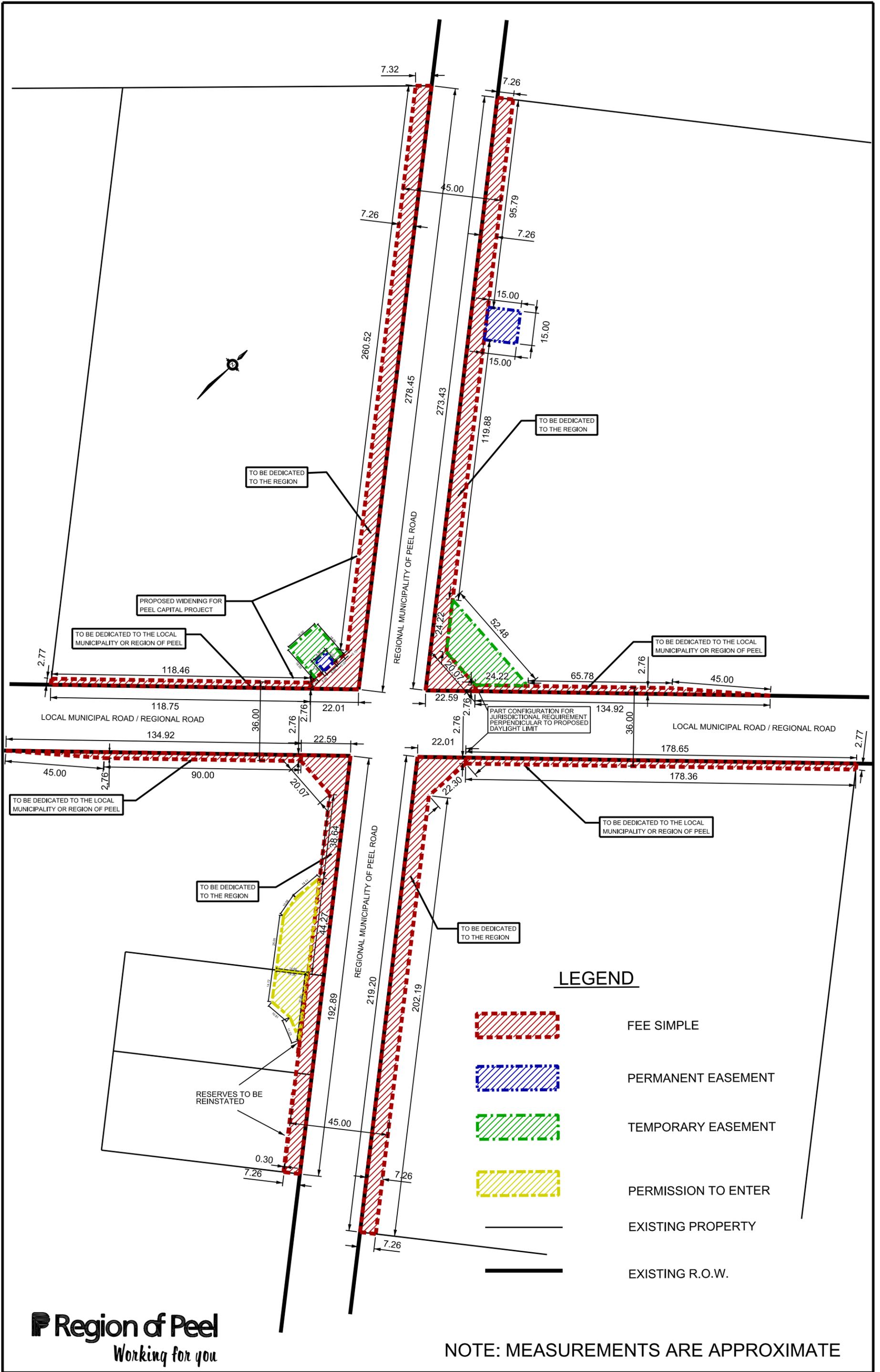
Region of Peel
Working for you

TRAFFIC CONTROL SIGNAL INSTALLATION
MAIN STREET @ SIDE STREET

TRI #	XXXXXXXX	Area	X-XX	Project No.	XX-XXXX
Checked by	X.X.	Drawn by	X.X.	Plan No.	XXXXX-D
Date	JULY 2014	Sheet	X of X		

