



# The Regional Municipality of Halton

## CADD Standards Manual for Linear Design Drawings

Version 2.0

*March 31, 2021*

## **About this Manual**

This manual is intended to be used by internal staff and consultants. The manual describes the CADD standards and procedures used to develop a set of engineering contract drawings in AutoCAD and Civil 3D for the Region of Halton.

This manual covers the following type of projects:

- Pre-Engineering
- Wastewater Main & Force mains
- Watermain
- Storm Sewer
- Road Reconstruction/Road Resurfacing
- Traffic Signal Installation

This manual is intended to be used with the attached ZIP file that contains all the required standard drawing blocks.

Halton Region will carry out a CADD compliance (quality assurance) review during all drawing phases to ensure adherence to these standards.

Suggestions for improvements are encouraged. All suggestions can be emailed to [cadstandards@halton.ca](mailto:cadstandards@halton.ca)

### **LEGAL DISCLAIMER**

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## HALTON CADD STANDARDS DIRECTORY STRUCTURE

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  - 📁 BOREHOLES
  - 📁 DETAILS & STAMPS
  - 📁 EROSION & SEDIMENT CONTROL
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  - 📁 PAVEMENT MARKINGS
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  - 📁 TYPICAL SHEETS
    - 📁 CONSULTANT SHEETS
    - 📁 INTERNAL STAFF
    - 📁 SCALES BARS
  - 📁 WATERMAIN SYMBOLS

The ZIP download contains CADD STANDARDS MANUAL FOR LINEAR DESIGN DRAWINGS, (MARCH 2021 EDITION) complete manual, sample PDF drawings, templates and all necessary support files. It is available for free and can be downloaded on the Region's website at the following link:

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## CADD Standards Manual for Linear Design Drawings Revision History

### CADD Standards Manual

Rev. No.	Item Content	Release Date	Updates By
1.0	<i>Initial Release</i>	<i>Feb. 2016</i>	<i>Technical &amp; Design Services</i>
2.0	<p><b>General updates and improvements reflecting changes in technologies and methods/workflows made to the following chapters in order to enforce and maintain consistency of drawings created for Halton Region</b></p> <p><b>Chapter 1-Introduction</b>  <i>Section 1.1 Software Update</i>  <i>Section 1.2 Link to Engineering Design Manuals, New Appendices and Templates</i></p> <p><b>Chapter 2-Workflow for Projects</b>  <i>Section 2.4 Base Plan Workflow Updated</i>  <i>Section 2.5 Workflow for a Typical Plan &amp; Profile Drawing</i></p> <p><b>Chapter 3-Drawing Setup</b>  <i>Section 3.1 Template Files &amp; Layers</i>  <i>Section 3.5 Crop Marks on Drawings</i>  <i>Section 3.11 New Codes Added &amp; Updated</i></p> <p><b>Chapter 4-Policy on Paper Space and Model Space</b>  <i>Section 4.3 Sheets for Road Reconstruction Projects</i>  <i>Section 4.4 Title Block Requirements</i></p> <p><b>Chapter 5-Policy on External References</b></p> <p><b>Chapter 6-Halton Civil 3D Style Kit</b>  <i>Section 6.2 Perpendicular Alignments for Road Reconstruction Projects</i>  <i>Section 6.2 Typical Plan and Profile Sheet Utilizing Halton Civil 3D Styles and Pipe Catalogue</i>  <i>Section 6.3-Path to Pipe Catalog Windows 10</i></p> <p><b>Chapter 7-Deliverables</b>  <i>Section 7.1 Hardcopy and Digital Requirements</i>  <i>Section 7.2 CADD File Submission</i>  <i>Section 7.4 Transfer of Electronic Submittals</i>  <i>Section 7.5 AutoCAD/Civil 3D Submittal</i></p>	<i>March 2021</i>	<i>Technical &amp; Design Services</i>

<b>Rev. No.</b>	<b>Item Content</b>	<b>Release Date</b>	<b>Updates By</b>
2.0	<p><b>Chapter 8-Critical Information for Survey Layout</b>            Section 8.1 Watermain/Sanitary Sewer Projects            Section 8.2 Road Reconstruction Projects</p> <p><b>Chapter 9-As Constructed Workflow</b>            Sections 9.1-9.2.3            As Constructed Procedure and Requirements            Updated For Watermain, Sanitary Sewer, Storm            Sewer and Culverts            Section 9.3 As Constructed-Shop Drawings            Section 9.4 Using GPS Technology for As Constructed            Information</p> <p><b>Chapter 10-Drawing Series and Descriptions</b>            Section 10.0 Updated All Series            New Series 80A-80c, 90-95,409B,            412,500,602, 603            Updated Sample Drawings</p> <p><b>Note: All typical sheets have been updated.</b></p>	March 2021	Technical & Design Services

### Halton Civil 3D Style Kit, Templates and Support Files

<b>Rev. No.</b>	<b>Updates/Description</b>	<b>Release Date</b>	<b>Updates By</b>
1.0	Initial Release	Feb. 2016	Technical & Design Services
2.0	Updated to 2020 Civil 3D Software Civil 3D Template Updated <ul style="list-style-type: none"> <li>• Layers, linetypes Updated</li> <li>• PSLTSCALE set to 0 (first TAB only)</li> <li>• PROP. Removed from Civil 3D labels</li> <li>• Annotative HALTON-MLEADERSTYLE added</li> <li>• Civil 3D Styles/Labels updated</li> </ul>	March 2021	Technical & Design Services

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## **1.0 Introduction**

This manual does not provide design guidance. Refer to Halton Region's Water and Wastewater Linear Design Manual latest version. The manual outlines the standards that are to be adhered in designing the Region's water and wastewater linear infrastructure.

This manual covers the basic preparation of project plans using AutoCAD and AutoCAD Civil 3D as a method of plan preparation.

Elements covered in this manual are project initiation, drawing file directory structure, drawing set up, layers, line types, colours, text styles, annotation, hatching and drawing symbols, pen weights and plotting styles. Sample drawings are also provided. **Sample drawings are for reference only** and are not intended as design guidelines. The Regional Municipality of Halton is currently using Autodesk Civil 3D to produce engineering drawings.

Halton Region will carry out a CADD compliance (quality assurance) review during all drawing review phases to ensure adherence to these standards.

### **1.1 Supported Software by Halton Region**

Halton Region is currently using the following Autodesk® products:

AutoCAD 2020

AutoCAD Civil 3D 2020

AutoCAD Raster Design 2020

Autodesk Design Review 2020

Halton Region will be upgrading to 2022 Autodesk software in September of 2021

The Region of Halton is on Autodesk subscription. Please note that the Region is currently utilizing an upgrade cycle which has its Civil 3D/AutoCAD software upgraded every second year. The software currently utilized is Civil 3D 2020 (AutoCAD 2018 Drawing-File Format). We will be switching to all 2022 Autodesk software in September of 2021

**All new projects must use the Regions AutoCAD drawing template or the Region's Civil 3D template. Refer to Chapter 3.0.**

**The Region of Halton reserves the right to decline any submittal due to software incompatibility issues.**

### **1.2 Support Files**

The ZIP download contains CADD STANDARDS MANUAL FOR LINEAR DESIGN DRAWINGS, MARCH 2021 EDITION) complete manual, sample PDF drawings, templates and all necessary support files. It is available for free and can be downloaded on the Region's website at the following link:

<https://www.halton.ca/The-Region/Regional-Planning/Planning-Applications/Download-Engineering-Design-Guides-Manuals>

These standards are expected to evolve based on the needs and requirements of Halton Region.

The downloadable ZIP file contains the following:

**Documentation:**

- CADD STANDARDS MANUAL FOR LINEAR DESIGN DRAWINGS, MARCH 2021, Version 2

**Sample Reference PDF Drawings (Appendices):**

- Appendix 1: Sample Watermain and Sanitary Sewer Project with Checklist
- Appendix 2: Sample "As Constructed" Drawing with Checklist

**Templates:** *Templates will be updated with improvements and/or changes to our CADD standards as they occur. Ensure that you are using the most current template when starting a project.*

**Civil 3D** (Halton Civil 3D Style Kit- Chapter 6.0)

- Halton\_C3D2020\_template.dwt

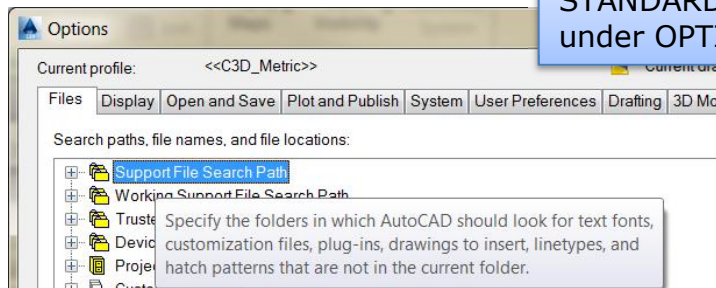
**AutoCAD**

- HALTON-DESIGN.DWT

**Additional Support Files:**

- Hatch Patterns
- Civil 3D Pipe Catalog
- Colour Tables (.ctb)
- Linetypes (.lin)
- Standard Blocks
- Typical Sheets for Consultants

Remember to specify the HALTON CADD STANDARDS DIRECTORIES and subfolders under OPTIONS



All questions related to using these files or our CAD Standards in general, email: [CADDstandards@halton.ca](mailto:CADDstandards@halton.ca)

## **2.0 Workflow for Projects**

Below is a workflow for a typical Region of Halton project:



### **2.1 Base Plan Preparation**

Base plans may be prepared using aerial topographic mapping or by topographic surveys or a combination of both. The following will outline the procedure to be followed for base plan preparation.

### **2.2 Mapping**

An order for topographic mapping is placed with a qualified mapping firm. The mapping firm will provide a digital AutoCAD drawing file of the topographical information.

#### **Co-ordinate System Requirements**

Co-ordinate System	
<b>Projection</b>	UTM (Universal Transverse Mercator) 6 degree
<b>Datum</b>	NAD 83 datum
<b>Zone</b>	Zone 17

#### **Layer Definition Requirements**

MAPPING LAYERS		
Layer Name	Color	Linetype
0	7 (white)	CONTINUOUS
M-BUILDINGS	7 (white)	CONTINUOUS
M-CONTOURS-TEXT-MINOR	7 (white)	CONTINUOUS
M-CONTOURS-TEXT-MAJOR	7 (white)	CONTINUOUS
M-CONTOURS-MINOR	1 (red)	CONTINUOUS
M-CONTOURS-MAJOR	2 (yellow)	CONTINUOUS
M-DRAINAGE	7 (white)	CONTINUOUS
M-EXROAD	7 (white)	CONTINUOUS
M-EXSHOULDER	7 (white)	DASHED
M-EXFENCE	7 (white)	FENCE
M-GRID	7 (white)	CONTINUOUS

MAPPING LAYERS		
Layer Name	Color	Linetype
M-PMARKS	7 (white)	CONTINUOUS
M-PROPERTY	7 (white)	CONTINUOUS
M-REMAIN-TOPO	7 (white)	CONTINUOUS
M-SPOT-ELEV	7 (white)	CONTINUOUS
M-SWAMP	7 (white)	DASHED
M-VEGETATION	7 (white)	CONTINUOUS

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## 2.3 Survey Information

In addition to topographic mapping, a survey crew managed by Halton or consultants will obtain field information relative to the accurate location of all above and underground utilities and services (storm and sanitary sewers and watermain). The information that is obtained from this survey is represented in:

- UTM (Universal Transverse Mercator) 6 degree, NAD83 Datum, Zone 17
- Co-ordinate list for all control stations
- Control station elevations
- Horizontal alignment and co-ordinate list
- Alignment ties
- Watermain valves, sanitary and storm manhole numbers and invert elevations
- Water valve top of nut elevations and top of main elevations.

## 2.4 Base Plan Information

As part of a project research package for water and sewer projects, the following information will be given for all capital projects:

- Topo survey
- As constructed plan and profile drawings
- Service permits (when available)
- Copies of the wastewater and water operating maps for the project area
- Municipal assessment parcels, property plans (compiled plans, registered plans, master plans, plan of subdivision, etc.)
- Aerial photos (SID Files)
- CCTV Sewer videos and reports
- GIS Information-sewer, watermain, sanitary laterals, water services etc.

For road reconstruction projects, the following information will be supplied as part of the research package

- All above items, **plus**
- Traffic Data
- Culvert Assessment Reports

***For all other information, please contact the Region's Project Manager assigned to the project.***

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## **2.5 Design Workflow**

Refer to **Halton Water Wastewater Linear Design Manual** latest version. The manual outlines the standards that are to be adhered in designing the Region's water and wastewater linear infrastructure.

It is available for free and can be downloaded on the Region's website at the following link:

<https://www.halton.ca/The-Region/Regional-Planning/Planning-Applications/Download-Engineering-Design-Guides-Manuals>

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## **3.0 Drawing Setup**

### **3.1 Template Files**

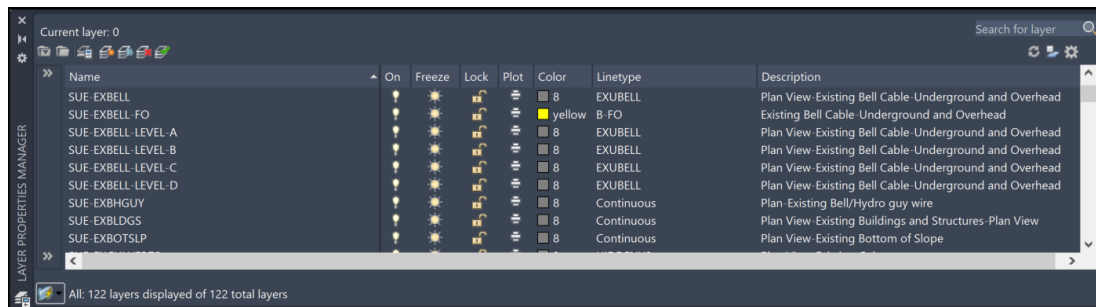
Template files can be found under the Template directory structure. All drawings created for the Region of Halton must be created using the following Civil 3D template or AutoCAD template:

- ▶ TEMPLATES
- ▶ AUTOCAD TEMPLATE
- ▶ CIVIL 3D TEMPLATE
- ▶ PIPE CATALOGS
- ▶ SUE TEMPLATE

- Civil 3D**     ***Halton\_C3D16\_template.dwt*** (For Civil 3D 2013-2014)  
***Halton\_C3D2020\_template.dwt*** (For Civil 3D 2018-2020)
- Civil 3D file contains styles, fonts, layers and dimension styles.
  - Refer to Chapter 6 for more information regarding Halton Civil 3D template use.

- AutoCAD**     ***HALTON-DESIGN.dwt***
- AutoCAD Template files contain text styles, layers, and dimension styles.

- SUE**            ***HALTON SUE TEMPLATE.dwt***
- This is Halton’s SUE template that is available for SUE contractors. If another template is used, all layers must be mapped to Halton’s SUE standard. Map the layers in the SUE drawing (provided by SUE company) to the following layers in Region’s SUE Template. Colour 8 is used so that a designer can differentiate between Halton survey (colour 7) and SUE (colour 8). Plotting characteristics are the same provided that you use the Halton Region Colour Table (CTB)



**Example:** Existing Bell layers (from SUE Company)  
 Layer EXBELL\_QLD shall reside on layer **SUE-EXBELL-LEVEL-D**

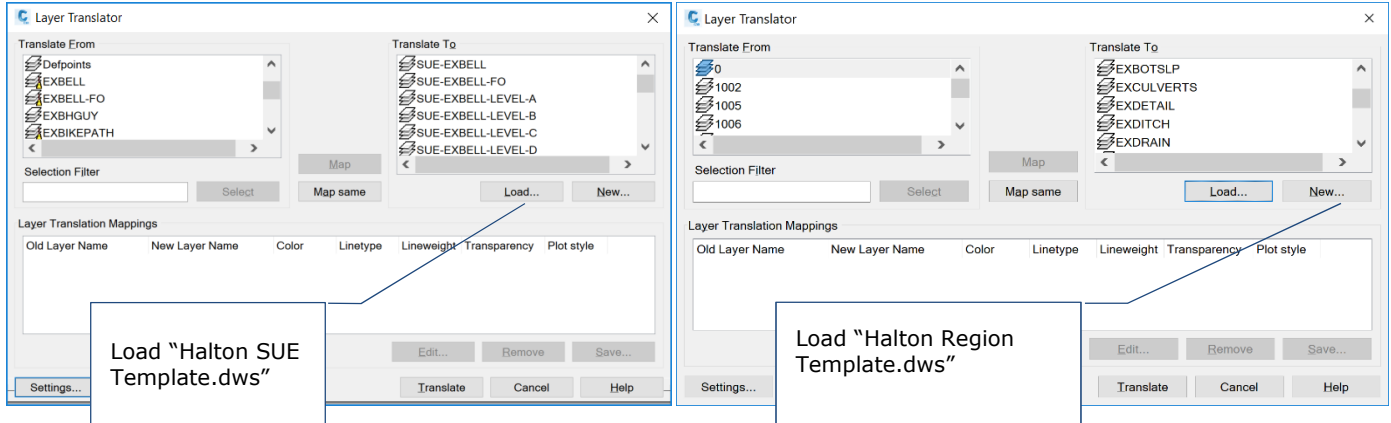
### Layer TRANSLATOR

#### Halton SUE Template.dws OR Halton Region Template.dws

- Use AutoCAD’s Layer Translator LAYTRANS (command) to map layers from your SUE contractor to Halton Sue Template standard or from other drawings to Halton region template.  
Refer to Autodesk Knowledge Network for assistance

In the Layer Translator, you specify the layers in the current drawing that you want to translate, and the layers to translate them to. The translation maps the layers in the current drawing to different layer names and layer properties in a specified drawing or standards file, and then converts them using those mappings.

[Autodesk Knowledge Network](#)



### 3.2 Colour

The colour of all entities in the drawing shall be BYLAYER only, not by individual entities unless the need arises for clarity.

### 3.3 Drawing Scale and Units

All drawings shall be drawn in model space to a scale of **1 drawing unit = 1 metre**

### 3.4 Layering Standards

The template drawing includes basic layers and linetypes that are to be used when creating project drawings. If more layers are required, added layers must follow Halton’s layer naming convention and format outlined in the table below. Line colours and pen weights for Halton’s layering are based on Halton Region’s Colour

Table (Halton Region.ctb). See section 3.7 for more information.

LAYER NAME PREFIXES	
Discipline Prefix	Description
<b>AC-</b>	As Constructed
<b>E-</b>	Electrical
<b>EX</b>	Existing
<b>L-</b>	Landscaping
<b>LS-</b>	Legal Survey
<b>M-</b>	Mapping
<b>PR-</b>	Proposed
<b>PRF</b>	Profile
<b>REM-</b>	Removals
<b>S-</b>	Structural
<b>TR-</b>	Traffic
<b>F-</b>	Future Works
<b>T-</b>	Temporary Works
<b>GIS-</b>	Information from GIS

At the time of printing this manual, the following are the most current standard layers.

Layer Name	Color	Linetype	Description
ALIGN	2 yellow	Continuous	Alignment
ALIGN-DETAILS	2 yellow	Continuous	Alignment Details i.e. Northing and Eastings, Stations and Offsets
ALIGN-STREET NAME	2 yellow	Continuous	Alignment-Place Holder for Street Name
BOREHOLES-PLAN	3 cyan	Continuous	Plan View-Borehole Location
BOREHOLES-PROFILE	1 red	Continuous	Profile View-Boreholes Location
BROAD-PEN	6 magenta	Continuous	Magenta Object Colour, Pen-0.7mm Line Width
CONTOURS-MAJOR	2 yellow	Continuous	Contours, Major
CONTOURS-MINOR	1 red	Continuous	Contours, Minor
CROP-MARKS	1 red	Continuous	Crop Marks-Plan View
Defpoints	7 white	Continuous	Description
EXBELL	7 white	EXUBELL	Plan View-Existing Bell Cable-Underground and Overhead
EXBELL-FO	2 yellow	B-FO	Plan View-Existing Bell Cable-Fibre Optic
EXBHGY	7 white	Continuous	Plan View-Bell/Hydro with Guy Wire Support
EXBIKEPATH	7 white	Continuous	Plan View-Existing Bicycle Path
EXBLDGS	7 white	Continuous	Plan View-Existing Buildings and Structures-Plan View
EXBOTSLP	7 white	Continuous	Plan View-Existing Bottom of Slope
EXCULVERTS	7 white	HIDDENX2	Plan View-Existing Culverts
EXDETAIL	7 white	Continuous	Plan View-Existing Detail for Baseplan
EXDITCH	7 white	DITCH2	Plan View-Existing Ditch
EXDRAIN	7 white	Continuous	Plan View-Existing Drainage
EXDWY	7 white	Continuous	Plan View-Existing Driveway or Entrance
EXFENCE	7 white	FENCE	Plan View-Existing Fence
EXGAS	7 white	EXUGAS	Plan View-Existing Gas Line
EXGDRAIL	7 white	GUIDERAIL	Plan View-Existing Guide Rail System
EXGP&GW	7 white	Continuous	Ex Guy Pole and Guy Wire
EXGUTTER	7 white	CENTER	Plan View-Existing Gutter line
EXHYDRO	7 white	EXUHYDRO	Plan View-Existing Hydro-Underground and Overhead
EXHYDRO-FO	2 yellow	H-FO	Plan View-Existing Hydro-Fibre Optic
EXMSC	7 white	Continuous	Plan View-Existing Miscellaneous Details
EXMSC-FO	2 yellow	FO	Plan View-Existing Miscellaneous-Fibre Optic
EXOIL	7 white	OILPIPE	Plan View-Existing Oil Pipeline
EXPMARKS	7 white	Continuous	Plan View-Existing Pavement Markings
EXRDSIGNS	7 white	Continuous	Plan View-Existing Road Signs
EXREFPT	4 cyan	Continuous	Plan View-Existing Reference Points
EXROAD	7 white	Continuous	Plan View-Existing Roadway
EXROGERS	7 white	EXUROGERS	Plan View-Existing Hydro-Underground and Overhead
EXSAN	7 white	DASHED	Plan View-Existing Sanitary Sewer
EXSAN-FORCEMAIN	7 white	DASHED	Plan View-Existing Sanitary Sewer Forcemain
EXSANLATERALS	7 white	DASHED	Plan View-Existing Sanitary Lateral
EXSHLD	7 white	SHLD	Plan View-Existing Shoulder
EXSIGNALS-ABOVE	7 white	Continuous	Plan View-Existing Signals Above Ground
EXSIGNALS-ABOVE-FO	2 yellow	TA-FO	Plan View-Existing Signals Above Ground-Fibre Optic
EXSIGNALS-CONDUIT	7 white	TSCONDUIT	Plan View-Existing Conduit for Signal Lights
EXSIGNALS-INGROUND	7 white	TSCONDUIT	Plan View-Existing Signals In Ground
EXSIGNALS-INGROUND-FO	2 yellow	T-FO	Plan View-Existing Signals In Ground-Fibre Optics
EXSTLIGHT-CABLE	7 white	STLIGHTCABLE	Plan View-Existing Street Light Cable
EXSTM	7 white	DASHEDX2	Plan View-Existing Storm Sewer
EXSWK	7 white	Continuous	Plan View-Existing Sidewalk
EXTOPSLP	7 white	Continuous	Plan View-Existing Top of Slope
EXTV	7 white	EXUTV	Plan View-Existing Television Cable

Layer Name	Color	Linetype	Description
EXTV-FO	2 yellow	TV-FO	Plan View-Existing Television Cable-Fibre Optic
EXUTILMSC	7 white	UTIL	Plan View-Existing Miscellaneous Utility Cable
EXVEG	7 white	Continuous	Plan View-Existing Vegetation
EXVEG-SIGNIFICANT	7 white	Continuous	Plan View-Existing Significant Vegetation
EXWALL	7 white	Continuous	Plan View-Existing Retaining Wall
EXWATER	7 white	DASHED2	Plan View-Existing Watermain
EXWATER-SERVICE	7 white	DASHED	Plan View-Existing Water Service
FINE-PEN	4 cyan	Continuous	Cyan Object Colour, Pen-0.35mm Line Width
GRID	7 white	Continuous	Gridlines
HIDDEN	1 red	Continuous	Hidden Objects or Text
HOUSE NUMBERS	2 yellow	Continuous	Manually Inputed House Numbers
MED-PEN	5 blue	Continuous	Blue Object Colour, Pen-0.50mm Line Width
MISC	2 yellow	Continuous	Miscellaneous Details
NORTHINGS EASTINGS	2 yellow	Continuous	Northings and Eastings for Survey Layout
OG	3 green	Continuous	Plan View-Original Ground Shot
OGBS	6 magenta	Continuous	Plan View-Original Ground, Bottom of Slope
OGCL	1 red	Continuous	Plan View-Original Ground, Centreline of Road
OGTS	5 blue	Continuous	Plan View-Original Ground, Top of Slope
PNTDESC	3 green	Continuous	Surveyed Point Description
PNTELEV	5 blue	Continuous	Surveyed Point Elevation
PNTNO	7 white	Continuous	Surveyed Point Number
PR-BIKEPATH	4 cyan	Continuous	Plan View-Proposed Bicycle Path
PR-BOTTOM OF GRANULARS	4 cyan	EXPRO	Subgrade
PR-CULVERTS	4 cyan	Continuous	Proposed Culverts
PR-DITCH-LEFT	2 yellow	DITCH	Proposed Ditch, Left Side of Road
PR-DITCH-RIGHT	2 yellow	DITCH2	Proposed Ditch, Right Side of Road
PR-ELEVOFF	4 cyan	Continuous	Proposed Elevation with Offset
PR-FENCE	4 cyan	PROPOSED FENCE	Plan View-Proposed Fence
PR-GDRAIL	4 cyan	GUIDERAIL	Plan View-Proposed Guide Rail System
PR-GRADING	2 yellow	Continuous	Plan View-Proposed Grading
PR-HATCH	252 252	Continuous	Proposed Hatch Patterns
PR-MULTIUSE PATH	4 cyan	Continuous	Plan View-Proposed Multi Use Path
PR-NOTES	4 cyan	Continuous	Proposed Notes
PR-PMARKS	5 blue	Continuous	Plan View-Proposed Pavement Markings
PR-PMARKTEXT	4 cyan	Continuous	Plan View-Proposed Pavement Marking Text
PR-RIPRAP	1 red	Continuous	Plan View-Proposed Rip Rap
PR-ROAD	4 cyan	Continuous	Plan View-Proposed Road
PR-ROAD-EOP	5 blue	Continuous	Plan View-Proposed Road Edge of Pavement
PR-SAN	6 magenta	Continuous	Plan View-Proposed Sanitary Sewer
PR-SAN-FORCEMAIN	6 magenta	Continuous	Plan View-Proposed Sanitary Sewer Forcemain
PR-SAN-LINE	6 magenta	DASHEDX2	Plan View-Proposed Sanitary Sewer Lining
PR-SANLATERALS	6 magenta	Continuous	Plan View-Proposed Sanitary Laterals
PR-SANLATERALS-LINE	6 magenta	DASHEDX2	Plan View-Proposed Lining For a Sanitary Lateral
PR-SEDIMENT & EROSION CONTROL	4 cyan	Continuous	Proposed Sediment and Erosion Control Measures
PR-SIDEWALK	4 cyan	Continuous	Plan View-Proposed Sidewalk
PR-SIDEWALK-AODA	1 red	Continuous	Plan View-AODA Tactile Pad
PR-SIGNS	5 blue	Continuous	Plan View-Proposed Road/Traffic Signs
PR-SIGNSTEXT	4 cyan	Continuous	Plan View-Proposed Road/Traffic Sign Text
PR-SILTFENCE	2 yellow	FENCELINE2	Plan View-Proposed Subdrain
PR-SOD	1 red	Continuous	Plan View-Proposed Soded Area
PR-STM	6 magenta	Continuous	Plan View-Proposed Storm Sewer

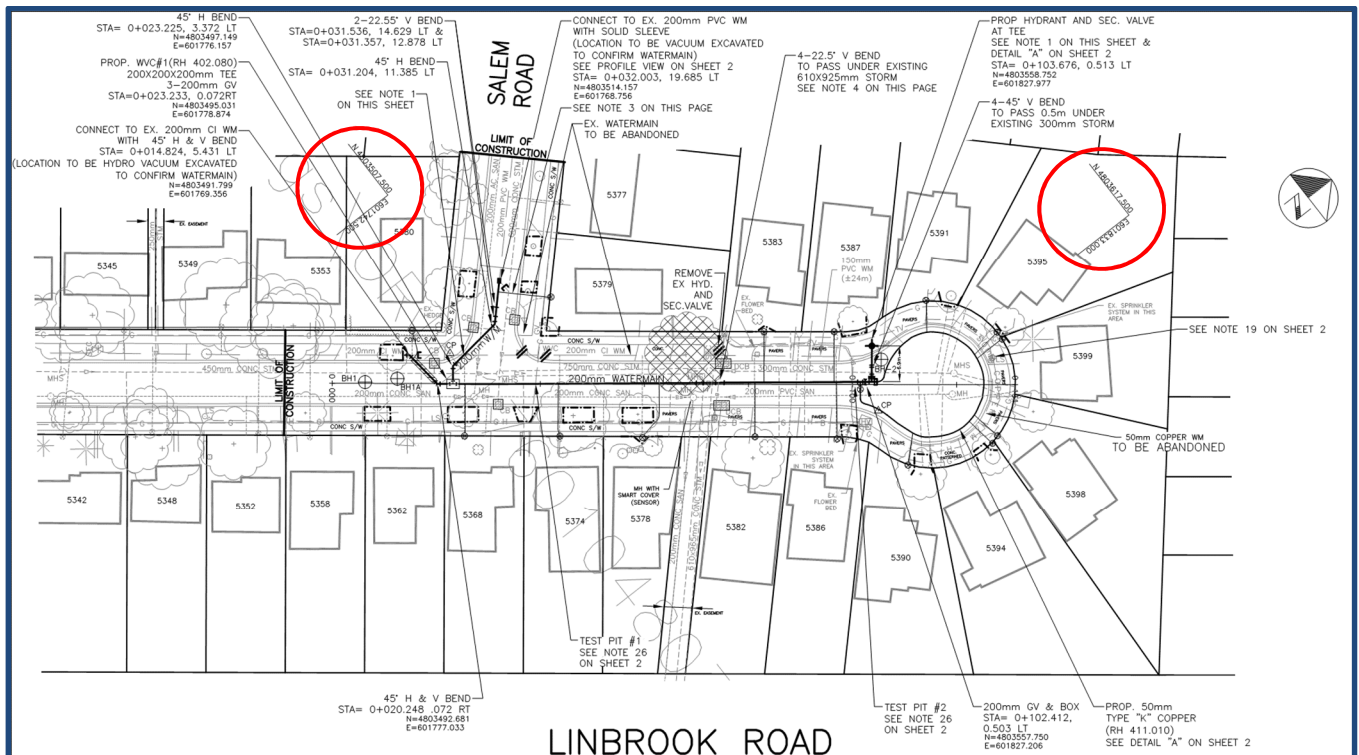
Layer Name	Color	Color	Linetype	Description
PR-SUBDRAIN	2	yellow	SUBDRAIN	Plan View-Proposed Subdrain
PR-WATER	6	magenta	Continuous	Plan View-Proposed Watermain
PR-WATERSERVICES	4	cyan	Continuous	Plan View-Proposed Water Service
PRF-GRID	7	white	Continuous	Section Grid
PRF-GRID-NO PLOT	8	8	Continuous	Section Grid-No Plot
PRF-GRIDTEXT	2	yellow	Continuous	Section Grid Text
PRFCULVERTS	4	cyan	Continuous	Profile View-Proposed Culverts
PRFEXBELL	7	white	EXPRO	Profile View-Existing Bell Cable or Duct
PRFEXBLDGS	2	yellow	Continuous	Profile View-Existing Building and Structures Elevations
PRFEXCULVERTS	7	white	Continuous	Profile View Existing Culverts
PRFEXDITCH	2	yellow	DITCH	Profile View-Existing Ditch
PRFEXDRAIN	7	white	PHANTOM	Profile View-Existing Drainage
PRFEXGAS	7	white	EXPRO	Profile View-Existing Gas Line
PRFEXHYDRO	7	white	EXPRO	Profile View-Existing Hydro Line
PRFEXMSC	7	white	EXPRO	Profile View-Existing Miscellaneous Detail
PRFEXROAD	2	yellow	EXPRO	Profile View-Existing Profile along Centreline or Base Line
PRFEXSAN	2	yellow	DASHED	Profile View-Existing Sanitary Sewer
PRFEXSAN-FORCEMAIN	2	yellow	DASHED	Profile View-Existing Sanitary Forcemain
PRFEXSTM	2	yellow	DASHEDX2	Profile View-Existing Storm Sewer
PRFEXTV	7	white	EXPRO	Profile View-Existing Television Cable or Duct
PRFEXWALL	7	white	Continuous	Profile View-Existing Wall or Structure
PRFEXWATER	2	yellow	DASHED2	Profile View-Existing Watermain
PRFROAD	4	cyan	Continuous	Profile View-Proposed Profile along Centreline or Baseline
PRFSAN	5	blue	Continuous	Profile View-Proposed Sanitary Sewer
PRFSAN-FORCEMAIN	5	blue	Continuous	Profile View-Proposed Sanitary Sewer Forcemain
PRFSAN-LINE	6	magenta	DASHEDX2	Profile View-Proposed Sanitary Sewer Lining
PRFSTM	5	blue	Continuous	Profile View-Proposed Storm Sewer
PRFWATER	5	blue	Continuous	Profile View-Proposed Watermain
PROPERTY	5	blue	Continuous	Plan View-Property Line
PRSAN-FORCEMAIN	6	magenta	Continuous	Plan View-Proposed Sanitary Sewer Forcemain
REFPT	4	cyan	Continuous	Plan View-Reference Point
REM-ROAD	2	yellow	Continuous	Plan View-Removal of Road
REM-VEG	2	yellow	Continuous	Plan View-Removal of Vegetation
SURVEY LAYOUT	2	yellow	Continuous	Plan View-For Survey Layout
TR-25MM-CONDUIT	2	yellow	DIVIDE	Plan View-Proposed 25mm Conduit
TR-50MM-CONDUIT	4	cyan	DASHDOT	Plan View-Proposed 50mm Conduit
TR-75MM-CONDUIT	5	blue	DASHED	Plan View-Proposed TR-75mm Conduit
TR-100MM-CONDUIT	6	magenta	Continuous	Plan View-Proposed 100mm Conduit
TR-LOOPS	4	cyan	DASHED	Plan View-Traffic Loops
TR-SIGNALS-ABOVE	4	cyan	Continuous	Plan View-Proposed Traffic Signals Above Ground
TR-SIGNALS-INGROUND	4	cyan	Continuous	Plan View-Proposed Traffic Signal Component Inground
TR-TEMP-SIGNALS-ABOVE	4	cyan	Continuous	Plan View-Proposed Traffic Signal Component Above Ground
TR-TEMP-SIGNALS-INGROUND	4	cyan	Continuous	Plan View-Temporary Traffic Signal Components
TREE PROTECTION ZONE	6	magenta	DASHDOT2	Plan View-Tree Protection Zone
VPORT	1	red	Continuous	Viewport Outline-NO PLOT
XBROAD-PEN	3	green	Continuous	Green Object Colour, Pen-0.90mm Line Width
XEG	2	yellow	DASHED	Section-Existing Ground
XFG	4	cyan	Continuous	Section-Proposed Ground
XFINE-PEN	2	yellow	Continuous	Yellow Object Colour, Pen-0.25mm Line Width
XFINE-PEN-NO PLOT	2	yellow	Continuous	Yellow Object Colour, Pen-0.25mm Line Width NO PLOT
XGRID	7	white	Continuous	Section-Grid
XGRIDTEXT	2	yellow	Continuous	Section-Grid Text
XXFINE-PEN	1	red	Continuous	Red Object Colour, Pen-0.15mm Line Width

### 3.5 Coordinates and Datum

Real co-ordinate registration shall conform to the following criteria:

Co-ordinate System	
<b>Projection</b>	UTM (Universal Transverse Mercator) 6 degree
<b>Datum</b>	NAD 83 datum
<b>Zone</b>	Zone 17

- For example, AutoCAD co-ordinates 100,400 (X, Y) is equal to (6 degree UTM) northing of 400 and the easting of 100.
- Registration of the 6 degree UTM co-ordinate system shall consist of a series of cross hairs drawn to the nearest 25-100m intervals.
- The northing and easting co-ordinates shall be shown at the intersection of the co-ordinate lines at 25-100m intervals.
- All information related to the co-ordinate system (crosshairs, Northing and Easting) shall be on layer CROP-MARKS.
- The cross hairs for the UTM co-ordinates shall be indicated outside of the road allowance in a clear area (if possible) as shown in figure 1. **Minimum, 2 per viewport**



**Figure 1-Sample**

### 3.6 Text Styles, Text Orientation & Pen Weights

#### Text Styles

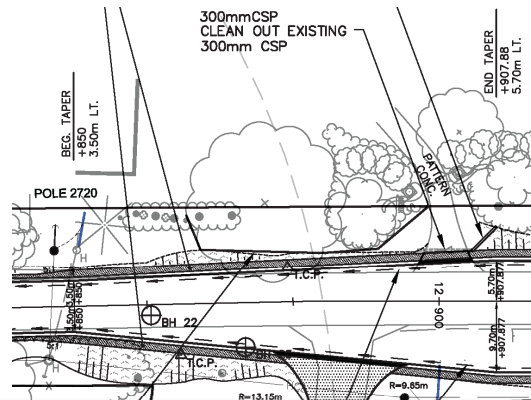
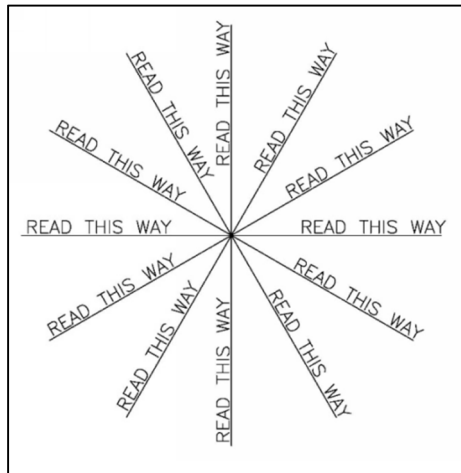
Standard text sizes have been defined to ensure conformity and legibility on all CADD drawings for viewing and plotting. The correct text size is dependent on the final plotting scale. The following table of text sizes is for drawings at a given scale:

All text fonts are **ROMAN SIMPLEX**

SCALES								PEN WEIGHT	TYPICAL LAYER	COLOUR
STYLE	1:1000	1:750	1:500	1:300	1:250	1:200	1:100			
L40	1.000	0.750	0.500	0.300	0.250	0.200	0.100	0.15mm	XXFINE-PEN	RED
L50	1.300	0.975	0.650	0.390	0.325	0.260	0.130	0.15mm	XXFINE-PEN	RED
L60	1.500	1.125	0.750	0.450	0.375	0.300	0.150	0.15mm	XXFINE-PEN	RED
L80	2.000	1.500	1.000	0.600	0.500	0.400	0.200	0.25mm	XFINE-PEN	YELLOW
L100	2.500	1.875	1.250	0.750	0.625	0.500	0.250	0.35mm	FINE-PEN/PR-NOTES	CYAN
L120	3.000	2.250	1.500	0.900	0.750	0.600	0.300	0.35mm	FINE-PEN/PR-NOTES	CYAN
L140	3.500	2.625	1.750	1.050	0.875	0.700	0.350	0.50mm	MED-PEN	BLUE
L175	4.500	3.375	2.250	1.350	1.125	0.900	0.450	0.50mm	BROAD-PEN	MAGENTA
L200	5.000	3.750	2.500	1.500	1.250	1.000	0.500	0.70mm	BROAD-PEN	MAGENTA
L240	6.000	4.500	3.000	1.800	1.500	1.200	0.600	0.70mm	BROAD-PEN	MAGENTA
L290	7.500	5.625	3.750	2.250	1.875	1.500	0.750	1.0mm	XBROAD-PEN	GREEN
L350	9.000	6.750	4.500	2.700	2.250	1.800	0.900	1.0mm	XBROAD-PEN	GREEN
L425	10.000	7.500	5.000	3.000	2.500	2.000	1.000	1.0mm	XBROAD-PEN	GREEN
L500	12.700	9.525	6.350	3.810	3.175	2.540	1.270	1.0mm	XBROAD-PEN	GREEN

**Text Orientation**

The standard text orientation shall be placed such that it is readable as per the following figure.



**EXCEPTION:** chainage along centreline shall face the direction of increasing chainage  
Orient plans so that roads and chainage run West to East and South to North. ALL Stationing shall progress left to right.

**Pen Weights**

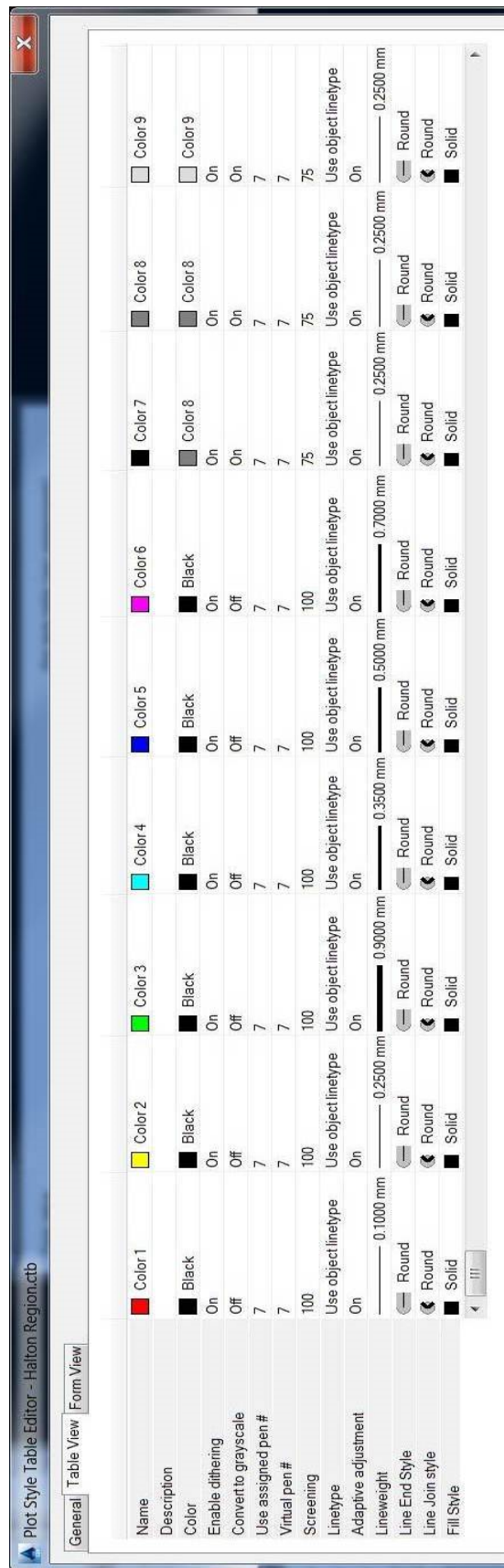
Halton Region utilizes the first 9 colours in AutoCAD as shown in the table below. For screening, the Region utilizes colours #7 (white), #8 (grey) and #9(grey). If more colours are required for screening, assign pen #251 or #254 with a pen width of 0.25mm.

OBJECT COLOUR	LINE WIDTH	% INTENSITY	PLOTTED COLOUR	LAYER or EXAMPLE
(1) Red	0.15mm	100%	Black	XXFINE-PEN
(2) Yellow	0.25mm	100%	Black	XFINE-PEN
(3) Green	0.90mm	100%	Black	XBROAD-PEN
(4) Cyan	0.35mm	100%	Black	FINE-PEN/PR-NOTES
(5) Blue	0.50mm	100%	Black	MED-PEN
(6) Magenta	0.70mm	100%	Black	BROAD-PEN
(7) White	0.25mm (screened)	*75%-100%	Colour 8	ALL EXISTING TOPO
(8) Gray	0.25mm (screened)	*75%-100%	Colour 8	SUI Investigation Layers
(9) Gray	0.25mm (screened)	*75%-100*	Colour 9	EXISTING TOPO
(251-252) Gray	0.25mm (screened)	100%	Object Colour	Pipe Hatching
(254) Gray	0.25mm (screened)	100%	Object Colour	Road Widening Hatch

\*PLOTTER CONFIGURATIONS DIFFER, ADJUST THE SCREENING VALUE ACCORDINGLY TO SUIT MEDIA TYPE AND PLOTTER.

**3.7 Plot Styles**

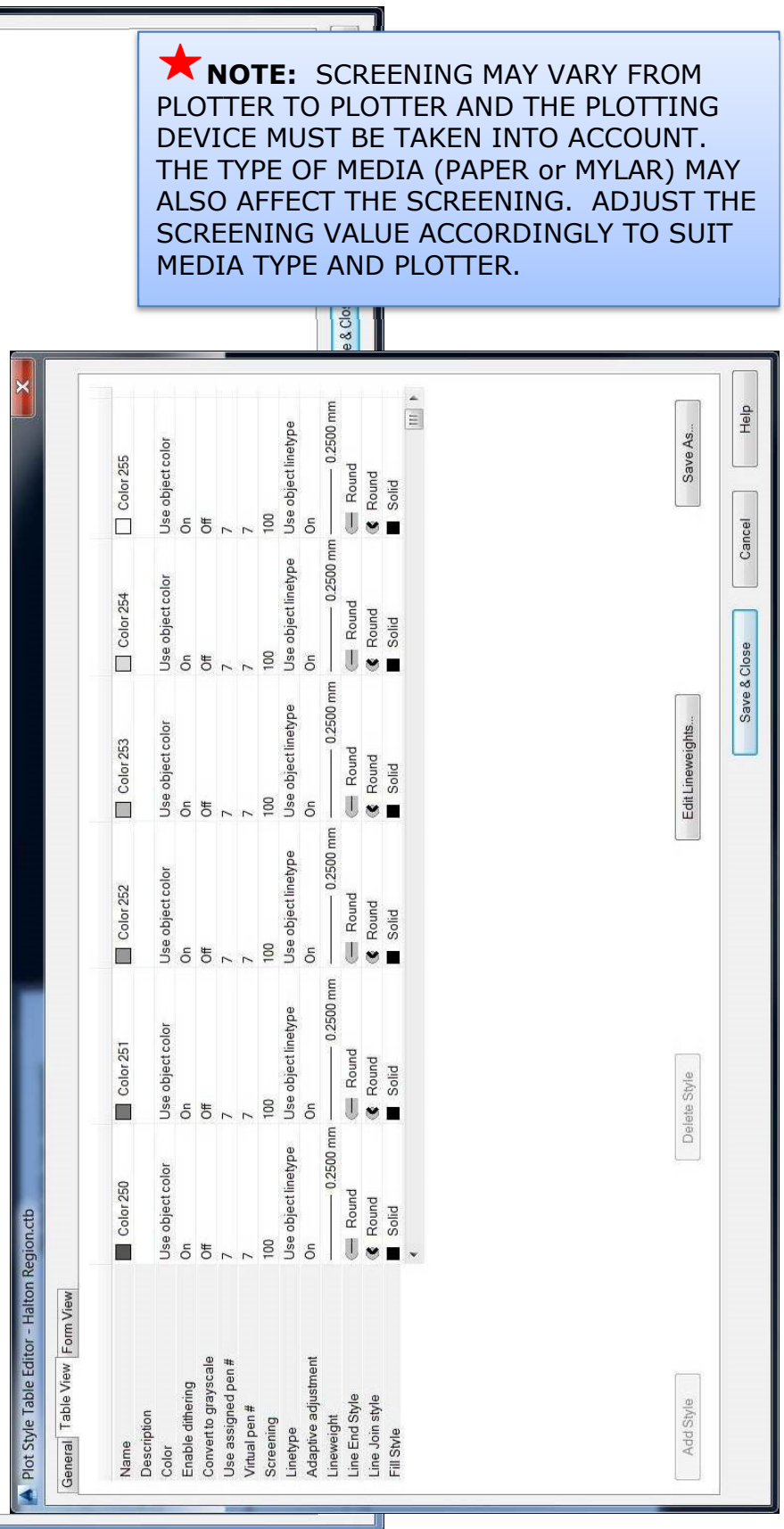
To ensure consistent plotting and viewing, Halton has developed 2 AutoCAD colour tables:  
**Halton Region.ctb**-for full size plots  
**Halton Region-half.ctb**-for half size scaled drawings.