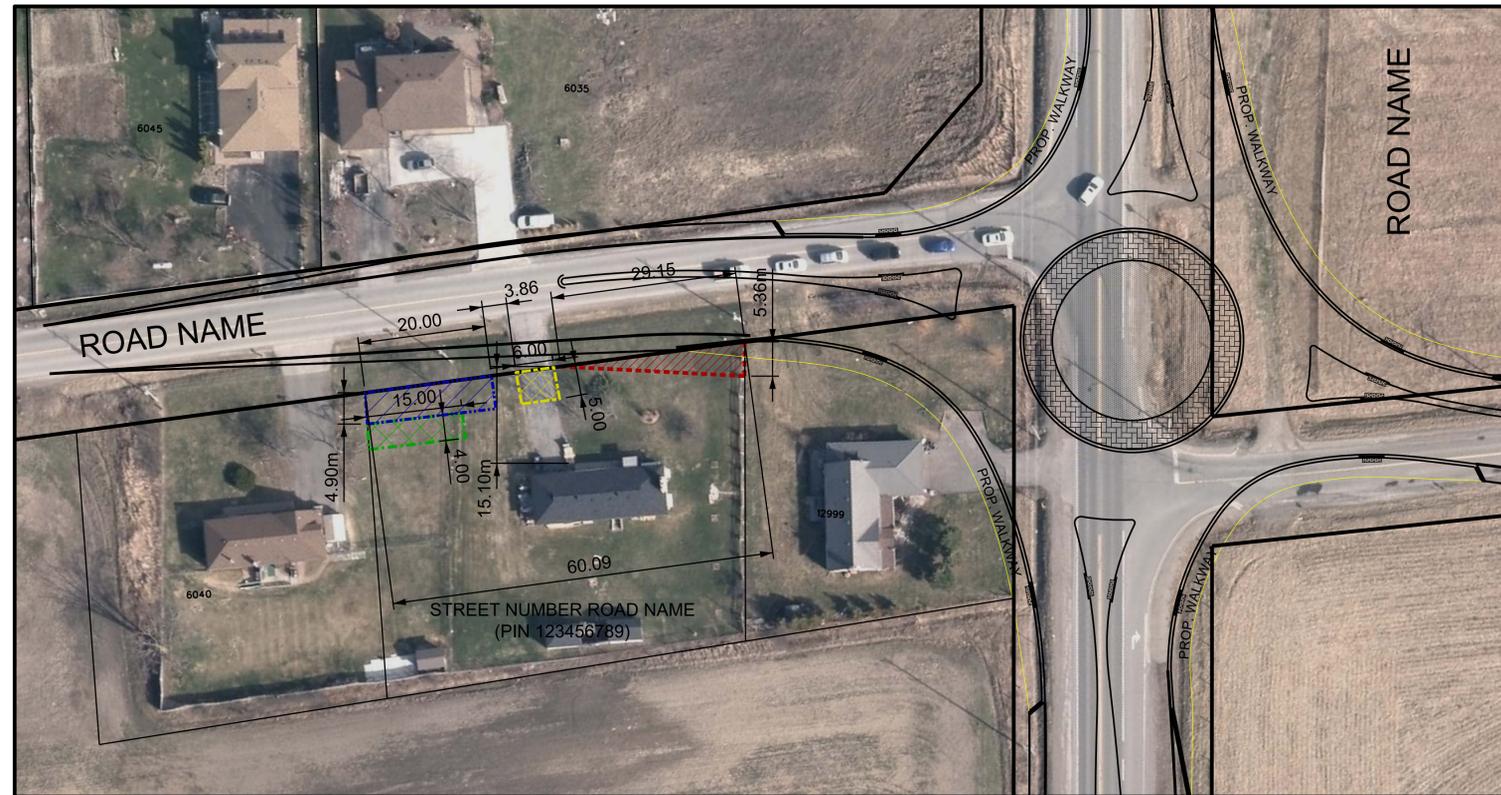
TRI # XXXXXXXX.01

Schedule I



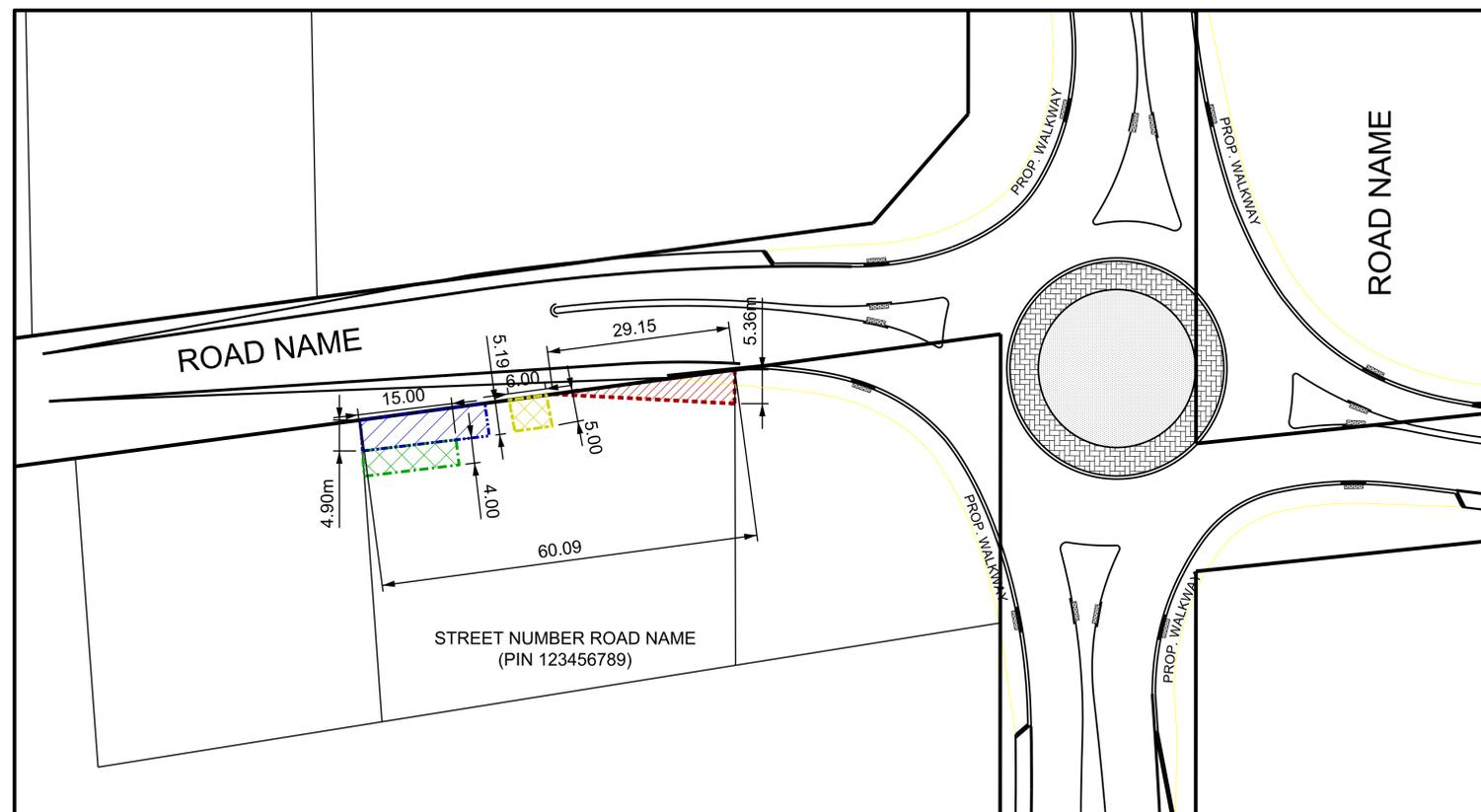
Schedule J

REVISIONS		
DATE	DETAILS	INIT.
APRIL 7, 2015	60% DESIGN ACQUISITION FOR REVIEW	T.J.



LEGEND

- EXISTING R.O.W.
- PROPOSED R.O.W.
- FEE SIMPLE PROPERTY
(± 78 sq.m.)
- PERMANENT EASEMENT
(± 102 sq.m.)
- TEMPORARY EASEMENT
(± 60 sq.m.)
- PERMISSION TO ENTER
(± 30 sq.m.)

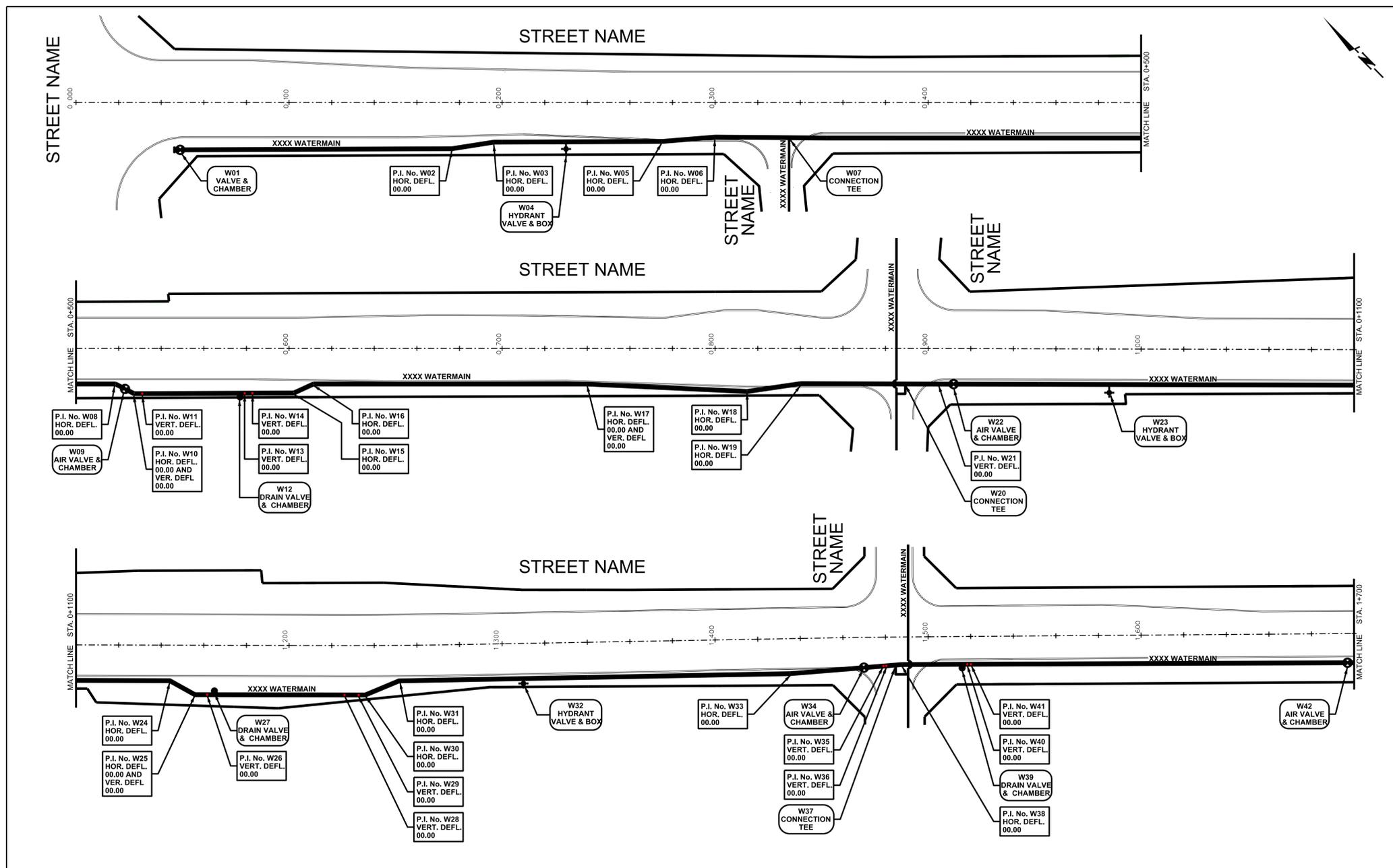


AFFECTED AMOUNT		
DESCRIPTION	UNIT	QUANTITY
LIGHT STANDARD	ea.	
DRIVEWAYS	sq.m.	
SOD	sq.m.	
TREES	ea.	
SHRUBS	LS.	
SIGNS	ea.	



PROJECT NAME
PROPERTY IMPACT PLAN
ADDRESS AND STREET NAME
(PIN 123456789)

CAD Area	Area	Project No.	XX-XXXX
Checked by	Drawn by	X.X.	Plan No.
Date	MONTH YEAR	Sheet	1 of 1



REVISIONS		
DATE	DETAILS	INIT.
MONTH DATE YEAR	ISSUED FOR CONSTRUCTION	X.X
MONTH DATE YEAR	AS RECORDED	X.X

KEY PLAN (N.T.S.)

KEY PLAN SPECIFIC TO PROJECT

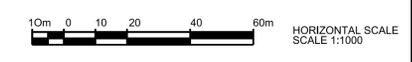
- NOTES:**
- ALL HORIZONTAL AND VERTICAL BENDS ARE IN DEGREES.
 - ALL PIPE SIZES ARE IN mm.
 - HORIZONTAL COORDINATES ARE BASED ON: 8 DEGREE UNIVERSAL TRANSVERSE MERCATOR (UTM) NAD_83 ORIGINAL ZONE 17 ELEVATIONS: GSC DATUM, 1978 SOUTHERN ONTARIO ADJUSTMENT

- LEGEND:**
- [Symbol] DENOTES PIPE VERTICAL/HORIZONTAL DEFLECTION
 - [Symbol] DENOTES OPERATIONAL APPURTENANCE
- PLACE MAXIMUM THREE HORIZONTAL ALIGNMENT SECTIONS PER DRAWING FOR CLARITY.
NOTES AND LEGEND CAN BE MOVED TO BEST FIT PAPER USE