Plot Style Table Editor - Halton Region.ctb

Name	Color	Color 1	Color 2	Color 3	Color 4	Color 5	Color 6	Color 7	Color 8	Color 9
Description	Black	Color 1	Color 2	Color 3	Color 4	Color 5	Color 6	Color 7	Color 8	Color 9
Enable dithering	On	On	On	On	On	On	On	On	On	On
Convert to grayscale	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off
Use assigned pen #	7	7	7	7	7	7	7	7	7	7
Virtual pen #	7	7	7	7	7	7	7	7	7	7
Screening	100	100	100	100	100	100	100	75	75	75
Linetype	Use object linetype	Use object linetype	Use object linetype	Use object linetype	Use object linetype	Use object linetype	Use object linetype	Use object linetype	Use object linetype	Use object linetype
Adaptive adjustment	On	On	On	On	On	On	On	On	On	On
Lineweight	0.1000 mm	0.2500 mm	0.9000 mm	0.3500 mm	0.5000 mm	0.7000 mm	0.2500 mm	0.2500 mm	0.2500 mm	0.2500 mm
Line End Style	Round	Round	Round	Round	Round	Round	Round	Round	Round	Round
Line Join style	Round	Round	Round	Round	Round	Round	Round	Round	Round	Round
Fill Style	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid

**★ NOTE:** SCREENING MAY VARY FROM PLOTTER TO PLOTTER AND THE PLOTTING DEVICE MUST BE TAKEN INTO ACCOUNT. THE TYPE OF MEDIA (PAPER or MYLAR) MAY ALSO AFFECT THE SCREENING. ADJUST THE SCREENING VALUE ACCORDINGLY TO SUIT MEDIA TYPE AND PLOTTER.



Plot Style Table Editor - Halton Region.ctb

Name	Color	Color 250	Color 251	Color 252	Color 253	Color 254	Color 255
Description	Color 250	Color 251	Color 252	Color 253	Color 254	Color 255	Color 255
Enable dithering	On	On	On	On	On	On	On
Convert to grayscale	Off	Off	Off	Off	Off	Off	Off
Use assigned pen #	7	7	7	7	7	7	7
Virtual pen #	7	7	7	7	7	7	7
Screening	100	100	100	100	100	100	100
Linetype	Use object linetype	Use object linetype	Use object linetype	Use object linetype	Use object linetype	Use object linetype	Use object linetype
Adaptive adjustment	On	On	On	On	On	On	On
Lineweight	0.2500 mm	0.2500 mm	0.2500 mm	0.2500 mm	0.2500 mm	0.2500 mm	0.2500 mm
Line End Style	Round	Round	Round	Round	Round	Round	Round
Line Join style	Round	Round	Round	Round	Round	Round	Round
Fill Style	Solid	Solid	Solid	Solid	Solid	Solid	Solid

### 3.8 Symbol/Blocks/Drawing Sheet Libraries

All symbology, typical project sheets and linetypes are available for download.

### 3.9 Linetypes

Within Halton templates and drawings, all layers have been assigned specific linetypes.

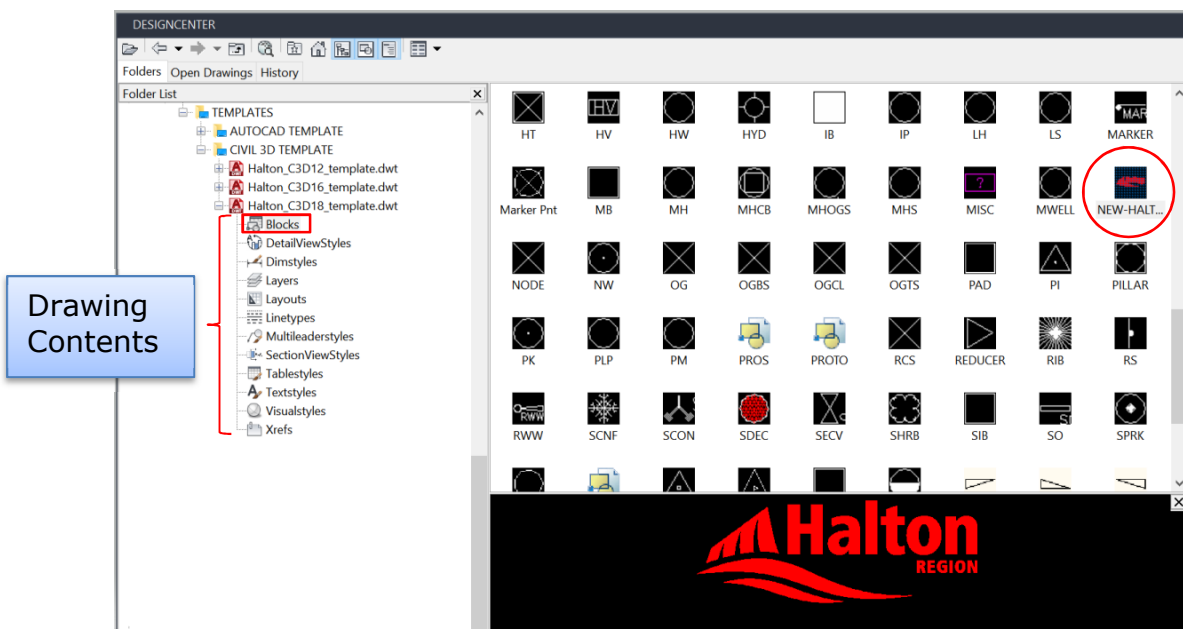
If linetypes (other than continuous) are used they shall be set BYLAYER only, and some instances by individual entities. A global Linetype scale of 1.0 is to be used. Within the provided templates and drawings, the layers have been assigned specific linetypes.

Refer to Chapter 10, Series 50-53. Linetypes should appear as “bylayer” where practical Set your PSLTSCALE to 0 (OFF) This AutoCAD variable will make the linetype appear similar in both model space and paper space.

### 3.10 Design Center Command

Autodesk’s Design Center provides access to content from another drawing or template such as blocks, dimstyles, layers, linetypes, text styles and other drawing content as shown below.

Select, drag and drop to insert into your current drawing.



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### 3.11 Survey Code Data Listing

The following section contains the database listings for the Carlson Survey Software as utilized by the Region of Halton Survey Services Department. This information is used to construct an AutoCAD 2D and 3D file that will produce topographical drawings of the topographic survey. The headings for the listings are discussed in the following:

- **CODE**  
This field indicates the terms that the surveyors use to represent physical detail in the field.
- **DESCRIPTION**  
An explanation of the code in question.
- **BLOCK/LINE**  
Indicates if the CODE is a line or a block.
- **LAYER**  
The AutoCAD layer that the CODE (Block/Line) is assigned to.
- **ENTITY**  
Indicates if the entity is a point or a 3D polyline.
- **LINETYPE**  
Linetype is assigned BYLAYER.

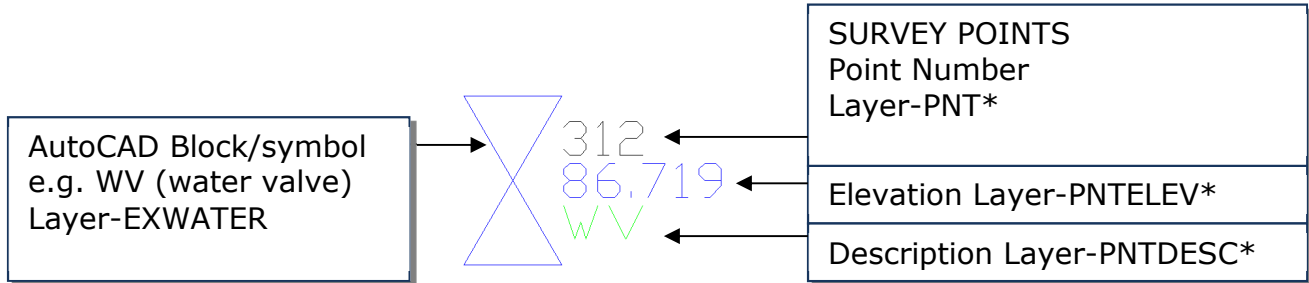
Code	Full Name	Layer	Symbol	Linetype	Entity
<b>300ST</b>	300x450mm SHARKS TOOTH	EXPMARKS	EX300X450 SHARK TOOTH	BYLAYER	Point
<b>600ST</b>	600x900mm SHARKS TOOTH	EXPMARKS	EX600X900 SHARK TOOTH	BYLAYER	Point
<b>AFS</b>	AUTOMATIC FLUSHING STATION	EXWATER	AFS	BYLAYER	Point
<b>ARC</b>	AIR RELEASE CHAMBER	EXWATER	ARC	BYLAYER	Point
<b>ARCV</b>	AIR RELEASE CHAMBER VENT	EXWATER	ARCV	BYLAYER	Point
<b>ASP</b>	ASPHALT	EXDETAIL	OG	BYLAYER	Point
<b>B</b>	BELL	EXBELL		BYLAYER	3DPLine
<b>BBOX</b>	BUFFALO BOX	EXWATER-SERVICE	BB	BYLAYER	Point
<b>BFO</b>	BELL FIBER OPTIC	EXBELL-FO		BYLAYER	3DPLine
<b>BH</b>	BORE HOLE	BOREHOLES-PLAN	BH	BYLAYER	Point
<b>BK</b>	BIKE SYM FOR BIKE LANE	EXPMARKS	BIKE	BYLAYER	Point
<b>BL</b>	BASELINE	EXREFPT		BYLAYER	3DPLine
<b>BLDG</b>	BUILDING	EXBLDGS		BYLAYER	3DPLine
<b>BM</b>	BENCH MARK	EXREFPT	BM	BYLAYER	Point
<b>BMH</b>	BELL MAN HOLE	EXBELL	BMH	BYLAYER	Point
<b>BOL</b>	BOLLARD	EXDETAIL	BOL	BYLAYER	Point
<b>BOLD</b>	BOULDER	EXDETAIL	BOLD	BYLAYER	Point
<b>BP</b>	BELL POLE	EXBELL	BP	BYLAYER	Point
<b>BPED</b>	BELL PEDASTAL	EXBELL	BPED	BYLAYER	Point
<b>BS</b>	BUS SHELTER	EXBLDGS		BYLAYER	3DPLine
<b>BWALL</b>	BOTTOM OF RETAINING WALL @ GROUND	EXWALL		BYLAYER	3DPLine
<b>C</b>	CABLE	EXTV		BYLAYER	3DPLine
<b>CAB</b>	CABLE CABINET FOR BELL, ROGERS, COGECO, HYDRO, ETC	EXMISC	CAB	BYLAYER	Point
<b>CB</b>	CATCH BASIN	EXSTM	CB	BYLAYER	Point
<b>CBMH</b>	CATCH BASIN MANHOLE	EXSTM	CBMH	BYLAYER	Point
<b>CBOX</b>	CURB BOX	EXWATER-SERVICE	CBOX	BYLAYER	Point
<b>CC</b>	CUT CROSS	EXREFPT	CC	BYLAYER	Point
<b>CCG</b>	CONC. CURB AND GUTTER	EXROAD		BYLAYER	3DPLine
<b>CFO</b>	CABLE TV FIBER OPTIC	EXTV-FO		BYLAYER	3DPLine
<b>CL</b>	CENTER LINE	EXREFPT		BYLAYER	3DPLine
<b>CM</b>	CONC. MON.	EXREFPT	CM	BYLAYER	Point
<b>CMB</b>	COMMUNITY MAIL BOX	EXDETAIL	CMB	BYLAYER	Point
<b>CNF</b>	CONIFEROUS TREE	EXVEG	CNF	BYLAYER	Point
<b>CO</b>	SANITARY CLEAN OUT- AT OR AROUND PROPERTY LINE (PVC STYLE)	EXSAN	CO	BYLAYER	Point
<b>CONC</b>	CONCRETE	EXDETAIL	OG	BYLAYER	Point
<b>CP</b>	CONTROL POINT	EXREFPT	CP	BYLAYER	Point
<b>CPED</b>	CABLE PEDISTAL	EXTV	CPED	BYLAYER	Point
<b>CR</b>	EDGE OF CREEK	EXDRAIN		BYLAYER	3DPLine
<b>CULV</b>	CULVERT	EXCULVERTS	CULV	BYLAYER	Point
<b>CV</b>	CABLE VAULT-BELL, ROGERS, COGECO, HYDRO, ETC	EXMISC	CV	BYLAYER	Point
<b>D</b>	DITCH	EXDITCH		BYLAYER	3DPLine
<b>DCB</b>	DOUBLE CATCH BASIN	EXSTM	DCB	BYLAYER	Point
<b>DCBMH</b>	DOUBLE CATCHBASIN MANHOLE	EXSTM	DCBMH	BYLAYER	Point
<b>DEC</b>	DECIDUOUS TREE	EXVEG	DEC	BYLAYER	Point
<b>DICB</b>	DITCH INLET CATCH BASIN	EXSTM	DICB	BYLAYER	Point
<b>DMD</b>	DIAMOND SYM FOR BIKE LANE	EXPMARKS	DIAMOND	BYLAYER	Point
<b>DRC</b>	DRAIN RELEASE CHAMBER	EXWATER	DC	BYLAYER	Point
<b>DWY</b>	EDGE OF DRIVEWAY	EXDWY		BYLAYER	3DPLine
<b>E</b>	ELECTRICAL ITEMS- RECEPTICLE, JUNCTION BOX ETC.	EXDETAIL	EOUTLET	BYLAYER	Point
<b>EB</b>	ELEVATION BREAKLINE	OG		BYLAYER	3DPLine
<b>EHH</b>	ELECTRICAL HANDHOLE	EXHYDRO	EHH	BYLAYER	Point
<b>EP</b>	EDGE OF ROAD	EXROAD		BYLAYER	3DPLine
<b>FB</b>	FLOWER BED	EXVEG		BYLAYER	3DPLine

Code	Full Name	Layer	Symbol	Linetype	Entity
FL	FENCE LINE	EXFENCE		BYLAYER	3DPLine
FM	SANITARY FORCEMAIN	EXSAN-FORCEMAIN		BYLAYER	3DPLine
FO	FIBER OPTIC (UNKNOWN)	EXMSC-FO		BYLAYER	3DPLine
FP	FLAG POLE	EXDETAIL	FP	BYLAYER	Point
FST	FLAG STONE MATERIAL	EXDETAIL	OG	BYLAYER	Point
G	GAS LINE	EXGAS		BYLAYER	3DPLine
GATE	GATE	EXDETAIL	GATE	BYLAYER	Point
GB	GABIAN BASKET/WALL (RAP FILLED CAGES)	EXWALL		BYLAYER	3DPLine
GFT	GAS FARM TAP	EXGAS	GFT	BYLAYER	Point
GH	GRAVE HEADSTONE	EXDETAIL	GH	BYLAYER	Point
GP	GUY POLE	EXGP&GW	GP	BYLAYER	Point
GR	GUIDE RAIL	EXGDRAIL		BYLAYER	3DPLine
GRV	GRAVEL	EXDETAIL	OG	BYLAYER	Point
GTP	GAS TEST POST	EXGAS	GTP	BYLAYER	Point
GUT	GUTTER LINE OF CURB	EXGUTTER		BYLAYER	3DPLine
GV	GAS VALVE	EXGAS	GV	BYLAYER	Point
GW	GUY WIRE	EXGP&GW	GW	BYLAYER	Point
H	UNDERGROUND HYDRO	EXHYDRO		BYLAYER	3DPLine
HDG	HEDGE	EXVEG		BYLAYER	3DPLine
HFO	HYDRO FIBER OPTIC	EXHYDRO-FO		BYLAYER	3DPLine
HH	HAND HOLE	EXSIGNALS-INGROUND	HH	BYLAYER	Point
HMH	HYDRO MANHOLE	EXHYDRO	HMH	BYLAYER	Point
HOT	HUB ON TANGENT	EXREFPT	HOT	BYLAYER	Point
HP	HYDRO POLE	EXHYDRO	HP	BYLAYER	Point
HPLS	HYDRO POLE WITH LUMINARE	EXHYDRO	HPLS	BYLAYER	Point
HR	PEDESTRIAN HAND RAIL	EXDETAIL		BYLAYER	3DPLine
HT	HYDRO TOWER	EXHYDRO	HT	BYLAYER	Point
HV	HYDRO VALT	EXHYDRO	HV	BYLAYER	Point
HYD	HYDRANT	EXWATER	HYD	BYLAYER	Point
IB	IRON BAR	EXREFPT	IB	BYLAYER	Point
ILS	INTERLOCKING STONE	EXDETAIL	OG	BYLAYER	Point
IP	IRON PIPE	EXREFPT	IP	BYLAYER	Point
KS	CONCRETE KILL STRIP	EXROAD		BYLAYER	3DPLine
LBKP	LEFT BIKE PATH	EXBKPATH		BYLAYER	3DPLine
LBS	LEFT BOTTOM SLOPE	EXBOTSPL		BYLAYER	3DPLine
LC	LEFT CONC.CURB & GUTTER	EXROAD		BYLAYER	3DPLine
LCR	LEFT EDGE OF CREEK	EXDRAIN		BYLAYER	3DPLine
LD	LEFT DITCH	EXDITCH		BYLAYER	3DPLine
LDWY	LEFT DRIVEWAY	EXDWY		BYLAYER	3DPLine
LEP	LEFT EDGE OF PAVEMENT	EXROAD		BYLAYER	3DPLine
LFL	LEFT FENCE LINE	EXFENCE		BYLAYER	3DPLine
LKS	LEFT CONCRETE KILLSTRIP	EXROAD		BYLAYER	3DPLine
LOG	LEFT ORIGINAL GROUND	OG		BYLAYER	3DPLine
LS	LIGHT STANDARD	EXHYDRO	LS	BYLAYER	Point
LSHLD	LEFT SHOULDER	EXSHLD		BYLAYER	3DPLine
LSW	LEFT SIDEWALK	EXSWK		BYLAYER	3DPLine
LTA	EX. LEFT TURN ARROW	EXPMARKS	EXLTARROW	BYLAYER	Point
LTS	LEFT TOP SLOPE	EXTOPSLP	OGTS	BYLAYER	3DPLine
LWALL	LEFT WALL	EXWALL		BYLAYER	3DPLine
MB	MAIL BOX	EXDETAIL	MB	BYLAYER	Point
MH	MANHOLE	EXSAN	MH	BYLAYER	Point
MHS	MANHOLE STORM	EXSTM	MHS	BYLAYER	Point
MISC	MISCELLANEOUS CODE	EXDETAIL	MISC	BYLAYER	Point
MKR	911 MARKER	EXDETAIL	MARKER	BYLAYER	Point

Code	Full Name	Layer	Symbol	Linetype	Entity
<b>MW</b>	MONITORING WELL	EXDETAIL	MWELL	BYLAYER	Point
<b>NW</b>	NAIL N WASHER	EXREFPT	NW	BYLAYER	Point
<b>OG</b>	ORIGINAL GROUND	OG	OG	BYLAYER	Point
<b>OGBS</b>	ORIGINAL GROUND BOTTOM SLOPE	OGBS	OGBS	BYLAYER	Point
<b>OGCL</b>	ORIGINAL GROUND CENTRE LINE	OGCL	OGCL	BYLAYER	3DPline
<b>OGS</b>	OIL, GRIT SEPARATOR MANHOLE	EXSTM	OGSMH	BYLAYER	Point
<b>OGTS</b>	ORIGINAL GROUND TOP SLOPE	OGTS	OGTS	BYLAYER	Point
<b>OLTSTA</b>	ROUNDAABOUT-LEFT TURN, STRAIGHT THROUGH ARROW	EXPMARKS	EXLTSTRTHRU	BYLAYER	Point
<b>ORTSTA</b>	ROUNDAABOUT-RIGHT TURN, STRAIGHT THROUGH ARROW	EXPMARKS	EXLTSTRTHRU	BYLAYER	Point
<b>PAD</b>	CONCRETE PAD	EXDETAIL	SPT0	BYLAYER	3DPline
<b>PCONC</b>	PATTERN CONCRETE	EXDETAIL	OG	BYLAYER	Point
<b>PI</b>	POINT OF INTERSECTION	EXREFPT	PI	BYLAYER	Point
<b>PIV</b>	POST INDICATOR VALVE (SMALL HYDRANT USED IN INDUSTRY/SAN LIFT STATIONS)	EXWATER	PIV	BYLAYER	Point
<b>PK</b>	PK NAIL	EXREFPT	PK	BYLAYER	Point
<b>PL</b>	PROPERTY LINE	PROPERTY		BYLAYER	3DPline
<b>PLR</b>	PILLAR	EXDETAIL	PILLAR	BYLAYER	Point
<b>PLS</b>	PRIVATE LIGHT POLE	EXDETAIL	PLP	BYLAYER	Point
<b>PM</b>	PARKING METER	EXDETAIL	PM	BYLAYER	Point
<b>PO</b>	EDGE OF POND	EXDRAIN		BYLAYER	3DPline
<b>PS</b>	POWER SUPPLY CABINET	EXSIGNALS-ABOVE	EXPSC	BYLAYER	Point
<b>PSW</b>	PAINT SOLID WHITE	EXPMARKS		CONTINUOUS	3DPline
<b>PSY</b>	PAINT SOLID YELLOW	EXPMARKS		CONTINUOUS	3DPline
<b>RAP</b>	RIP RAP AREA (5' CRUSHED OR RIVER ROCK)	EXDETAIL		BYLAYER	3DPline
<b>RBKP</b>	RIGHT BIKE PATH	EXBKPATH		BYLAYER	3DPline
<b>RBS</b>	RIGHT BOTTOM SLOPE	EXBOTSPL		BYLAYER	3DPline
<b>RC</b>	RIGHT CONC. CURB & GUTTER	EXROAD		BYLAYER	3DPline
<b>RCS</b>	RAILWAY CROSS SIGN	EXDETAIL	RCS	BYLAYER	Point
<b>RD</b>	RIGHT DITCH	EXDITCH		BYLAYER	3DPline
<b>RDWY</b>	RIGHT EDGE DRIVEWAY	EXDWY		BYLAYER	3DPline
<b>REP</b>	RIGHT EDGE PAVEMENT	EXROAD		BYLAYER	3DPline
<b>RFL</b>	RIGHT FENCE LINE	EXFENCE		BYLAYER	3DPline
<b>RIB</b>	ROUND IRON BAR	EXREFPT	RIB	BYLAYER	Point
<b>RKS</b>	RIGHT CONCRETE KILLSTRIP	EXROAD		BYLAYER	3DPline
<b>RLC</b>	RED LIGHT CAMERA ON POLE	EXSIGNALS-ABOVE	RLCP	BYLAYER	Point
<b>RLF</b>	RED LIGHT CAMERA FLASH ON POLE	EXSIGNALS-ABOVE	RLCFP	BYLAYER	Point
<b>ROB</b>	ROW OF BUSH	EXVEG		BYLAYER	3DPline
<b>ROG</b>	RIGHT ORIGINAL GROUND	OG		BYLAYER	3DPline
<b>ROW</b>	RIGHT OF WAY	PROPERTY		BYLAYER	3DPline
<b>RRX</b>	EX. RAILWAY CROSSING ROAD MARKING	EXPMARKS	EXRRX	BYLAYER	Point
<b>RS</b>	ROAD SIGN	EXRDSIGNS	RS	BYLAYER	Point
<b>RSHLD</b>	RIGHT SHOULDER	EXSHLD		BYLAYER	3DPline
<b>RSW</b>	RIGHT SIDEWALK	EXSWK		BYLAYER	3DPline
<b>RTA</b>	EX. RIGHT TURN ARROW	EXPMARKS	EXRTARROW	BYLAYER	Point
<b>RTS</b>	RIGHT TOP SLOPE	EXTOPSLP		BYLAYER	3DPline
<b>RWALL</b>	RIGHT WALL	EXWALL		BYLAYER	3DPline
<b>RWW</b>	RAILROAD WIG-WAG	EXDETAIL	RWW	BYLAYER	Point
<b>RWY</b>	RAILWAY LINE (TOP OF RAIL)	EXDETAIL		BYLAYER	3DPline
<b>S</b>	SWALE	EXDITCH		BYLAYER	3DPline
<b>SAN</b>	SANITARY SEWER	EXSAN		BYLAYER	3DPline
<b>SCNF</b>	CONIFEROUS TREE SIGNIFICANT	EXVEG-SIGNIFICANT	SCNF	BYLAYER	Point
<b>SCON</b>	SIAMESE CONNECTION	EXWATER	SCON	BYLAYER	Point
<b>SDEC</b>	DECIDUOUS TREE-SIGNIFICANT	EXVEG-SIGNIFICANT	SDEC	BYLAYER	Point
<b>SECV</b>	SECONDARY VALVE	EXWATER	SECV	BYLAYER	Point

Code	Full Name	Layer	Symbol	Linetype	Entity
SFV	SANITARY FORCEMAIN VALVE	EXSAN-FORCEMAIN	SFV	BYLAYER	Point
SFVB	SAN FORCEMAIN VALVE BOX ONLY TO DENOTE CHANGE IN DIR/TRACER WIRE ACCESS	EXSAN-FORCEMAIN	EXSFVB	BYLAYER	Point
SFVC	SANITARY FORCEMAIN VALVE CHAMBER	EXSAN-FORCEMAIN	SFVC	BYLAYER	Point
SHRB	SHRUB	EXVEG	SHRB	BYLAYER	Point
SIB	STANDARD IRON BAR	EXREFPT	SIB	BYLAYER	Point
SL	SUMP LINE-OUTLET LOCATION IN DITCH	EXDETAIL	SL	BYLAYER	Point
SLTA	EX. STRAIGHT THRU, LEFT TURN ARROW	EXPMARKS	EXSTRLTARROW	BYLAYER	Point
SO	SIGN-OTHER	EXDETAIL	SO	BYLAYER	Point
SPRK	SPRINKLER HEAD	EXDETAIL	SPRK	BYLAYER	Point
SRTA	EX. STRAIGHT THRU, RIGHT TURN ARROW	EXPMARKS	EXSTRRTARROW	BYLAYER	Point
STA	EX. STRAIGHT THRU ARROW	EXPMARKS	EXSTRARROW	BYLAYER	Point
STK	WOODEN STAKE	EXREFPT	STK	BYLAYER	Point
STM	STORM SEWER	EXSTM		BYLAYER	3DPLine
STOP	STOP BAR	EXPMARKS		CONTINUOUS	3DPLine
STP	STUMP	EXVEG	STP	BYLAYER	Point
SW	SIDEWALK	EXSWK		BYLAYER	3DPLine
T	TRAFFIC U/G	EXSIGNALS-INGROUND		BYLAYER	3DPLine
TB	TELEPHONE BOOTH	EXBELL	TB	BYLAYER	Point
TCP	TEMP CONTROL POINT	EXREFPT	TCP	BYLAYER	Point
TEMH	TRAFFIC ELEC. MH	EXSIGNALS-INGROUND	TEMH	BYLAYER	Point
TFO	TRAFFIC FIBER OPTIC	EXSIGNALS-INGROUND-FO		BYLAYER	3DPLine
TL	TRAFFIC LIGHT STANDARD	EXSIGNALS-ABOVE	TL	BYLAYER	Point
TLP	TRAFFIC LOOPS	EXSIGNALS-INGROUND		dashed	3D & 2D
TLS	TRAFFIC LIGHT W/LUMINAIRE	EXSIGNALS-ABOVE	TLS	BYLAYER	Point
TP	TELEGRAPH POLE	EXMSC	TP	BYLAYER	Point
TPAD	TACTILE PAD (ACCESSIBILITY REQUIREMENT)	EXDETAIL		BYLAYER	3DPLine
TSC	TRAFFIC SIGNAL CONTROLLER	EXSIGNALS-ABOVE	TC	BYLAYER	Point
TW	TEST WELL	EXDETAIL	TWELL	BYLAYER	Point
TWALL	TOP OF RETAINING WALL	EXWALL		BYLAYER	3DPLine
UA	UTURN ARROW	EXPMARKS	EXU-TURN	BYLAYER	Point
VCI	VALVE CHAMBER-IRRIGATION SYSTEMS	EXDETAIL	VCI	BYLAYER	Point
VF	VERTICAL FACE	EXDETAIL		BYLAYER	3DPLine
W	WATER MAIN	EXWATER		BYLAYER	3DPLine
W11	WHITE, 1m LINE 1m GAP	EXPMARKS		PAINT11	3DPLine
W33	WHITE, 3m LINE 3m GAP	EXPMARKS		PAINT33	3DPLine
W36	WHITE, 3m LINE 6m GAP	EXPMARKS		PAINT36	3DPLine
W37	WHITE, 3m LINE 7m GAP	EXPMARKS		PAINT37	3DPLine
W39	WHITE, 3m LINE 9m GAP	EXPMARKS		PAINT39	3DPLine
WALL	RETAINING WALL	EXWALL		BYLAYER	3DPLine
WELL	WELL	EXDETAIL	WELL	BYLAYER	Point
WL	WATER LEVEL	EXDRAIN	OG	BYLAYER	Point
WMC	WATER METER CHAMBER	EXWATER	WMC	BYLAYER	Point
WV	WATER VALVE	EXWATER	WV	BYLAYER	Point
WVC	WATER VALVE CHAMBER	EXWATER	WVC	BYLAYER	Point
Y11	YELLOW, 1m LINE 1m GAP	EXPMARKS		PAINT11	3DPLine
Y33	YELLOW, 3m LINE 3m GAP	EXPMARKS		PAINT33	3DPLine
Y36	YELLOW, 3m LINE 6m GAP	EXPMARKS		PAINT36	3DPLine
Y37	YELLOW, 3m LINE 7m GAP	EXPMARKS		PAINT37	3DPLine
Y39	YELLOW, 3m LINE 9m GAP	EXPMARKS		PAINT39	3DPLine

### 3.12 Survey Points and Block Scales



In order to control visibility on the screen, SURVEY POINTS will be placed on the following layers and the symbology will be on their appropriate layers, as illustrated above.

Layer Name	Description
PNTNO	Point Number
PNTELEV	Point Elevation
PNTDESC	Point Description
PNT*-EXCULVERTS	All Existing Culverts
PNT*-EXWATER	All Existing Watermain Points
PNT*-EXSAN	All Existing Sanitary Points
PNT*-EXSAN-FORCEMAIN	All Existing Sanitary Forcemain Points
PNT*-STORM SEWER	All Existing Storm Points
PNT*-EXVEG	All Existing Vegetation Points

All sizes for blocks, lines and scales to patterns are for a final plot scale 1:500. For other final plot scale requirements rescale all blocks (except the vegetation blocks) within the drawing file.

Survey blocks are to be inserted on the layer they will reside on at a scale of 1 for 1:500 drawings. They will assume the properties of their insertion layer. ATTDISP must be set to NORMAL or ON to view the tag description

Scale	1:500	1:250	1:300	1:200
Block Scale Ratio	1.0	0.5	0.6	0.4

### 3.13 Workflow for a Typical Plan and Profile Drawing for Sanitary Sewer or Watermain Replacement Project

Workflow below is based on 1:500 (PLAN) and 1:50 (PROFILE) scales. Approval to use a different scale due to scope of work must be given by Project Manager. If a different scale is used, the Consultant is responsible to ensure that all blocks are scaled appropriately. LTscales are to be adjusted and any other adjustments are to be made to ensure that the drawings meet the Region’s requirements.

**Halton Region will carry out a CADD compliance (quality assurance) review during all drawing review phases to ensure adherence to these CADD standards**

Check Box	Task	CADD Standards Chapter/Series	Source
<input type="checkbox"/>	If aerial mapping is used, the aerial mapping drawing is inserted into the pre engineering survey drawing to produce a common base drawing. The combined drawing is then imported into Halton Civil 3D template	Chapter 2	Mapping company
<input type="checkbox"/>	Survey information imported into Halton's Civil 3D template	Chapter 3	ROH Survey
<input type="checkbox"/>	Add house numbers and assessment parcels from GIS baseplan	Series 100	Provided by Region as part of project research
<input type="checkbox"/>	Add street names in model space	Series 93	
<input type="checkbox"/>	Compile and draw existing information on baseplan	Applicable series	
<input type="checkbox"/>	Rotate blocks to alignment plan view		
<input type="checkbox"/>	Rotate guy wires and connect to poles		
<input type="checkbox"/>	Label driveways other than asphalt i.e. concrete, pavers or stamped concrete	Series 100	
<input type="checkbox"/>	Label gardens		
<input type="checkbox"/>	Add as constructed information i.e. watermain sewer and utilities from adjoining projects. Use the prefix <b>PRXXXX-AC WATER</b> , Colour 8		
<input type="checkbox"/>	Insert SID aerial mapping. Trace roof lines and other topographical information that is required.		
<input type="checkbox"/>	Add GIS Gas layer (Internal Staff only) (consultant's will circulate drawings to all applicable utilities)	Series 700-701	Provided by Region as part of project research

Check Box	Task	CADD Standards Chapter/Series	Source
<input type="checkbox"/>	Add CH or CVC Regulatory Limits	Series 101	Provided by Region as part of project research
<input type="checkbox"/>	Create alignments for all streets with labels	Chapter 6	
<input type="checkbox"/>	Create surface from 3D survey information. <ul style="list-style-type: none"> <li>• Drawing Objects e.g. OG, OGCL, MH, MHS</li> <li>• Breaklines (EOP,OGCL,DWYS, SW)</li> </ul>	Chapter 6	
<input type="checkbox"/>	Generate profile for each street (Vertical 1:50)	Chapter 6	
<input type="checkbox"/>	Create pipe network for storm sewer <ul style="list-style-type: none"> <li>• Catch basin leads</li> <li>• Plot storm laterals (if available or contact area municipality)</li> <li>• Label network-plan &amp; profile</li> </ul>	Chapter 6	
<input type="checkbox"/>	Create pipe network for Sanitary sewer <ul style="list-style-type: none"> <li>• Plot sanitary laterals from CCTV reports</li> <li>• Label network-plan &amp; profile</li> </ul>	Chapter 6	
<input type="checkbox"/>	Add existing watermain information <ul style="list-style-type: none"> <li>• From survey</li> <li>• From operating maps</li> <li>• From as constructed (digital or from as constructed drawings)</li> <li>• label-plan &amp; profile</li> </ul>	Series 800	
<input type="checkbox"/>	<p>One plan and profile per tab. All street layouts may be contained in one drawing depending on size of project. For large projects such as road reconstruction, separate the project into multiple drawing files. E.g. Design drawing may contain all plan and profile drawings. Alignment drawing will be its own.</p> <p>Depending on the scope of the project, Separate drawing are required for alignment, removals, reconstruction, pavement elevations, pavement marking, Traffic Signal layout, electrical, structural, landscaping and pavement elevations drawings. See Appendix 4</p> <p>Page layout - In the Region's Civil 3D template, Layout 1 has been set up for a paper size of 914mmx610mm (D+ 36"x24"). Insert plan and profile sheet (see series 80A-80C Typical Sheets) at 0,0,0. While in paper space, create plan, profile, chainage viewport on layer VPORT (no plot layer). Set your viewport scale to 1:500</p>	Chapter 4	

Check Box	Task	CADD Standards Chapter/Series	Source
<input type="checkbox"/>	Insert plan and profile sheet at 0,0,0. (Updated plan and profile sheet) Setup views for each street (1:500) <ul style="list-style-type: none"> <li>Plan (Two crop marks per plan view in model space)</li> <li>Profile</li> <li>Chainage</li> </ul>	Series 80A-80C  Series 93	Download the most current standard sheets.
<input type="checkbox"/>	Set PSLTSCALE to 0 (zero). Linetype dash lengths are based on the drawing units of the space (model or paper) in which the objects were created, scaled by the global LTSCALE factor. In some instances, some linetype scale may have to be adjust to suit certain conditions.		
<input type="checkbox"/>	Insert north arrow (ENGNORTH.DWG) and key plan in paper space	Series 94	
<input type="checkbox"/>	For the key plan, use double street line network and street names. See sample drawing for requirements. May also use a viewport to insert a keyplan. Hatch area of key plan that represents the same area as shown in plan view.	Series 91	Provided by Region as part of project research
<input type="checkbox"/>	Add street names	Series 93	
<input type="checkbox"/>	Add profile elevations to profile view.	Series 94	
<input type="checkbox"/>	Add title block information and appropriate signing block.	Chapter 4	
<input type="checkbox"/>	<ul style="list-style-type: none"> <li>Add removal legend and road restoration details, if applicable.</li> <li>Add Notes REFER TO SHEET X FOR GENERAL NOTES. REFER TO SHEET X FOR RESTORATION DETAILS. REFER TO SHEET X FOR SEDIMENT CONTROL DETAIL REFER TO SHEET X FOR LATERAL CROSS SECTION</li> </ul>	Series 301	
<input type="checkbox"/>	Add match lines with stations and corresponding sheet numbers.	Series 94	
	At this point, design process can start. Design - refer to "Halton Water Wastewater Linear Design Manual".		Download the latest copy. See page 3 for link
<input type="checkbox"/>	Once the preliminary design is complete, the following shall be carried out:  Soil Investigation Utility Circulation Subsurface Utility Investigation (if required) Arborist and Tree Preservation		

Check Box	Task	CADD Standards Chapter/Series	Source
<input type="checkbox"/>	Add borehole information	Series 100	
<input type="checkbox"/>	Add Subsurface Utility Investigation information.		
<input type="checkbox"/>	Add Utility information	Series 700-701	
<input type="checkbox"/>	<b>MANDATORY:</b> Consultant to conduct their own thorough CADD compliance review and a contents review (eTransmit file) prior to sending drawing for review. <b>Drawings will be sent back</b>		
<input type="checkbox"/>	Circulate drawings for review: <b>CADD Compliance Review</b> Denise Serafin, Supervisor of Technical & Design Services <b>Constructability Review</b> Les Dziadula, Supervisor, Construction Services <b>Operations Review</b> Richard Wunder, Operations Support Coordinator		

***IMPORTANT things to follow:***

- NO XCLIP! The Region will NOT accept drawings that use XCLIP.**
- Policy Model Space and Paper Space. Refer to Chapter 4.
- Policy External Referencing. Refer to Chapter 5.
- Plot all drawing and PDF files using Halton’s colour tables. Refer to Chapter 7.
- Complete submittal package. Refer to Chapter 7.

## 4.0 Policy on Model Space and Paper Space

### 4.1 Model Space

For engineering projects, the use of model space and paper space is strongly recommended. All drawing models **MUST** be drawn (existing conditions and proposed design) as one continuous and uniform model (plan and profile) in model space. Annotation may be placed in model space or paper space. Annotations related to the model such as dimensions and notes must be included in the model space so that they are easier to coordinate and revise such as:

- pavement widths
- house numbers
- type of sewer
- utility notes
- start, end of tapers
- crop marks
- curb type

See example on next page or refer to the sample drawings provided in appendices.

### 4.2 Paper Space

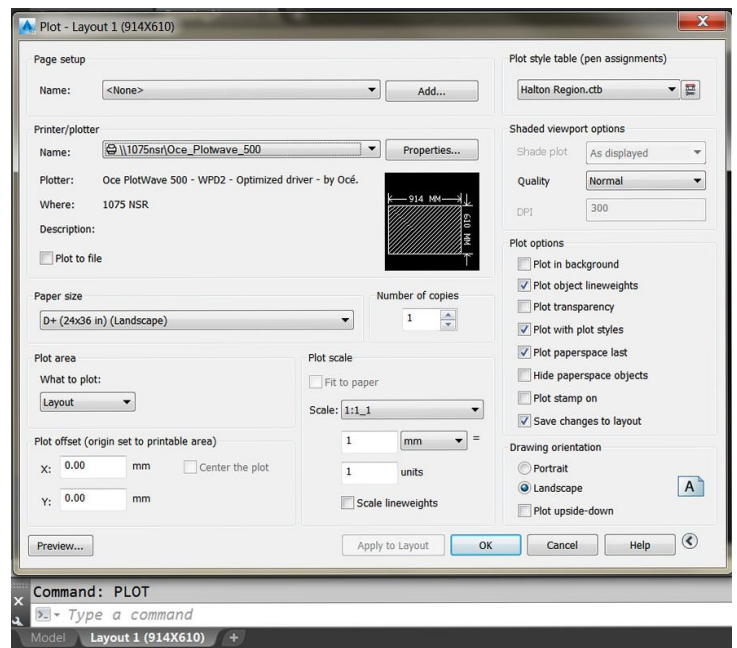
In Paper Space, the layout of specific views i.e. plan, profile and chainage, borders and title blocks (plan and profile sheets) shall be inserted. Insertion point **0,0,0**.

Common elements found in Paper Space

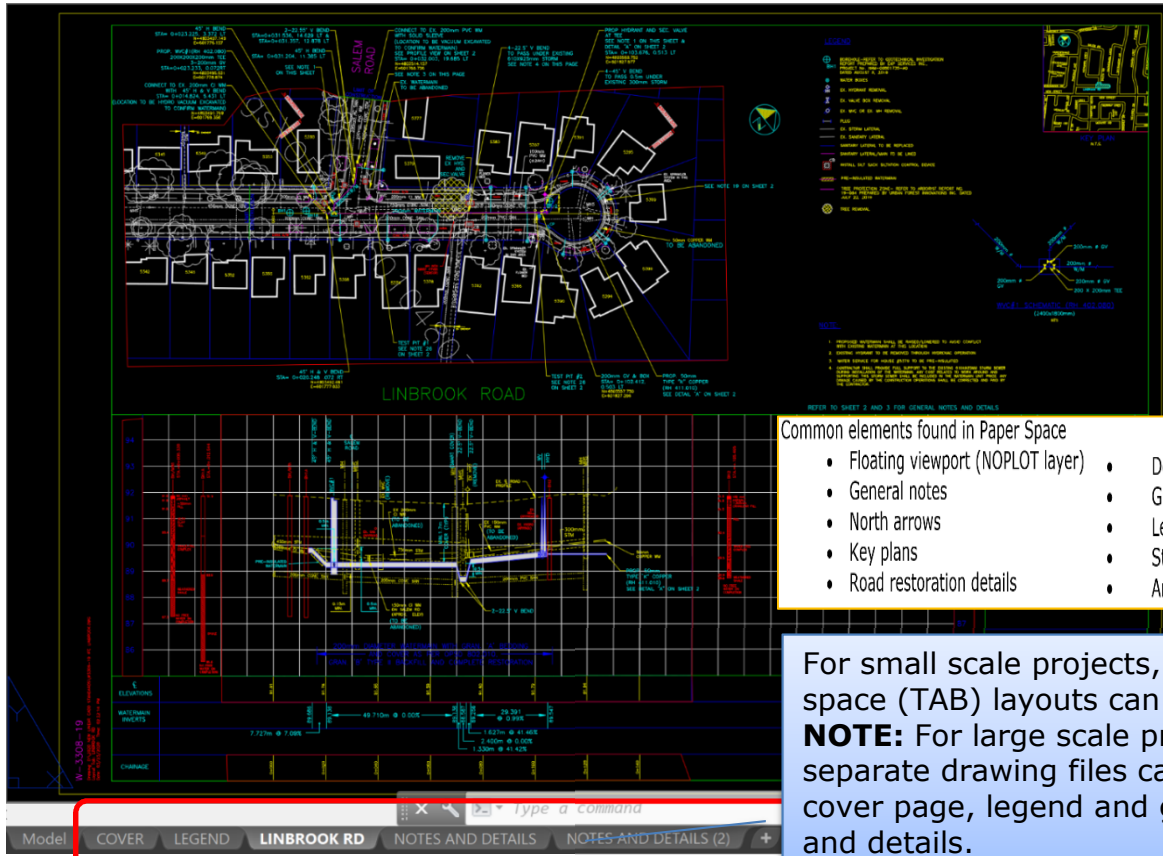
- Floating viewport (VPORT-NO PLOT layer)
- General notes
- North arrows
- Key plans
- Road restoration details
- Details in viewports
- Grid elevations
- Legend information i.e. removal etc
- Street names
- Annotation

**Recommendation:** Place one plan and profile sheet per layout tab. The Region's templates have **one** pre-defined 914x610 (36"x24") layout that can be copied to create more paper space layout tabs. An example of multiple layouts is also illustrated on the next page.

**Note:** **The Region will not accept drawings that use XCLIP**



## 4.3 Typical Plan and Profile Sheet-Multiple Paper Space (TAB) Layouts



- Common elements found in Paper Space
- Floating viewport (NOPLOT layer)
  - General notes
  - North arrows
  - Key plans
  - Road restoration details
  - Details in viewports
  - Grid elevations
  - Legend information i.e. removal etc
  - Street names
  - Annotation

For small scale projects, multiple paper space (TAB) layouts can be used.  
**NOTE:** For large scale projects, separate drawing files can be used for cover page, legend and general notes and details.

For large road reconstruction projects, separate drawings are required for the following:

- Alignments
- Removals
- New Construction
- Typical Cross Sections
- Pavement Markings and Traffic Control Signs
- Pavement Elevations
- Driveway Profiles
- Staging
- Landscaping
- Structural
- Electrical
- Etc.
- All drawings can have Multiple Paper Space (TAB) Layouts

\* Cross sections are required at every 20m stations and at all pavement width transitions (start/end tapers etc.)

1. TP114013-COVER INDEX LEGEND.pdf
2. TP114013-ALIGN.pdf
3. TP114013-REM.pdf
4. TP114013-NC.pdf
5. TP114013-NC-bypass-rd.pdf
6. TP114013-TYP.pdf
7. TP114013-DET.pdf
8. TP114013-STG.pdf
9. TP114013-DWY.pdf
10. TP114013-SDRDS.pdf
11. TP114013-PE.pdf
12. TP114013-PMARKS.pdf
13. STR CN OVERPASS.pdf
14. TP114013-STR CULVERTS.pdf
15. ELECTRICAL.pdf
16. LANDSCAPING.pdf

Example of a submission using eTransmit for a road reconstruction project

## 4.4 Title Block Details

Below is an example of information required on a standard plan and profile sheets.