DWG No.	POINT No.	STATION	NORTHING	EASTING	INV. ELEV.	OFFSET TO PL	POINT DESCRIPTION
XXXX-D	W01	0+000.00	0000000.00	0000000.00			VALVE & CHAMBER
	W02	0+000.00	0000000.00	0000000.00	000.00	0.00	HORIZONTAL DEFLECTION
	W03	0+000.00	0000000.00	0000000.00	000.00	0.00	HORIZONTAL DEFLECTION
XXXX-D	W04	0+000.00	0000000.00	0000000.00			HYDRANT VALVE & BOX
	W05	0+000.00	0000000.00	0000000.00	000.00	0.00	HORIZONTAL DEFLECTION
	W06	0+000.00	0000000.00	0000000.00	000.00	0.00	HORIZONTAL DEFLECTION
	W07	0+000.00	0000000.00	0000000.00	000.00	0.00	CONNECTION TEE
XXXX-D	W08	0+000.00	0000000.00	0000000.00	000.00	0.00	HORIZONTAL DEFLECTION
	W09	0+000.00	0000000.00	0000000.00			AIR VALVE & CHAMBER
	W10	0+000.00	0000000.00	0000000.00	000.00	0.00	HORIZONTAL DEFLECTION
	W11	0+000.00	0000000.00	0000000.00	000.00	0.00	VERTICAL DEFLECTION
	W12	0+000.00	0000000.00	0000000.00			DRAIN VALVE & CHAMBER
	W13	0+000.00	0000000.00	0000000.00	000.00	0.00	VERTICAL DEFLECTION
	W14	0+000.00	0000000.00	0000000.00	000.00	0.00	VERTICAL DEFLECTION
	W15	0+000.00	0000000.00	0000000.00	000.00	0.00	HORIZONTAL DEFLECTION
	W16	0+000.00	0000000.00	0000000.00	000.00	0.00	HORIZONTAL DEFLECTION
	W17	0+000.00	0000000.00	0000000.00	000.00	0.00	VERTICAL DEFLECTION