*NOTE: AT TENDERING STAGE, REMOVE ALL PREVIOUS REVISIONS AS SHOWN BELOW.*

**Design**  
-The REVISIONS area is updated with reviews and other milestones eg. SUBMITTED FOR 30% REVIEW

**Issued for Tender**  
-The REVISIONS area is cleared of all reviews.  
Replaced with ISSUED FOR TENDER  
-If addendum(s) are required, add **Addendum #** to revision area  
-Revision cloud(s) and addendum number(s) are added to drawings

**Issued for Construction**  
-Revision cloud, revision number and content in the revision area is removed  
-The REVISIONS area will have ISSUED FOR CONSTRUCTION

**As Constructed**  
-all revision clouds are removed.  
-Internal staff will have AS CONSTRUCTED  
-Consultants will have AS CONSTRUCTED (CONSULTING FIRM)

<p>TEXT STYLE: L80 LAYER: XFINE-PEN</p> <p>CONSULTANTS</p> <p>HALTON REGION</p>			
	OD/OM/XXXX	A.A.	AS CONSTRUCTED (CONSULTING FIRM)
	OD/OM/XXXX	A.A.	AS CONSTRUCTED
	OD/OM/XXXX	A.A.	ISSUED FOR CONSTRUCTION
1	OD/OM/XXXX	A.A.	ADDENDUM #1
	OD/OM/XXXX	A.A.	ISSUED FOR TENDER
REVISION NOTE			
NO.	DATE	BY	REVISIONS
DESIGN	A.A.	CH'KD	DATE
DRAWN	B.B.	CH'KD	OD/OM/XXXX
SCALE			
1:XXX HORIZ.		0 XX X XX XX	
1:50 VERT.		0 0,5 1 2 3	
REGIONAL		STAMP	
SEE COVER SHEET FOR REGIONAL ACCEPTANCE			
CONSULTANT LOGO			
			
<p>OR MUNICIPALITY AND HALTON LOGO FOR JOINT PROJECTS</p> <p>STANDARD TITLES FOR ROAD, SEWER AND WATERMAIN PROJECTS</p>			
<p>TEXT STYLE: L140 LAYER: MED-PEN</p> <p>TEXT STYLE: L120 LAYER: FINE-PEN</p> <p>EACH SHEET SHALL HAVE INDIVIDUAL LOCATION DESCRIPTION BASED ON PLAN LIMITS. USE NEAREST STREET INTERSECTIONS AS REFERENCE POINTS.</p> <p>TEXT STYLE: L175 LAYER: BROAD-PEN</p> <p>TEXT STYLE: L175 LAYER: BROAD-PEN</p> <p>TEXT STYLE: L175 LAYER: BROAD-PEN</p>			
<p>ROAD RECONSTRUCTION ON SANITARY SEWER REPLACEMENT ON WATERMAIN REPLACEMENT ON <b>DUNCAN DRIVE</b></p> <p>FROM WEBBER DR. TO 110m W OF MOULTREY CRT. STA. 1+050 TO STA. 1+950</p> <p>IN THE TOWN OF HALTON HILLS (GEORGETOWN)</p>			
CONSULTANT FILE NO.		REGIONAL DRAWING NO. FOR REGION USE ONLY	
CONTRACT NO. (W/S/R 1234)		DRAWING NO.	
<b>W-1234B-20</b>		SHEET <b>2</b> OF <b>24</b>	
<p>TEXT STYLE: L140 LAYER: MED-PEN</p> <p>TEXT STYLE: L175 LAYER: BROAD-PEN</p> <p>TEXT STYLE: L175 LAYER: BROAD-PEN</p> <p>TEXT STYLE: L175 LAYER: BROAD-PEN</p>			
<p>LIST ALL PROJECT NUMBERS ASSOCIATED TO PROJECT</p> <p>TEXT STYLE: L175 LAYER: BROAD-PEN</p> <p><b>PROJECT TYPE</b> W-WATERMAIN S-WASTEWATER MAIN R-ROAD WS-WATER AND WASTEWATER MAIN</p> <p>PROJECT NUMBER AND PHASE</p> <p>YEAR</p>			
<p>FOR JOINT PROJECTS WITH MUNICIPALITIES.</p> <p>CONTRACT NO. (PR-2802)</p> <p><b>12-12</b></p> <p>HALTON REGION PROJECT NUMBER</p> <p>AREA MUNICIPALITY PROJECT NUMBER</p>			

## 4.4 Standard Titles and Sheets for a Road Construction Project

Listed below is an **example** of the chronological sheet order for a road reconstruction project. **Sheets and sheet numbering are dependent upon the scope and size of the project. Consult with your Project Manager when setting up your sheets.**

### Plan Sheet Order

### Numbering Series

Title Sheet	
Legend	1 of ..
Item Breakdown and Index	2 of ..
Alignment Data	7 of ..
Removals	12 of ..
Road Reconstruction	29 of ..
Typical Sections & Details	31 of ..
Pavement Elevations	36 of ..
Pavement Markings and Traffic Control Signs	41 of ..
Entrance Profiles	47 of ..

### Stagging

Stage 1	STG1 of STG...
Typical Stagging Sections	STG2 of STG..

### Watermain and Sanitary Sewer (W-Water, S-Sewer) \*\*If applicable

Road Name, STA. X+XXX TO STA. X+XXX	WS1 of WS..
Construction Staging	WS2 of WS..
Foundation Layout	WS3 of WS..

### Structural/Culvert Drawings

General Arrangement	S1 of S..
Construction Staging	S2 of S..
Foundation Layout	S3 of S..
Abutments	S4 of S..
Wing Walls	S5 of S..
Prestressed Girder and Bearings	S6 of S..
Deck Details	S7 of S..
Deck Reinforcement	S8 of S..
Parapet Wall with Sidewalk and Railings	S9 of S..

### Landscaping Drawings

Landscape Plan	L1 of L..
Planting Detail	L6 of L..
Notes and Plant Schedules	L7 OF L..

### Electrical Drawings

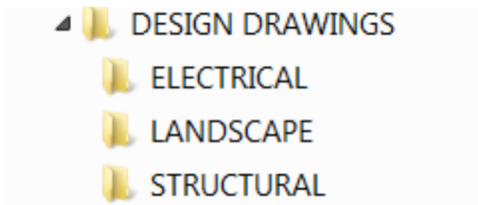
Traffic Signal Layout	E1 of E..
Temporary Traffic Signal Layout	E2 of E..
Traffic Signals Removals	E3 of E..
Street Lighting Layout	E4 of E..
Traffic Signal Wiring and Street Lighting Diagrams	E5 of E..
Temporary Traffic Signal Wiring Diagram	E6 of E..
Lighting and Communication Wiring Diagram	E7 of E..
Electrical Removals	E8 of E..

**PHM-125 are required for all signalized intersections.** Contact your Project Manager for PHM-125 requirements.

## **5.0 Policy on External References**

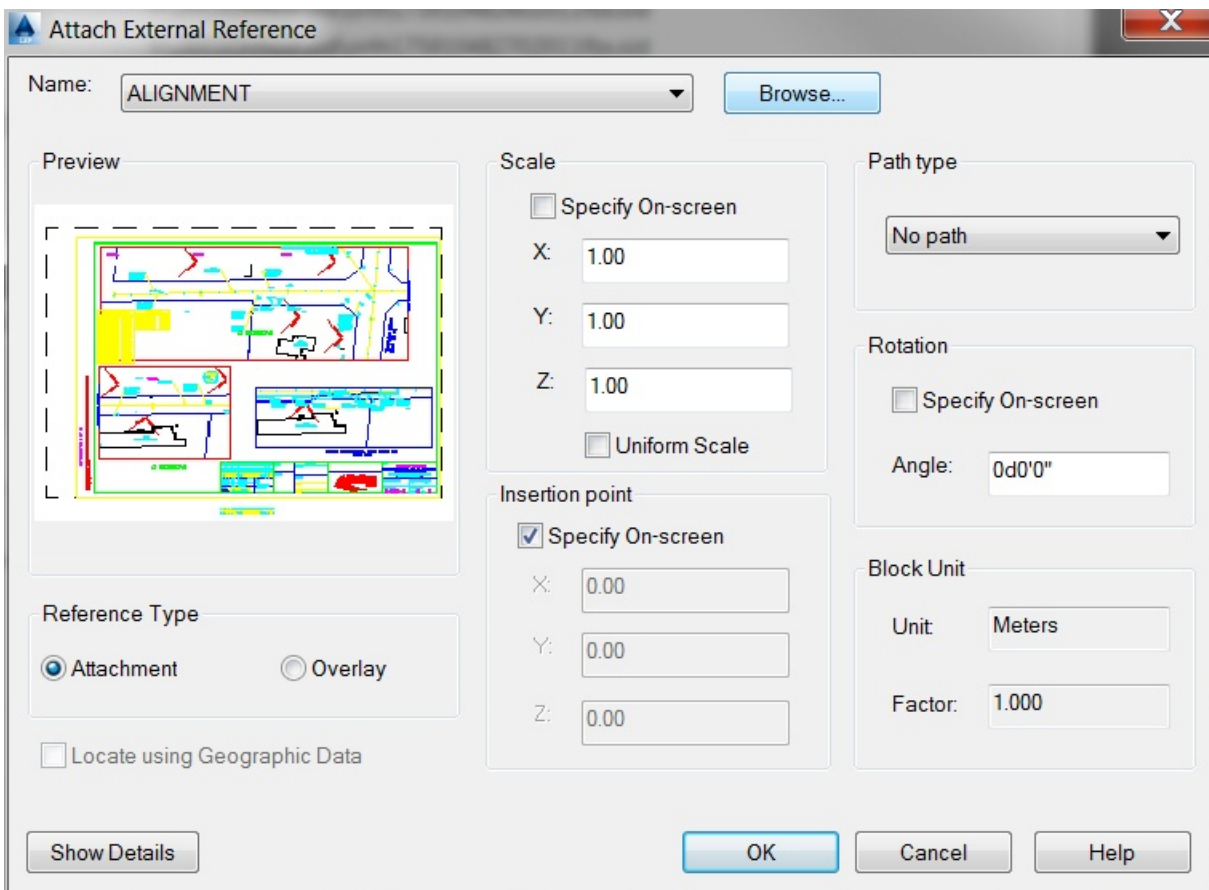
All externally referenced source drawings (xref's) shall be inserted on layer 0. Externally referenced drawings shall not be moved or rotated from the original UTM 6 degree and NAD 83 datum co-ordinate system used in the drawing.

All external reference files shall be located in the same directory as the dependent files within the discipline, so that users do not have to "re-path" Xref's. See illustration below



**MANDATORY**

If drawings are located in separate folders, use **ETransmit** when submitting files. **Select "place all files in one folder" option See chapter 7, section 7.5.**



You can attach any drawing file (DWG, DWF, PDF and DGN files) as an external reference or xref in the current drawing. The Reference type shall be set to **Attachment** and the Path shall be set to **NO PATH** (xref file must be located in the same folder as the current drawing file)

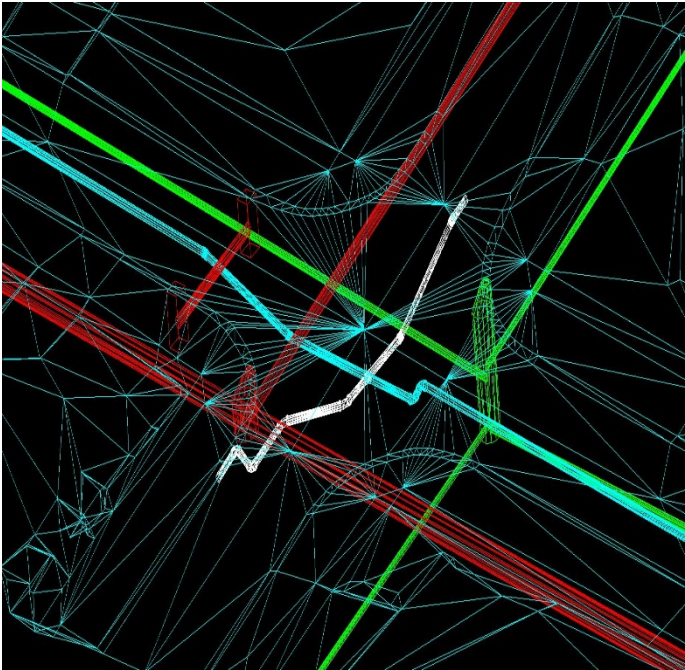
- Keep the parent and child drawings in the same directory
- Set current layer to 0 (zero) and attach the file on that layer.
- An insertion point of 0,0,0, scale 1,1,1 and a rotation of zero.
- Do not control (mix) Xref layer visibility from the parent and the child drawing. It is preferred that the layer controlled in the child drawing.
- Do not bind Xref's in design drawings.
- Use the **bind** option **only** at the "as constructed" stage of the project.

***TIP: Xref's should be used wherever common components of the base plan are used in one or more drawings, so that any changes made to the base plan are automatically updated in all of the associated drawings.***

***IN ALL SUBMITTALS, REFERENCE FILES SHALL BE LOCATED IN THE SAME DIRECTORY AS THE DEPENDANT FILES AND SHALL NOT INCLUDE PATH NAMES IN THE REFERENCE FILE ATTACHMENT.***

***IT IS MANDATORY THAT YOU USE ETRANSMIT FOR DRAWING FILE SUBMITTALS. SEE CHAPTER 7, SECTION 7.5. THERE ARE NO EXCEPTIONS***

## 6.0 Halton Civil 3D Style Kit



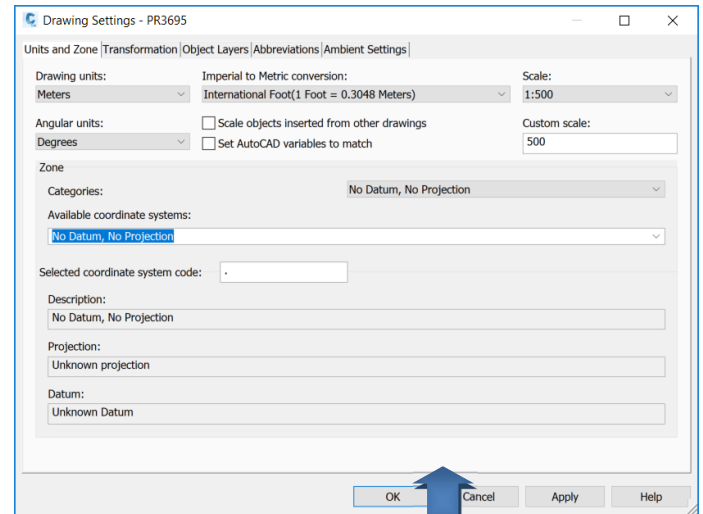
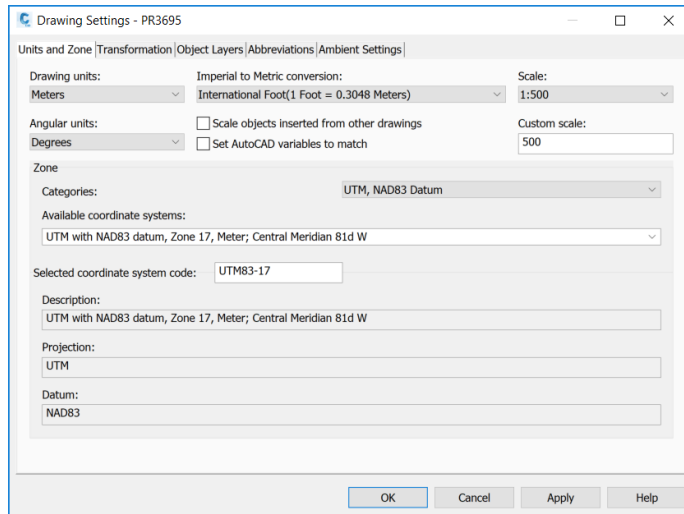
Civil3D styles and settings have been created to address road and sewer projects. Due to limitations with pressure pipe networks, Halton does not utilize this feature. Watermain designs are created using plain AutoCAD entities and commands.

Halton Civil 3D styles and settings are based on the standard Civil3D 2020 template file "\_AutoCAD Civil 3D (Metric) NCS Extended.dwt". All Civil 3D styles created for the Region of Halton have their names prefixed with "\_H\_".

This template **MUST** will be used to start all new Civil 3D projects, or existing projects can be inserted into a drawing (.dwg) file based on this template.

### 6.1 Units and Zone Settings

Under the units and Zone setting tab, set the following parameters as shown below



All survey done by Halton Region are carried out utilizing 6 degree UTM co-ordinate system, NAD 83 datum so there is no need to set a coordinate system. In order to utilize some of Civil 3D features, there will be a need to set the coordinate system to UTM83-17 as shown in the above screen capture.

## 6.2 Civil 3D Drawing Settings & Styles

Civil 3D object and label styles may have nested layers, however for flexibility nested layers have been eliminated from this template. **The user must take care to set objects on the correct Halton standard layer.** For example Civil 3D has one object layer for all pipe labels. The user must set the labels to the correct layer for storm, sanitary, plan or profile, proposed or existing.

A Civil 3D Pipe network contains five AutoCAD layer settings for pipe, structure, plan, profile, and section. As this template does not use nested Civil 3D style layering to set the above layers, it is recommended that the AutoCAD layers be set in a Civil 3D pipe network. The template includes a Civil 3D pipe network for proposed and existing storm and sanitary as an example.

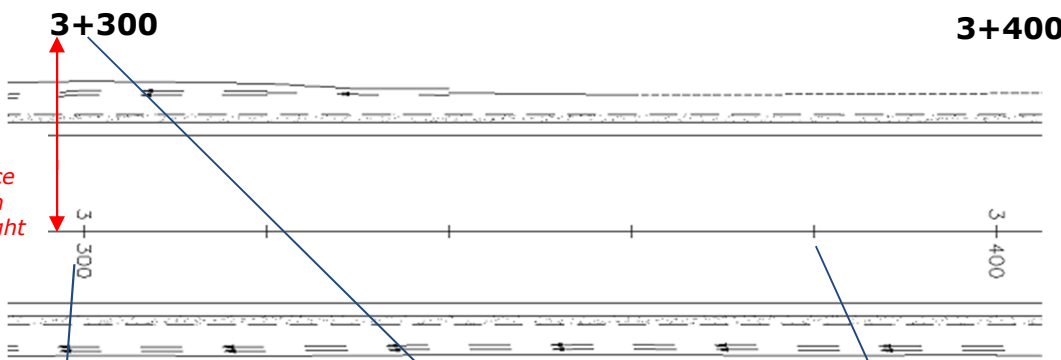
The following figures illustrate the default drawing settings and styles contained in Halton’s Civil 3D template.

Units and Zone   Transformation   Object Layers   Abbreviations   Ambient Settings						Units and Zone   Transformation   Object Layers   Abbreviations   Ambient Settings					
Object	Layer	Modifier	Value	Locked		Object	Layer	Modifier	Value	Locked	
Alignment	ALIGN	Suffix	-*			Parcel Segment	C-PROP-LINE	None			
Alignment-Labeling	ALIGN	Suffix	-*			Parcel Segment-Labeling	0	None			
Alignment Table	MED-PEN	None				Parcel Table	MED-PEN	None			
Appurtenance	0	None				Pipe	PR-SAN	None			
Appurtenance-Labeling	0	None				Pipe-Labeling	PR-NOTES	None			
Assembly	C-ROAD-ASSM	None				Pipe and Structure Table	MED-PEN	None			
Building Site	0	None				Pipe Network Section	PRFSAN	None			
Cant View	0	None				Pipe or Structure Profile	PRFSAN	None			
Catchment	0	None				Point Table	MED-PEN	None			
Catchment-Labeling	0	None				Pressure Network Section	0	None			
Corridor	C-ROAD-CORR	None				Pressure Part Profile	0	None			
Corridor Section	XFG	None				Pressure Part Table	0	None			
Feature Line	C-TOPO-FEAT	None				Pressure Pipe	0	None			
Fitting	0	None				Pressure Pipe-Labeling	0	None			
Fitting-Labeling	0	None				Profile	PRFROAD	Prefix	*-		
General Note Label	FINE-PEN	None				Profile-Labeling	PRFROAD	Prefix	*-		
General Segment Label	FINE-PEN	None				Profile View	PRF-GRID	None	*-		
Grading	C-TOPO-GRAD	None				Profile View-Labeling	PRF-GRIDTEXT	None	*-		
Grading-Labeling	0	None				Sample Line	XFINE-PEN-NO PLOT	None			
Grid Surface	C-TOPO	None				Sample Line-Labeling	XFINE-PEN-NO PLOT	None			
Grid Surface-Labeling	C-TOPO-TEXT	None				Section	XFG	None			
Interference	PR-STM	None				Section-Labeling	XGRIDTEXT	None			
Intersection	0	None				Section View	XGRID	None			
Intersection-Labeling	0	None				Section View-Labeling	XGRIDTEXT	None			
Mass Haul Line	0	None				Section View Quantity Takeoff Table	XGRIDTEXT	None			
Mass Haul View	0	None				Sheet	XFINE-PEN-NO PLOT	None			
Match Line	MED-PEN	None				Structure	PR-SAN	None			
Match Line-Labeling	FINE-PEN	None				Structure-Labeling	PR-NOTES	None			
Material Section	XFG	None				Subassembly	C-ROAD-ASSM	None			
Material Table	MED-PEN	None				Superelevation View	0	None			
Parcel	C-PROP	None				Surface Legend Table	MED-PEN	None			
Parcel-Labeling	0	None				Survey Figure	V-SURV-FIGR	None			
Parcel Segment	C-PROP-LINE	None				Survey Figure-Labeling	0	None			
						Survey Figure Segment Label	0	None			
						Survey Network	V-SURV-NTWK	None			
						Tin Surface	C-TOPO	None	*-		
						Tin Surface-Labeling	C-TOPO-TEXT	None	*-		
						View Frame	XFINE-PEN-NO PLOT	None			
						View Frame-Labeling	XFINE-PEN-NO PLOT	None			

## ALIGNMENT STYLES

**\_H\_Layout**

*User to set offset distance depending on viewport height*



**\_H\_ Maj Stat**  
perp=100m

**\_H\_ Maj Stat Par**  
**Road Projects Only**  
Distance from centreline varies project to project.  
User to set offset distance.


**\_H\_Minor**  
tick=20

**3+300**

**3+400**

**\_H\_N\_E**


N=4826825.714  
E=591314.942



BH 14

**\_H\_STA OS**

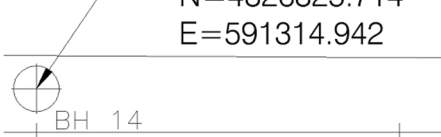
STA=3+360.000  
O/S=-2.394 L



BH 14

**\_H\_STA OSNE**

STA=3+360.000  
O/S=-2.394 L  
N=4826825.714  
E=591314.942



BH 14







































**Alignment**

- Alignment Styles
  - \_H\_Generic
  - \_H\_Layout
  - H\_ROW
  - Standard
- Design Checks
- Label Styles
  - Label Sets
    - \_H\_Centreline
    - \_H\_Curb
    - \_No Labels
    - Standard
- Station
- Station Offset
  - \_H\_N E
  - \_H\_Sta OS
  - \_H\_Sta OS N E
  - Standard
  - Expressions
- Line
  - Curve
    - \_H\_Curve data
    - \_H\_Radius
    - \_H\_Radius point
    - Standard
    - Expressions
  - Spiral
  - Tangent Intersection
  - Point of Intersection
- Table Styles
- Commands

## POINTS

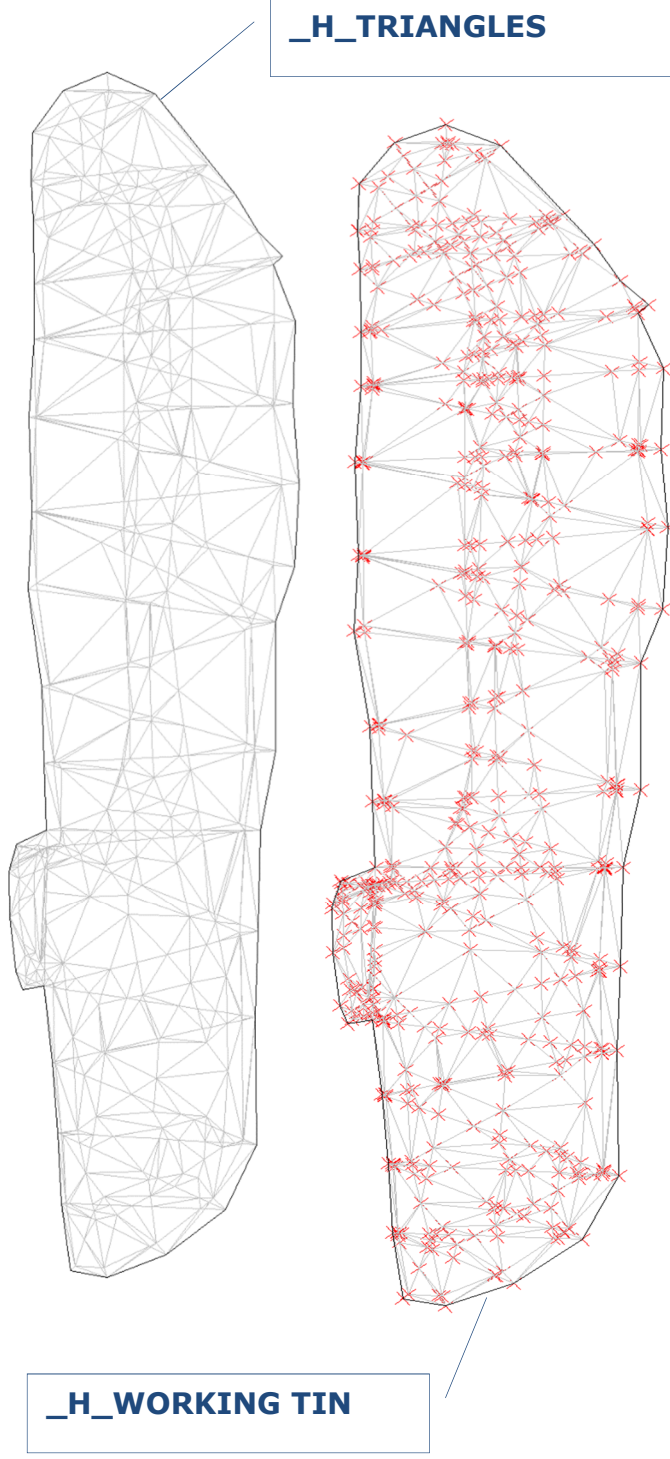
- Point Styles
  - \_H\_BH
  - \_H\_BM
  - \_H\_BMH
  - \_H\_BOL
  - \_H\_BOLD
  - \_H\_BP
  - \_H\_BPED
  - \_H\_BPG
  - \_H\_BS
  - \_H\_CB
  - \_H\_CBMH
  - \_H\_CBOX
  - \_H\_CC
  - \_H\_CM
  - \_H\_CNF
  - \_H\_CP
  - \_H\_CPED
  - \_H\_CULV
  - \_H\_DCB
  - \_H\_DEC
  - \_H\_FP
  - \_H\_GATE
  - \_H\_Generic | It
  - \_H\_Generic | rt
  - \_H\_Generic +
  - \_H\_GH
  - \_H\_GP
  - \_H\_GV
  - \_H\_GW
  - \_H\_HH
  - \_H\_HMH
  - \_H\_HOT
  - \_H\_HP
  - \_H\_HPG
  - \_H\_HT
  - \_H\_HV
  - \_H\_HYD

- Label Styles
  - \_H\_Bell
  - \_H\_Description (bottom right)
  - \_H\_Description (centered)
  - \_H\_Elevation
  - \_H\_For Survey Layout
  - \_H\_Hydro
  - \_H\_Name
  - \_H\_PN Elev Desc
  - \_H\_Raw description (bottom right)
  - \_H\_Raw description (centered)
  - \_H\_SECV
  - Standard
  - Expressions

 _H_IB	
 _H_IP	
 _H_LS	
 _H_MB	
 _H_MH	
 _H_MHS	
 _H_NW	
 _H_OG	
 _H_OGBS	
 _H_OGCL	
 _H_OGTS	
 _H_PAD	
 _H_PI	
 _H_PILLAR	
 _H_PK	
 _H_PM	
 _H_RCS	
 _H_RIB	
 _H_RS	
 _H_SCNF	
 _H_SDEC	
 _H_SECV	
 _H_SHRB	
 _H_SIB	
 _H_STK	
 _H_STP	
 _H_TB	
 _H_TCP	
 _H_TEMH	
 _H_TL	
 _H_TLS	
 _H_TP	
 _H_TSC	
 _H_WELL	
 _H_WV	
 _H_WVC	
 Basic	
 Standard	

**SURFACES**

- [-] Surface
  - [-] Surface Styles
    - [+] \_H\_Border
    - [+] \_H\_Contours
    - [+] \_H\_Cut and Fill Banding 0.5m Interval
    - [+] \_H\_Drainage area analysis
    - [+] \_H\_Elevation Banding (2D)
    - [+] \_H\_Points
    - [+] \_H\_Section only
    - [+] \_H\_Slope arrows
    - [+] \_H\_Slope Banding (2D)
    - [+] \_H\_Triangles
    - [+] \_H\_Working tin
    - [+] \_No Display
    - [+] Standard
  - [+] Label Styles
  - [+] Table Styles
  - [+] Commands

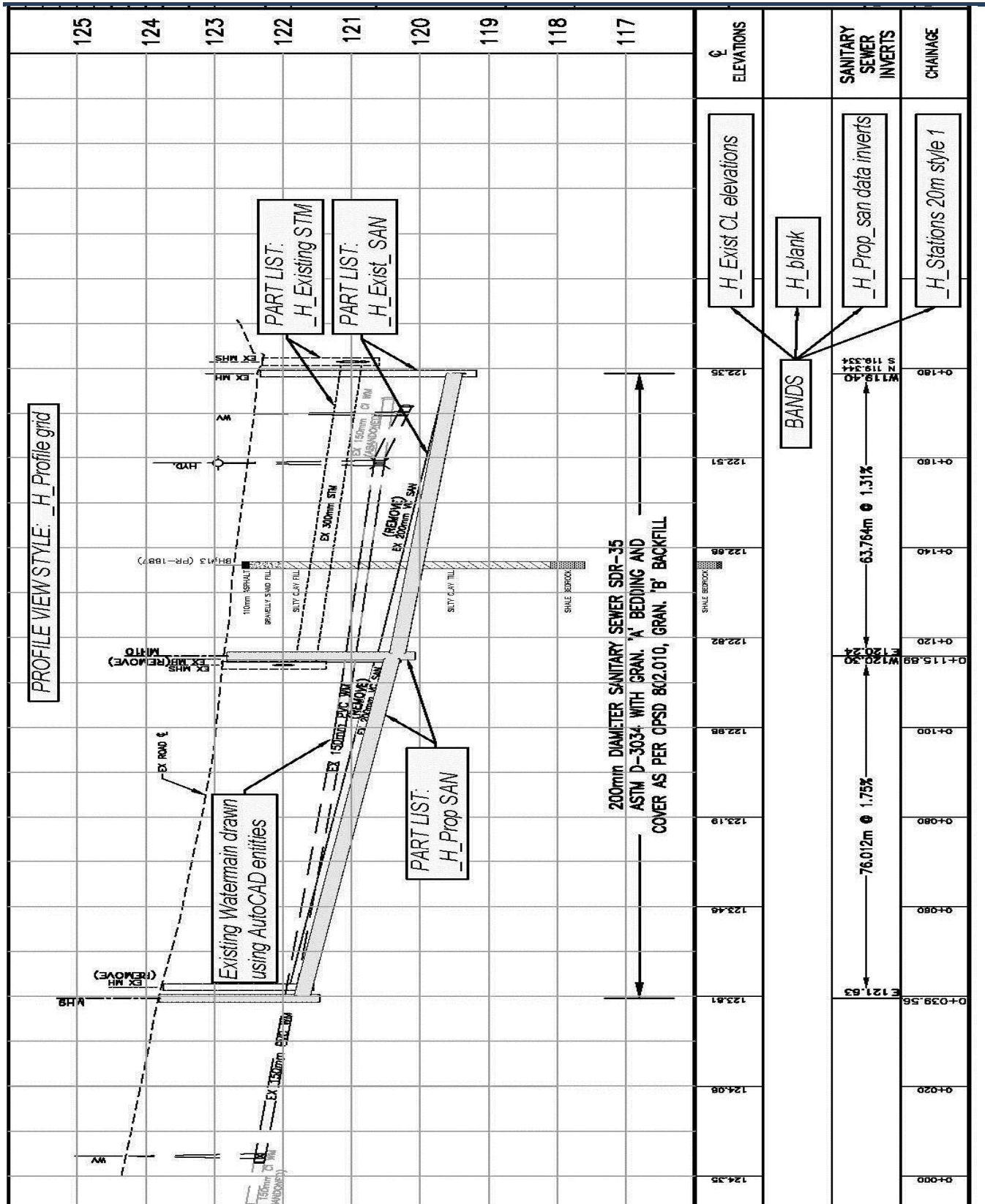


**\_H\_TRIANGLES**

**\_H\_WORKING TIN**

# PROFILES

<ul style="list-style-type: none"> <li>Profile             <ul style="list-style-type: none"> <li>Profile Styles                 <ul style="list-style-type: none"> <li>_H_Existing ground</li> <li>_H_Generic</li> <li>_H_Layout</li> <li>_H_Proposed top</li> <li>_H_Watermain</li> <li>Standard</li> </ul> </li> <li>Design Checks</li> <li>Label Styles                 <ul style="list-style-type: none"> <li>Label Sets                     <ul style="list-style-type: none"> <li>_H_Road top CL</li> <li>_H_Watermain</li> <li>_No Labels</li> <li>Standard</li> </ul> </li> <li>Station                     <ul style="list-style-type: none"> <li>Major Station</li> <li>Minor Station</li> <li>Horizontal Geometry Point</li> </ul> </li> <li>Grade Breaks                     <ul style="list-style-type: none"> <li>_H_PVI station elevation</li> <li>_H_Watermain Deflection</li> <li>Standard</li> <li>Expressions</li> </ul> </li> <li>Line                     <ul style="list-style-type: none"> <li>_H_Percent Grade</li> <li>Standard</li> <li>Expressions</li> </ul> </li> <li>Curve                     <ul style="list-style-type: none"> <li>_H_BVC</li> <li>_H_Curve data crest</li> <li>_H_Curve data sag</li> <li>_H_EVC</li> <li>_H_PVI</li> <li>_H_Style 2 Crest</li> <li>_H_Style 2 Sag</li> <li>Standard</li> <li>Expressions</li> </ul> </li> </ul> </li> </ul> </li></ul>	<ul style="list-style-type: none"> <li>Profile View             <ul style="list-style-type: none"> <li>Profile View Styles                 <ul style="list-style-type: none"> <li>_H_Profile 100 grid</li> <li>_H_Profile grid</li> <li>Standard</li> </ul> </li> <li>Label Styles                 <ul style="list-style-type: none"> <li>Station Elevation</li> <li>Depth</li> <li>Projection</li> </ul> </li> <li>Band Styles                 <ul style="list-style-type: none"> <li>Band Sets                     <ul style="list-style-type: none"> <li>_H_Road set</li> <li>_H_Water and Sewer</li> <li>_No Bands</li> <li>Standard</li> </ul> </li> </ul> </li> <li>Profile Data                 <ul style="list-style-type: none"> <li>_H_Blank</li> <li>_H_CL road elevations</li> <li>_H_Exist CL elevations</li> <li>_H_Prop WM elev</li> <li>_H_Prop WM stations</li> <li>_H_Stations 20m style 1</li> <li>_H_Stations 20m style 2</li> <li>_H_Stations 20m style 3</li> <li>Standard</li> </ul> </li> <li>Vertical Geometry                 <ul style="list-style-type: none"> <li>_H_Prop WM distance @ grade</li> <li>Standard</li> </ul> </li> <li>Horizontal Geometry</li> <li>Superelevation Data</li> <li>Sectional Data                 <ul style="list-style-type: none"> <li>Standard</li> </ul> </li> <li>Pipe Network                 <ul style="list-style-type: none"> <li>_H_Exist Sewer data</li> <li>_H_Prop SAN data</li> <li>_H_Prop SAN data_inverts</li> <li>_H_Prop sewer stations</li> <li>_H_Prop STM data</li> <li>_H_Prop STM data_inverts</li> <li>Standard</li> </ul> </li> </ul> </li> </ul>
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PROFILE VIEW STYLE: \_H\_Profile grid

Existing Watermain drawn using AutoCAD entities

PART LIST: \_H\_Prop SAN

PART LIST: \_H\_Exist STM

PART LIST: \_H\_Exist SAN

200mm DIAMETER SANITARY SEWER SDR-35  
ASTM D-3034 WITH GRAN. 'A' BEDDING AND  
COVER AS PER OPSD 8(2.010, GRAN. 'B' BACKFILL

BANDS

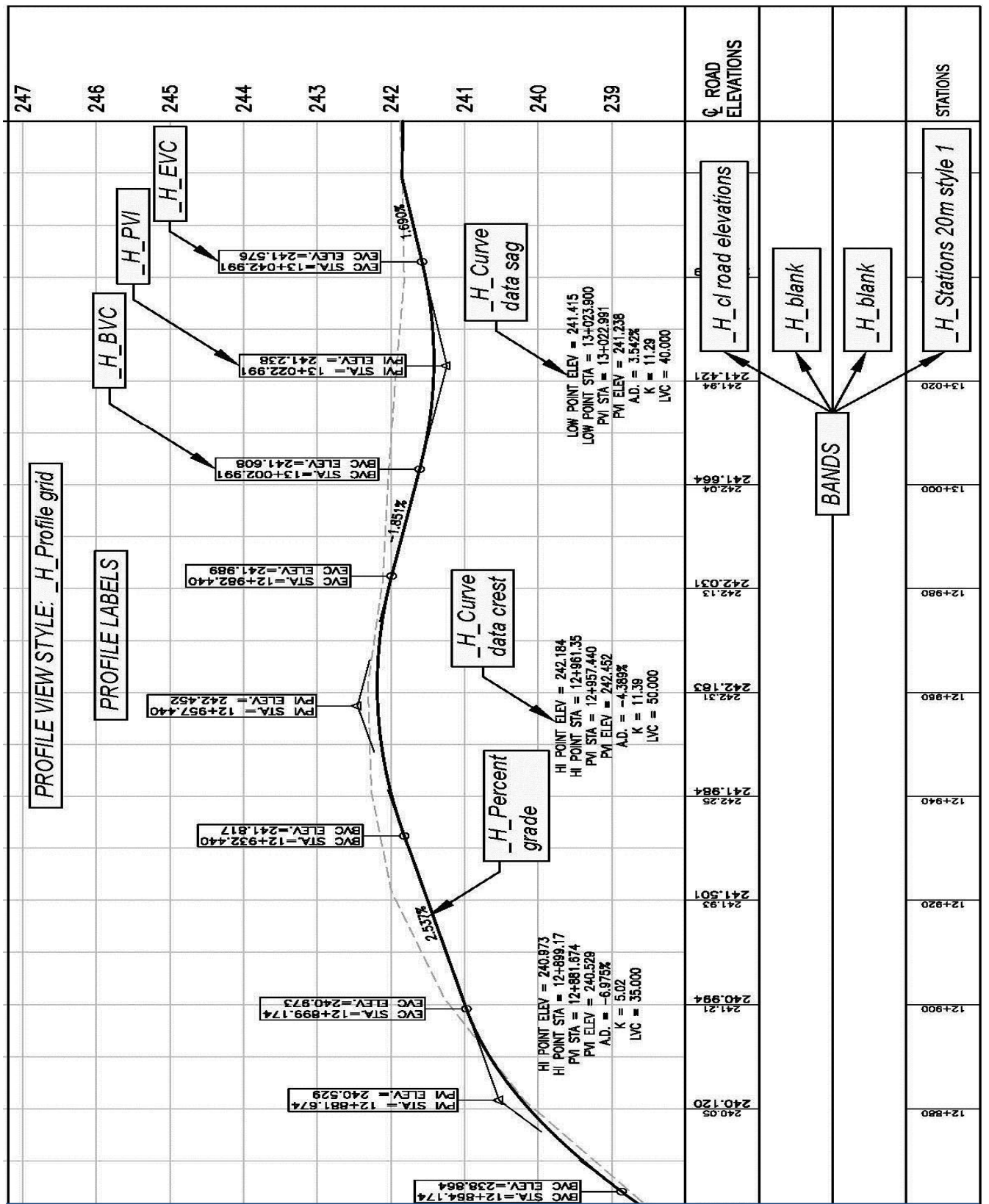
\_H\_Exist CL elevations

\_H\_blank

\_H\_Prop\_san data inverts

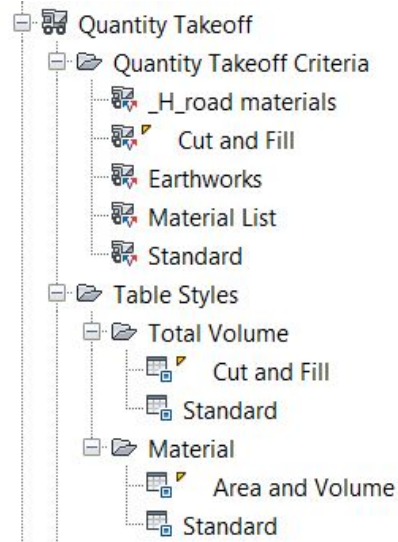
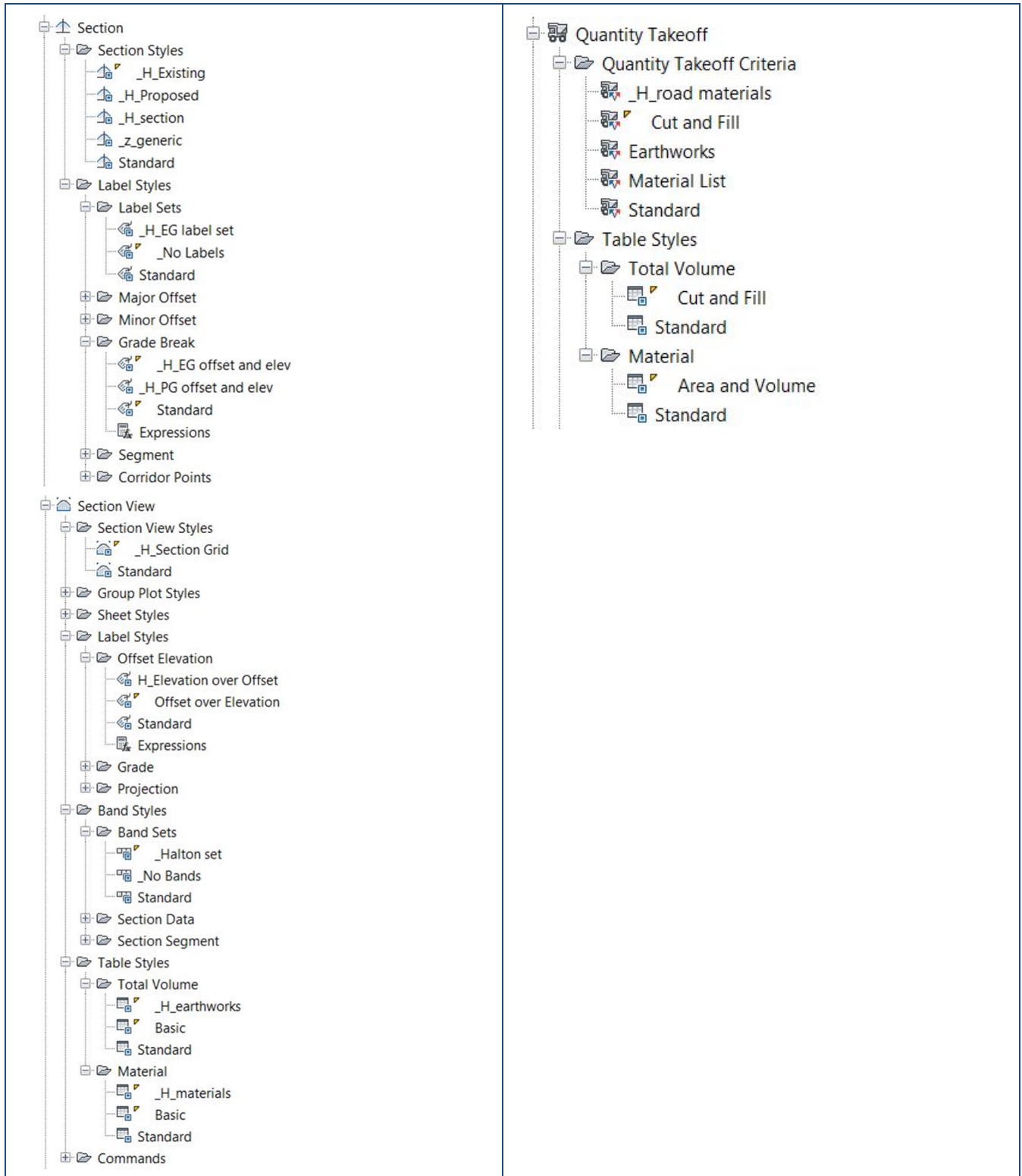
\_H\_Stations 20m style 1

Typical profile utilizing Halton Civil 3D styles



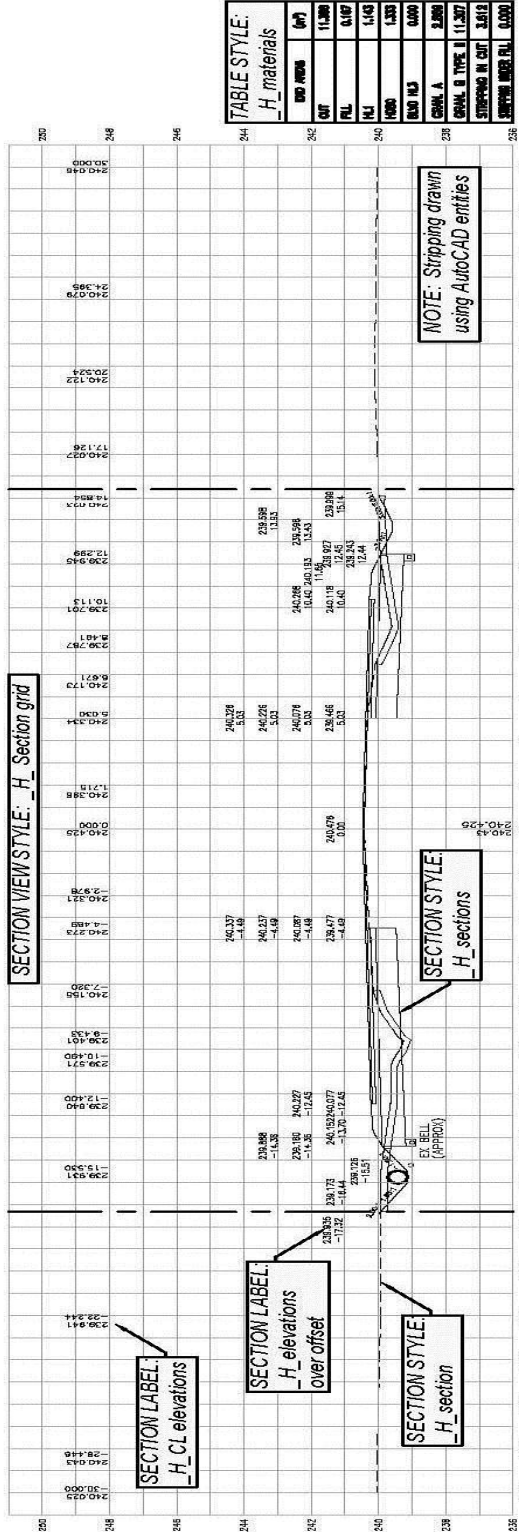
**Typical road profile utilizing Halton Civil 3D styles**

## CROSS SECTIONS



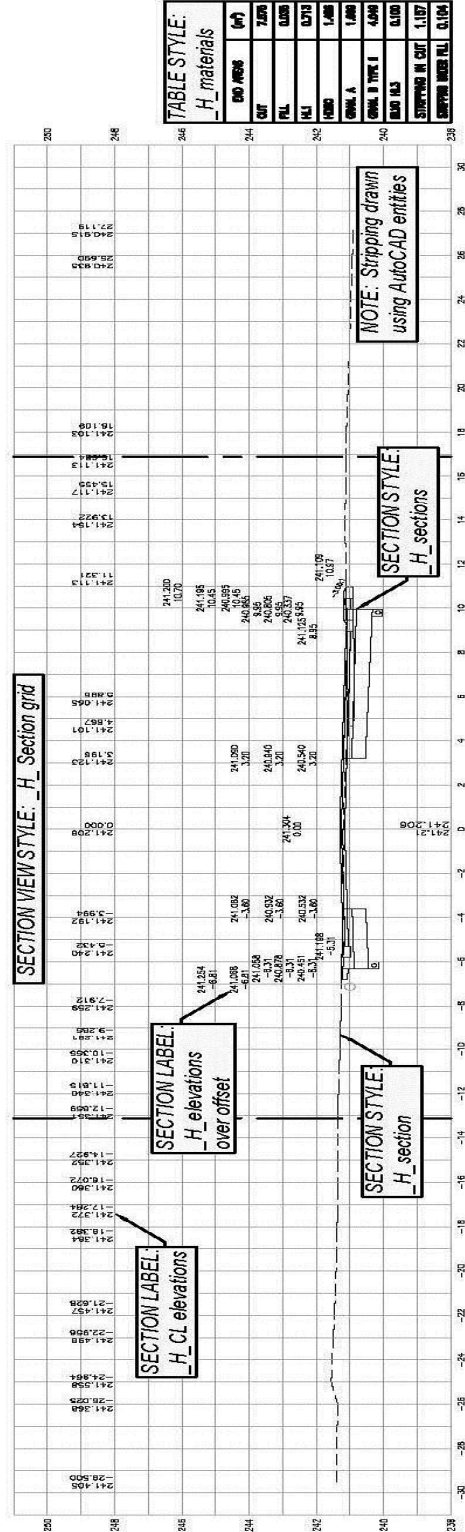
**RURAL CROSS SECTION**

3+120.00



**URBAN CROSS SECTION**

12+000.00



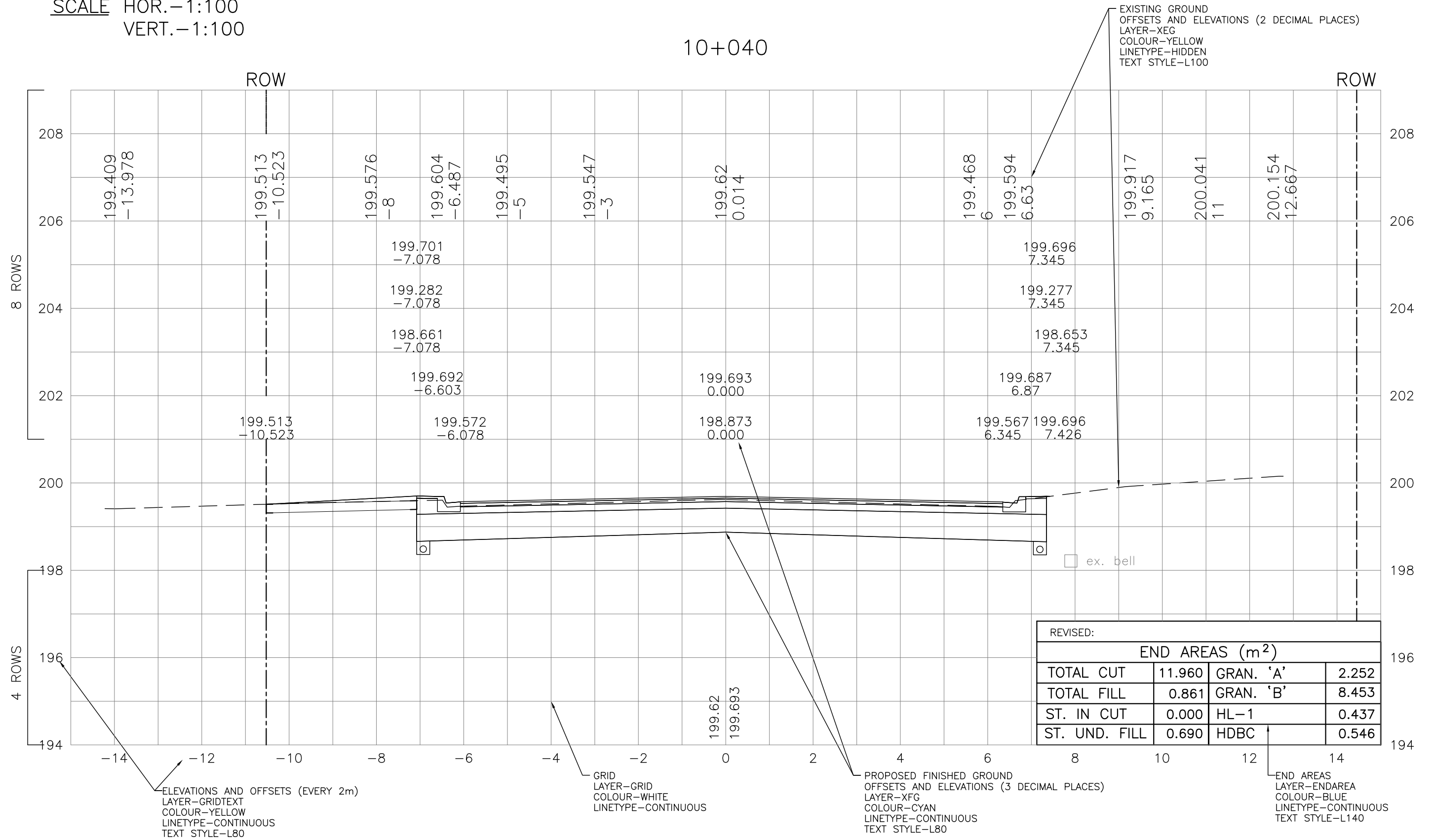
**Typical cross sections utilizing Halton Civil 3D styles**

Cross sections are required at every 20m stations and at all pavement width transitions (start/end tapers etc.)

# TYPICAL URBAN CROSS-SECTION

SCALE HOR.-1:100  
VERT.-1:100

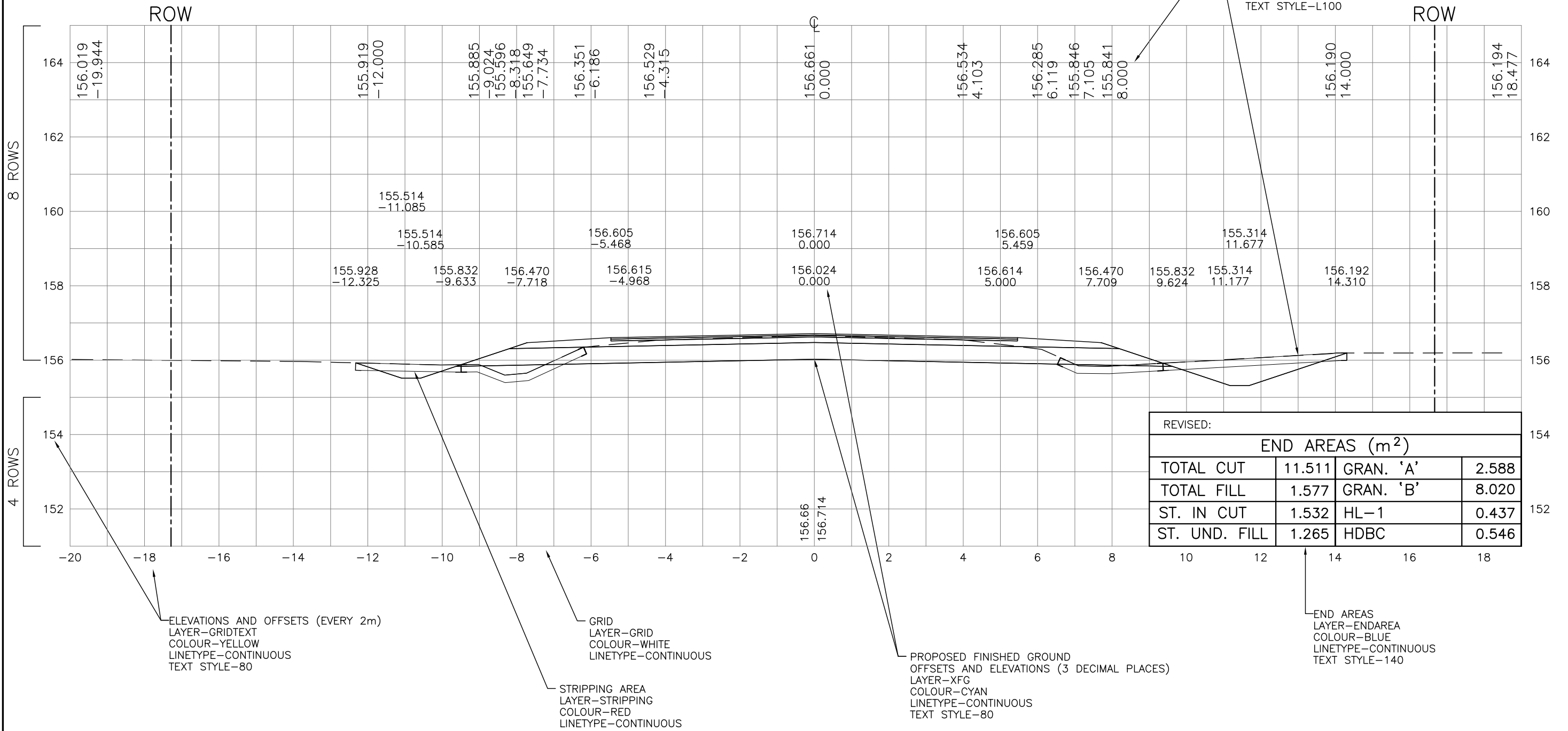
10+040



# TYPICAL RURAL CROSS-SECTION

SCALE HOR.-1:100  
VERT.-1:100

1+140



# PIPE NETWORKS

<ul style="list-style-type: none"> <li>[-] Pipe Network             <ul style="list-style-type: none"> <li>[-] Parts Lists                 <ul style="list-style-type: none"> <li>[-] _H_Exist SAN</li> <li>[-] _H_Exist STM</li> <li>[-] _H_Prop SAN</li> <li>[-] _H_Prop STM</li> <li>[-] Standard</li> </ul> </li> <li>[-] Interference Styles</li> <li>[-] Commands</li> <li>[-] Pipe                 <ul style="list-style-type: none"> <li>[-] Pipe Styles                     <ul style="list-style-type: none"> <li>[-] _H_Exist double Line</li> <li>[-] _H_Exist single Line</li> <li>[-] _H_Profile Crossing Pipe</li> <li>[-] _H_Prop Culverts</li> <li>[-] _H_Prop double Line</li> <li>[-] _H_Prop double Line (Inner &amp; Outer Walls)</li> <li>[-] _H_Prop_Single Line</li> <li>[-] Standard</li> </ul> </li> <li>[-] Pipe Rule Set</li> <li>[-] Label Styles                     <ul style="list-style-type: none"> <li>[-] Plan Profile                         <ul style="list-style-type: none"> <li>[-] _H_Plan and Profile Exist SAN</li> <li>[-] _H_Plan and Profile Exist STM</li> <li>[-] _H_Plan and Profile Prop SAN</li> <li>[-] _H_Plan and Profile Prop STM</li> <li>[-] _H_Plan Exist Flow Arrow SAN</li> <li>[-] _H_Plan Exist Flow Arrow STM</li> <li>[-] _H_Plan Prop Flow arrow</li> <li>[-] Standard</li> <li>[-] Expressions</li> </ul> </li> <li>[-] Crossing Section</li> <li>[-] Crossing Profile                         <ul style="list-style-type: none"> <li>[-] _H_CB LEAD LT</li> <li>[-] _H_CB LEAD RT</li> <li>[-] Standard</li> <li>[-] Expressions</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>[-] Structure             <ul style="list-style-type: none"> <li>[-] Structure Styles                 <ul style="list-style-type: none"> <li>[-] _H_Exist SAN manhole</li> <li>[-] _H_Exist STM CB</li> <li>[-] _H_Exist STM CBMH</li> <li>[-] _H_Exist STM DCB</li> <li>[-] _H_Exist STM manhole</li> <li>[-] _H_model boundary</li> <li>[-] _H_Null-CB LEAD</li> <li>[-] _H_Prop CB</li> <li>[-] _H_Prop DCB</li> <li>[-] _H_Prop Manhole</li> <li>[-] _J_Flared End Section</li> <li>[-] Null</li> <li>[-] Standard</li> </ul> </li> <li>[-] Structure Rule Set</li> <li>[-] Label Styles                 <ul style="list-style-type: none"> <li>[-] _H_Plan EX MH 2.0mm</li> <li>[-] _H_Plan Name 2.0mm</li> <li>[-] _H_Plan Name 2.5mm</li> <li>[-] _H_PRF CB LEAD LT</li> <li>[-] _H_PRF CB LEAD RT</li> <li>[-] _H_PRF EX MH</li> <li>[-] _H_PRF EX MHS</li> <li>[-] _H_Prof Name CL 2.5mm</li> <li>[-] _H_ProfB exist InvInOut</li> <li>[-] _H_ProfB exist InvOutIn</li> <li>[-] _H_ProfB prop InvInOut</li> <li>[-] _H_ProfB prop InvOutIn</li> <li>[-] Basic</li> <li>[-] Standard</li> <li>[-] Expressions</li> </ul> </li> <li>[-] Table Styles</li> </ul> </li> </ul>
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## 6.3 Pipes Catalog

A Civil 3D pipe catalog includes three files (xml, dwg, bmp). Copy the following files into the Civil 3D pipe catalog folder for metric circular pipes.

- CSP\_Round\_68x13\_metric.bmp
- CSP\_Round\_68x13\_metric.dwg
- CSP\_Round\_68x13\_metric.xml
- PVC\_Pipe Metric\_SDR28\_SDR28.xml

PVC\_Pipe\_Metric\_SDR35\_SDR28.xml is a Civil 3D pipe catalog created using Civil 3D 2008 sp2. This XML file references standard Civil 3D files "AeccCircularDIPipe\_Metric.dwg" and "AeccCircularDIPipe\_Metric.bmp".

### Default folders:

#### **Civil 3D 2020, Windows 7 & Windows 10**

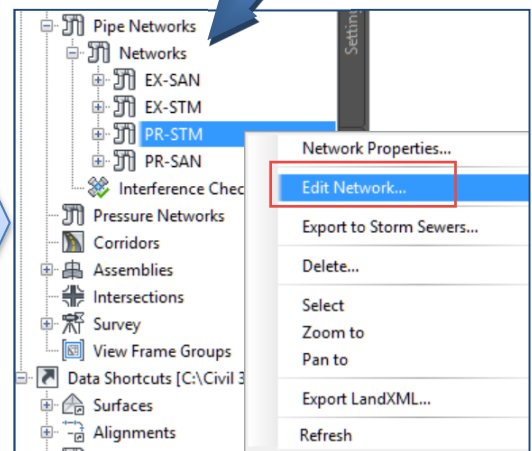
***C:\ProgramData\Autodesk\C3D 20XX\enu\Pipes Catalog\Metric Pipes\Circular Pipes***

***Important:*** To update the Civil 3D parts catalog, execute the Civil 3D "PartBuilder" command, select the root folder "Metric Pipe Catalog", and click the "Catalog Regen" button.

The following figures on the following pages depict the pipe networks parts list contained in the Halton Pipe Catalogs

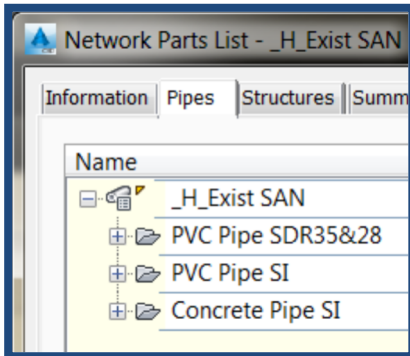


Pipe network place holders for sanitary and storm. Empty pipe networks with assigned layers are pre-defined in the Region's template. To add pipes & structures, right click to select the network from the Prospector tab, right-click to launch "Edit Network".

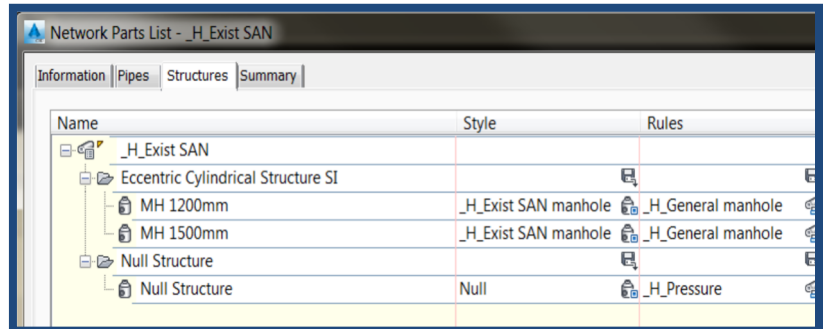


The following figures show the pipe networks parts lists contained in the Halton Pipe Catalogs.

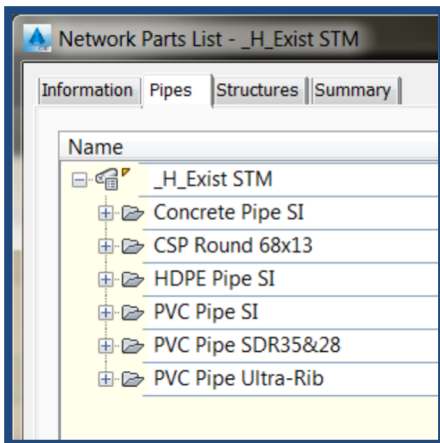
**Existing Sanitary Sewer**



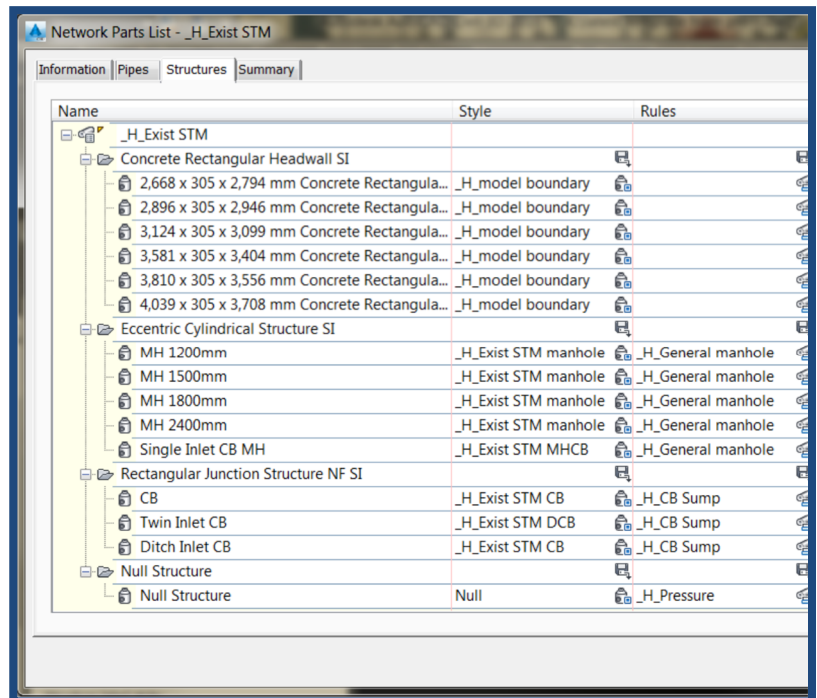
**Existing Sanitary Structures**



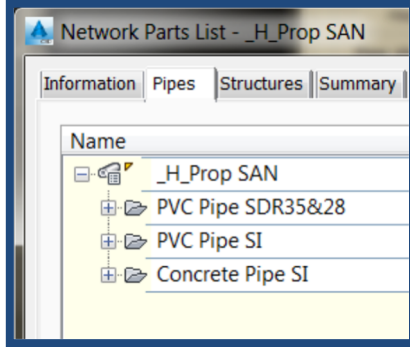
**Existing Storm Sewer**



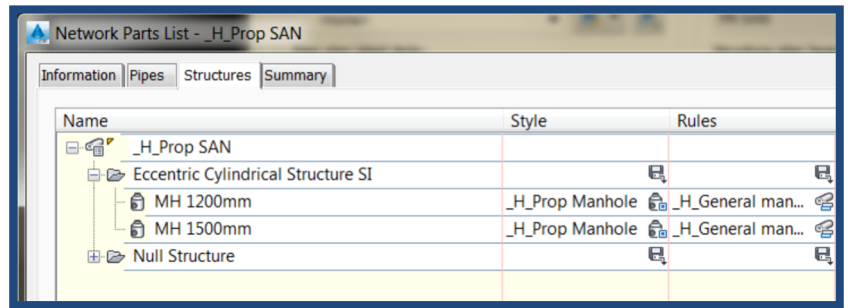
**Existing Storm Structures**



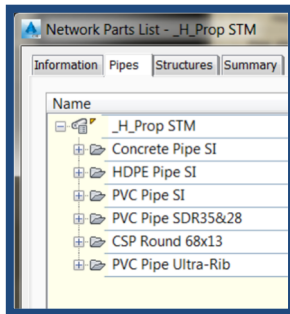
### Proposed Sanitary Sewer



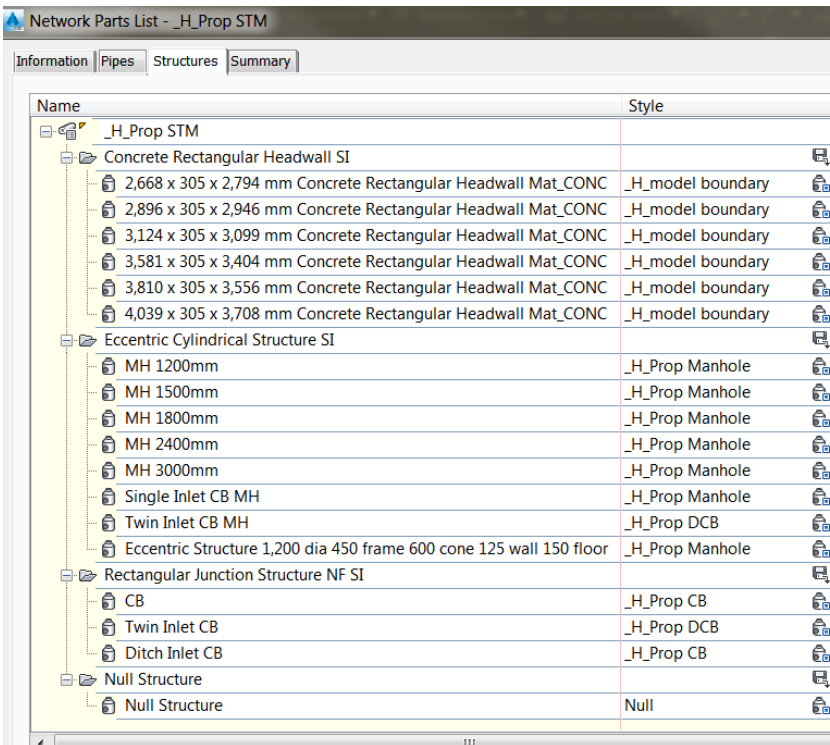
### Proposed Sanitary Sewer Structures



### Proposed Storm Sewer



### Proposed Storm Sewer Structure



## **7.0 Deliverables**

The following section includes but is not limited to engineering drawing stages required by Halton Region:

- 30%, 60% and 90 % Design Stages, as required by the Project Manager
- Issued for Tender (IFT)
- Issued for Construction (IFC)
- As Constructed

**Halton Region will carry out a CADD compliance (quality assurance) review during all drawing review phases to ensure adherence to these standards.**

## **7.1 Digital Submission Requirements Table**

Stage	All Civil 3D Drawings	Full-Scale PDF	eTransmit	Engineer's Stamp	Division Director & Manager Signature
<b>30%, 60% &amp; 90% Review</b>	✓	✓	✓	✗	✗
<b>Issued for Tender (IFT)</b>	✓	✓	✓	✓	✗
<b>Issued for Construction (IFC)</b>	✓	✓	✓	✓	✓
<b>As Constructed **</b>	✓	✓	✓	✗	✗

\*\* All redline drawings, shop drawings, connection details, PHM-125 and electronic diaries must be submitted as part of the as constructed submission. No disclaimers are permitted on either the As Constructed or Record drawings.

Consultants may be required to submit hard copies at any stage if requested by the Project Manager.

**IMPORTANT: During all review stages, consultants are to use eTransmit as outlined in section 7.5 of this manual.**

---

## **7.2 CADD File Submission Requirements for Linear Projects**

Along with the hardcopy requirements, the AutoCAD/Civil 3D files must also be submitted for CADD compliance. **eTransmit is mandatory when submitting Civil 3D/AutoCAD drawings. See section 7.5 of this manual.**

Contact the Project Manager or [CADDSTANDARDS@halton.ca](mailto:CADDSTANDARDS@halton.ca) for required version of software when submitting AutoCAD/Civil 3D files.

For digital CADD drawing submissions (including As Constructed) from Consultants for Linear Projects the following is required:

1. Civil 3D 2020 drawing
2. AutoCAD 2020 drawing

## **7.3 PDF File Format**

At all stages of the project when drawings are submitted to Halton Region, consultants must supply the same drawings in PDF format. The PDF's must be printable at full size (to scale) to fit a 914mmx610mm or 36"x24" bond sheet. For smaller projects, the PDF drawings must be a single file containing all drawings (book format) for the project and in their correct order. For large road reconstruction projects, separate PDF files for cover, item breakdown and index, alignments, removals, new construction etc. will be accepted.

**NO colour drawings or password protected PDF files will be permitted.**

## **7.4 Transfer of Electronic Submittals**

Electronic drawing files shall be submitted to the Project Manager using current best practices, such as:

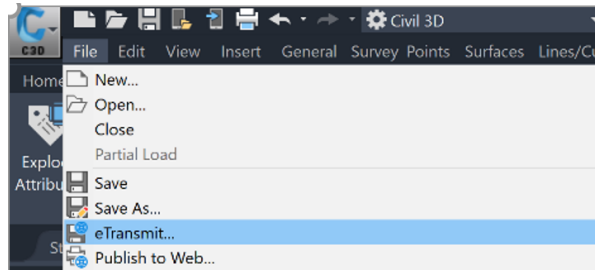
- USB Stick
- DROPBOX
- 2big4email
- FTP Site

## 7.5 AutoCAD/Civil 3D Submittal

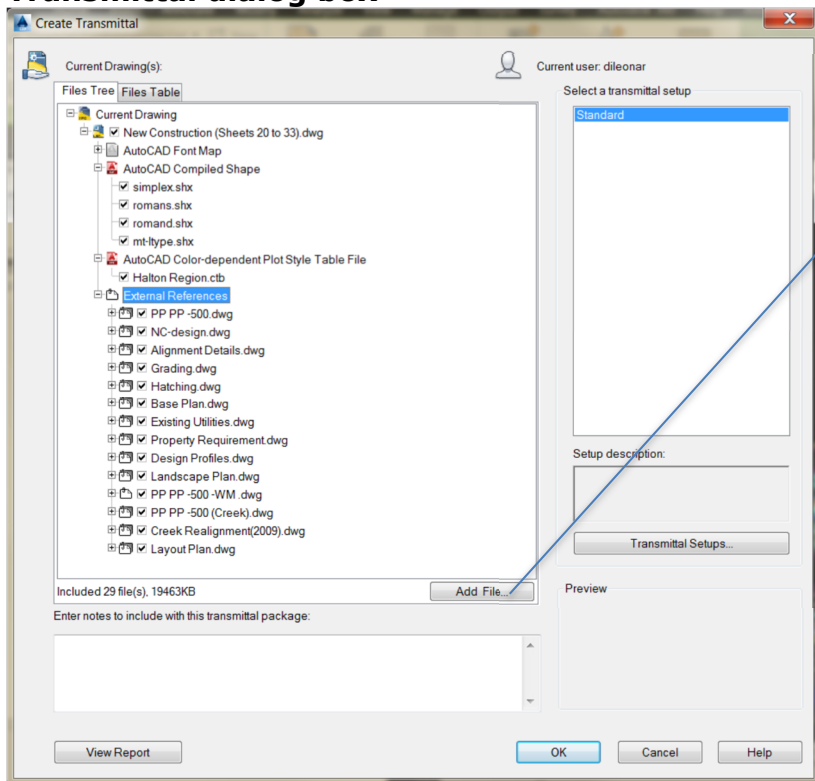
### eTransmit

eTransmit is an AutoCAD/Civil 3D utility that provides a fast and easy way to package all your files into **one** transmittal package. It shall include **ALL** your reference files, data references, plot style table, image files, reorganize your reference path, material textures, data link files, plotter configuration files, font files and any other dependent files. **It is mandatory that you place ALL files in one folder during the eTransmit process. See settings image on page 59. Drawing will be sent back if this is not done.**

To create an eTransmit in Civil 3D 2020, simply go to the **File** pull down



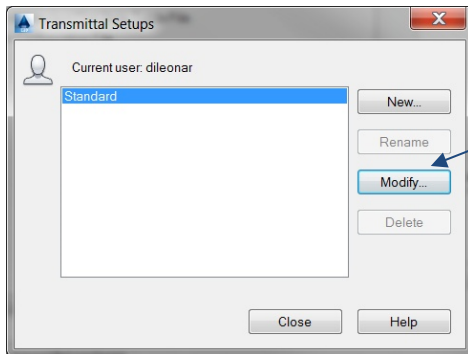
### Transmittal dialog box



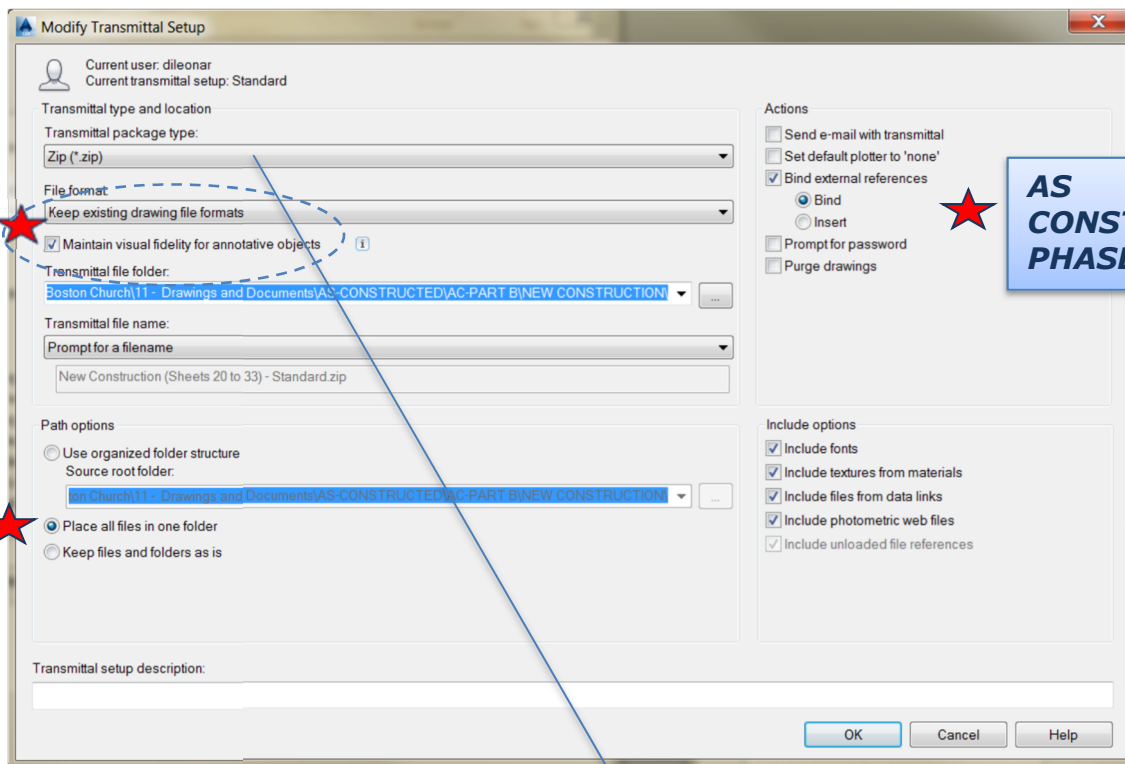
*To add more drawings or files associated with your drawing, select **Add File...***

All related digital drawings must include the following:

- CTB (colour-dependant plot style table) or STB (plot style table) file references
- PC3 (plotter configuration file reference)
- SHX (AutoCAD compiled shape references)
- TTF (TrueType Font file references or non-standard AutoCAD format)
- LIN (AutoCAD line file references)











































**Select  
Modify**

































**AS  
CONSTRUCTED  
PHASE**

Contact the Project Manager or [CADDSTANDARDS@halton.ca](mailto:CADDSTANDARDS@halton.ca) for required version of software when submitting AutoCAD/Civil 3D files.

**Example of a 90% Submittal for a Road Reconstruction Project  
Civil 3D Drawings using eTransmit PDF Files**

 163269-00-COVER.zip	 163269-00-COVER.pdf
 163269-01-02-INDEX-BREAKDOWN.zip	 163269-01-INDEX.pdf
 163269-03-LEGEND.zip	 163269-02-BREAKDOWN.pdf
 163269-04-DETAILS.zip	 163269-03-LEGEND.pdf
 163269-05-12-ALIGNMENT.zip	 163269-04-DETAILS.pdf
 163269-13-19-REMOVALS.zip	 163269-05-12-ALIGNMENT.pdf
 163269-20-27-ESC.zip	 163269-13-19-REMOVALS.pdf
 163269-28-42-P&P.zip	 163269-20-27-ESC.pdf
 163269-43-54-WM P&P.zip	 163269-28-42-P&P.pdf
 163269-55-58-TYPICALS.zip	 163269-43-54-WM Plan&Profile.pdf
 163269-59-RET-WALL.zip	 163269-55-58-TYPICALS.pdf
 163269-60-66-PAVEMENT MARKINGS.zip	 163269-59-RET-WALL.pdf
 163269-67-72-SIDESTREETS.zip	 163269-60-66-PAVEMENT MARKING-.pdf
 163269-73-75-DRIVEWAYS.zip	 163269-67-72-SIDESTREETS.pdf
 163269-76-82-PAVEMENT ELEVATIONS.zip	 163269-73-75-DRIVEWAYS.pdf
 163269-83-92-NOISEWALLS.zip	 163269-76-82-PAVEMENT-ELEVATIONS.pdf
 163269-93-118-STAGING.zip	 163269-83-92-NOISE-WALLS.pdf
 163269-XSEC.zip	 163269-93-118-STAGING .pdf
	 163269-127-203-ELECTRICAL.pdf
	 163269-204-213 STRUCTURAL.pdf
	 163269-L1-L8-LANDSCAPE.pdf
	 163269-XSEC.pdf

**Example of an Issued for Tender (IFT) Submittal for a Road Reconstruction Project  
Civil 3D Drawings using eTransmit PDF Files**

 00_cov_indx.zip	 00_cov-indx-leg.pdf
 01_hor_vert.zip	 01_hor_vert.pdf
 02_stging.zip	 02_stging.pdf
 03_esc.zip	 03_esc.pdf
 04_rmvls.zip	 04_rmvls.pdf
 05_newc.zip	 05_newc.pdf
 06_typcls.zip	 06_typcls.pdf
 07_pelev.zip	 07_pelev.pdf
 08_pmrks.zip	 08_pmrks.pdf
 09_drwyprof.zip	 09_drwyprof.pdf
 5190 - E01 - E19 - Phase 1.zip	 13_CN_Bridge.pdf
 10581-Dundas Street - CN_Standard.zip	 14_Tansley.pdf
 10581-Dundas Street - rwall Standard.zip	 15_Electrical.pdf
 landscape cad.zip	 5190 - E01 - E19 - Phase 1.pdf
 tansley_dwgs.zip	 PH-1 landscape.pdf

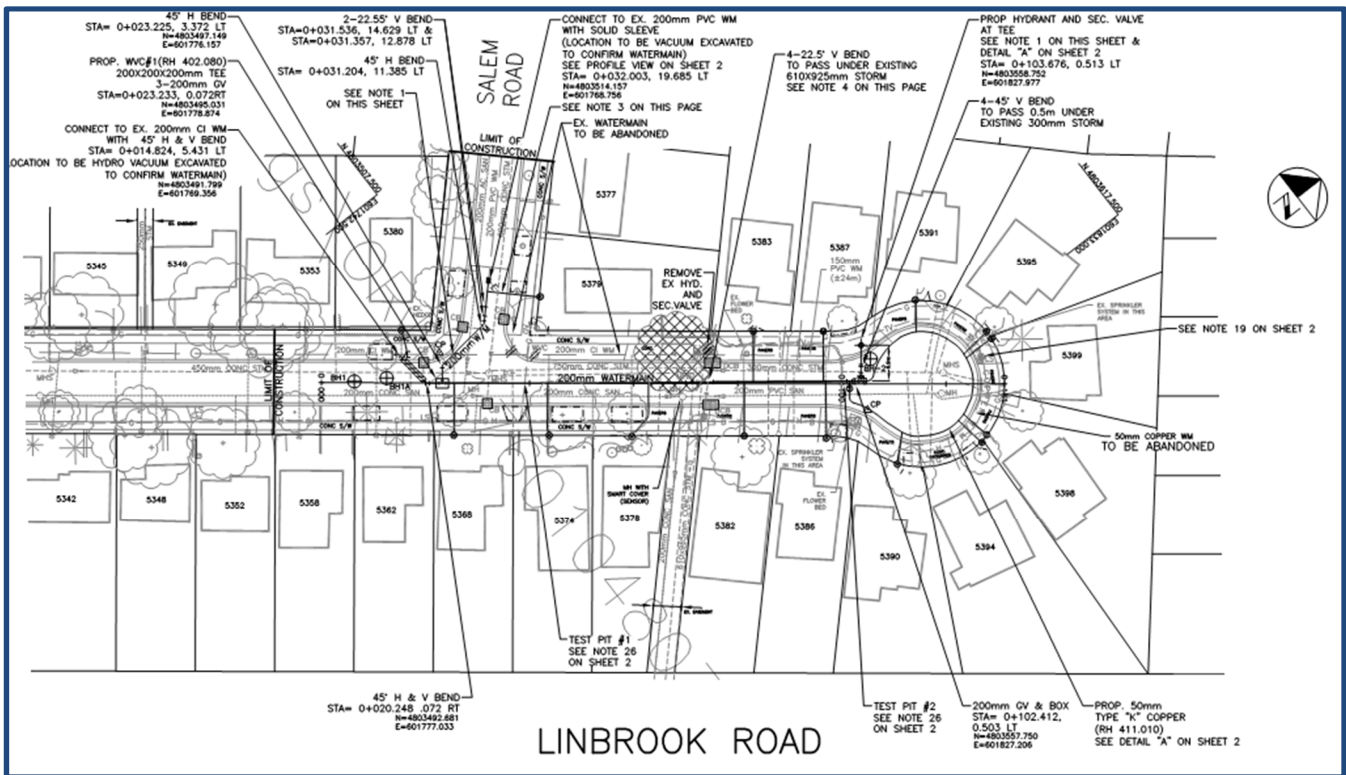
## 8.0 Critical Information for Survey Layout

It is the responsibility of the consultant to provide the following information on the drawings for contractor layout.

### 8.1 Watermain/Sanitary Sewer Projects

Requirements for Watermain and Wastewater main Projects:

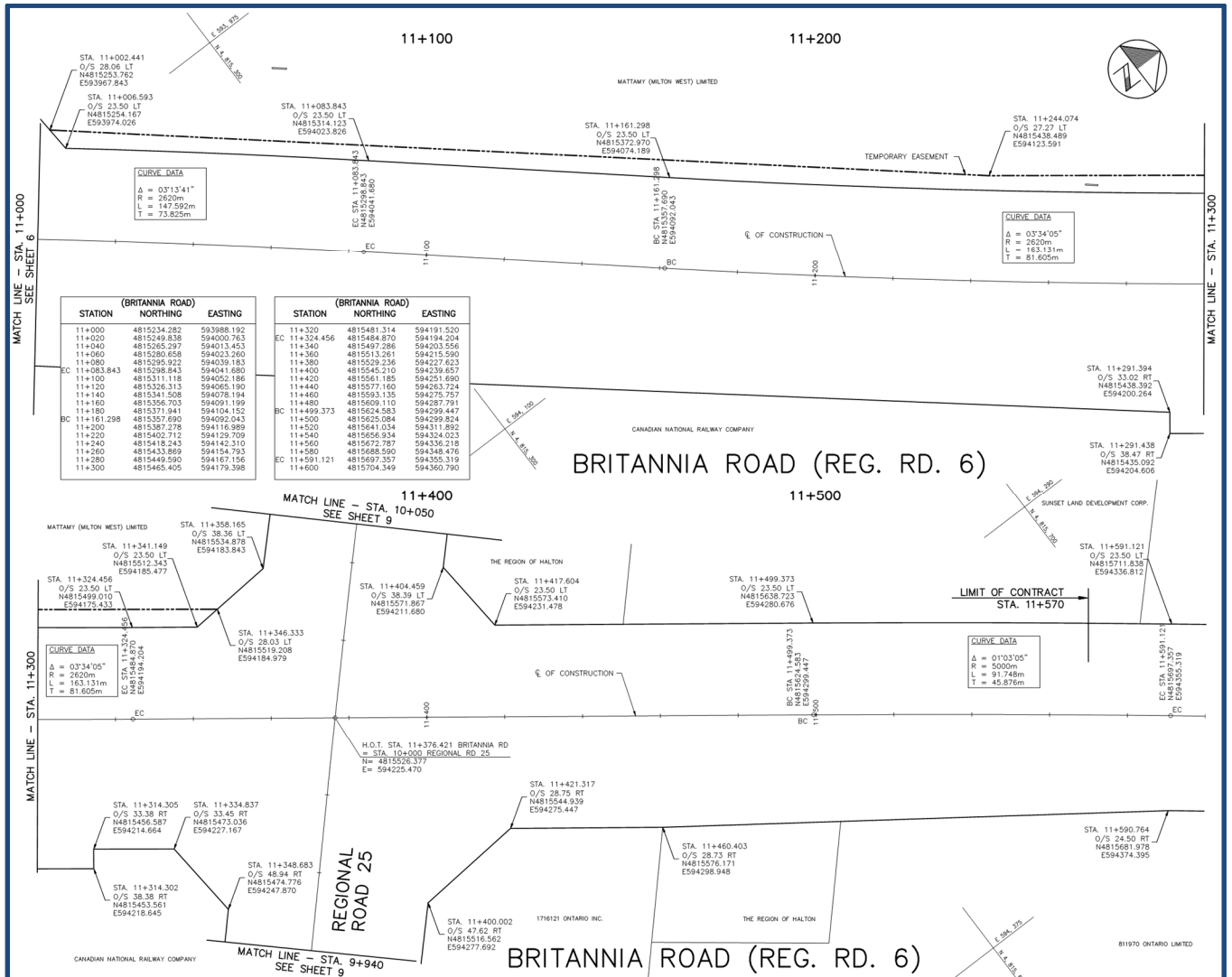
1. On the plan and profile sheet, provide station and offset plus northings and easting for all proposed infrastructure as shown below. See sample drawing in Appendix 1



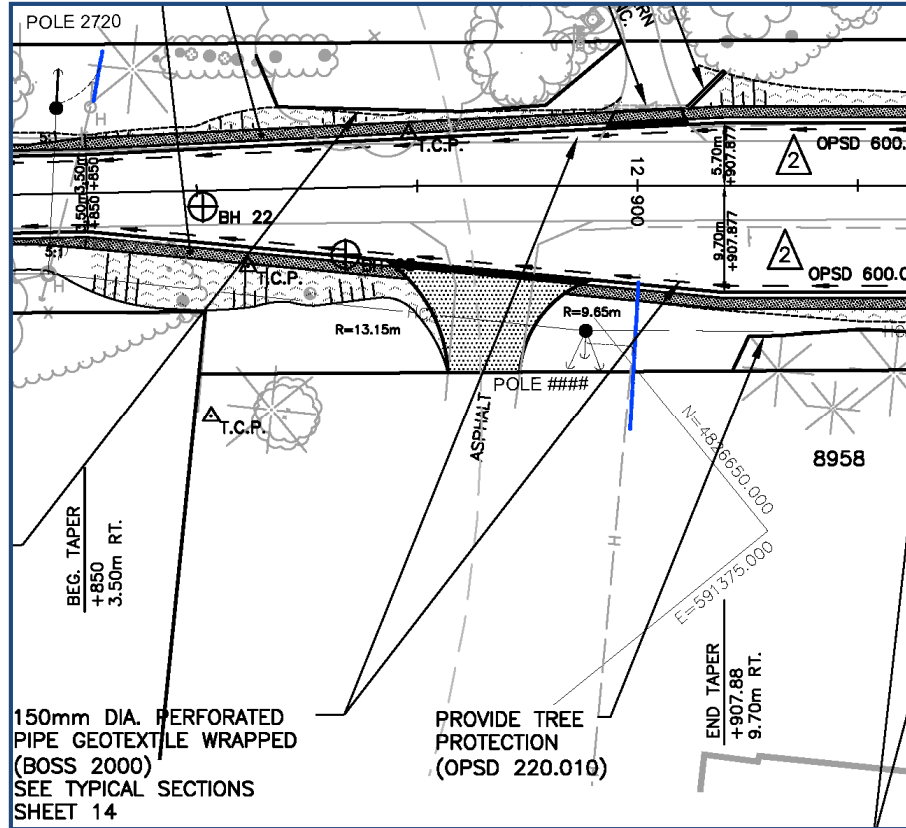
## 8.2 Road Reconstruction Projects

Requirements for Road Reconstruction Projects:

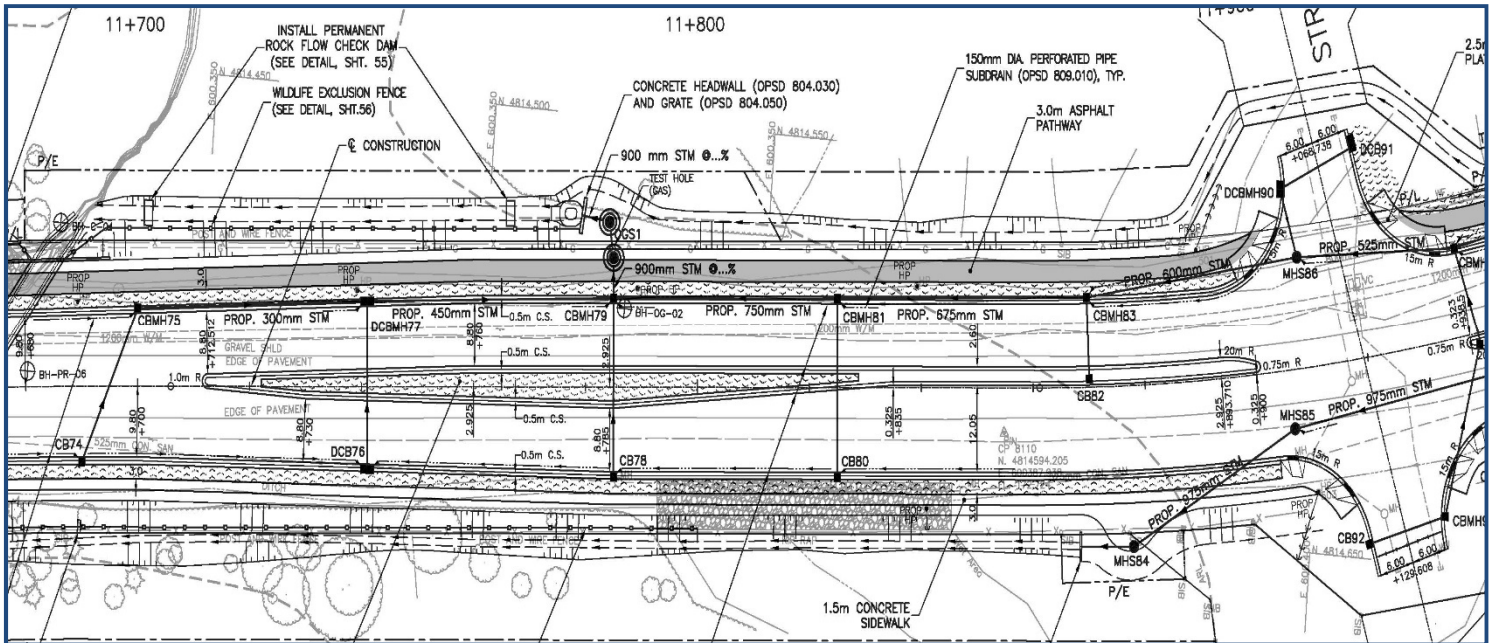
1. Alignment Sheet shall contain (example in Appendix 4):
  - Horizontal Alignment
    - 20m incremental station report
    - P.I. station report
    - Horizontal curve information
  - Property bars and control points label with station & offset, Northing and Easting



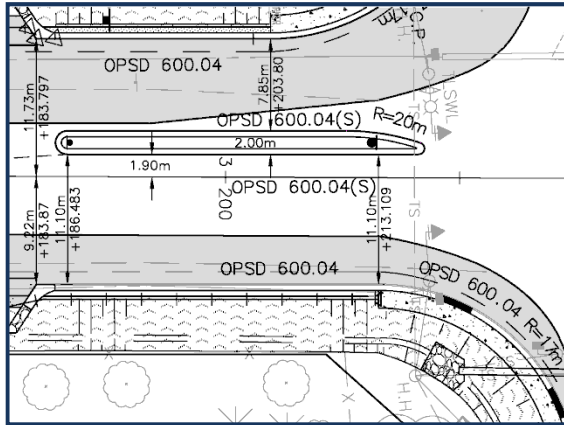
2. Pavement widths at all transitions.