DWG No.	POINT No.	STATION	NORTHING	EASTING	INV. ELEV.	OFFSET TO PL	POINT DESCRIPTION
XXXX-D	W18	0+000.00	0000000.00	0000000.00	000.00	0.00	HORIZONTAL DEFLECTION
	W19	0+000.00	0000000.00	0000000.00	000.00	0.00	HORIZONTAL DEFLECTION
	W20	0+000.00	0000000.00	0000000.00	000.00	0.00	CONNECTION TEE
	W21	0+000.00	0000000.00	0000000.00	000.00	0.00	VERTICAL DEFLECTION
	W22	0+000.00	0000000.00	0000000.00			AIR VALVE & CHAMBER
XXXX-D	W23	0+000.00	0000000.00	0000000.00			HYDRANT VALVE & BOX
	W24	0+000.00	0000000.00	0000000.00	000.00	0.00	HORIZONTAL DEFLECTION
	W25	0+000.00	0000000.00	0000000.00	000.00	0.00	VERTICAL DEFLECTION
	W26	0+000.00	0000000.00	0000000.00	000.00	0.00	VERTICAL DEFLECTION
	W27	0+000.00	0000000.00	0000000.00			DRAIN VALVE & CHAMBER
	W28	0+000.00	0000000.00	0000000.00	000.00	0.00	VERTICAL DEFLECTION
	W29	0+000.00	0000000.00	0000000.00	000.00	0.00	VERTICAL DEFLECTION
	W30	0+000.00	0000000.00	0000000.00	000.00	0.00	HORIZONTAL DEFLECTION
	W31	0+000.00	0000000.00	0000000.00	000.00	0.00	HORIZONTAL DEFLECTION
	W32	0+000.00	0000000.00	0000000.00			HYDRANT VALVE & BOX
XXXX-D	W33	0+000.00	0000000.00	0000000.00	000.00	0.00	HORIZONTAL DEFLECTION
	W34	0+000.00	0000000.00	0000000.00			AIR VALVE & CHAMBER
	W35	0+000.00	0000000.00	0000000.00	000.00	0.00	VERTICAL DEFLECTION

DWG No.	POINT No.	STATION	NORTHING	EASTING	INV. ELEV.	OFFSET TO PL	POINT DESCRIPTION
XXXX-D	W36	0+000.00	0000000.00	0000000.00	000.00	0.00	VERTICAL DEFLECTION
	W37	0+000.00	0000000.00	0000000.00	000.00	0.00	CONNECTION TEE
	W38	0+000.00	0000000.00	0000000.00	000.00	0.00	HORIZONTAL DEFLECTION
	W39	0+000.00	0000000.00	0000000.00			DRAIN VALVE & CHAMBER
	W40	0+000.00	0000000.00	0000000.00	000.00	0.00	VERTICAL DEFLECTION
	W41	0+000.00	0000000.00	0000000.00	000.00	0.00	VERTICAL DEFLECTION
	W42	0+000.00	0000000.00	0000000.00			AIR VALVE & CHAMBER
	W43	0+000.00	0000000.00	0000000.00			DRAIN VALVE & CHAMBER



Region of Peel
Working for you

STREET NAME
PROP. XXXXmm WATERMAIN
HORIZONTAL / VERTICAL ALIGNMENT

CAD Area	X-XX	Area	X-XX	Project No.	XX-XXXX
Checked by		Drawn by	X.X.	Plan No.	XXXX-D
Date	MONTH, YEAR	Sheet	X of X		