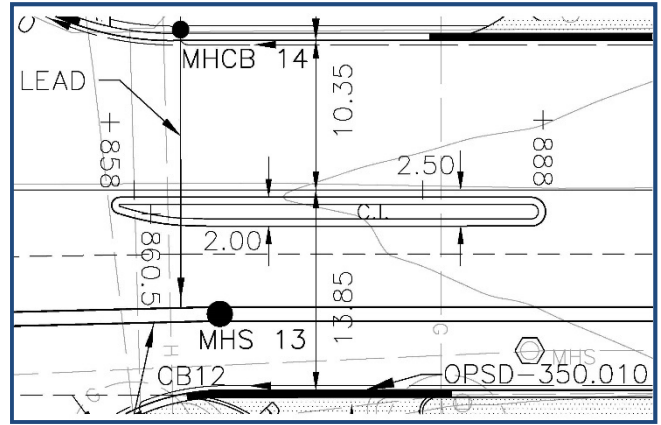
3. All proposed edge of pavement (EP) curve data.



4. Island edge of pavement (EP) data.

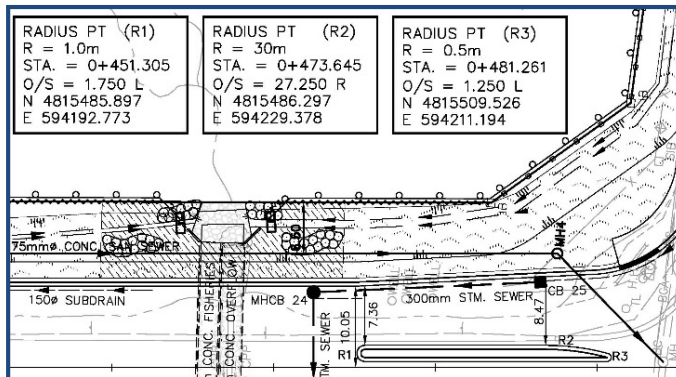


Example A

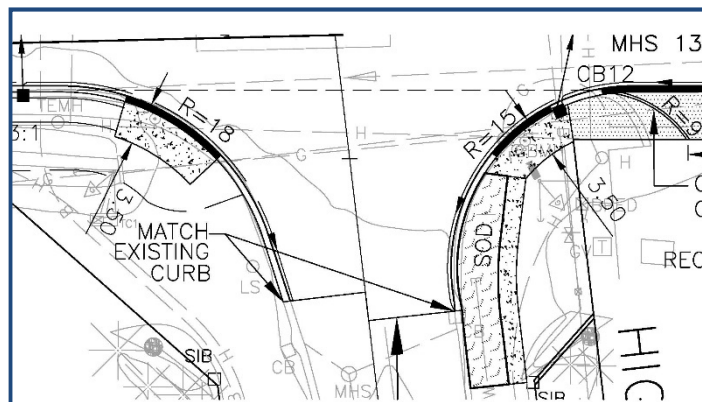


Example B

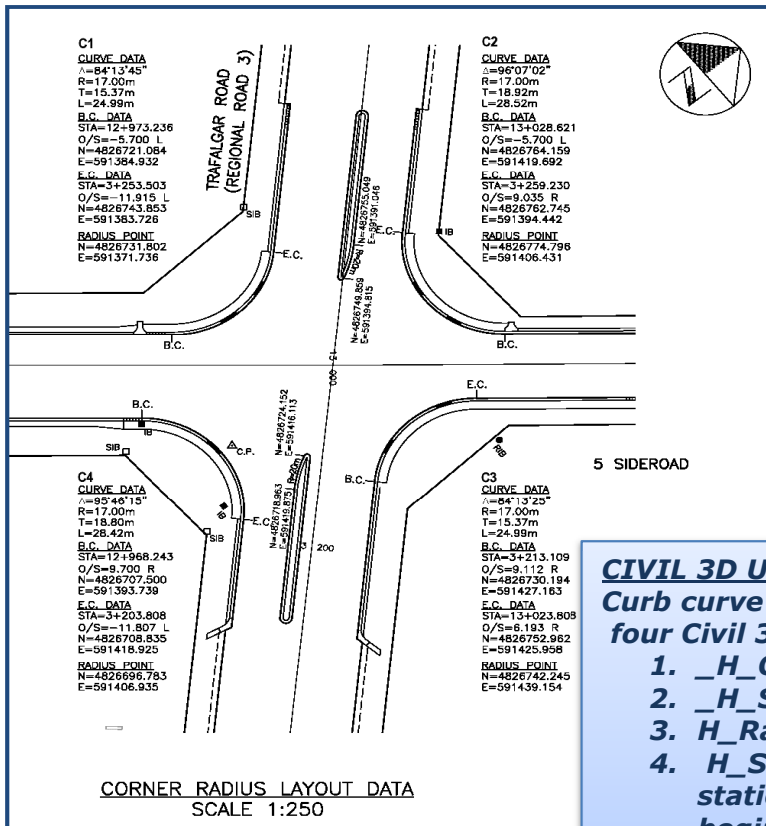
5. Island radius information



6. Curb tie into existing locations.



7. Corner radius layout data & island radius information



**Projects with multiple intersections, each curve shall have a unique identification label as illustrated**

**CIVIL 3D USERS**  
 Curb curve data is created using four Civil 3D label objects:

1. \_H\_Curve data
2. \_H\_Sta OS N E
3. H\_Radius point
4. H\_Sta OS N E" label is an alignment station offset label used to annotate beginning and end of curve data. This label does not include the point description (e.g. BC, PCC, EC). This can be added manually by editing the label text.

8. Side inlet catch basin manholes will be laid out using gutter line station and offset information.
9. Detailed cross sections are required at every 20m stations and at all pavement width transitions i.e. start/end tapers etc. See Chapter 6.0 for Civil 3D cross section style or send an email request for a sample cross sections to [CADDstandards@halton.ca](mailto:CADDstandards@halton.ca)
10. Control packages can be requested through the Project Manager. Control should be verified prior to construction.

## **9.0 As Constructed Workflow**

As constructed drawings must reflect all the changes, additions and deletions that were made during construction so that future work may be designed and built with minimal unforeseen situations.

### **9.1 General Information Required on AS CONSTRUCTED Drawings**

Accurate AS CONSTRUCTED drawings are very important for operations, maintenance and engineering staff. As-constructed drawings provide a permanent record of what was actually constructed in the field and where infrastructure components are located, both horizontally and vertically. As constructed drawings should indicate all changes that have occurred during construction.

- Change text as shown but not limited to:

ABANDON TO <b>ABANDONED</b>	PLUG TO <b>PLUGGED</b>
ADJUST TO <b>ADJUSTED</b>	PRUNE TO <b>PRUNED</b>
BREAK TO <b>BROKE</b>	REPLACE TO <b>REPLACED</b>
CONNECT TO <b>CONNECTED</b>	REGRADE TO <b>REGRADED</b>
CONSTRUCT TO <b>CONSTRUCTED</b>	RELOCATE TO <b>RELOCATED</b>
COLD PLAINING TO <b>COLDPLANED</b>	RESURFACE TO <b>RESURFACED</b>
DECOMMISSION TO <b>DECOMISSIONED</b>	REMOVE TO <b>REMOVED</b>
EXTEND TO <b>EXTENDED</b>	SALVAGE TO <b>SALVAGED</b>
INSTALL TO <b>INSTALLED</b>	TRANSITION TO <b>TRANSITIONED</b>
INSULATE TO <b>INSULATED</b>	REPLACE TO <b>REPLACED</b>
LINE TO <b>LINED</b>	REBENCH TO <b>REBENCHED</b>
MATCH TO <b>MATCHED</b>	EX. PROFILE ALONG € TO <b>ORIGINAL PROFILE €</b>
MAINTAIN TO <b>MAINTAINED</b>	PROP. € OF ROAD TO <b>€ OF ROAD</b>
MILL TO <b>MILLED</b>	

- Note any discrepancies in existing utilities between the drawings and actual in the field.
- Remove **ALL** instances of the word "PROPOSED"

- Update all page references including match lines, reference to details, sheets and other projects.

**9.1.1 Revision Area Requirements (Title Block)**

- Update the revision block and as shown below. By **HALTON REGION** or **CONSULTING FIRM**.

TEXT STYLE: L80  
LAYER: XFINE-PEN

CONSULTANTS →  
HALTON REGION →

	OD/OM/XXXX	A.A.	AS CONSTRUCTED (CONSULTING FIRM)
	OD/OM/XXXX	A.A.	AS CONSTRUCTED
	OD/OM/XXXX	A.A.	ISSUED FOR CONSTRUCTION
1	OD/OM/XXXX	A.A.	ADDENDUM #1
	OD/OM/XXXX	A.A.	ISSUED FOR TENDER
			REVISION NOTE
<b>NO.</b>	<b>DATE</b>	<b>BY</b>	<b>REVISIONS</b>

**9.1.2 As Constructed Stamp**

- All the sheets shall have the following AS CONSTRUCTED stamp.

Fill in all project related information.

*EDIT ATTRIBUTES*

AS-CONSTRUCTED DRAWING	
CONTRACTOR	ABC CONTRACTORS
WORK COMMENCED	12/26/2013
WORK COMPLETED	12/26/2013
INSPECTOR	FULL NAME AND (CONSULTANT)
INSPECTOR'S DIARIES	E-0001 OR #4215_(CONSULTANT)
<p align="center">THE REGIONAL MUNICIPALITY OF HALTON MAKES NO WARRANTIES WITH RESPECT TO THE ACCURACY OF THIS DRAWING AND ASSUMES NO RESPONSIBILITY FOR ITS USE. ALL INFORMATION SHOULD BE VERIFIED</p>	

Edit Attributes	
Block name:	AC-BLOCK CONSULTANT
ENTER CONTRACTOR'S NAME	ABC CONTRACTORS
ENTER WORK COMMENCE DATE	12/26/2013
ENTER WORK COMPLETED DATE	12/26/2013
ENTER INSPECTOR'S NAME (CONSULTANT)	FULL NAME AND (CONSULTANT)
INSPECTOR'S DIARIES NUMBER	E-0001 OR #4215_(CONSULTANT)

*(AC-BLOCK CONSULTANT.DWG)*

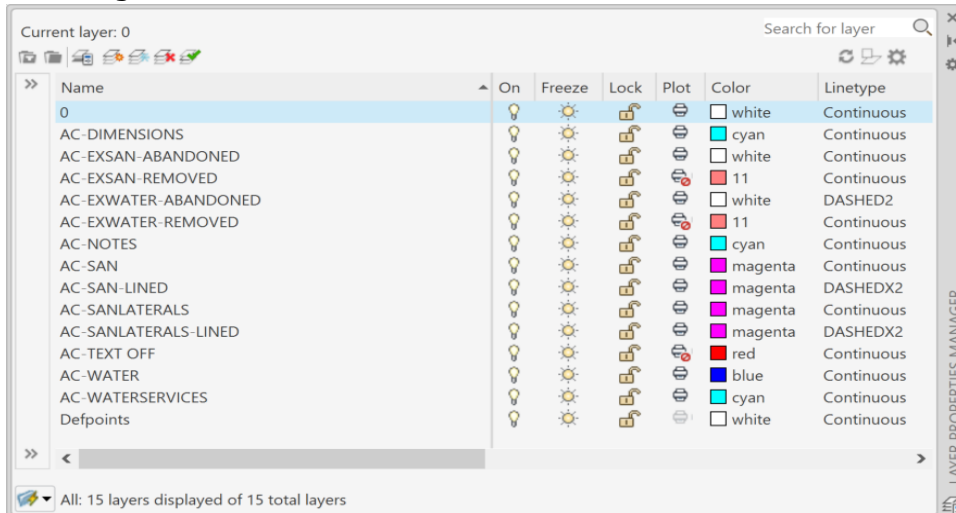
**Example**

AS-CONSTRUCTED DRAWING	
CONTRACTOR	FERMAR PAVING LTD.
WORK COMMENCED	06/18/2014
WORK COMPLETED	06/15/2016
INSPECTOR	TIM MITCHELL (MMM GROUP)
INSPECTOR'S DIARIES	E-0001 (MMM GROUP)
<p align="center">THE REGIONAL MUNICIPALITY OF HALTON MAKES NO WARRANTIES WITH RESPECT TO THE ACCURACY OF THIS DRAWING AND ASSUMES NO RESPONSIBILITY FOR ITS USE. ALL INFORMATION SHOULD BE VERIFIED</p>	

Contact Project Manager to obtain electronic diary number if one has not been assigned at the start of construction

### 9.1.3 As Constructed Layers for Sanitary Sewer, Watermain and Storm Sewer

Below is an overview of as constructed layers that are required for as constructed drawings. Some **PR-LAYER NAME** layers can be renamed to **AC-LAYER NAME** while other **AC-LAYERS** will have to be created with the following properties as illustrated in the layer dialogue box



#### Sanitary Sewer

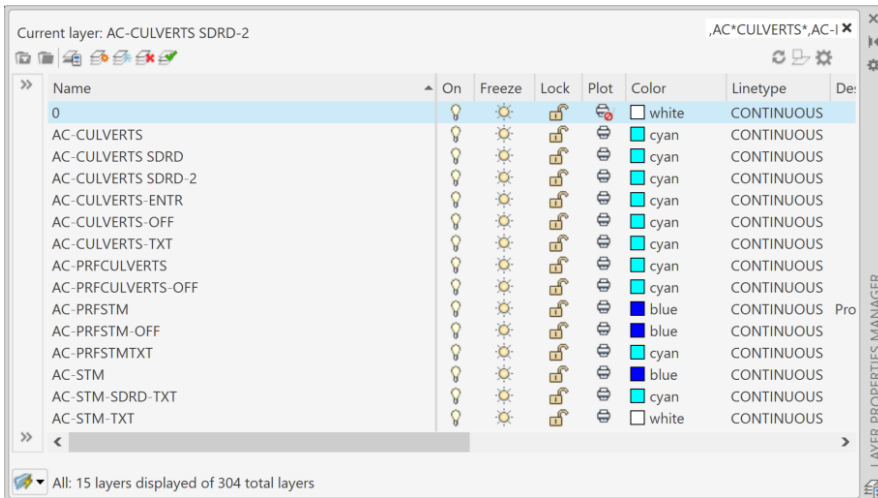
- Transfer all existing sanitary sewer components that were removed during construction to layer **AC-EXSAN-REMOVED**
- Rename layer PR-SAN to **AC-SAN**
- Rename layer PR-SAN-LINE to **AC-SAN-LINED**
- Rename layer PR-SANLATERALS to **AC-SANLATERALS**
- Rename layer PR-SANLATERALS-LINE to **AC-SANLATERALS-LINED**
- Rename layer PRFSAN to **AC-PRFSAN**

**Refer to sample drawing  
in Appendix 2**

#### Watermain

- Transfer all existing watermain components that were removed during construction (e.g. WW's and // removal symbol to layer **AC-EXWATER-REMOVED**)
- Move all existing watermain components that were abandoned e.g. 200mm CI Watermain to layer **AC-EXWATER-ABANDONED**
- Rename layer PR-WATER to **AC-WATER**
- Rename layer PR-WATERSERVICES to **AC-WATERSERVICES**
- Transfer any text such as station and offset, Northing and Eastings to layer **AC-TEXT OFF**.
- If watermain inverts are surveyed, those elevations will be placed on the **AC-NOTES** layer

## Storm Sewer and Culverts



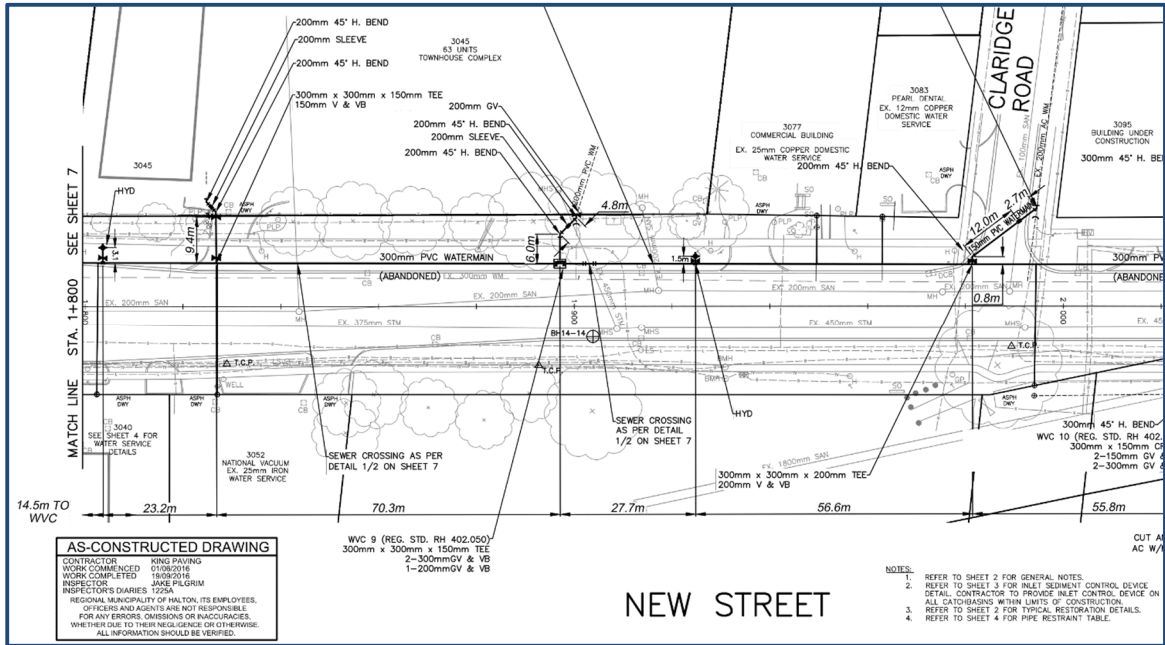
**Refer to  
sample  
drawing  
in Appendix 2**

- Transfer all existing storm sewer components that were removed during construction to layer **AC-EXSTM-REMOVED**
- Rename layer PR-STM to **AC-STM**
- Rename layer PR-STMLATERALS to **AC-STMLATERALS**
- Rename layer PR-CULVERTS to **AC-CULVERTS**
- Rename other layers from PR-\* to **AC-\*** for storm sewer and culverts as required.

## 9.2 Watermain, Sanitary Sewer and Storm Sewer Requirements

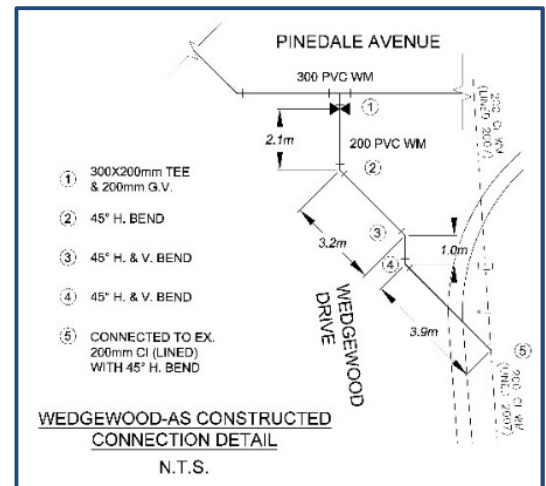
### 9.2.1 Watermain Requirements

- Rename and create layers listed in 9.1.4
- Type of materials for installed pipe and appurtenances (i.e. PVC, DI, etc.) and the type and size of existing watermain the contractor connected to.
- Use **AC-DIMENSIONS** (colour CYAN) to dimension all distances on the drawing (once move to as constructed location), from one appurtenance to another (i.e. valve to tee, tee to bend, or MH to MH, watermain to hydrant, etc.).

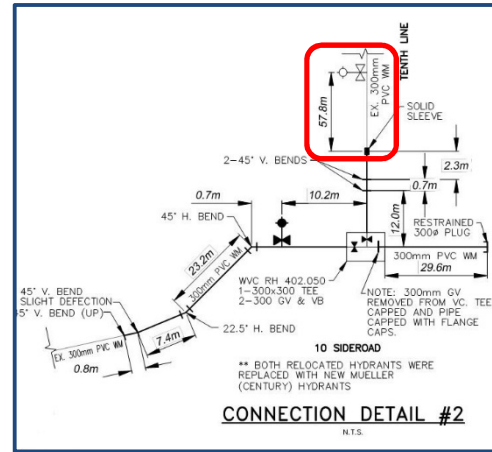
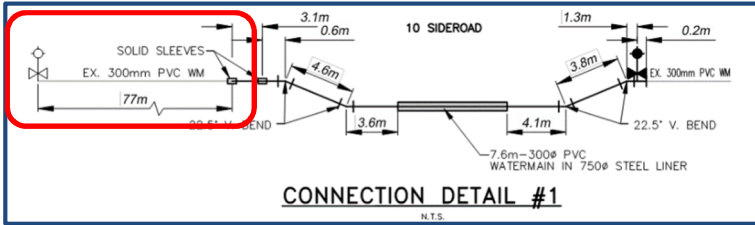


- Bends shall be labelled as horizontal, vertical or as a combination bend  
**EXAMPLES**

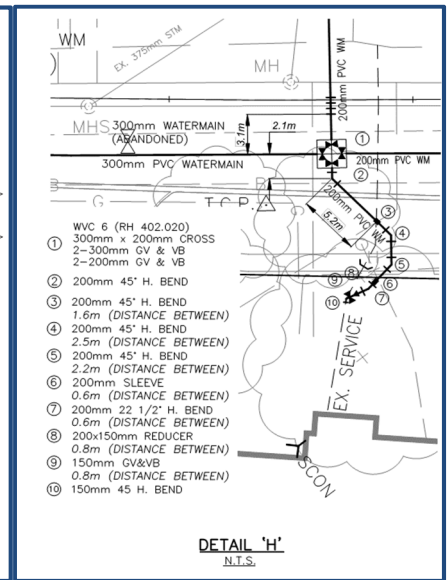
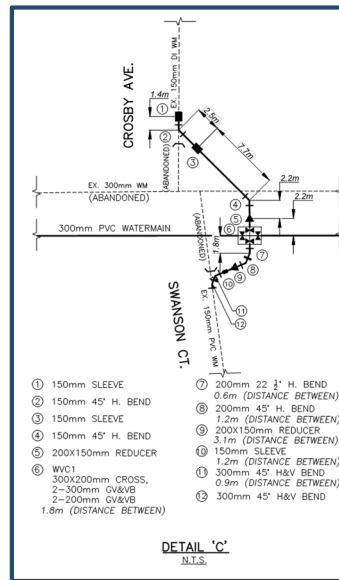
11 ¼° H. BEND, 22 ½° H. BEND, 45° H. BEND  
 11 ¼° V. BEND, 22 ½° V. BEND, 45° V. BEND  
 11 ¼° H. & V. BEND  
 22 ½° H. & V. BEND  
 45° H. & V. BEND



- Where a new watermain connects to an existing, a measurement shall be shown from the closest appurtenance on the existing watermain to the connection location.



- Any deviation from the design shall be drawn and noted. i.e. deviation from line or grade, change in sizes, etc.)



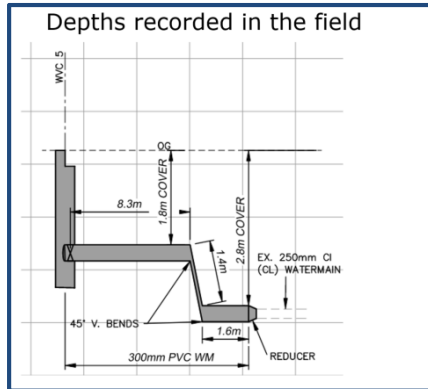
- Show correct location of water services on plan using swing ties from the water service locate sheets provided by the inspector or post construction survey data.

		<b>Title:</b> 018 -Water Service Locate Sheet <b>Document #:</b> Q-Infra-TF-BDINS-901 <b>Revision #:</b> 2		<b>Folder:</b> Inspections <b>Issue Date:</b> May 2019					
<b>WATER SERVICE LOCATE SHEET</b>									
<b>PR NUMBER:</b> W 3308A <b>LOCATION:</b> Linbrook Road, Burlington									
HOUSE NUMBER	DATE D/M/Y	SIZE (mm)	TYPE OF NEW SERVICE	DEPTH AT CURB BOX (m)	DIRECTION 1: LENGTH FROM CORNER OF BUILDING TO PL		DIRECTION 2: LENGTH TO CURB BOX		COMMENTS
					LEFT CORNER	RIGHT CORNER	LEFT	RIGHT	
Salem Road									
5380	19/11/2019	25	Type K copper	1.80	2.1		5.2		#5380 Salem Rd, Service from Linbrook Road, ex private 20mm copper
Linbrook Road									
5390	20/11/2019	25	Type K copper	1.75		8.2	9.7		ex private 20mm copper
5394	20/11/2019	25	Type K copper	1.70	11.7		1.1		ex private 20mm copper
5398	20/11/2019	25	Type K copper	1.75		6.5	0.7		ex private 20mm copper
5397	21/11/2019	25	Type K copper	1.70		6.5	4.3		ex private 20mm copper
5391	21/11/2019	25	Type K copper	1.75		5.0			ex private 20mm copper
5369	22/11/2019	25	Type K copper	1.80		6.4	2.8		ex private 20mm copper
5363	25/11/2019	25	Type K copper	1.75		7.1	9.8		ex private 20mm copper



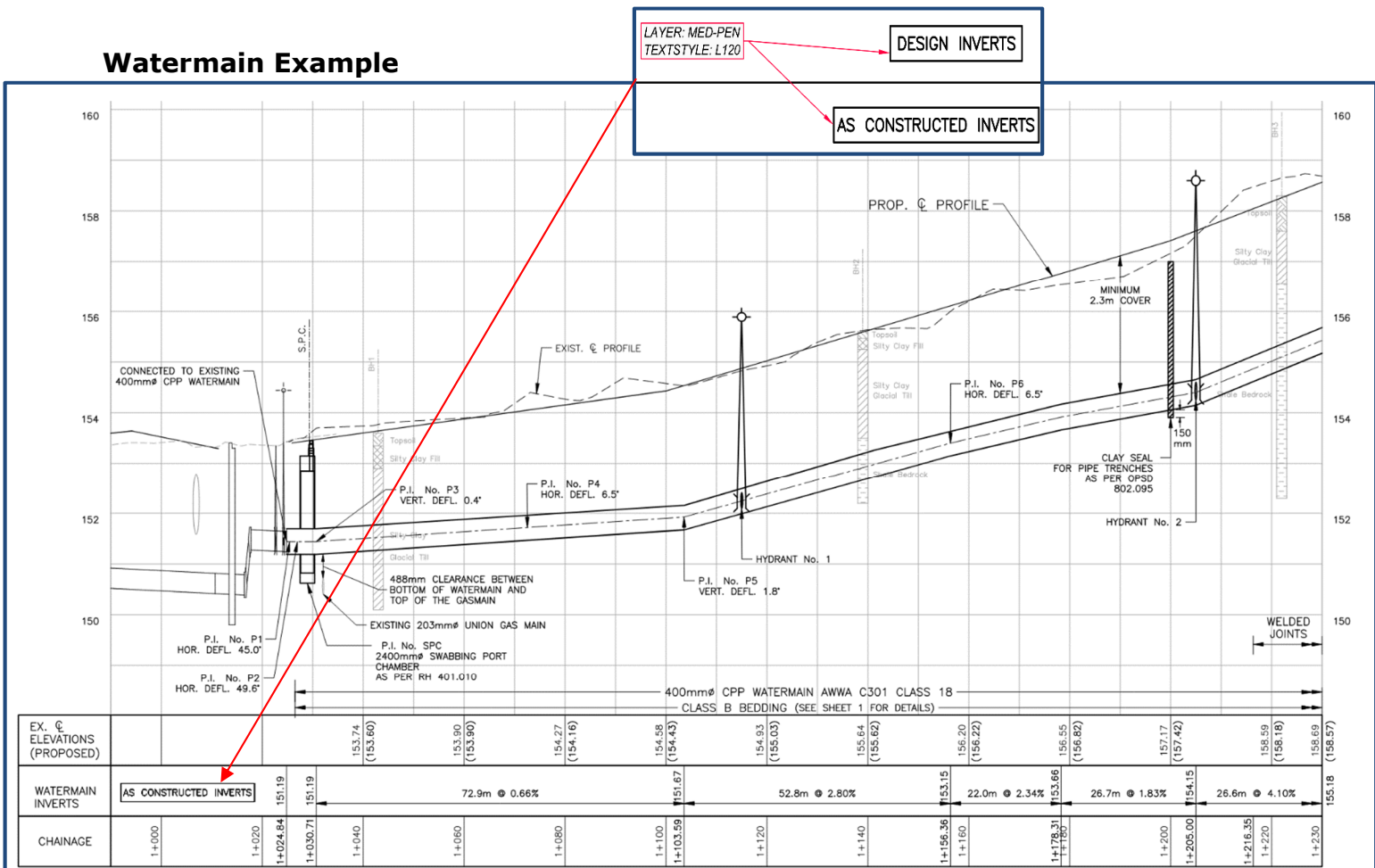
- Add any additional notes from the construction inspector's redlines.

**Example:**



- Include pipe material, pipe inverts at appurtenances if available. Indicate if the inverts are **As Constructed** or **Design** inverts as shown.

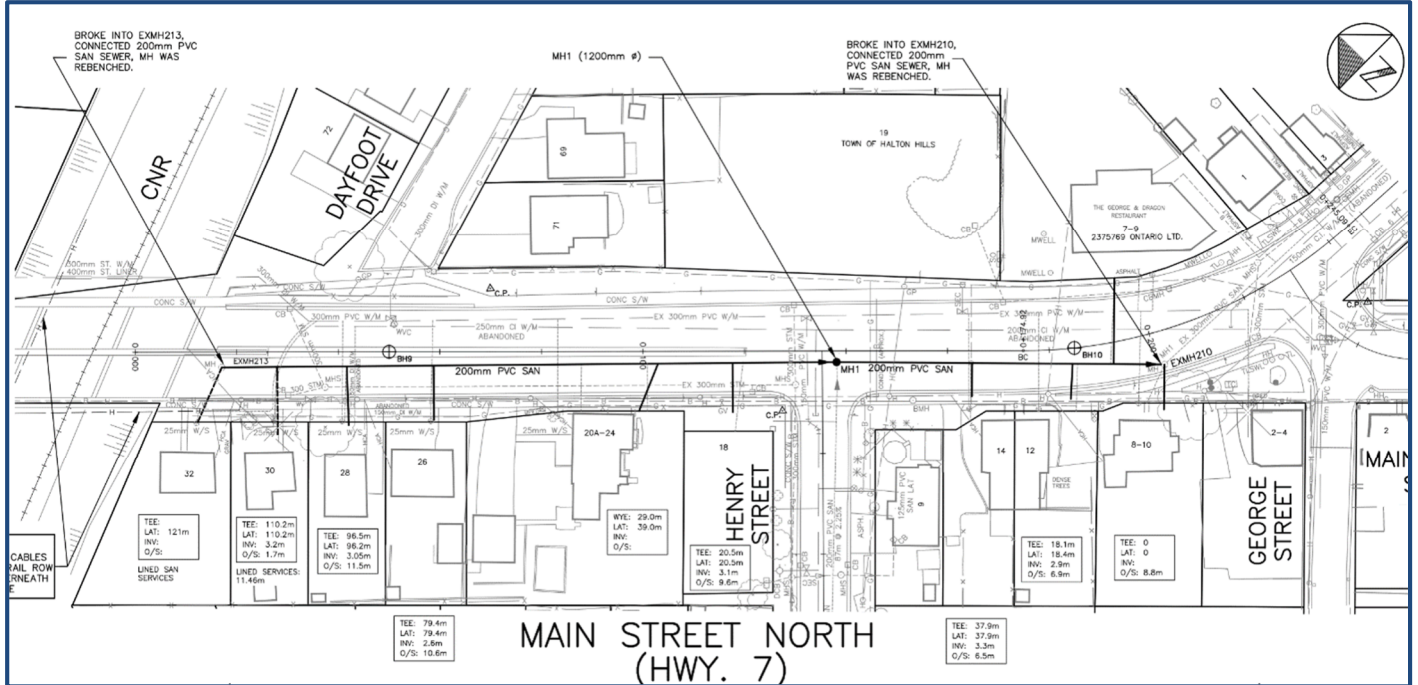
**Watermain Example**



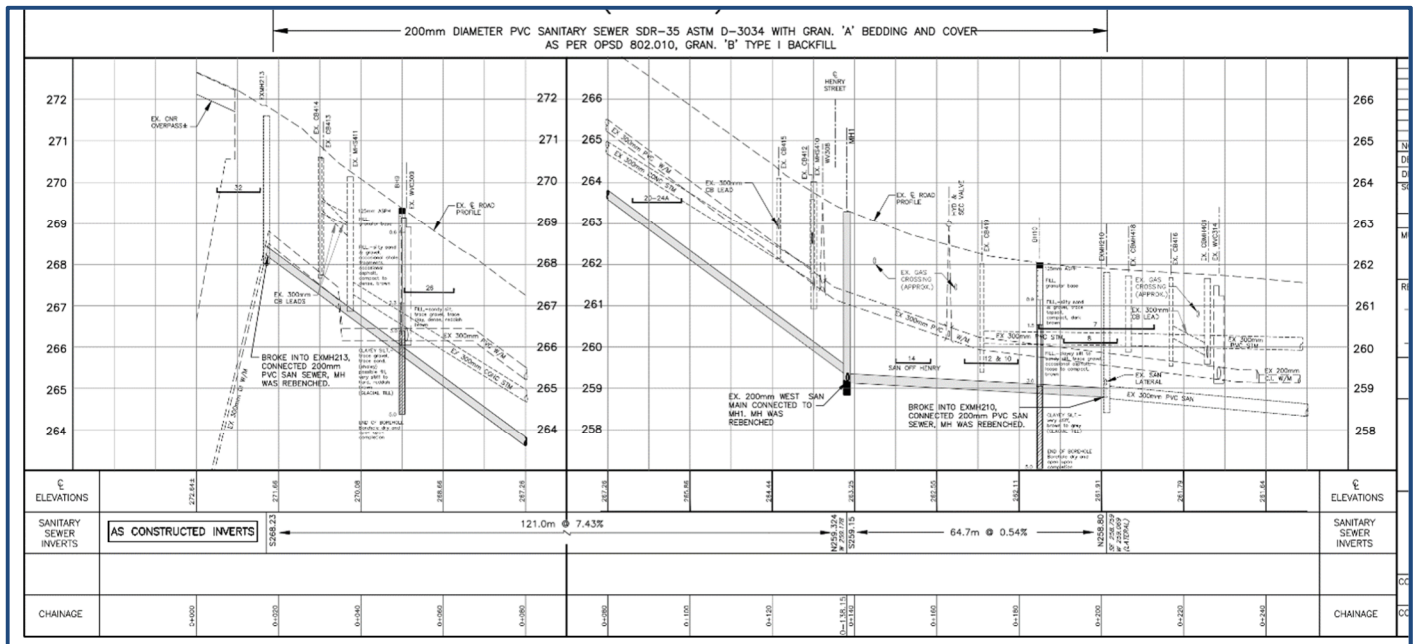
### 9.2.2 Sanitary Sewer Requirements

- ❑ Rename and create layers listed in 9.1.4
- ❑ All Civil 3D objects (structures and pipes) to be moved to as constructed location. Eg. MH, pipe inverts, lengths, etc.

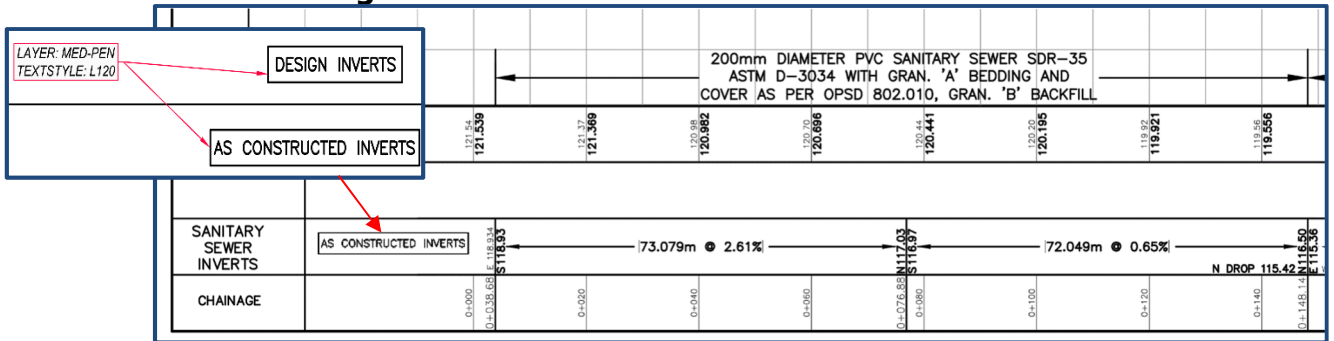
#### PLAN



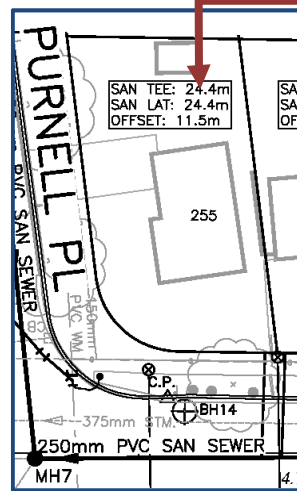
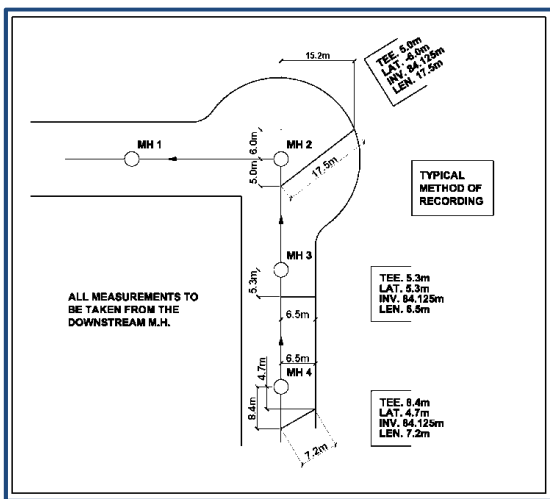
#### PROFILE



- Include pipe material, pipe inverts at manholes and indicate if the inverts are **As Constructed** or **Design** inverts as shown.



- Provide stationing of each sewer service tee from sewer manhole and offset distance to lateral from sewer main. Use SANTEE.DWG Halton label format  
Layer: AC-NOTES



TEE \_\_\_\_\_  
LAT \_\_\_\_\_  
INVERT \_\_\_\_\_  
O/S \_\_\_\_\_

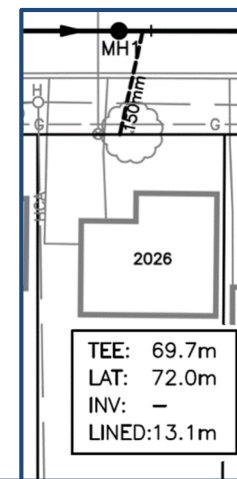
(AC-SANTEE.dwg)

- And from swing ties from the sanitary lateral locate sheets provided by the inspector or post construction survey data.

**SANITARY LATERAL LOCATE SHEET**

PR NUMBER: PR-2870  
LOCATION: Mountainside Dr.

HOUSE NUMBER	DATE D/M/Y	SIZE (mm)	TYPE OF NEW SERVICE LATERAL	LENGTH (m)	DIRECTION 1: LENGTH FROM CORNER OF BUILDING TO PL		DIRECTION 2: LENGTH TO CURB BOX		COMMENTS
					LEFT CORNER	RIGHT CORNER	LEFT	RIGHT	
2054	23/09/13	100	Lined	11.6	15			13.2	New property MH
2050	23/09/13	100	Lined	18.4		0.3	3.9		100mm C/O & Riser
2028	6/11/2013	100	Lined	14.3		2.8	2.5		100mm C/O & Riser
2026	30/09/13	100	Lined	13.1		5.9	3.7		100mm C/O & Riser
2048	15/11/13	100	Lined	20.3	10			4.5	100mm C/O & Riser
2075	30/10/13	100	Lined	11.6	6.7			2	100mm C/O & Riser Off Tyrrell
2058	20/09/13	100	Lined	15.2					100mm C/O inside the house
2044	18/11/13	100	Lined	21.1		9		5	100mm C/O & Riser
2022	6/11/2013	100	Lined	11.2	6			4	100mm C/O & Riser
2052	28/11/13	100	Lined	24.4					100mm C/O inside the house

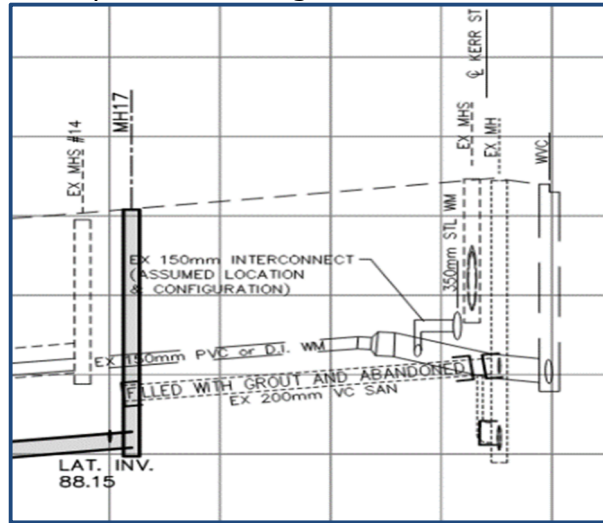


(AC-SANTEELINED.dwg)

- Add any additional notes from the construction inspector’s redlines.

**Example**

Ex. Pipe filled with grout and abandoned



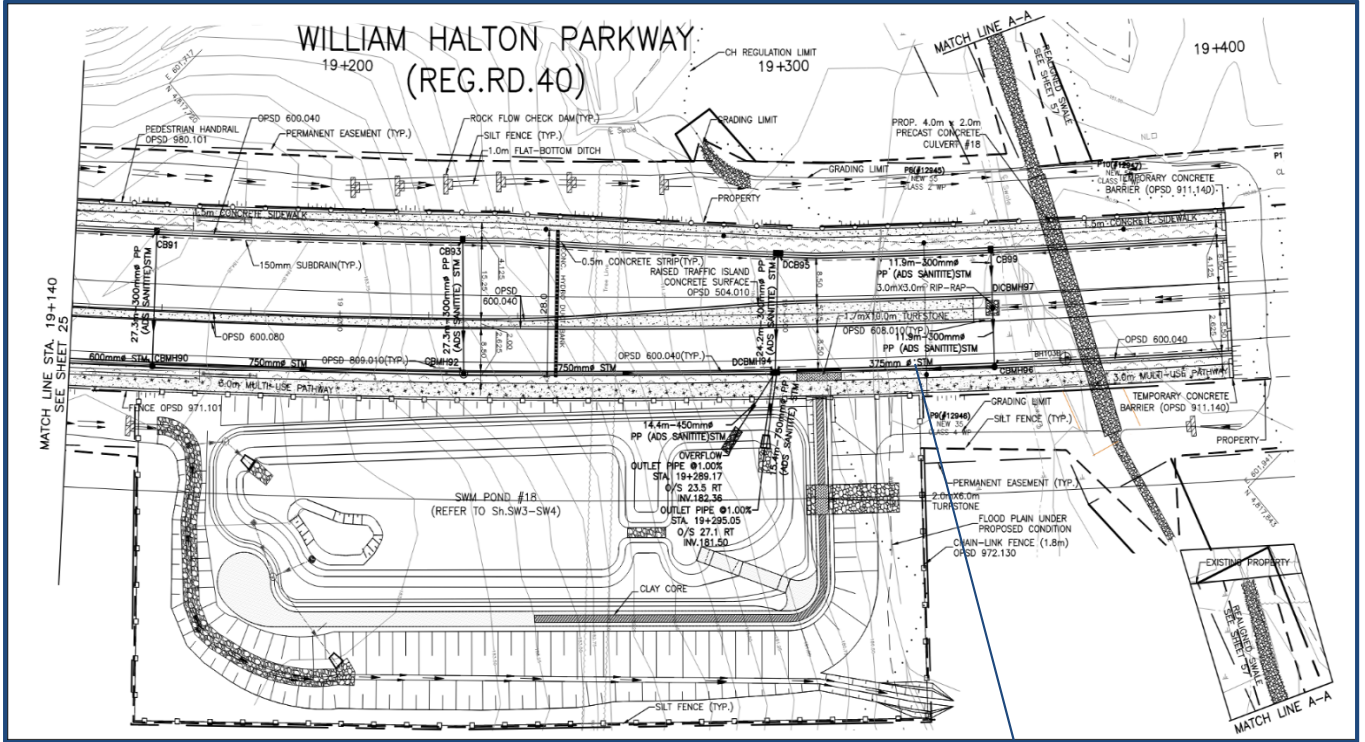
**9.2.3 Storm Sewer Requirements**

- Rename and create layers listed in 9.1.4
- All Civil 3D objects (structures and pipes) to be moved to as constructed location. Eg. MHS, CB, DICB pipe inverts, lengths, etc.
- Update **ALL** Storm Sewer Data table to reflex as constructed information provided by inspector

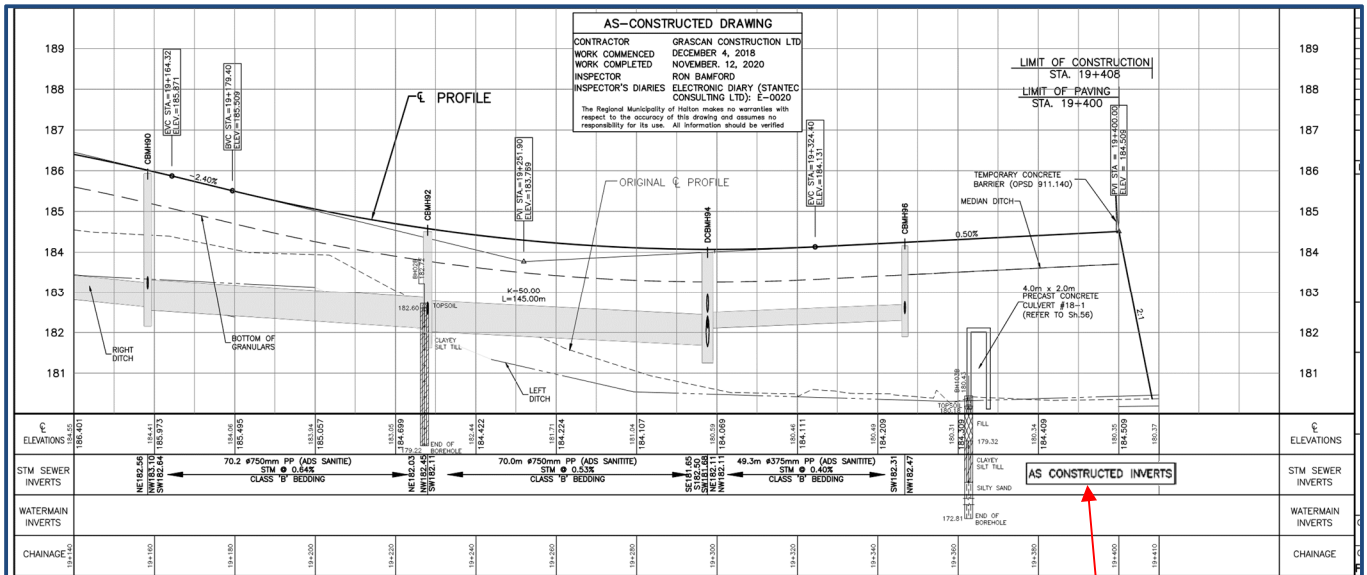
STORM SEWER DATA AS CONSTRUCTED								
MH. #	STATION	C. CONSTR OFFSET	MH. STD. DWG.	INVERTS		FRAME & COVER STD.	TOP OF FRAME ELEV.	REMARKS
				INLET	OUTLET			
CBMH48	17+793.41	15.20 RT	701.011	190.57 NE 191.46 NW 191.24 SE	190.48 SW	400.082	193.411	
CB49	17+797.62	20.68 LT	705.010		191.65 SE	400.082	193.405	
CBMH52	17+872.00	13.86 RT	701.010	190.88 NE 192.19 NW	190.84 SW	400.082	194.048	
CB53	17+872.00	8.16 LT	705.010		192.30 SE	400.082	194.125	
CBMH54	17+945.00	12.34 RT	701.010	191.39 NE 192.82 NW	191.34 SW	400.082	194.492	
CB55	17+945.00	11.45 LT	705.010		192.94 SE	400.082	194.511	

- Label all storm pipes and catch basin leads in plan as shown below  
Format=Length (m)-Size diameter symbol pipe material (manufacturer) STM

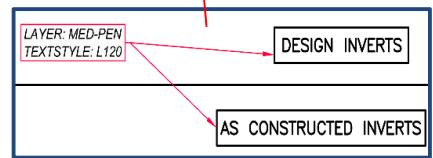
Eg. **39.5m-750mm Ø PP (ADS SANITITE) STM**



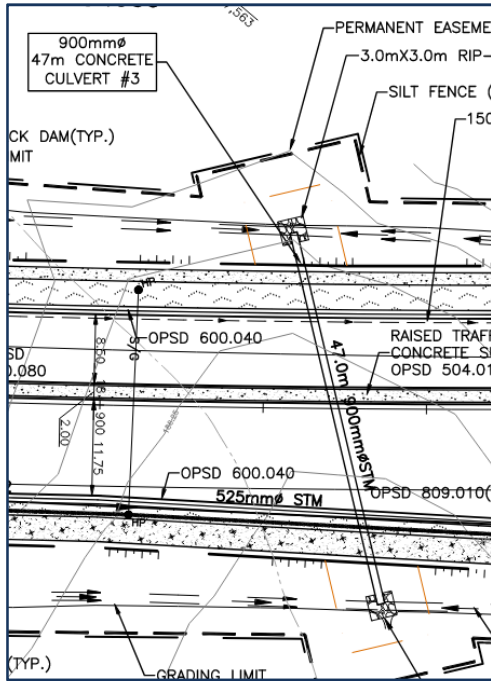
Pipe information will be shown in the chainage area. See next page.



- Include as constructed elevations, slope and pipe inverts at manholes from inspectors redlines. Indicate if the inverts are As Constructed or just Design inverts. Indicate if the inverts are **As Constructed** or **Design** inverts as shown.



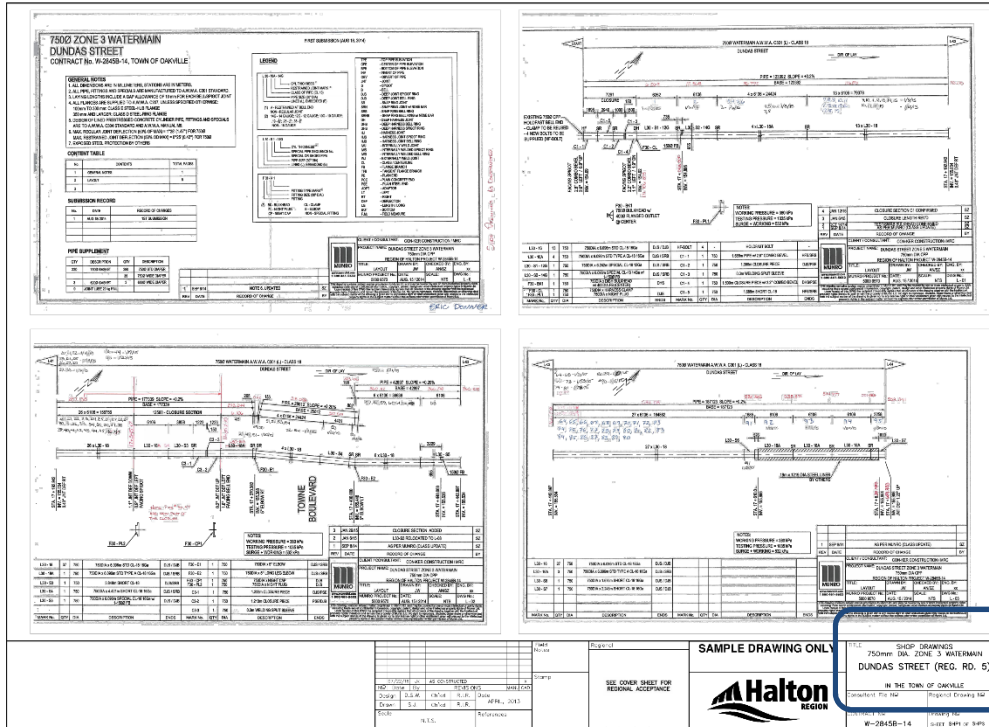
- Update Culvert Data table with as constructed information
- Label culvert information on plan as shown below



CULVERT DATA AS CONSTRUCTED									
CULVERT NO.	DIA. (mm)	LENGTH (m)	INLET			OUTLET			REMARKS
			STATION	CONST. OFFSET	INV. ELEV.	STATION	CONST. OFFSET	INV. ELEV.	
3	900	47	18+923.47	21.51 LT	186.43	18+934.62	23.92 RT	185.77	
4	900	45	19+020.00	20.09 LT	185.99	19+020.00	25.05 RT	185.19	

## 9.3 As Constructed-Shop Drawings

- Submit all **red lined** shop drawings and supporting documents. Create a new plan sheet for:
  - Concrete Pressure Pipe (CPP) shop drawings
  - OIL and Grit Separators
  - Pre-cast culverts
  - Valve chambers
  - Other (discretion of the PM)



Required Title Block Information As Shown

TITLE SHOP DRAWINGS 750mm DIA. ZONE 3 WATERMAIN DUNDAS STREET (REG. RD. 5) 300m E. OF TOWNE BLVD. TO SIXTH LINE IN THE TOWN OF OAKVILLE	
Consultant File NO	Regional Drawing NO
CONTRACT NO W-2845B-14	Drawing NO SHEET SHP1 OF SHP3

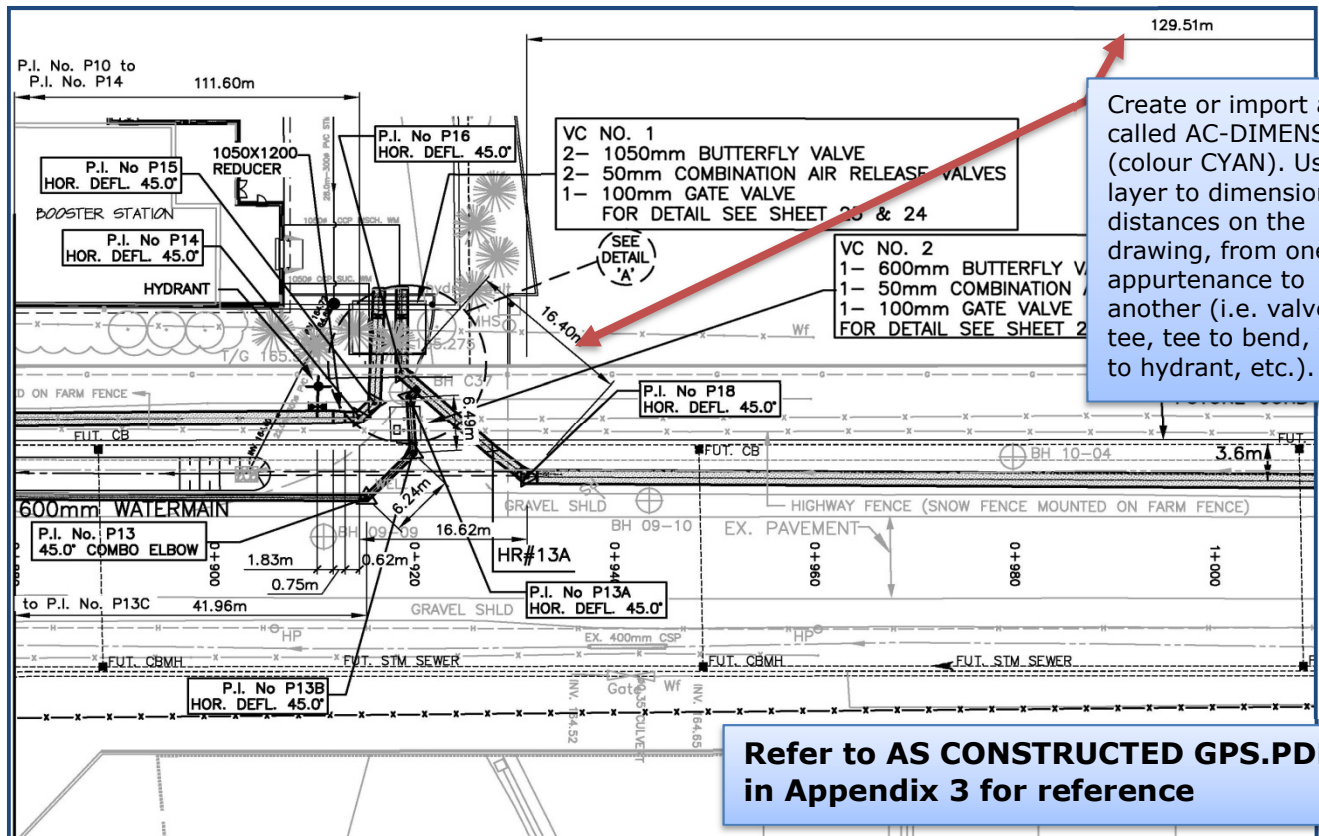


Refer to sample drawings in Appendix 2

## 9.4 Using GPS Technology for As Constructed Information

Pipes, manholes, chambers, appurtenance's or other features can be picked using GPS technology for the creation of the As Constructed or as a method of accurately detailing the daily work by the inspector during the construction phase. The following data should become part of the As Constructed data and shown on the drawings.

- The datum the data was collected in must be shown on the drawing.  
i.e. NAD 83, UTM Zone 17
- All points that are GPS must be shown on the drawing using a common numbering system. This information must match the reporting method.
- The preferred method would be numbering of the points on the Plan & Profile drawings with a chart showing the coordinates and point numbers. The chart must be labelled with "As-Constructed Information".
- Include Bench Mark information on all drawing sheets, listing both description of bench mark and vertical datum used is to be included.
- Shop drawing must also be included. See section 9.2
- Ensure that all the requirements are met from section 9.2.



AS CONSTRUCTED 600Ø WATERMAIN DATA

PI No.	EASTING	NORTHING	DESCRIPTION
P13	600854.16	4813817.36	HOR. DEFL. 45.0'
P13A	600845.22	4813823.23	HOR. DEFL. 45.0'
P13B	600849.07	4813827.62	HOR. DEFL. 45.0'

AS CONSTRUCTED GPS DATA

AS CONSTRUCTED 1050Ø AND 1200Ø WATERMAIN DATA

PI No.	EASTING	NORTHING	DESCRIPTION
P14	600850.24	4813821.17	1050Ø HOR. DEFL. 45'
P15	600848.09	4813821.15	1050Ø HOR. DEFL. 45'
P16	600843.99	4813820.84	1050Ø HOR. DEFL. 45'
P18	600842.72	4813837.39	1050X1200 INCREASER HOR. DEFL. 45'
P19	600749.94	4813929.86	1200Ø HOR. DEFL. 1.60'
P20	600689.02	4813992.29	1200Ø VERT. DEFL. 1.0'
VC#1 VENT.	600485.48	4813813.43	VC#1 VENT PIPE
HYDRANT V&BOX	600859.05	4813815.71	HYDRANT V&BOX

## **10.0 Drawing Series and Descriptions**

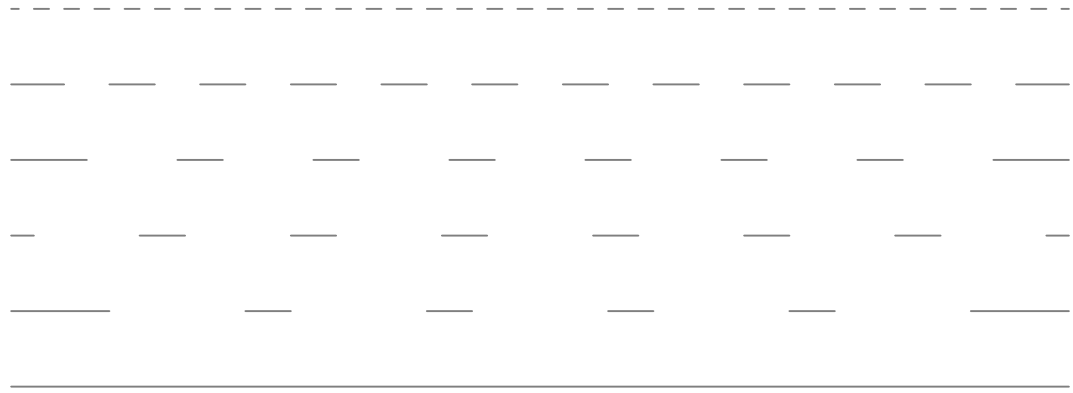
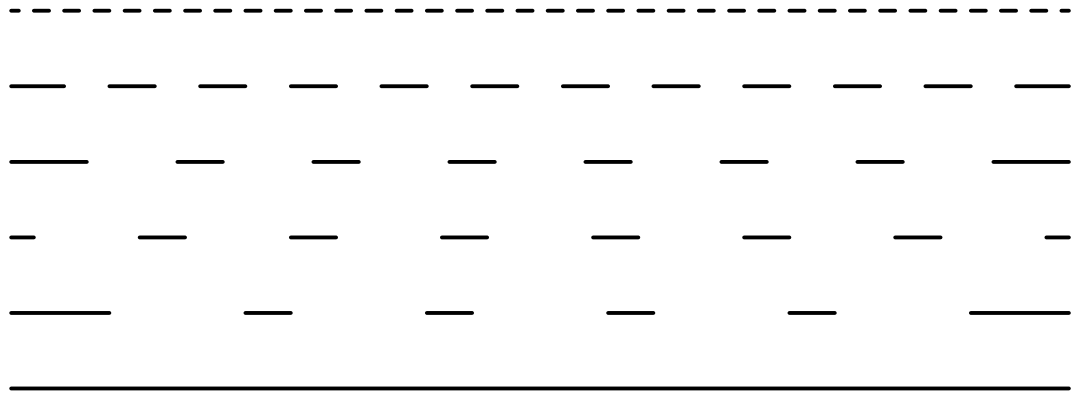
Halton has developed standard set symbology/blocks and linetypes that to be used during baseplan, design and as constructed workflows. This next section contains all of Halton’s symbols, linetypes and layering specifications.


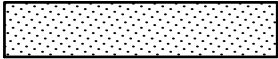





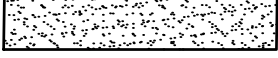


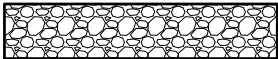
<b>Series</b>	<b>Description</b>
<b>50-53</b>	Custom Halton Linetypes
<b>75</b>	Typical Hatch Patterns for Road Reconstruction Projects
<b>80A-80C</b>	Typical Sheets
<b>90-95</b>	General Annotation
<b>100-106</b>	Miscellaneous
<b>200-201</b>	Reference Points
<b>300-301</b>	Adjustments and Removals
<b>400</b>	Existing Roadway
<b>401-404</b>	Proposed Roadway
<b>405-406</b>	Existing Traffic Works
<b>407-409B</b>	Proposed Traffic Works
<b>410</b>	Existing Pavement Markings
<b>411</b>	Proposed Pavement Markings
<b>412</b>	Proposed Pavement Markings-Roundabouts
<b>413</b>	Proposed Pavement Markings
<b>414</b>	Proposed Road Signs
<b>415</b>	Typical Traffic Data Charts
<b>416</b>	Typical Roadway Lighting Data Charts
<b>417-418</b>	Sediment and Erosion Control
<b>500</b>	Sanitary Sewer Forcemain
<b>501</b>	Sanitary Sewer
<b>502</b>	Sanitary Sewer-Lining
<b>600-601</b>	Storm Sewer
<b>602</b>	Culverts
<b>603</b>	Storm Sewer/Culvert Data Chart
<b>700-701</b>	Utilities
<b>800-801</b>	Existing Watermain
<b>802-803</b>	Proposed Watermain
<b>900</b>	Landscaping
<b>2000A,B,C</b>	Regulatory Signs
<b>2001A,B,C</b>	Warning Signs
<b>2002A &amp; B</b>	Temporary Conditions Signs

DESCRIPTION	LINETYPE	PLAN
<u>GAS &amp; OIL</u>		<i>NOTE: MUST DEFINE A "ROMANS" TEXTSTYLE WITH A HEIGHT OF 0</i>
GAS	EXUGAS	<i>LAYER=EXGAS</i> — — — — — G — — — — — G — — — — — G — — — — — G —
GAS (HIGH PRESSURE)	EXHPGAS	— — — — — GH — — — — — GH — — — — — GH — — — — — GH —
OIL PIPE LINE (HIGH PRESSURE PETROLEUM PIPELINE)	OILPIPELINE	<i>LAYER=EXOIL</i> — — — — — OIL — — — — — OIL — — — — — OIL — — — — — OIL —
<u>MISCELLANEOUS FIBER OPTIC CABLE</u>		
FIBER OPTIC CABLE—UNDERGROUND	FO	<i>LAYER=EXMSC—FO</i> ————— FO ————— FO ————— FO ————— FO —————
FIBER OPTIC CABLE—AERIAL	A—FO	————— A—FO ————— A—FO ————— A—FO ————— A—FO —————
<u>BELL</u>		
BELL CABLE—UNDERGROUND	EXUBELL	<i>LAYER=EXBELL</i> — — — — — B — — — — — B — — — — — B — — — — — B —
BELL CONDUIT—UNDERGROUND	BELLCONDUIT	— — — — — BC — — — — — BC — — — — — BC — — — — — BC —
BELL FIBRE OPTIC—UNDERGROUND	B—FO	<i>LAYER=EXBELL—FO</i> ————— B—FO ————— B—FO ————— B—FO ————— B—FO —————
BELL CABLE—AERIAL	BCA	————— BCA ————— BCA ————— BCA —————
<u>ROGERS</u>		
ROGERS CABLE—UNDERGROUND	EXUROGERS	<i>LAYER=EXROGERS</i> — — — — — R — — — — — R — — — — — R — — — — — R —
ROGERS FIBRE OPTIC—UNDERGROUND	R—FO	<i>LAYER=EXROGERS—FO</i> ————— R—FO ————— R—FO ————— R—FO ————— R—FO —————
<u>HYDRO</u>		
HYDRO CABLE—UNDERGROUND	EXUHYDRO	<i>LAYER=EXHYDRO</i> — — — — — H — — — — — H — — — — — H — — — — — H —
HYDRO CABLE—AERIAL	HCA	————— HCA ————— HCA ————— HCA —————
HYDRO FIBER OPTIC—UNDERGROUND	H—FO	<i>LAYER=EXHYDRO—FO</i> ————— H—FO ————— H—FO ————— H—FO ————— H—FO —————
<u>TELEVISION</u>		
TV—UNDERGROUND	EXUTV	<i>LAYER=EXTV</i> — — — — — TV — — — — — TV — — — — — TV — — — — — TV —
TV—AERIAL	TVCA	————— TVCA ————— TVCA ————— TVCA —————
TV FIBER OPTIC—UNDERGROUND	TV—FO	<i>LAYER=EXTV—FO</i> ————— TV—FO ————— TV—FO ————— TV—FO ————— TV—FO —————



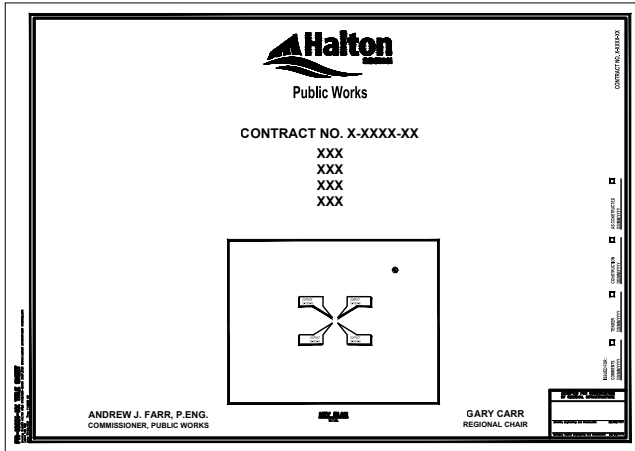


DESCRIPTION	LINETYPE	PLAN
<u>PAVEMENT MARKINGS (EXISTING)</u>  1m LINE, 1m GAP  3m LINE, 3m GAP  3m LINE, 6m GAP  3m LINE, 7m GAP  3m LINE, 9m GAP  SOLID WHITE, SOLID YELLOW	PAINT11  PAINT33  PAINT36  PAINT37  PAINT39  CONTINUOUS	<p><i>NOTE: MUST DEFINE A "ROMANS" TEXTSTYLE WITH A HEIGHT OF 0</i></p> <p><i>LAYER=EXPMARKS</i></p> 
<u>PAVEMENT MARKINGS (PROPOSED)</u>  1m LINE, 1m GAP  3m LINE, 3m GAP  3m LINE, 6m GAP  3m LINE, 7m GAP  3m LINE, 9m GAP  SOLID WHITE, SOLID YELLOW	PAINT11  PAINT33  PAINT36  PAINT37  PAINT39  CONTINUOUS	<p><i>LAYER=PR-PMARKS</i></p> 

	HATCH	PATTERN	SUGGESTED SCALE FOR 1:500	ANGLE	PEN WIDTH	PEN COLOUR
REMOVALS	 MILLING	ANSI31	0.5	0°	0.25mm	YELLOW (2)
	 PAVEMENT REMOVAL	DOTS	0.4	45°	0.25mm	YELLOW (2)
	 CONCRETE REMOVAL	ANSI37	0.4	0°	0.25mm	YELLOW (2)
	 CLEARING AND GRUBBING	NET	0.4	45°	0.25mm	YELLOW (2)
PROPOSED WORKS	 WIDENING & RESURFACING	SOLID	N/A	N/A	0.25mm	254
	 CONCRETE	AR-CONC	0.5	0°	0.10mm	RED (1)
	 TOP SOIL & SOD	SOD	0.5	0°	0.10mm	RED (1)
	 GRAVEL-DRIVEWAYS & SHOULDERS	AR-SAND	0.01	0°	0.25mm	YELLOW (2)
	 PAVED DRIVEWAYS, SHOULDERS & BOULEVARDS	DOTS	0.3	0°	0.25mm	YELLOW (2)
	 INTERLOCK STONE	AR-HBONE	0.01	0°	0.10mm	RED (1)
	 RIP-RAP	GRAVEL	0.1	0°	0.10mm	RED (1)

**NOTES:**

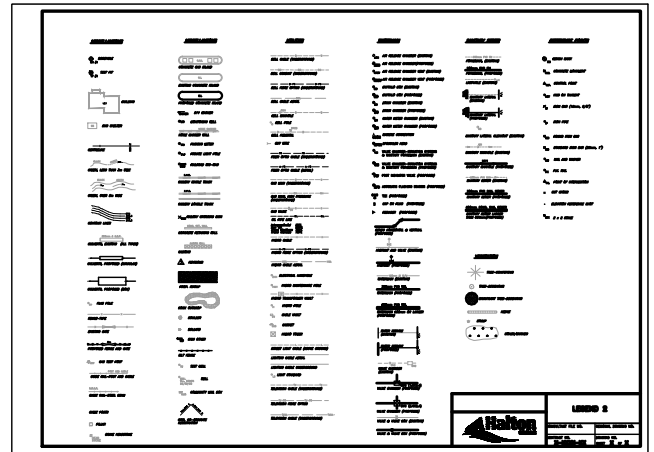
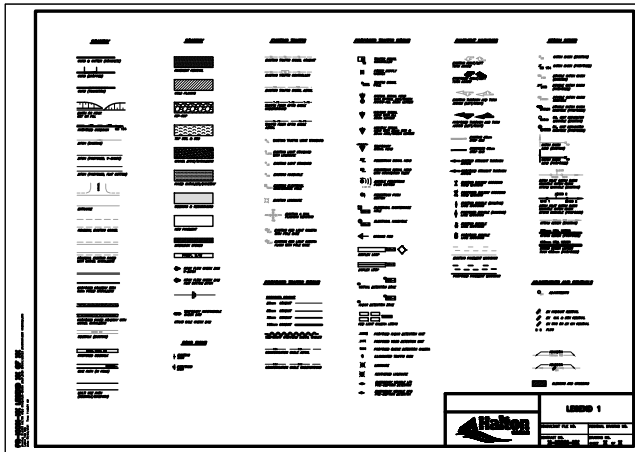
1. THE SCALES FOR HATCH PATTERNS ARE SUGGESTION ONLY. SCALE TO SUITE AREA TO BE HATCHED.
2. ANGLE IS BASED ON PLAN VIEW NOT WORLD COORDINATE SYSTEM.



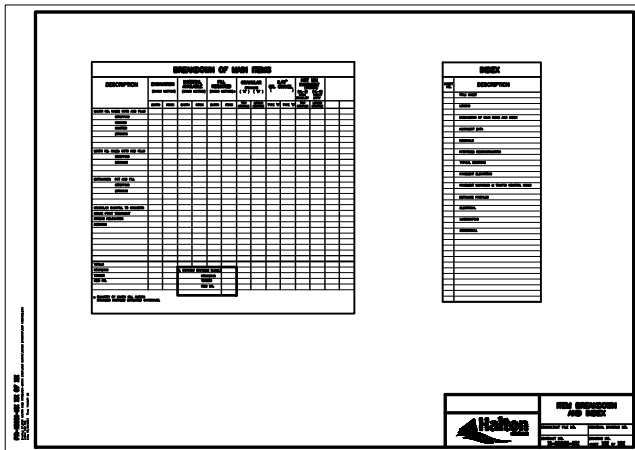
PAGE (LAYOUT) SETUP

PAPER SIZE: 914mmX610mm (36"X24")  
 DRAWING ORIENTATION: LANDSCAPE  
 PLOT SCALE: 1 mm=1 Unit (1:1)

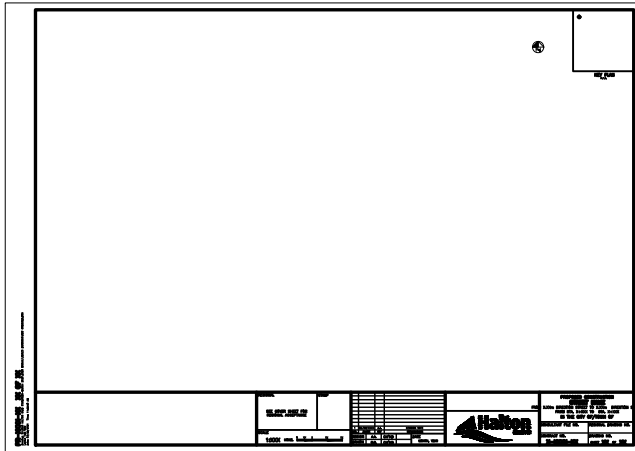
1000\_COVER SHEET.DWG



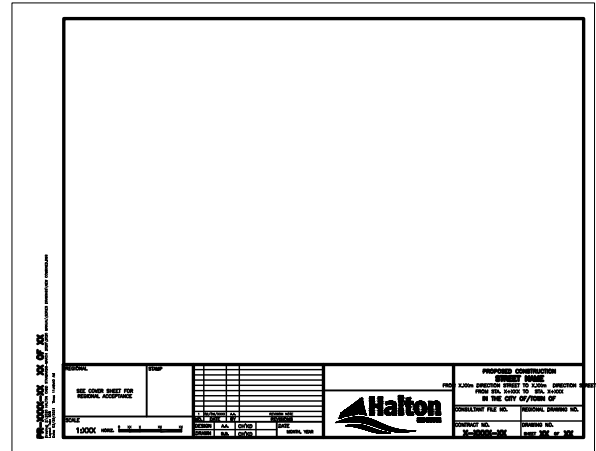
LEGEND.DWG



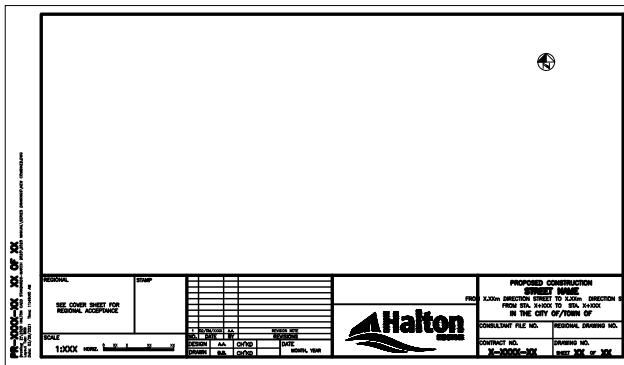
1000\_ITEM-INDEX.DWG



1000\_PLAN.DWG



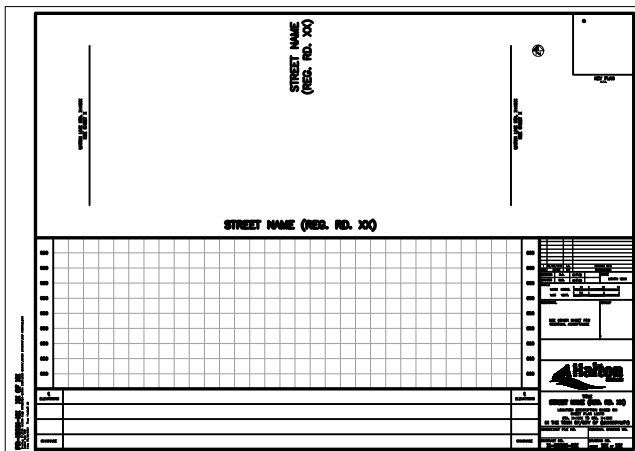
1000\_PLAN C SIZE SHEET.DWG



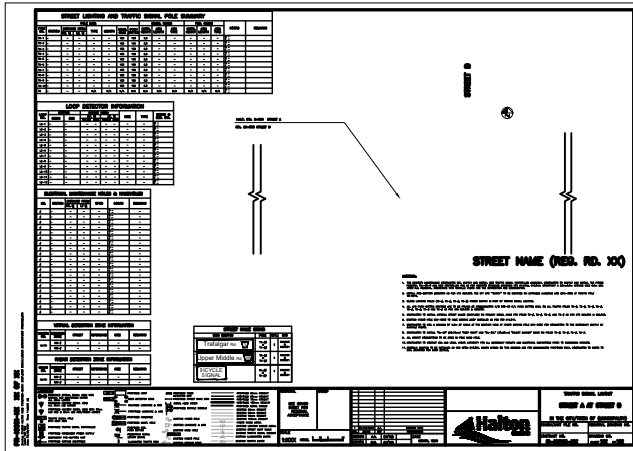
PLAN B SIZE SHEET (11X17).DWG

PAGE (LAYOUT) SETUP

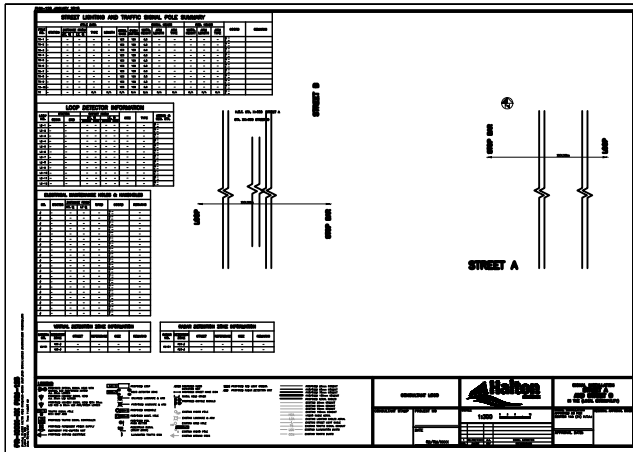
PAPER SIZE: 914mmX610mm (36"X24")  
 DRAWING ORIENTATION: LANDSCAPE  
 PLOT SCALE: 1mm=1 Unit (1:1)



1000\_PLAN+PROFILE SHEET (WITH ATTRIBUTES).DWG  
 1000\_PLAN+PROFILE SHEET (WITHOUT\_ATTRIBUTES).DWG



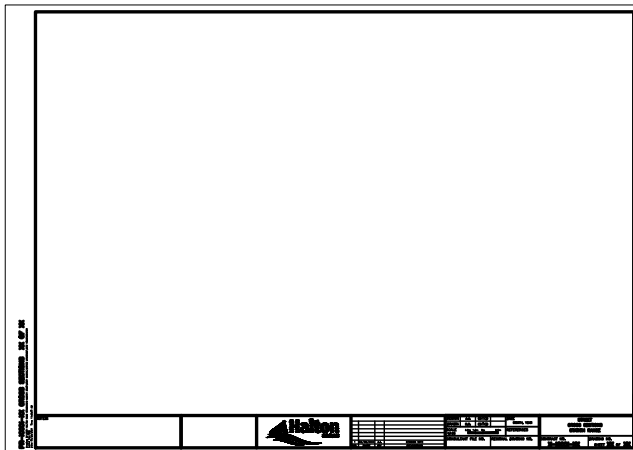
1000\_SIGNAL SHEET.DWG



PAGE (LAYOUT) SETUP

PAPER SIZE: 914mmX610mm (36"X24")  
 DRAWING ORIENTATION: LANDSCAPE  
 PLOT SCALE: 1mm=1 Unit (1:1)

NEW PHM-125 TEMPLATE .DWG  
 (HALTON-SIGNAL APPROVAL DRAWING)



1000\_ITEM-INDEX.DWG

COVER SHEET

Public Works

**CONTRACT NO. X-XXXX-XX**

**DESCRIPTION  
DESCRIPTION**

**IN THE  
TOWN OF OR CITY OF**

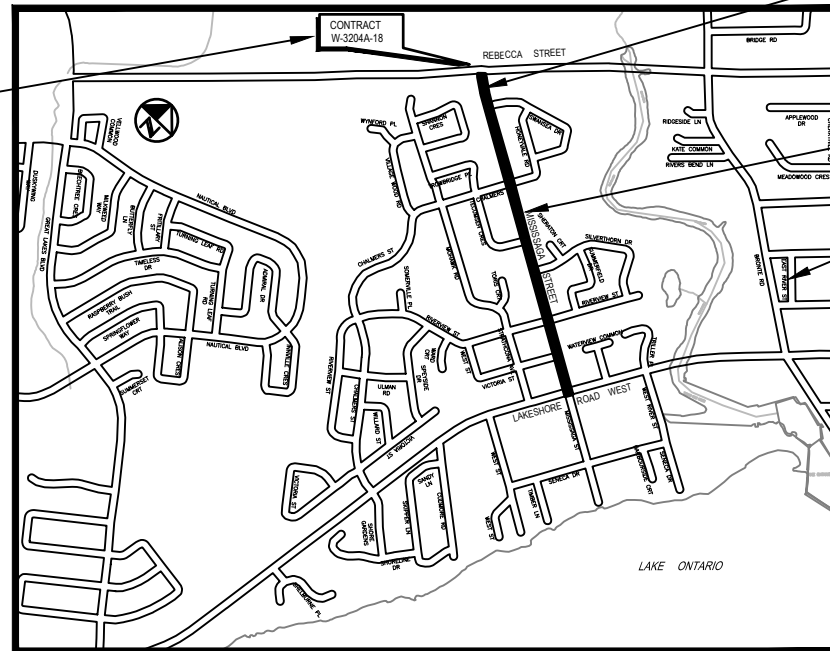
TEXT STYLE: L500,  
LAYER: BROAD-PEN

LAYER: FINE-PEN  
HATCH PATTERN: SOLID  
HATCH COLOUR: CYAN

LAYER: FINE-PEN  
(AS PER BLOCK)

MAJOR ROADS  
LAYER: FINE-PEN  
TEXTSYL: L80

MINOR ROADS  
LAYER: XFINE-PEN  
TEXTSYL: L60



**KEY PLAN**

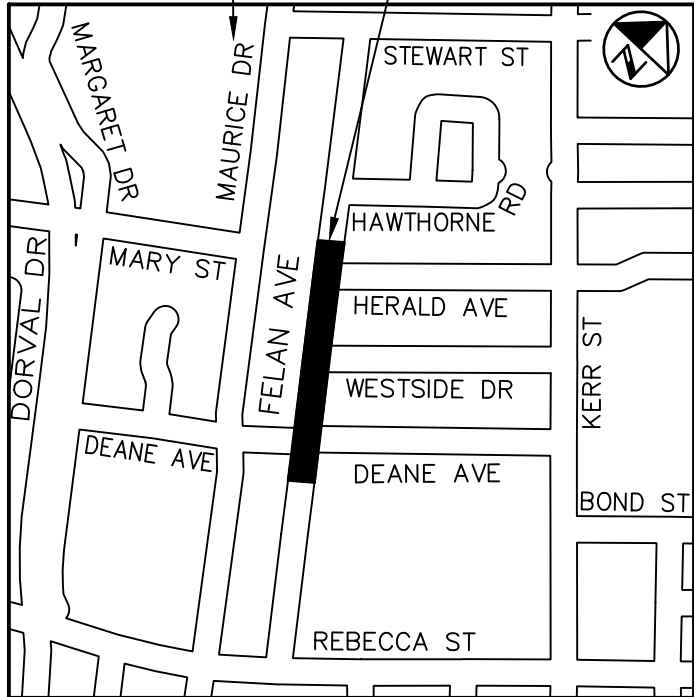
LAYER: BROAD-PEN  
TEXTSYL: L200

KEY PLAN-SEWER AND WATERMAIN PROJECTS

KEY PLAN-ROAD RECONSTRUCTION AND ROAD RESURFACING PROJECTS

LAYER: XFINE-PEN  
TEXTSYLE: L60 (MIN.)

LAYER: FINE-PEN  
HATCH PATTERN: SOLID



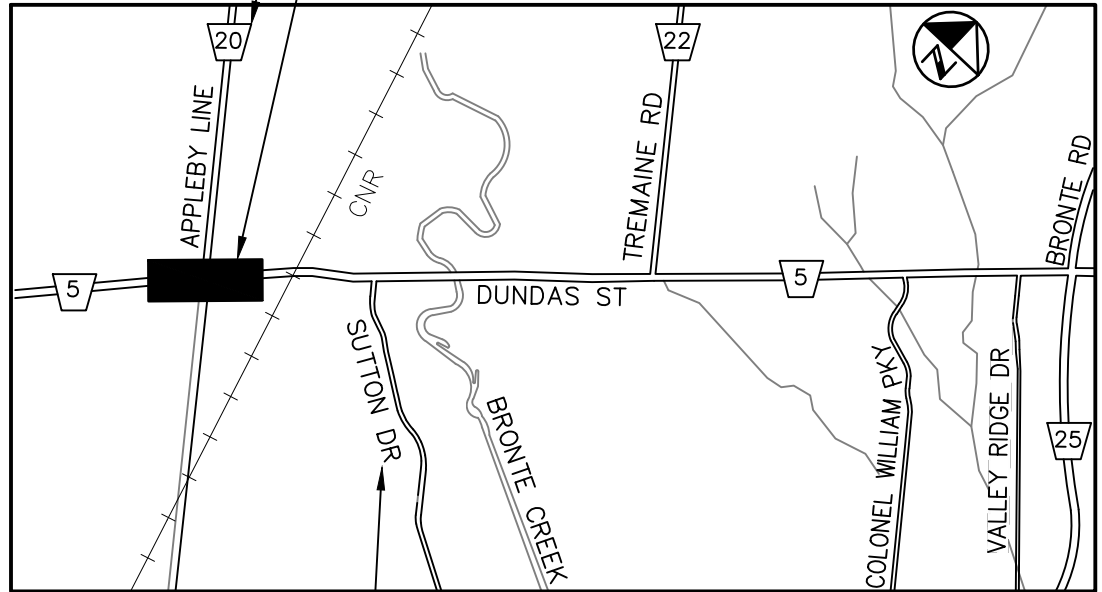
KEY PLAN  
N.T.S.

LAYER: MED-PEN  
TEXTSTYLE: L140

LAYER: FINE-PEN  
TEXTSTYLE: L80

USE FLOWER POT BORDER  
FOR ALL REGIONAL ROADS

LAYER: FINE-PEN  
HATCH PATTERN: SOLID



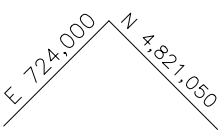
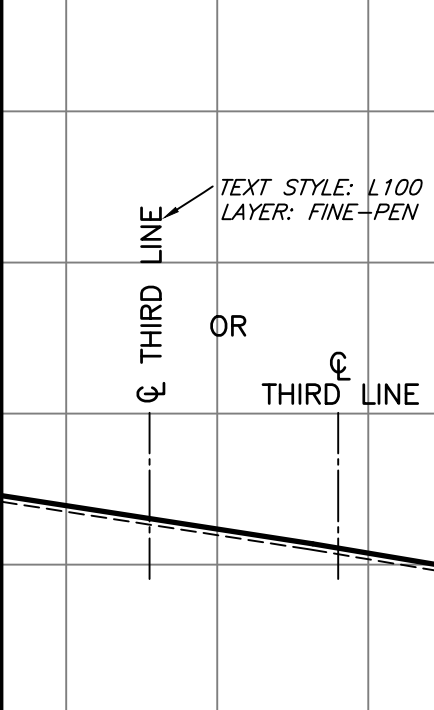
LAYER: XFINE-PEN  
TEXTSYLE: L60 (MIN.)

KEY PLAN  
N.T.S.

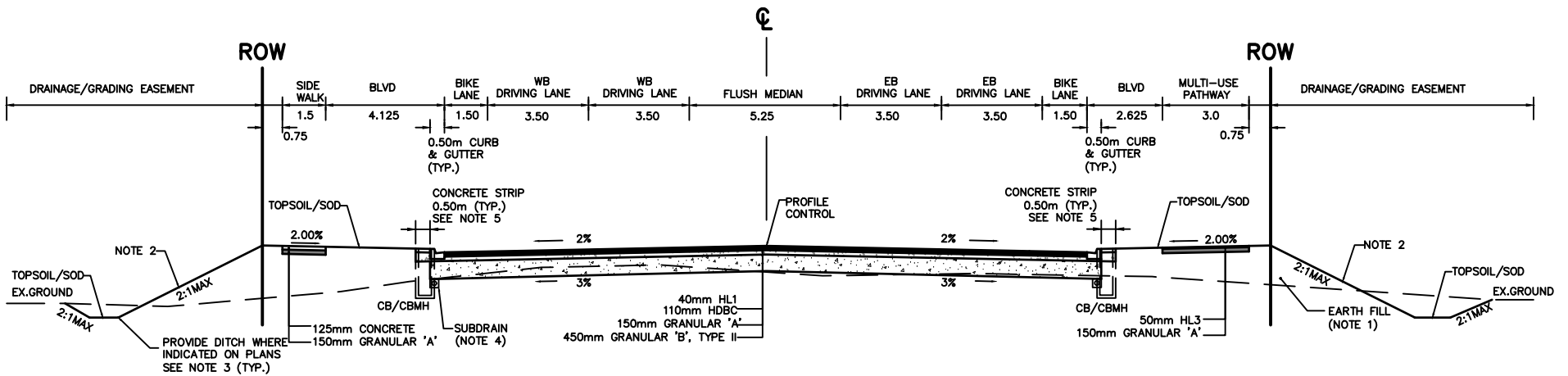
LAYER: MED-PEN  
TEXTSTYLE: L140

LAYER: FINE-PEN  
TEXTSTYLE: L80

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE	PROFILE	TEXT STYLE
	<p><b>CENTRELINE</b> REFER TO CHAPTER 6 FOR CIVIL 3D ALIGNMENT STYLES</p>	<p>PLAN ALIGN-STREET NAME</p> <p>EXISTING PROFILE PRFEXROAD</p> <p>PROPOSED PROFILE PRFROAD</p>	<p>YELLOW</p> <p>YELLOW</p> <p>MAGENTA</p>		L80		<p>L175</p> <p>L140</p>
	<p><b>PARALLEL CHAINAGE</b> (ROAD PROJECTS ONLY) REFER TO CHAPTER 6 FOR CIVIL 3D ALIGNMENT STYLES</p>	BROAD-PEN	MAGENTA				L175
	<p><b>HUB ON TANGENT</b> (ROAD PROJECTS ONLY)</p>	FINE-PEN	CYAN				L100
		XFINE-PEN	YELLOW				L80
	<p><b>☉ OF CONSTRUCTION</b> (ROAD PROJECTS ONLY) ONE PER PLAN VIEWPORT ON ALL THE FOLLOWING SHEETS BUT NOT LIMITED TO:</p> <ul style="list-style-type: none"> <li>-ALIGNMENT</li> <li>-REMOVAL</li> <li>-NEW CONSTRUCTION</li> <li>-PAVEMENT ELEVATIONS</li> <li>-PAVEMENT MARKINGS &amp; TRAFFIC ONTROL SIGNS</li> <li>-STAGING</li> <li>-LANDSCAPING</li> <li>-ELECTRICAL</li> <li>-STRUCTURAL</li> </ul>	FINE-PEN	CYAN				L100
		FINE-PEN					
				<p>H.O.T. STA 0+198.000 TREMAINE ROAD= H.O.T. STA 4+000.000 14TH SIDEROAD</p> <p>N 4,816,648.167 E 588,855.492</p>			

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE	PROFILE	TEXT STYLE
	CO-ORDINATES	CROP-MARKS	RED	 <p>MINIMUM TWO SETS OF COORDINATES PER SHEET.</p> <p><i>NOTE:</i> CROP MARKS TO BE LABELED IN MODEL SPACE WITH TRUE NORTHING AND EASTING USING THE WORLD CO-ORDINATE SYSTEM</p>	L80	 <p>TEXT STYLE: L100 LAYER: FINE-PEN</p>	
	<u>STREET NAMES</u>						
	MAIN STREET <i>(PLAN)</i>	XBROAD-PEN	GREEN	<b>MILL STREET</b>	L350		
	SIDE STREET <i>(PLAN)</i>	BROAD-PEN	MAGENTA	<b>THIRD LINE</b>	L240		
	REGIONAL ROAD <i>(PLAN)</i>	XBROAD-PEN	GREEN	<b>TRAFALGAR ROAD (REG. RD. 3)</b>		L350	
	ALL PROPOSED NOTES	PR-NOTES	CYAN	<p>REFER TO SECTION 3.6 FOR SCALE HEIGHTS AND SAMPLE DRAWING IN APPENDIX 1 ALSO REFER TO THE HALTON CIVIL 3D STYLE KIT IN CHAPTER 6 FOR AVAILABLE ALIGNMENT LABEL STYLES.</p> <p>HYDRANT AT TEE, STA=0+456.001, 0.787 LT. N=4810545.187 E=606723.235</p> <p>MH#6, STA=0+296.717, 1.036 LT. N=4810656.047 E=606608.859</p>	LAYER: PR-NOTES TEXTSTYLE: L100	LAYER: NORTHINGS EASTINGS TEXTSTYLE: L80	
	NORTHINGS AND EASTINGS	NORTHINGS EASTINGS	YELLOW				
	<u>NOTE:</u> ANNOTATIVE HALTON-MLEADER STYLE IS AVAILABLE IN THE 2020 CIVIL 3D TEMPLATE.						

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE
	LIMIT OF CONTRACT OR LIMIT OF CONSTRUCTION <i>(ROAD PROJECTS ONLY)</i>	BROAD-PEN	MAGENTA	<p style="text-align: right;"><b>LIMIT OF CONTRACT</b> → STA. 0+860</p> <p style="text-align: left;">← <b>LIMIT OF CONSTRUCTION</b> STA. 0+860</p>	L175
	MATCH LINE	MED-PEN	BLUE	<p style="text-align: center;"> </p>	L140
ENGNORTH	NORTH ARROW	FINE-PEN	CYAN		
	PROFILE ELEVATIONS	MED-PEN	BLUE		L140



**TYPICAL SECTION-FLUSH MEDIAN DUNDAS STREET (REG. RD.5)**

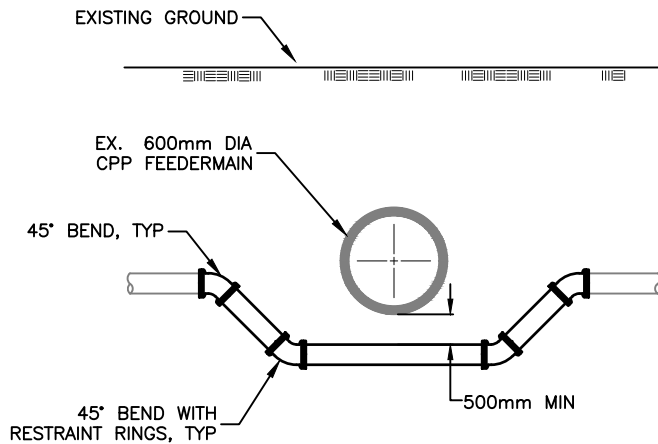
STA. XX+XXX TO STA. XX+XXX

(NTS)

LAYER: PR-NOTES  
TEXTSTYLE: L100

LAYER: MED-PEN  
TEXTSTYLE: L140

LAYER: BROAD-PEN  
TEXTSTYLE: L175



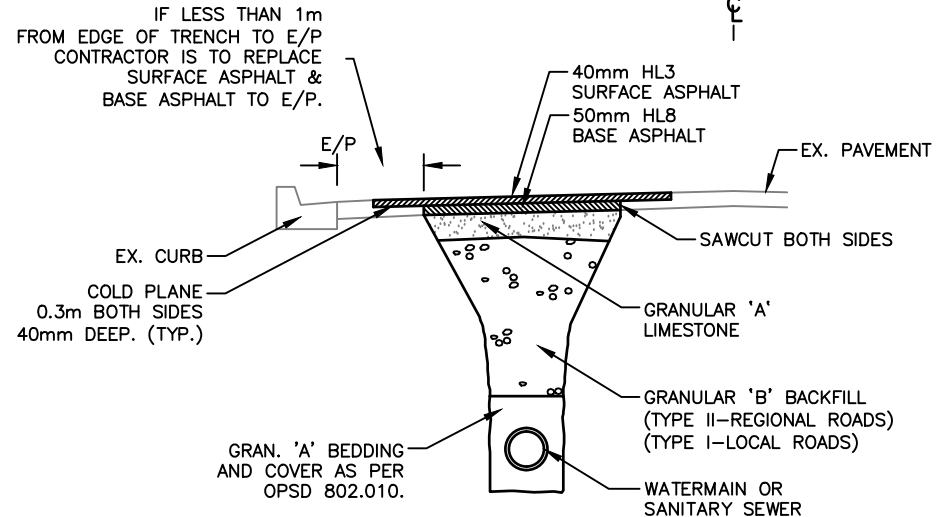
**TYPICAL PIPE CROSSING DETAIL**

N.T.S.

NOTE: ALL JOINTS TO BE RESTRAINED

LAYER: MED-PEN  
TEXTSTYLE: L140

LAYER: PR-NOTES  
TEXTSTYLE: L100


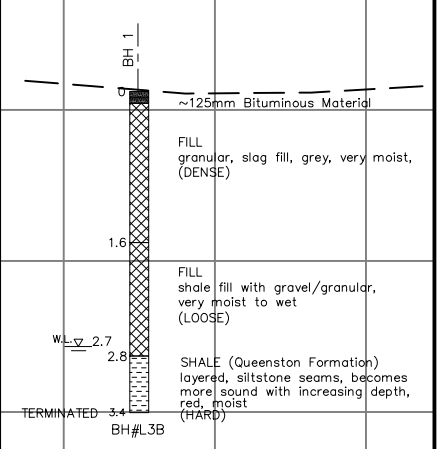

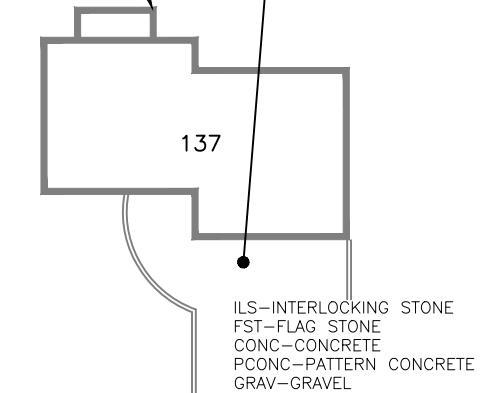
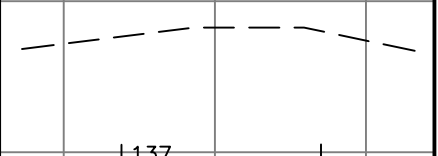





**ROAD RESTORATION DETAIL**

N.T.S.

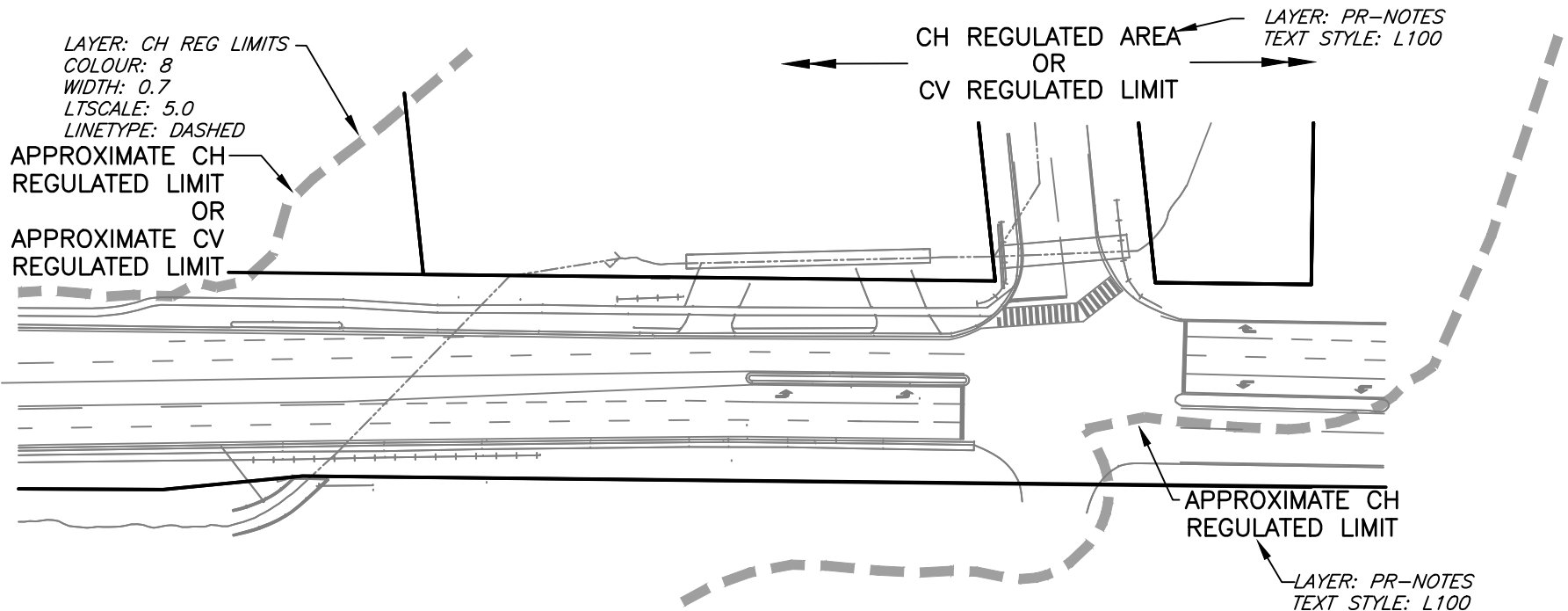
NOTE: ASPHALT DRIVEWAY RESTORATION IS TO BE FULL WIDTH OF DRIVEWAY WITH 50mm HL 3F.

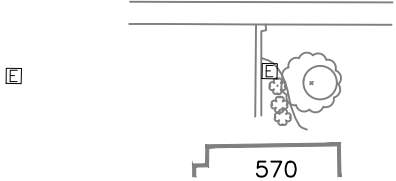

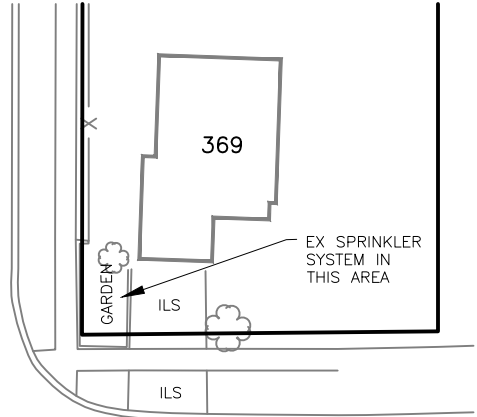


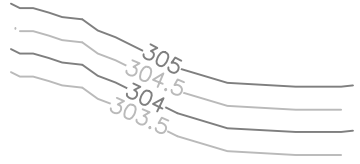


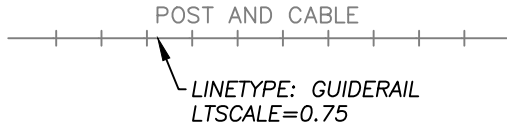
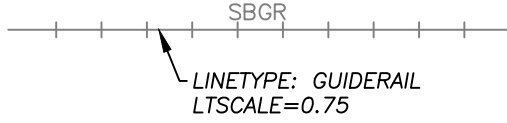
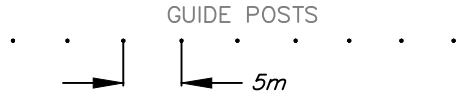
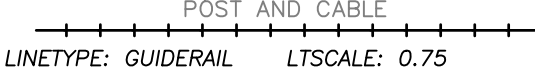

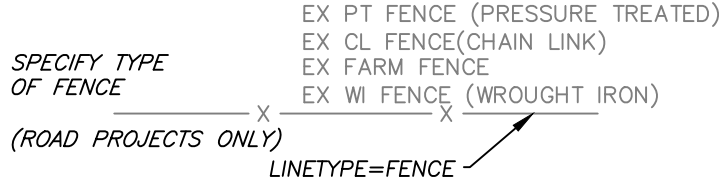
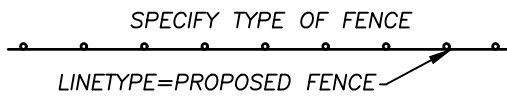

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE	PROFILE	TEXT STYLE
BH	BOREHOLE (SHOWN IN EXACT LOCATION ON PLAN, SHOW IN EXACT ELEVATION AND LOCATION IN PROFILE IF POSSIBLE OTHERWISE SHOW IN LEGIBLE LOCATION).	PLAN BOREHOLES-PLAN	CYAN		L80		L80
TPIT	TEST PIT (SHOWN IN EXACT LOCATION ON PLAN, SHOW IN EXACT ELEVATION AND LOCATION IN PROFILE IF POSSIBLE OTHERWISE SHOW IN LEGIBLE LOCATION).	PLAN BOREHOLES-PLAN	CYAN		L80		
		PROFILE BOREHOLES-PROFILE	RED				
	BUILDING (INDICATE STREET NUMBER, NAME IF INDUSTRIAL OR COMMERCIAL & NUMBER OF STORIES)  (FROM GIS MAPPING SUPPLIED BY HALTON REGION)	PLAN EXBLDGS	WHITE		L80		L80
		PROFILE PRFEXBLDGS	YELLOW				L60
		GIS-MPAC-HOUSE NUMBERS					
		HOUSE NUMBERS (MANUAL INPUT)					
	BUS SHELTER	EXBLDGS	WHITE				
CMB	COMMUNITY MAILBOX	EXDETAIL	WHITE				
GH	GRAVE HEADSTONE	EXDETAIL	WHITE		L80		
	CEMETARY (INDICATE NAME OF CEMETARY, MORE DETAILS IF REQUIRED)	FINE-PEN	CYAN	HOLY SEPULCHRE CEMETARY	L100		


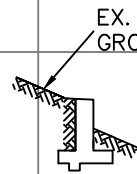
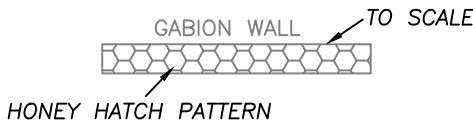
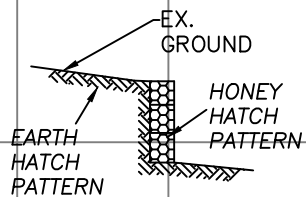

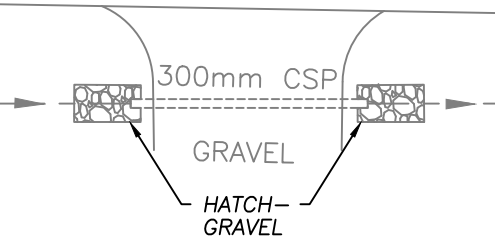
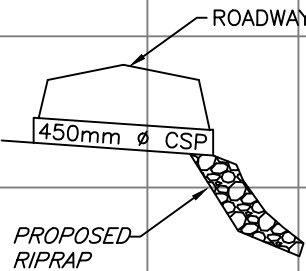
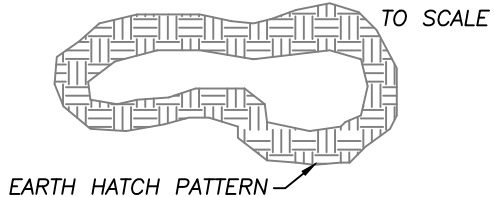
BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE	PROFILE	TEXT STYLE
	CREEK (LESS THAN 3m WIDE)	PLAN EXDRAIN PROFILE PRFEXDRAIN	WHITE  YELLOW		L80		L80
	CREEK (MORE THAN 3m WIDE)	PLAN EXDRAIN PROFILE PRFEXDRAIN	WHITE  YELLOW		L80		L80
	LAKE	EXDRAIN	WHITE		L100		L80











**CONSERVATION HALTON REGULATION LIMITS OR CREDIT VALLEY CONSERVATION LIMITS**





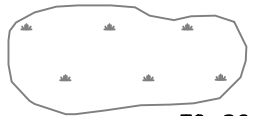







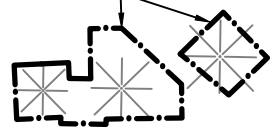














BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE
EOUTLET	OUTDOOR ELECTRICAL OUTLET <i>(EXISTING OUTDOOR OUTLET FOUND IN GARDENS OR BY LAMPPOLES)</i>	EXDETAIL	RED		
FP	FLAG POLE	EXDETAIL	WHITE		
	EXISTING GARDEN AREA	EXDETAIL	RED		L60
	EXISTING SPRINKLER SYSTEM AREA	EXDETAIL	RED		L60
GFT	GAS FARM TAP	EXDETAIL	WHITE		
GTP	GAS TEST POST	EXDETAIL	WHITE		
	CONTOUR LINES <i>COLOURS CAN BE CONTROLLED IN CIVIL 3D STYLE _H_CONTOURS TO SUITE PROJECT REQUIREMENTS</i>	CONTOURS-MAJOR CONTOURS-MINOR	WHITE 253		L80

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE
	POST AND CABLE GUIDE RAIL SYSTEM	EXGRAIL	WHITE		L80
	STEEL BEAM GUIDE RAIL SYSTEM	EXGRAIL	WHITE		L80
	GUIDE POSTS	EXGRAIL	WHITE		
	GUIDE RAIL (PROPOSED)	PR-GDRAIL	CYAN		L80
	PEDESTRIAN HAND RAIL	EXDETAIL	WHITE		L80
	FENCE (EXISTING)	EXFENCE	WHITE		L80
	FENCE (PROPOSED)	PR-FENCE	CYAN		L80
GATE	GATE (EXISTING)	EXFENCE	WHITE		L80
	GATE (PROPOSED)	PR-FENCE	CYAN		L80





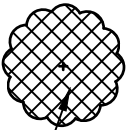
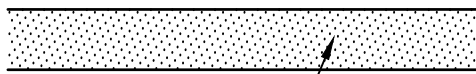
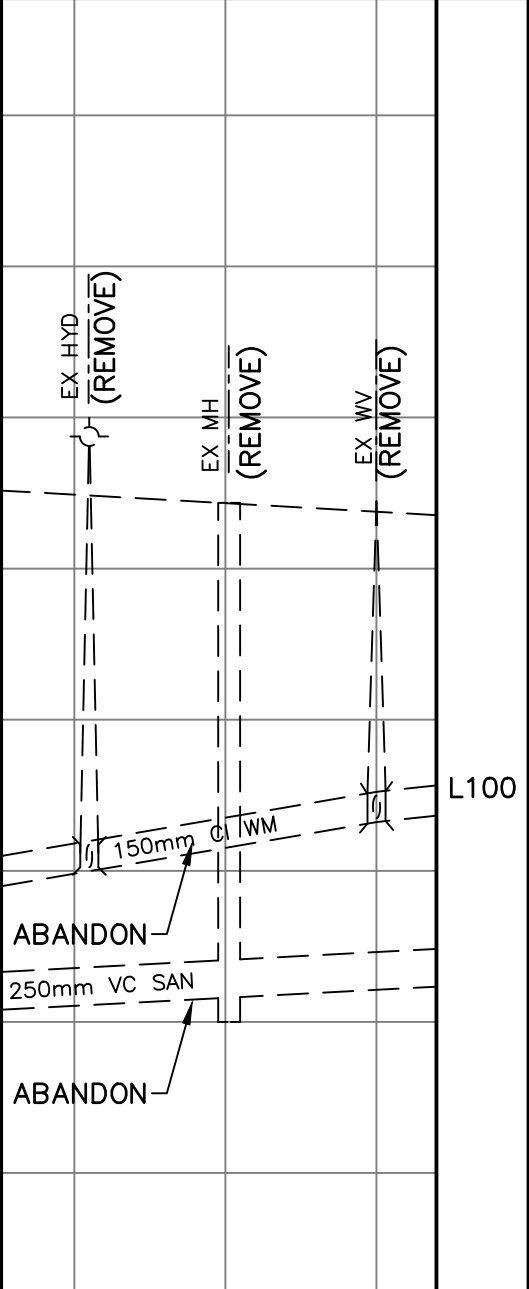
BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE	PROFILE	TEXT STYLE
MARKER	<b>RETAINING WALLS</b>						
	CONCRETE (ETC.)	PLAN EXWALL PROFILE PRFEXWALL	WHITE YELLOW				L80
	GABIONS	PLAN EXWALL PROFILE PRFEXMSC	WHITE YELLOW				L80
	911 MARKER	EXDETAIL	WHITE				
	EXISTING RIP-RAP	PLAN EXDETAIL PROFILE PRFEXMSC	WHITE YELLOW				
	ROCK OUTCROP	EXDETAIL	WHITE				














BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE
MWELL	MONITORING WELL	EXDETAIL	WHITE		
	NOISE BARRIER	EXDETAIL	WHITE		
PILLAR	PILLAR	EXDETAIL	WHITE		
PM	PARKING METER <i>(EXISTING)</i>	EXDETAIL	WHITE		
PLP	PRIVATE LIGHT POLE	EXDETAIL	WHITE		
RWW	RAILROAD WIG-WAG	EXDETAIL	WHITE		
	RAILWAY <i>(SINGLE TRACK) STATE WHETHER C.N.R. OR C.P.R.</i>	EXDETAIL	WHITE		
	RAILWAY <i>(DOUBLE TRACK) STATE WHETHER OR C.N.R. OR C.P.R.</i>	EXDETAIL	WHITE		
RCS	RAILWAY CROSSING SIGN	EXDETAIL	WHITE		
SL	SUMP LINE	EXDETAIL	WHITE		



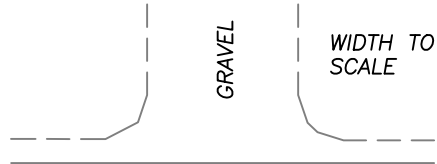
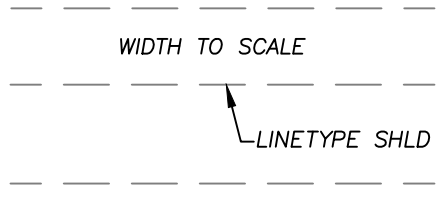
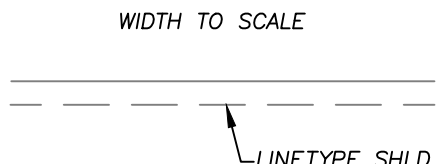
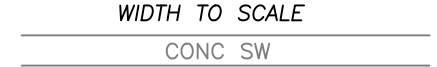


BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE
BOLD	BOULDER	EXDETAIL	WHITE	 TO SCALE	
BOL	BOLLARD	EXDETAIL	WHITE	 TO SCALE	
SO	SIGN-OTHER	EXDETAIL	WHITE	 TO SCALE	
STP	STUMP	EXVEG	WHITE	 TO SCALE	
	SWAMP/MUSKEG	EXVEG	WHITE	 TO SCALE	
TWELL	TEST WELL	EXDETAIL	WHITE	 TW	
WELL	WELL (SHOW DIA. IF REQUIRED)	EXDETAIL	WHITE		L80
	<b><u>VEGETATION</u></b>				
CNF	CONIFEROUS (SHOW TRUNK DIA. IF REQUIRED)	EXVEG	WHITE	 TO SCALE	
SCNF	CONIFEROUS TREE-SIGNIFICANT	EXVEG	WHITE		
DEC	DECIDUOUS (SHOW TRUNK DIA. IF REQUIRED)	EXVEG	WHITE	 TO SCALE	
SDEC	DECIDUOUS TREE-SIGNIFICANT	EXVEG	WHITE		
	HEDGE	EXVEG	WHITE		
	TREE PROTECTION	TREE PROTECTION ZONE	MAGENTA	 LINETYPE: DASHDOT2 LTSCALE: 4	

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE
BM	BENCH MARK <i>(SHOW IN EXACT LOCATION ON PLAN)</i>	REFPT	CYAN	 BM	L80
CM	CONCRETE MONUMENT	REFPT	CYAN	 CM	L80
CC	CUT CROSS	REFPT	CYAN	x	
CP	CONTROL POINT	REFPT	CYAN	 CP	L80
	ELEVATION REFERENCE SHOT	REFPT	CYAN	x	
HOT	HUB ON TANGENT	REFPT	CYAN	 HOT	L80
IB	IRON BAR (5/8")	REFPT	CYAN	 IB	L80
IP	IRON PIPE	REFPT	CYAN	 IP	L80
NW	NAIL AND WASHER	REFPT	CYAN	 NW	L80
RIB	ROUND IRON BAR	REFPT	CYAN	 RIB	L80
SIB	STANDARD IRON BAR (1")	REFPT	CYAN	 SIB	L80
PK	P.K. NAIL	REFPT	CYAN	 PK	L80
STK	2X2 STAKE	REFPT	CYAN	 STK	L80
PI	POINT OF INTERSECTION	REFPT	CYAN	 PI	L80

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE
	PROPERTY LINE <i>(FROM GIS MAPPING, SUPPLIED BY HALTON REGION)</i>	GIS-ASSESSMENT PARCEL BOUNDARY	BLUE		L80
	PROPERTY LINE <i>(WITH BEARINGS &amp; DIMENSIONS IF REQUIRED)</i>	PROPERTY	BLUE		L80
	TEMPORARY WORKING EASEMENT	PROPERTY- WORKING EASEMENT	BLUE		L80
	PERMANENT WORKING EASEMENTS <i>(SHOW DIMENSIONS IF REQUIRED)</i>	PROPERTY- PERMANENT WORKING EASEMENTS	BLUE		L80
	PROPOSED FUTURE PROPERTY LINE <i>(E.G. DEVELOPMENTS)</i>	PROPERTY- FUTURE PROPERTY LINE	MAGENTA		L100

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	PROFILE	TEXT STYLE
ADJUST	ADJUSTMENTS	FINE-PEN	CYAN	 <p>(SUCH ITEMS AS CATCHBASINS, MANHOLES, VALVE BOXES, VALVE CHAMBERS HYDRANTS ETC.)</p>		
REMOVAL	REMOVAL	MED-PEN	BLUE	 <p>(SUCH ITEMS AS CULVERTS, STUMPS, FENCES, CURB &amp; GUTTER, SEWERS WATERMAINS, CATCHBASINS, MANHOLES, HYDRANTS, HYDRO &amp; BELL POLES ETC.)</p>		
	TO BE ABANDONED (SEWERS, WATERMAINS, ETC.)	FINE-PEN	CYAN	 <p>L100</p>		
	MH REMOVAL	MED-PEN	BLUE	 <p>L100</p>		
	CLEARING & GRUBBING (OR GRUBBING ONLY)	REM-VEG	YELLOW	 <p>HATCH PATTERN: NET COLOUR: YELLOW SEE SERIES 75</p>		
	PAVEMENT (REMOVAL)	REM-ROAD	CYAN	 <p>HATCH PATTERN: DOTS COLOUR: YELLOW SEE SERIES 75</p>		
						

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN
REM-LEGEND WATER	WATERMAIN REMOVAL LEGEND	PR-NOTES	BY ENTITY	<p><b>LEGEND</b></p> <p> BOREHOLE—REFER TO GEOTECHNICAL INVESTIGATION REPORT PREPARED BY BH1 .....</p> <p>DATED: OD/OM/YEAR</p> <p> WATER BOXES</p> <p> EX HYDRANT REMOVAL</p> <p> EX VALVE BOX REMOVAL</p> <p> EX WVC OR EX MH REMOVAL</p> <p> PLUG</p> <p> EX STORM LATERAL</p> <p> EX SANITARY LATERAL</p> <p> CB INSTALL SILT SACK SILTATION CONTROL DEVICE</p> <p> PRE-INSULATED WATERMAIN (URECON)</p> <p> EXTRUDED POLYSTYRENE INSULATION</p> <p> TREE PROTECTION ZONE</p> <p> TREE REMOVAL</p>

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE
	CONCRETE GAS ISLAND (EXISTING)	EXROAD	WHITE		L80
	CONCRETE ISLAND (EXISTING)	EXROAD	WHITE		L80
	ENTRANCE, <i>INDICATE IN THE GENERAL NOTES THAT DRIVEWAY MATERIAL IS ASPHALT UNLESS OTHERWISE NOTED. LABEL EXCEPTIONS TO THIS NOTE ON THE PLAN.(SEE 100)</i>	EXROAD	WHITE		L80
	ROADWAY (EXISTING GRAVEL)	EXROAD	WHITE		
	ROADWAY (EXISTING PAVED WITH GRAVEL SHOULDER)	EXROAD	WHITE		
	SIDEWALK CONCRETE (EXISTING)	EXSWK	WHITE		L80
	TACTILE PAD (EXISTING)	EXDETAIL	RED		
RS	SIGNS, ROADWAY (EXISTING)	EXRDSIGNS	WHITE	 ENSURE SIGN IS FACING IN THE CORRECT DIRECTION	

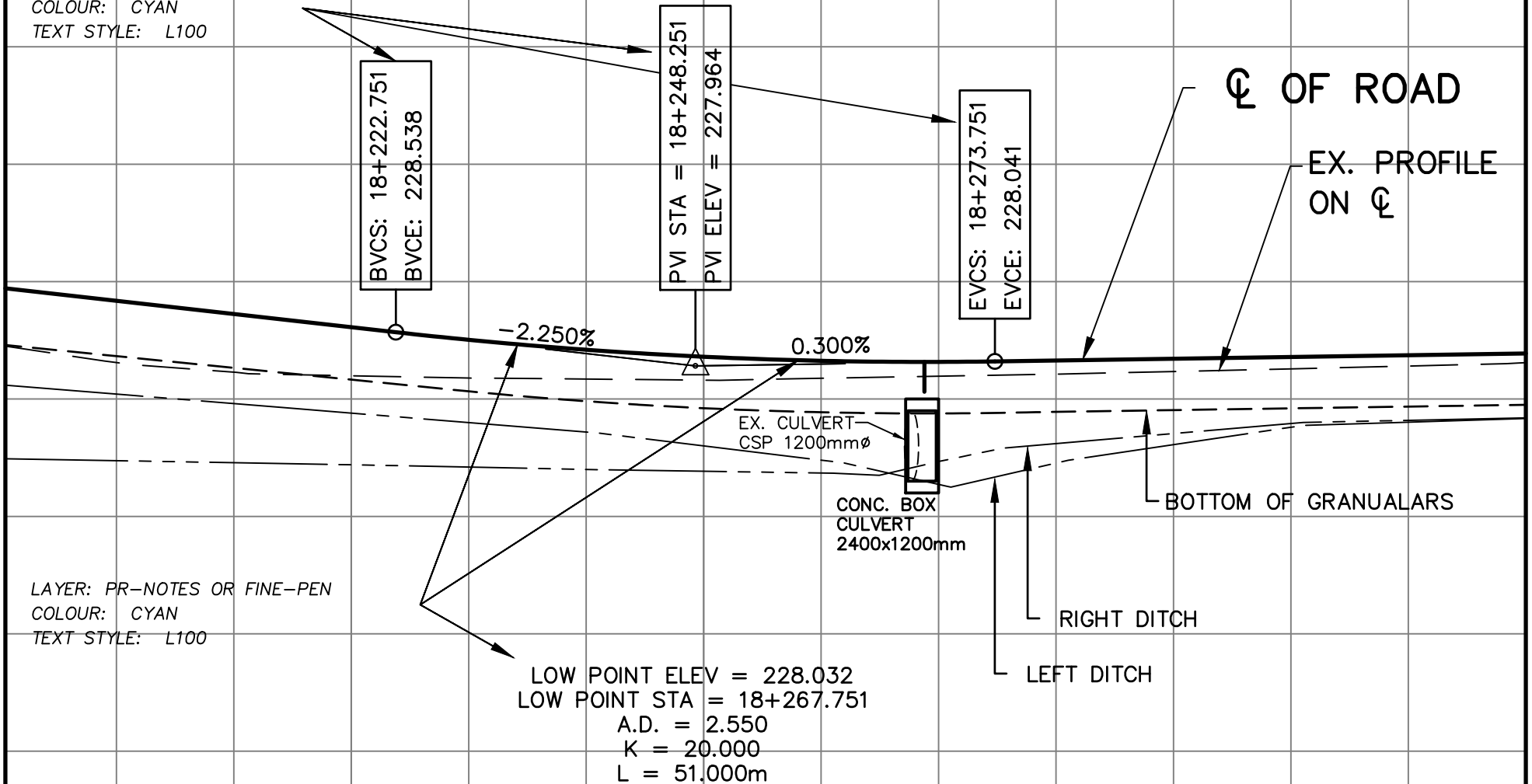
BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE	PROFILE	TEXT STYLE
	CONCRETE CURB & GUTTER (SHOW TYPE ON DRAWING OR IN TABLE FORM)	PR-ROAD PR-ROAD-EOP	AS NOTED		L100	<p><b>EXAMPLE #1</b></p> <p>PROP. <math>\phi</math> PROFILE</p> <p>EXIST. <math>\phi</math> PROFILE</p> <p>LINETYPE: CONTINUOUS</p> <p>LINETYPE: EXPRO</p>	
	CURB, DROPPED	PR-ROAD	CYAN		L80		L175
	CURB-TRANSITION (LABEL TYPE)	PR-ROAD	CYAN		L80	L140	
	ROADWAY WITH 0.5m PAVED SHOULDER	PR-ROAD	AS NOTED				
	ROADWAY (PROPOSED PAVED ROAD WITH GRAVEL SHOULDERS)	PR-ROAD	CYAN		L100	<p><b>EXAMPLE #2</b></p> <p>TOP OF PAVEMENT (GRADE CONTROL)</p> <p>EXISTING GROUND <math>\phi</math> CONSTRUCTION</p> <p>LINETYPE: CONTINUOUS</p> <p>LINETYPE: EXPRO</p>	L175 L140
	BIKE PATH IN ROAD (IDENTIFIED BY PAVEMENT MARKING)	PR-BIKEPATH	BLUE				
	CONCRETE ISLAND	PR-ROAD	AS NOTED				L80

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE
TACPAD	SIDEWALK (PROPOSED CONCRETE)	PR-SIDEWALK	CYAN	<p>PROP CONC SW WIDTH TO SCALE</p> <p>HATCH PATTERN: AR-CONC SCALE: TO SUIT AREA LAYER: PR-HATCH OR OTHER COLOUR: RED (CAN VARY)</p> <p>HATCH PATTERN: AR-CONC SCALE: TO SUIT AREA LAYER: PR-HATCH OR OTHER COLOUR: RED (CAN VARY)</p> <p>3.0m CONC BUS BAY</p> <p>CONC PASSENGER PLATFORM</p> <p>3.0m MULTI-USE PATHWAY</p> <p>0.5m CONC. KILL STRIP</p> <p>0.5m CONC. KILL STRIP</p> <p>3.0m ASPHALT MULTI-USE PATHWAY WIDTH TO SCALE</p> <p>HATCH PATTERN: SOLID LAYER: PR-HATCH (CAN VARY) COLOUR: COLOUR 254</p> <p>1.5m ASPHALT BIKE PATH WIDTH TO SCALE</p> <p>HATCH PATTERN: SOLID LAYER: PR-HATCH (CAN VARY) COLOUR: COLOUR 254</p> <p>COLOUR BY BLOCK</p>	L100
	CONCRETE PROPOSED CONC. PASSENGER PLATFORM, CONC. KILL STRIP, CONC. SIDEWALK & CONC. BUS BAY	VARIES	VARIES		
	MULTI USE PATH (SIDEWALK/BIKEPATH)	PR-MULTIUSE PATH	CYAN		L100
	BIKE PATH OFF ROAD	PR-BIKEPATH	CYAN		
TACPAD	TACTILE PAD	PR-SIDEWALK-AODA	RED		

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE	PROFILE	TEXT STYLE
	BOTTOM OF GRANULARS (SUBGRADE)	PR-BOTTOM OF GRANULAR	CYAN				
	EARTH OR ROCK CUT OR FILL (PROPOSED ONLY)	PR-GRADING	YELLOW			<b>EXAMPLE #1</b>	
	PROPOSED SUBDRAIN	PR-SUBDRAIN	YELLOW			<b>PROP. <math>\phi</math> PROFILE</b>	L175
	<b>**FOR CLARITY CONTRACTOR TO REFER TO TYPICAL SECTIONS FOR SUBDRAIN LOCATION</b>					<b>EXIST. <math>\phi</math> PROFILE</b>	L140
	DITCH (PLAN) (EXISTING)	PLAN EXDITCH PROFILE PRFEXDITCH	WHITE YELLOW			<b>BOTTOM OF GRANULARS</b>	
	V-DITCH (PLAN) (PROPOSED)	PR-DITCH-LEFT PR-DITCH-RIGHT	YELLOW			<b>PROP. LEFT DITCH</b> LINETYPE: DITCH	L100
	FLAT BOTTOM DITCH (PLAN) (PROPOSED)	PR-DITCH-LEFT PR-DITCH-RIGHT	YELLOW			<b>PROP. RIGHT DITCH</b> LINETYPE: DITCH2	
	TOP SOIL & SOD	PR-SOD	RED			(PROP. NOTE BY COLOUR: CYAN)	

PROFILE VIEW

LAYER: PR-NOTES OR FINE-PEN  
 COLOUR: CYAN  
 TEXT STYLE: L100


















LAYER: PR-NOTES OR FINE-PEN  
 COLOUR: CYAN  
 TEXT STYLE: L100

REFER TO CHAPTER 6 FOR  
 CIVIL 3D ROAD PROFILE STYLES

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE
EXLUM	LUMINAIRE	EXSIGNALS-ABOVE	WHITE		
4WBEACON	EXISTING 4 WAY, FLASHING BEACONS	EXSIGNALS-ABOVE	WHITE		
HH	HANDHOLE	EXSIGNALS-INGROUND	WHITE		
TEMH	TRAFFIC MAINTENANCE HOLE	EXSIGNALS-INGROUND	WHITE		
EXTC	TRAFFIC CONTROLLER	EXSIGNALS-ABOVE	WHITE		
TL	TRAFFIC LIGHT STANDARD	EXSIGNALS-ABOVE	WHITE		
LS	LIGHT STANDARD	EXSIGNALS-ABOVE	WHITE		
TLS	TRAFFIC LIGHT STANDARD WITH LUMINAIRE	EXSIGNALS-ABOVE	WHITE		
	EXISTING TRAFFIC LOOP	EXSIGNALS-INGROUND	WHITE		
EXPSC	EXISTING POWER SUPPLY CABINET	EXSIGNALS-INGROUND	WHITE		
EXRLCP	RED LIGHT CAMERA (WITH POLE BASE)	EXSIGNALS-ABOVE	WHITE		
EXRLCFP	RED LIGHT CAMERA FLASH (WITH POLE BASE)	EXSIGNALS-ABOVE	WHITE		
	RED LIGHT CAMERA LOOPS	EXSIGNALS-INGROUND	WHITE		

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE
	TRAFFIC SIGNAL CONDUIT	EXSIGNALS-CONDUIT	WHITE	<p style="text-align: center;"><i>LINETYPE-TSCONDUIT</i></p> <p style="text-align: center;">——— TS ——— TS ——— TS ——— TS ——— TS ——— TS ———</p>	L80
	COMMUNICATION CABLE AERIAL	EXSIGNALS-ABOVE	WHITE	<p style="text-align: center;"><i>LINETYPE-CCA</i></p> <p style="text-align: center;">——— CCA ——— CCA ——— CCA ———</p>	L80
	TRAFFIC SIGNAL AERIAL	EXSIGNALS-ABOVE	WHITE	<p style="text-align: center;"><i>LINETYPE-TSA</i></p> <p style="text-align: center;">——— TSA ——— TSA ——— TSA ———</p>	L80
	COMMUNICATION CABLE UNDERGROUND	EXSIGNALS-INGROUND	WHITE	<p style="text-align: center;"><i>LINETYPE-CCU</i></p> <p style="text-align: center;">——— CCU ——— CCU ——— CCU ———</p>	L80
	TRAFFIC FIBER OPTIC CABLE AERIAL	EXSIGNALS-ABOVE-FO	YELLOW	<p style="text-align: center;"><i>LINETYPE-TA-FO</i></p> <p style="text-align: center;">——— TA-FO ——— TA-FO ——— TA-FO ———</p>	L80
	TRAFFIC FIBER OPTIC CABLE UNDERGROUND	EXSIGNALS-INGROUND-FO	YELLOW	<p style="text-align: center;"><i>LINETYPE-T-FO</i></p> <p style="text-align: center;">——— T-FO ——— T-FO ——— T-FO ———</p>	L80
	STREET LIGHT CABLE	EXSTLIGHT-CABLE	WHITE	<p style="text-align: center;"><i>LINETYPE-STLIGHTCABLE</i></p> <p style="text-align: center;">——— L ——— L ——— L ———</p>	L80

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN
TC	TRAFFIC SIGNAL CONTROLLER	TR-SIGNALS-ABOVE	CYAN	
PSC	POWER SUPPLY CABINET	TR-SIGNALS-ABOVE		
POLE	TRAFFIC SIGNAL POLE	TR-SIGNALS-ABOVE	CYAN	
SSTH	SPECIAL SIGNAL HEAD WITH OPTICAL AMB/GREEN ARROW- ALL 30cm LENSES	TR-SIGNALS-ABOVE	CYAN	
SH30	HIGHWAY SIGNAL HEAD ALL 30cm LENSES	TR-SIGNALS-ABOVE	CYAN	
SH	HIGHWAY SIGNAL HEAD WITH 30cm RED & 20cm AMB/GREEN LENSES	TR-SIGNALS-ABOVE	CYAN	
SH	AERIAL SIGNAL HEAD WITH BACKBOARD AND OVERHEAD CABLE	TR-TEMP-SIGNALS-ABOVE	CYAN	
	OVERHEAD SIGNAL CABLE	TR-TEMP-SIGNALS-ABOVE	BLUE	
PSH	PEDESTRIAN SIGNAL HEAD	TR-SIGNALS-ABOVE	CYAN	
PSHCT	PEDESTRIAN SIGNAL HEAD WITH COUNTDOWN TIMER	TR-SIGNALS-ABOVE	CYAN	
PPB	PEDESTRIAN PUSH BUTTON	TR-SIGNALS-ABOVE	CYAN	
APPB	AUDIBLE PEDESTRIAN PUSH BUTTON	TR-SIGNALS-ABOVE	CYAN	

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE
PRMH	ELECTRICAL MAINTENANCE HOLE	TR-SIGNALS-INGROUND	CYAN		L100
PRHH	ELECTRICAL HANDHOLE	TR-SIGNALS-INGROUND	CYAN		L100
GND	GROUND ROD	TR-SIGNALS-INGROUND	CYAN		
LUM	LUMINAIRE	TR-SIGNALS-ABOVE	CYAN		
RECLUM	RECOVERED LUMINAIRE	TR-SIGNALS-ABOVE	CYAN		
PRE-EMP-1	EMERGENCY VEHICLE I/R PRE-EMPTION DETECTOR	TR-SIGNALS-ABOVE	CYAN		
PRE-EMP-2	EMERGENCY VEHICLE GPS PRE-EMPTION DETECTOR	TR-SIGNALS-ABOVE	CYAN		
VDC	VIDEO DETECTION UNIT	TR-SIGNALS-ABOVE	CYAN		
RDU	RADAR DETECTION UNIT	TR-SIGNALS-ABOVE	CYAN		
QDC	QUEUE DETECTION CAMERA	TR-SIGNALS-ABOVE	CYAN		
HDCAM	HD CAMERA	TR-SIGNALS-ABOVE	CYAN		
GRIDCAM	GRIDSMART CAMERA	TR-SIGNALS-ABOVE	CYAN		
MIOCAM	MIOVISION CAMERA	TR-SIGNALS-ABOVE	CYAN		
SURVCAM	SURVEILLANCE CAMERA	TR-SIGNALS-ABOVE	CYAN		
TSDL	ILLUMINATED TRAFFIC SIGN	TR-SIGNALS-ABOVE	YELLOW		

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE
RLCP	RED LIGHT CAMERA (WITH POLE BASE)	TR-SIGNALS-ABOVE	CYAN		
RLCFP	RED LIGHT CAMERA FLASH (WITH POLE BASE)	TR-SIGNALS-ABOVE	CYAN		
	RED LIGHT CAMERA LOOPS			 LINETYPE-DASHED	L100
	DUPLEX LOOP	TR-LOOPS	CYAN	 LINETYPE-DASHED	L100
	SIMPLEX LOOP	TR-LOOPS	CYAN	 LINETYPE-DASHED	L100
	VIRTUAL DETECTION ZONE	TR-LOOPS	GREEN	 COLOUR-GREEN LINETYPE-DOT	L100
	RADAR DETECTION ZONE	TR-LOOPS	GREEN	 COLOUR-GREEN LINETYPE-DOT	L100
	<u>PROPOSED RIGID CONDUIT</u>				
	25mm CONDUIT	TR-25mm-CONDUIT	YELLOW		
	50mm CONDUIT	TR-50mm-CONDUIT	CYAN		
	75mm CONDUIT	TR-75mm-CONDUIT	BLUE		
	100mm CONDUIT	TR-100mm-CONDUIT	MAGENTA		
				 FOR 1:250 & 1:300 SCALE COLOURS MAY NEED ADJUSTMENT DUE TO OVER ALL SCALE OF DRAWING	

# TYPICAL TRAFFIC LEGEND












**LEGEND**











	PROPOSED SPECIAL SIGNAL HEAD WITH BIMODAL LED AMB/GREEN ARROW ALL 30cm LENSES		PROPOSED LOOP		PROPOSED VIDEO DETECTION UNIT		PROPOSED 25mm CONDUIT
	PROPOSED HIGHWAY SIGNAL HEAD ALL 30cm LED LENSES		VIDEO DETECTOR ZONE		PROPOSED STREET NAME SIGN		PROPOSED 50mm CONDUIT
	PROPOSED HIGHWAY SIGNAL HEAD WITH 30cm LED RED & 20cm LED AMB/GREEN LENSES		SALVAGED LUMINAIRE & ARM		SIGNAL HEAD COVER		PROPOSED 75mm CONDUIT
	TRAFFIC SIGNAL POLE WITH MAST ARM		PROPOSED LUMINAIRE & ARM		PROPOSED BICYCLE SIGNALS		PROPOSED 100mm CONDUIT
	PROPOSED TRAFFIC SIGNAL CONTROLLER		PROPOSED HANDHOLE		EXISTING HYDRO POLE		PROPOSED AERIAL CABLES
	PROPOSED PERMANENT POWER SUPPLY		PROPOSED MAINT. HOLE		EXISTING LUMINAIRE & ARM		EXISTING 25mm CONDUIT
	EMERGENCY PRE-EMPTION UNIT		PROPOSED PED. PUSH BUTTON		EXISTING HAND HOLE		EXISTING 50mm CONDUIT
	PROPOSED GROUND ELECTRODE		PEDESTRIAN SIGNAL (COUNT DOWN)		EXISTING HYDRO POLE		EXISTING 75mm CONDUIT
			ILLUMINATED TRAFFIC SIGN		EXISTING HYDRO POLE		EXISTING 100mm CONDUIT
					EXISTING GROUND RODS		HYDRO CABLE AERIAL
							EXISTING LIGHTING CABLES AERIAL
							EXISTING STREET LIGHT CABLE
							EXISTING TRAFFIC SIGNAL CONDUIT
							EXISTING ILLUMINATION DUCTS
							EXISTING TRAFFIC DUCTS

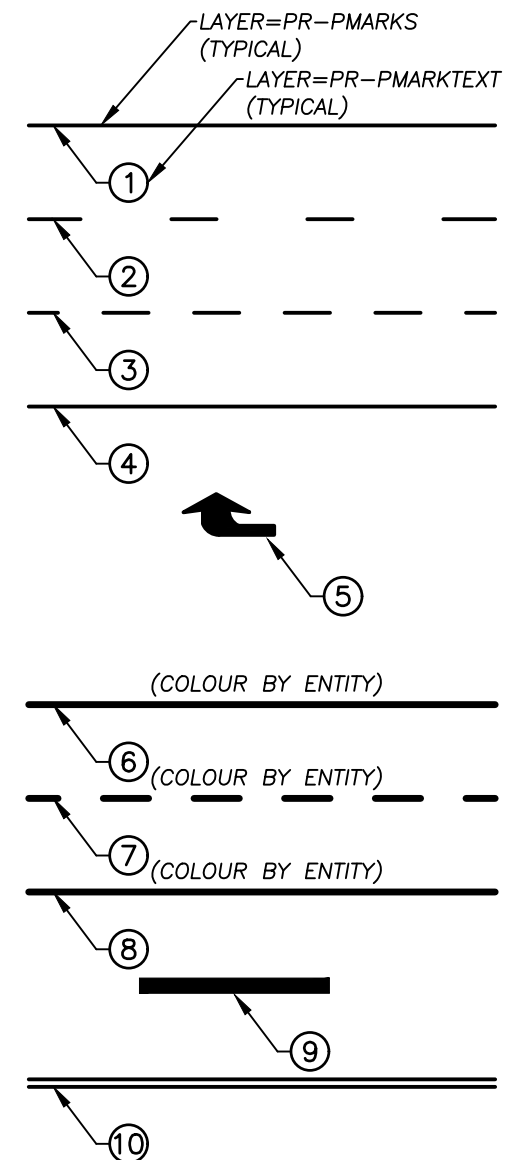
# TYPICAL STREET NAME SIGN FOR MAST ARMS CHART









STREET NAME SIGNS			
SIGN GRAPHIC	POLE	QTY.	UTS
	TS-## & TS-##	2	999.020 & 999.031
	TS-## & TS-##	2	999.020 & 999.031
	TS-## & TS-##	2	999.020 & 999.031








SEE 1 000\_SIGNAL SHEET.DWG

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN
	EXISTING PAVEMENT MARKINGS	EXPMARKS	WHITE	
EXRTARROW	EXISTING RIGHT TURN ARROW	EXPMARKS	WHITE	
EXLTARROW	EXISTING LEFT TURN ARROW	EXPMARKS	WHITE	
EXSTRRTARROW	EXISTING THROUGH AND RIGHT TURN ARROW	EXPMARKS	WHITE	
EXSTRLTARROW	EXISTING THROUGH AND LEFT TURN ARROW	EXPMARKS	WHITE	
	EXISTING 60cm STOP BAR	EXPMARKS	WHITE	
EXSTRARROW	EXISTING STRAIGHT THROUGH ARROW	EXPMARKS	WHITE	
EXRRX	EXISTING RAILWAY CROSSING ROAD MARKING	EXPMARKS	WHITE	
DIAMOND	BICYCLE (DIAMOND) LANE MARKINGS	EXPMARKS	WHITE	
BIKE	BICYCLE LANE MARKINGS	EXPMARKS	WHITE	
EXU-TURN	EXISTING U-TURN	EXPMARKS	WHITE	

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN
PRRTARROW	PROPOSED RIGHT TURN ARROW	PR-PMARKS	BLUE	
PRLTARROW	PROPOSED LEFT TURN ARROW	PR-PMARKS	BLUE	
PRSTRRTARROW	PROPOSED THROUGH AND RIGHT TURN ARROW	PR-PMARKS	BLUE	
PRSTRLTARROW	PROPOSED THROUGH AND LEFT TURN ARROW	PR-PMARKS	BLUE	
	PROPOSED 60cm STOP BAR	PR-PMARKS	BLUE	
PRSTRARROW	PROPOSED STRAIGHT THROUGH ARROW	PR-PMARKS	BLUE	
PRRRX	PROPOSED RAILWAY CROSSING ROAD MARKING	PR-PMARKS	BLUE	
PRDIAMOND	BICYCLE (DIAMOND) LANE MARKINGS	PR-PMARKS	RED	 (COLOUR BY ENTITY)
PRBIKE	BICYCLE LANE MARKINGS	PR-PMARKS	RED	 (COLOUR BY ENTITY)
PRU-TURN	U-TURN	PR-PMARKS	BLUE	

DESCRIPTION	COLOUR
<p><b>LEGEND</b></p> <ul style="list-style-type: none"> <li>① SOLID YELLOW LINE, 10cm</li> <li>② 363 BROKEN WHITE LINE, 10cm</li> <li>③ 333 BROKEN WHITE LINE, 10cm</li> <li>④ SOLID WHITE LINE, 10cm</li> <li>⑤ MTO SPEC. ARROW</li> <li>⑥ SOLID WHITE LINE, 20cm</li> <li>⑦ 333 BROKEN WHITE LINE, 20cm</li> <li>⑧ SOLID YELLOW LINE, 20cm</li> <li>⑨ SOLID WHITE STOP BAR, 60cm</li> <li>⑩ DOUBLE SOLID YELLOW, 10cm x2</li> </ul>	 <p>BLUE</p> <p>BLUE</p> <p>BLUE</p> <p>BLUE</p> <p>GREEN</p> <p>GREEN</p> <p>GREEN</p> <p>BLUE</p> <p>BLUE</p>

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN
	<b><u>EXISTING</u></b>			
EX300X450 SHARK TOOTH	SHARKS TOOTH (300X450mm)	EXPMARKS	WHITE	
EX600X900 SHARK TOOTH	SHARKS TOOTH (600X900mm)	EXPMARKS	WHITE	
EXLTSTRTHRU	LEFT TURN, STRAIGHT THROUGH ARROW	EXPMARKS	WHITE	
EXRTSTRTHRU	RIGHT TURN, STRAIGHT THROUGH ARROW	EXPMARKS	WHITE	
	<b><u>PROPOSED</u></b>			
PR300X450 SHARK TOOTH	SHARKS TOOTH (300X450mm)	EXPMARKS	WHITE	
PR600X900 SHARK TOOTH	SHARKS TOOTH (600X900mm)	EXPMARKS	WHITE	
PRLTSTRTHRU	LEFT TURN, STRAIGHT THROUGH ARROW	PR-PMARKS	WHITE	
PRRTSTRTHRU	RIGHT TURN, STRAIGHT THROUGH ARROW	PR-PMARKS	WHITE	

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE
PRRDSIGN	PROPOSED SIGN WITHOUT POST E.G. SPEED LIMIT SIGN ON AN EXISTING POLE	PR-SIGNS	BLUE	 ORIENT SIGN IN THE CORRECT DIRECTION	
PRRDSIGN	PROPOSED ROAD SIGN	PR-SIGNS	BLUE	 ORIENT SIGN IN THE CORRECT DIRECTION	
PRRDSIGN2	PROPOSED (2-POSTS) SIGN	PR-SIGNS	BLUE		
MARMSIGN	MAST ARM SIGN	PR-SIGNS	CYAN		
	PROPOSED ROAD SIGN WITH NOTE	PR-SIGNSTEXT	CYAN	 DIRECTION OF TRAVEL (GRAPHIC OF SIGN-OPTIONAL)	L100
	<u>FORMAT</u> SIGN NUMBER, SIGN NAME (SIZE)cm SUPPORT-SPECIFY TYPE OF POST L.O.=LATERAL OFFSET FROM E.P. M.H.=MOUNTING HEIGHT STA.=STATION			 Rb-1 "MAX 50km/h SIGN" (60X90)cm SUPPORT=P.T. WOOD POST (10X10)cm M.H.=2.2m L.O.=3.5m± STA.=3+590	
	PROPOSED ADVANCE STREET NAME SIGN WITH NOTE	PR-SIGNSTEXT	CYAN	 ADVANCED STREET NAME SIGN UTS 999.010 "TRAFALGAR ROAD" (180X45)cm SUPPORT=P.T. WOOD POST 1-(10x10)cm M.H.=2.0m L.O.=4.0m± STA.=3+485 SEE SHEET XX FOR SIGN LAYOUT DATA	L100
	<u>FORMAT</u> ADVANCED STREET NAME SIGN UTS 999.010 "ROAD NAME" (SIZE)cm SUPPORT=SPECIFY TYPE OF POST L.O.=LATERAL OFFSET FROM E.P. M.H.=MOUNTING HEIGHT STA.=STATION				

### STREET LIGHTING AND TRAFFIC SIGNAL POLE SUMMARY

POLE DATA								SIGNAL HEADS			PED. HEADS			COORD	REMARKS
POLE NO.	STATION	DISTANCE FROM		TYPE	LENGTH	CONC. BASE	PUSH BUTTON	MNTG. HEIGHT	ARM LENGTH	ARM TYPE	MNTG. HEIGHT	ARM LENGTH	ARM TYPE		
		RT. Ⓡ	LT Ⓡ												
TS-1	6+976.500	8.000	-	TP19-1080E-AB-406	5.8m	YES	-	5.0	3.0	TR-10SMA	-	-	-	N 4804695.789 E 595011.127	
TS-2	6+975.500	-	8.000	ET40-1055E-AB-406	11.3m	YES	-	5.0	4.6	TR-15SMA	-	-	-	N 4804682.689 E 595001.882	
TS-3	11+612.200	15.600	-	ET40-1055E-AB-406	11.3m	YES	YES	4.7	0.6	D-24	2.75	D.A.B.	D-16	N 4804680.864 E 594988.874	
TS-4	11+609.600	-	3.100	TP24-845C-AB-406	7.3m	YES	-	4.7	0.6	D-24	-	-	-	N 4804690.520 E 594972.686	
TS-5	11+613.700	-	14.400	ET40-1055E-AB-406	11.3m	YES	YES	5.0	4.6	TR-15SMA	2.75	D.A.B.	D-16	N 4804700.848 E 594966.545	

### DETECTOR LOOP INFORMATION

LOOP NO.	STATION		OFFSET FROM				SIZE	TYPE	No. OF TURNS	COORD Ⓢ BEG. STA.
	BEGIN	END	RT. Ⓡ		LT. Ⓡ					
			BEGIN	END	BEGIN	END				
LD-1	6+967.200	6+974.700	3.000	3.000	-	-	7.5X1.8	SIMPLEX	2	N 4804686.056 E 595015.197
LD-2	6+967.200	6+974.700	-	-	0.300	0.300	7.5X1.8	DUPLEX	2-4-2	N 4804683.523 E 595013.161
LD-3	6+976.200	6+983.700	0.300	0.300	-	-	7.5X1.8 (IRREGULAR)	DUPLEX	2-4-2	N 4804691.695 E 595008.183
LD-4	6+976.200	6+983.700	0.300	-	-	0.300	7.5X1.8	DUPLEX	2-4-2	N 4804689.162 E 595006.147

### VIRTUAL DETECTION ZONE INFORMATION

CAMERA NO.	DETECTION ZONE	STREET	REFERENCE	SIZE	REMARKS
VD101	VDZ101	DUNDAS ST. E	2.0m AHEAD OF STOP BAR	2.0m X 10.0m	CENTRE OF LANE
	VDZ102	DUNDAS ST. E	15.0m BEHIND STOP BAR	2.0m X 10.0m	CENTRE OF LANE

### RADAR DETECTION ZONE INFORMATION

RADAR NO.	DETECTION ZONE	STREET	REFERENCE	SIZE	REMARKS
RD101	RDZ-#	-	-	-	-
	RDZ-#	-	-	-	-

### ELECTRICAL MAINTENANCE HOLES & HANDHOLES

NO.	STATION	DISTANCE FROM		OPSD/UTS	COORD	REMARKS
		RT. Ⓡ	LT Ⓡ			
HH-3	11+592.200	-	3.000	UTS 602.010	N 4804677.032 E 594961.822	-
HH-4	7+025.000	-	6.000	UTS 602.010	N 4804715.301 E 584964.567	-

**NOTES**

1. ALL DISTANCES TO THREE DECIMAL ACCURACY.
2. ALL LETTERS UPPERCASE EXCEPT METRES m AND MILLIMETRES mm.
3. USE A L80 TEXT STYLE ON LAYER XFINE-PEN.
4. THE HEADING IS PRE-DEFINED AS A WBLOCK TRAFDATA.DWG

### LIGHTING POLE ASSEMBLY SUMMARY

POLE NO.	ROAD	LOCATION			BASE		GRD.		POLE				ARM			LUMINAIRE				COORD.	NOTES
		STATION	DISTANCE FROM		CONC. BASE	FRANG. BASE	INSTL.	INSTL.	MAT.	CAT.	LENGTH (m)	INSTL.	LENGTH (m)	CAT.	INSTL.	WATTAGE	LAMP TYPE	LENS	PC		
			LT. E	RT. E																	
P-1	BRITANNIA ROAD	8+670.1	16.6m	-	YES	-	ONE	NEW	ALUM.	E35-845E-AB-292	9.8	NEW	2.4	REBMA-4125	NEW	213W	LED	-	YES	N-4 813 393.857 E- 592 561.034	-
P-2	BRITANNIA ROAD	8+692.7	-	15.7m	YES	-	ONE	NEW	ALUM.	E35-845E-AB-292	9.8	NEW	2.4	REBMA-4125	NEW	213W	LED	-	YES	N-4 813 390.311 E- 592 600.127	-
P-3	BRITANNIA ROAD	8+719.7	17.9m	-	YES	-	-	NEW	ALUM.	E35-845E-AB-292	9.8	NEW	2.4	REBMA-4125	NEW	213W	LED	-	YES	N-4 813 432.515 E- 592 591.507	-
P-4	BRITANNIA ROAD	-	-	16.8m	YES	-	ONE	NEW	ALUM.	E35-845E-AB-292	9.8	NEW	2.4	REBMA-4125	NEW	213W	LED	-	YES	N-4 813 429.312 E-592 633.472	-
P-5	BRITANNIA ROAD	8+743.6	18.0m	-	YES	-	ONE	NEW	ALUM.	E35-845E-AB-292	9.8	NEW	2.4	REBMA-4125	NEW	213W	LED	-	YES	N-4 813 472.005 E- 592 622.656	-
P-6	BRITANNIA ROAD	8+785	-	17.3m	YES	-	-	NEW	ALUM.	E35-845E-AB-292	9.8	NEW	2.4	REBMA-4125	NEW	213W	LED	-	YES	N-4 813 462.566 E- 592 659.956	-

### SUMMARY OF: ELECTRICAL CHAMBERS




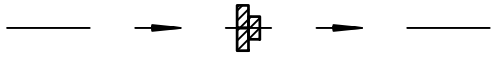
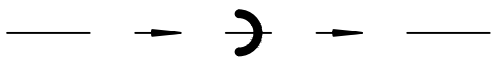
E.C. No.	LOCATION				GRD.		CHAMBER					COORD.	NOTES
	ROAD NAME	STATION	DIST. FROM C	DIST. FROM E/P	INSTL.	INSTL.	MAT.	DI. / DIMENSION	CONSTRUCTION DETAIL	INSTALLATION DETAIL			
HH-1	BRITANNIA ROAD	8+818.4	28.5m	-	-	NEW	CONC.	460mm Ø	UTS 602.010	UTS 602.050	N-4 813 516.317 E- 592 643.418		
HH-2	BRITANNIA ROAD	8+853.9	17.9m	-	-	NEW	CONC.	460mm Ø	UTS 602.010	UTS 602.050	N-4 813 538.043 E- 592 673.321		
HH-3	BRITANNIA ROAD	9+136.2	28.8m	-	-	NEW	CONC.	460mm Ø	UTS 602.010	UTS 602.050	N-4 813 769.040 E- 592 835.970		
HH-4	BRITANNIA ROAD	9+160.1	28.8m	-	-	NEW	CONC.	460mm Ø	UTS 602.010	UTS 602.050	N-4 813 788.101 E- 592 850.522		
HH-5	BRITANNIA ROAD	9+228.4	17.8m	-	-	NEW	CONC.	460mm Ø	UTS 602.010	UTS 602.050	N-4 813 818.227 E- 592 909.709		

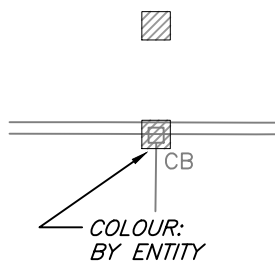
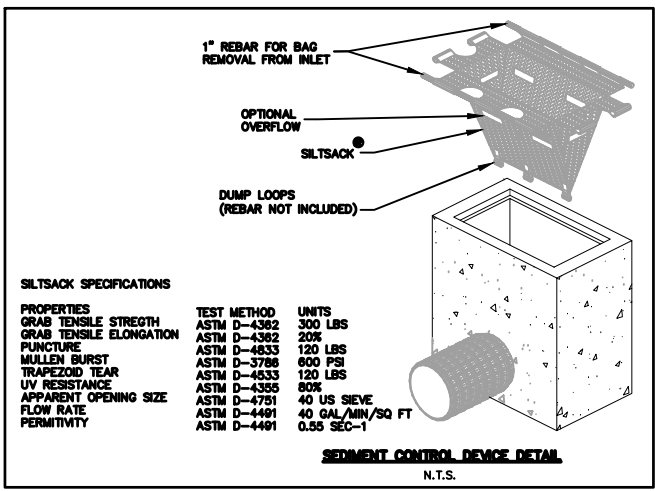
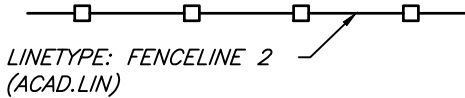
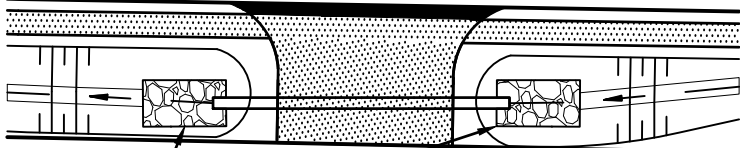
### ROADWAY LIGHTING – POWER SUPPLIES AND HYDRO POLE ILLUMINATION SUMMARY

POLE NO.	ROADWAY	STATION	POLE DATA		TYPE	HYDRO SUPPLY POLE NO.	LUMINAIRES			POWER SUPPLY			REMARKS	
			OFFSET C				FIXTURE	ARM LENGTH	FIXTURE MOUNT HEIGHT	STATION	OFFSET C			TYPE
			RT.	LT.							RT.	LT.		
EHP1	DUNDAS ST. E.	19+258.0	-	-	EXISTING HYDRO POLE	7422	150W HPS FLAT GLASS	2.4m	8.0m	N/A	N/A	N/A	-	GROUND ELECTRODE & GUY ANCHOR
EHP2	DUNDAS ST. E.	19+313.0	-	-	EXISTING HYDRO POLE	7421	150W HPS FLAT GLASS	2.4m	8.0m	N/A	N/A	N/A	-	-
EHP3	DUNDAS ST. E.	19+369.5	-	-	EXISTING HYDRO POLE	7420	150W HPS FLAT GLASS	2.4m	8.0m	N/A	N/A	N/A	-	-

**NOTES**

1. ALL DISTANCES TO THREE DECIMAL ACCURACY.
2. ALL LETTERS UPPERCASE EXCEPT METRES m AND MILLIMETRES mm.
3. USE A L80 TEXT STYLE ON LAYER XFINE-PEN.
4. THE HEADING IS PRE-DEFINED AS A WBLOCK POLEDATA.DWG

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE
RKCHDAM-V	ROCK FLOW CHECK DAM V BOTTOM DITCH	PR-SEDIMENT & EROSION CONTROL	CYAN		
RKCHDAM-FL	ROCK FLOW CHECK DAM FLAT BOTTOM DITCH	PR-SEDIMENT & EROSION CONTROL	CYAN		
RKCHDAM TEMP-IMP	TEMP. IMPERMEABLE ROCK DAM	PR-SEDIMENT & EROSION CONTROL	CYAN		
ROCK CHECK DAM	STRAW BALE CHECK DAM	PR-SEDIMENT & EROSION CONTROL	CYAN		
FSOXX	FILTER SOXX	PR-SEDIMENT & EROSION CONTROL	CYAN		

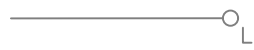
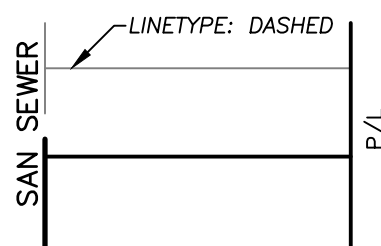


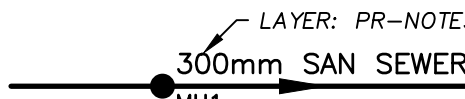
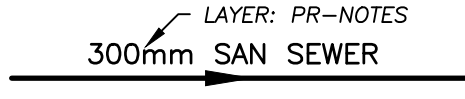
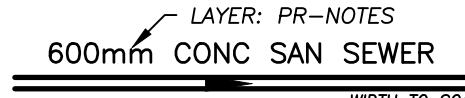
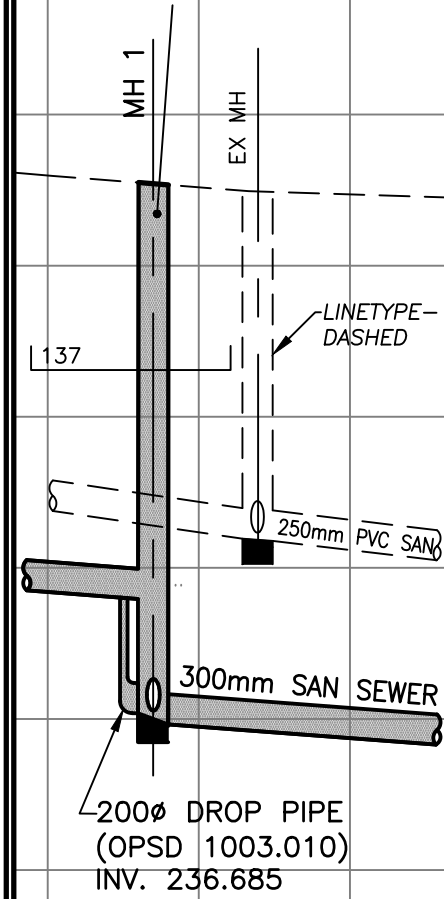
BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE																														
SC	SEDIMENT CONTROL DEVICE	PR-SEDIMENT & EROSION CONTROL	RED	 <p>COLOUR: BY ENTITY</p> <p><b>DETAIL EXAMPLE</b></p>  <p>1" REBAR FOR BAG REMOVAL FROM INLET</p> <p>OPTIONAL OVERFLOW</p> <p>SILTSACK</p> <p>DUMP LOOPS (REBAR NOT INCLUDED)</p> <p><b>SILTSACK SPECIFICATIONS</b></p> <table border="1"> <thead> <tr> <th>PROPERTIES</th> <th>TEST METHOD</th> <th>UNITS</th> </tr> </thead> <tbody> <tr> <td>GRAB TENSILE STRENGTH</td> <td>ASTM D-4362</td> <td>300 LBS</td> </tr> <tr> <td>GRAB TENSILE ELONGATION</td> <td>ASTM D-4362</td> <td>20%</td> </tr> <tr> <td>PUNCTURE</td> <td>ASTM D-4633</td> <td>120 LBS</td> </tr> <tr> <td>MULLEN BURST</td> <td>ASTM D-3786</td> <td>600 PSI</td> </tr> <tr> <td>TRAPEZOID TEAR</td> <td>ASTM D-4533</td> <td>120 LBS</td> </tr> <tr> <td>UV RESISTANCE</td> <td>ASTM D-4355</td> <td>80%</td> </tr> <tr> <td>APPARENT OPENING SIZE</td> <td>ASTM D-4751</td> <td>40 US SIEVE</td> </tr> <tr> <td>FLOW RATE</td> <td>ASTM D-4491</td> <td>40 GAL/MIN/SQ FT</td> </tr> <tr> <td>PERMITIVITY</td> <td>ASTM D-4491</td> <td>0.55 SEC-1</td> </tr> </tbody> </table> <p><b>SEDIMENT CONTROL DEVICE DETAIL</b> N.T.S.</p>	PROPERTIES	TEST METHOD	UNITS	GRAB TENSILE STRENGTH	ASTM D-4362	300 LBS	GRAB TENSILE ELONGATION	ASTM D-4362	20%	PUNCTURE	ASTM D-4633	120 LBS	MULLEN BURST	ASTM D-3786	600 PSI	TRAPEZOID TEAR	ASTM D-4533	120 LBS	UV RESISTANCE	ASTM D-4355	80%	APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE	FLOW RATE	ASTM D-4491	40 GAL/MIN/SQ FT	PERMITIVITY	ASTM D-4491	0.55 SEC-1	
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	SILT FENCE	PR-SILTFENCE	YELLOW	 <p>LINETYPE: FENCELINE 2 (ACAD.LIN)</p>																															
	RIP-RAP TREATMENT FOR SEWER AND CULVERT OUTLETS	PLAN PR-RIPRAP	RED	 <p>3.0x5.0m RIP-RAP PAD AS PER OPSD 810.01 TYPE "B" WITH GEOTEXTILE (TYP)</p> <p>LAYER: PR-NOTES TEXTSTYLE: L100</p>																															

BLOCK	DESCRIPTION	LAYER: PLAN PROFILE	COLOUR	PLAN	TEXT STYLE	PROFILE	TEXT STYLE
EXSFVC	FORCEMAIN (EXISTING)	EXSAN-FORCEMAIN	WHITE		L80		L100
	VALVE CHAMBER SANITARY FORCEMAIN	EXSAN-FORCEMAIN	WHITE		L80		
EXSFVB	VALVE BOX ONLY TO INDICATE CHANGE IN DIRECTION	EXSAN-FORCEMAIN	WHITE				L100
EXSFVB	EXISTING VALVE						
	FORCEMAIN (PROPOSED)	PR-SAN-FORCEMAIN	MAGENTA				L100
	VALVE CHAMBER SANITARY FORCEMAIN	PR-SAN-FORCEMAIN	BYCOLOUR				
PRSFVB	VALVE BOX ONLY TO INDICATE CHANGE IN DIRECTION	PR-SAN-FORCEMAIN	MAGENTA				L100
PRSFV	PROPOSED VALVE	PRFSAN-FORCEMAIN	BLUE				

**\*\*AS CONSTRUCTED STAGE**

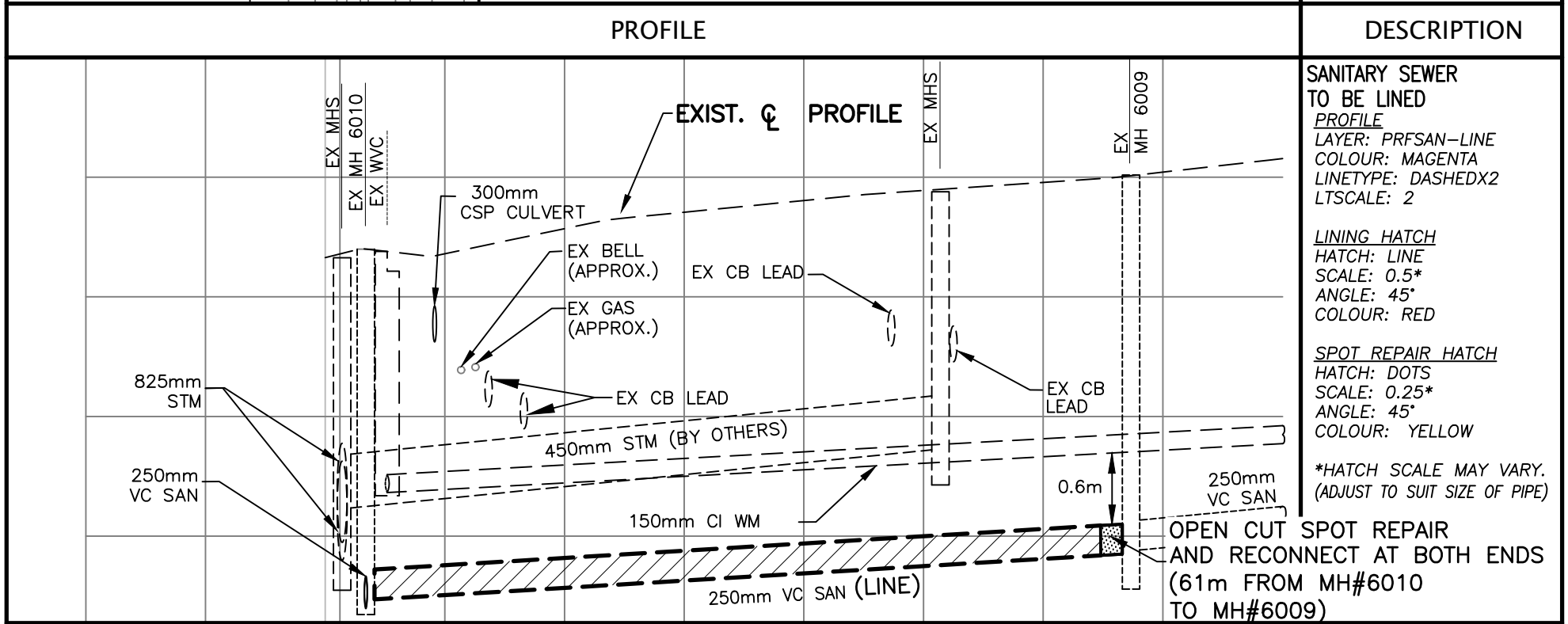
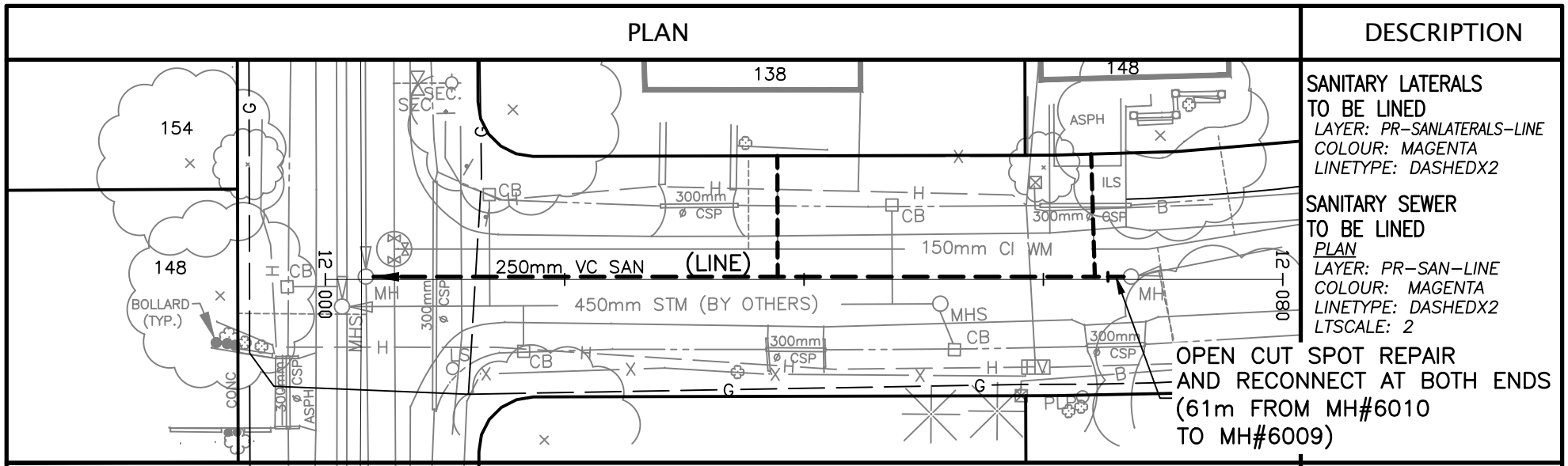
INCLUDE PIPE MATERIAL IN PLAN & PROFILE E.G. 300mm PVC (DR18) SAN FORCEMAIN

PROPOSED FORCEMAIN  
HATCH PATTERN: DOTS  
SCALE: 0.2  
LAYER: PR-HATCH  
COLOUR-252 (SCREENED)

BLOCK	DESCRIPTION	LAYER:	COLOUR	PLAN	TEXT STYLE	PROFILE	TEXT STYLE
LH	LAMP HOLE	PRFSAN	WHITE		L80		L80
	SANITARY LATERAL	EXSANLATERALS	WHITE			HATCH PATTERN: DOTS SCALE: 0.1 LAYER: PR-HATCH COLOUR: 252 (SCREENED)	L100
	SANITARY LATERAL	PR-SANLATERALS	BLUE				L80
CO	SANITARY LATERAL CLEANOUT	EXSAN	WHITE				
MH	SANITARY MANHOLE & SANITARY SEWER (EXISTING)	PLAN EXSAN PROFILE PRFEFSAN	WHITE YELLOW		L80		
PRMH	SANITARY MANHOLE & SANITARY SEWER (PROPOSED)	PLAN PR-SAN PLAN PR-SAN PROFILE PRFSAN	MAGENTA MAGENTA BLUE				
	SANITARY SEWER (600mmØ OR LARGER USE DOUBLE LINES)	PLAN PR-SAN PROFILE PRFSAN	MAGENTA BLUE		L100		
		PROFILE PRFSAN	BLUE		L100		
							L100

**\*\*AS CONSTRUCTED STAGE**

INCLUDE PIPE MATERIAL IN PLAN & PROFILE E.G. 300mm PVC SAN SEWER

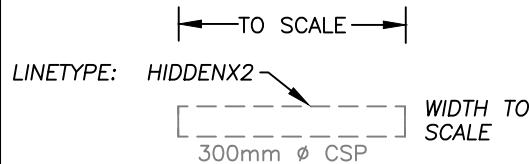
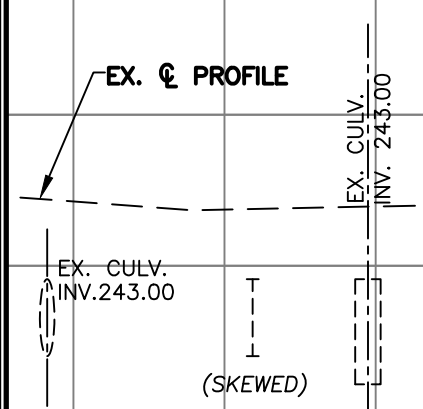
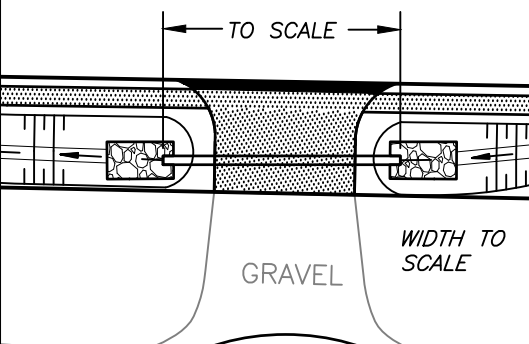
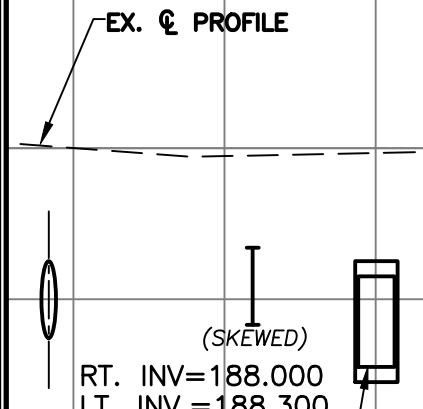
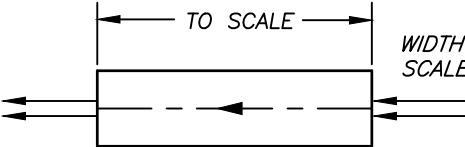
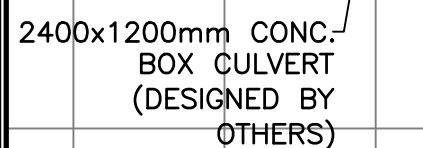


BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE	PROFILE	TEXT STYLE
CB	CATCH BASIN (EXISTING)	EXSTM	WHITE		L80		L60
PR-CB	CATCH BASIN (PROPOSED)	PR-STM	CYAN		L100		
DCB	DOUBLE CATCH BASIN (EXISTING)	EXSTM	WHITE		L80		
PR-DCB	DOUBLE CATCH BASIN (PROPOSED)	PR-STM	CYAN		L100		
DCBMH	DOUBLE CATCHBASIN MAINTENANCE HOLE (EXISTING)	EXSTM	WHITE		L80		
PR-DCBMH	DOUBLE CATCHBASIN MAINTENANCE HOLE (PROPOSED)	PR-STM	CYAN		L100		
	CATCH BASIN LEAD (EXISTING)	PLAN EXSTM PROFILE PRFEXSTM	WHITE YELLOW				
	CATCH BASIN LEAD (PROPOSED)	PR-STM	BLUE				
DICB	DITCH INLET CATCH BASIN (EXISTING)	EXSTM	WHITE		L80		
PR-DICB	DITCH INLET CATCH BASIN (PROPOSED)	PR-STM	CYAN		L100		

BLOCK	DESCRIPTION	LAYER:	COLOUR	PLAN	TEXT STYLE	PROFILE	TEXT STYLE
OGSMH	OIL, GRIT SEPARATOR MAINTENANCE HOLE (EXISTING)	EXSTM	WHITE			<b>NOTE:</b> PROP. WATERMAIN OR PROP. SEWER TO BE HATCHED	
PR-OGSMH	OIL, GRIT SEPARATOR MAINTENANCE HOLE (PROPOSED)	PR-STM	CYAN		L100		
MHS CBMH	STORM MAINTENANCE HOLE OR MAINTENANCE HOLE CATCH BASIN (EXISTING)	PLAN EXSTM PROFILE PRFEXSTM	WHITE YELLOW		L80		
PR-CBMH PR-MHS	STORM MAINTENANCE HOLE OR CATCH BASIN MAINTENANCE HOLE (PROPOSED)	PLAN PR-STM PROFILE PRFSTM	CYAN MAGENTA		L100		L80
	STORM SEWER (EXISTING) (GREATER THAN 600mm, SHOW DOUBLE LINE)	PLAN EXSTM PROFILE PRFEXSTM	WHITE YELLOW		L80		L100
		PLAN EXSTM PROFILE PRFEXSTM	WHITE YELLOW		L80		L80
	STORM SEWER (PROPOSED) (600mmØ OR LARGER USE DOUBLE LINES)	PLAN PR-STM PROFILE PRFSTM	MAGENTA BLUE		L100		L80
		PLAN PR-STM PROFILE PRFSTM	MAGENTA BLUE		L100		L100

**\*\*AS CONSTRUCTED STAGE**

INCLUDE PIPE MATERIAL IN PLAN & PROFILE E.G. 300mm CONC STM SEWER

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE	PROFILE	TEXT STYLE		
CULV	CULVERTS (ALL TYPES) (EXISTING)	PLAN EXCULVERTS	WHITE	 <p>LINETYPE: HIDDENX2</p> <p>300mm <math>\phi</math> CSP</p> <p>WIDTH TO SCALE</p>	L80	 <p>EX. <math>\phi</math> PROFILE</p> <p>EX. CULV. INV. 243.00</p> <p>(SKEWED)</p> <p>EX. CULV. INV. 243.00</p>	L80		
	CIRCULAR CULVERTS (DRIVEWAYS) (PROPOSED) (SHOW SKEW IF NECESSARY)	PLAN PR-CULVERTS	CYAN		 <p>TO SCALE</p> <p>GRAVEL</p> <p>WIDTH TO SCALE</p> <p>500mm CSP 1.6mm PG <math>\phi</math> 18+216.00 18.7m RT 12.0m LENGTH</p>		L100	 <p>EX. <math>\phi</math> PROFILE</p> <p>(SKEWED)</p> <p>RT. INV.=188.000 LT. INV.=188.300</p>	L100
	BOX CULVERTS (PROPOSED) (SHOW SKEW IF NECESSARY)	PLAN PR-CULVERTS	CYAN		 <p>TO SCALE</p> <p>WIDTH TO SCALE</p> <p>19.0m-2400X1200mm (C1A) CONCRETE BOX CULVERT SEE SHEET XX (CULVERT DATA TABLE REQUIRED. SEE PAGE 603)</p>		L100		 <p>2400x1200mm CONC. BOX CULVERT (DESIGNED BY OTHERS)</p>

STORM SEWER DATA								
CB/MH. #	STATION	¢ CONSTR. OFFSET	MH. STD. DWG.	INVERTS		FRAME & COVER STD.	TOP OF FRAME ELEV.	REMARKS
				INLET	OUTLET			
CB52	0+130.50	10.50LT	701.02	N131.45	S131.20	401.01	134.25	-

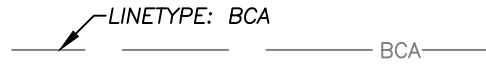


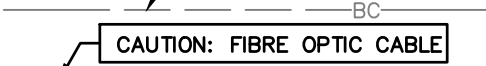
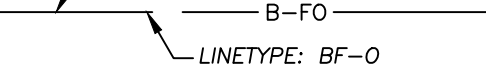
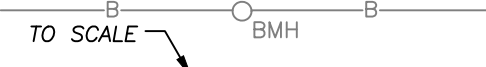



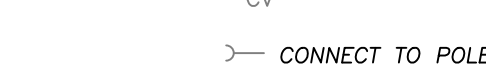
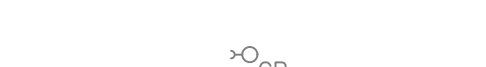
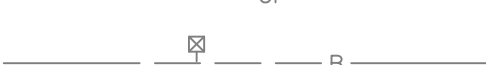


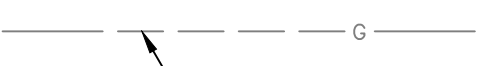
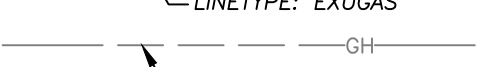
\* OFFSET TO CENTRE OF FRAME AND GRATE / COVER

CULVERT DATA									
CULVERT NO.	DIA. (mm)	LENGTH (m)	INLET			OUTLET			REMARKS
			STATION	¢ CONST. OFFSET	INV. ELEV.	STATION	¢ CONST. OFFSET	INV. ELEV.	
2	500	21.5	0+340.000	9.850LT.	188.429	0+334.400	10.45 RT	188.315	1.3mm P.G.
C1A	2400x1200	34.09	14+098.97	20.18 LT	226.730	14+098.83	14.07 RT	226.651	CONC. BOX

(CULVERTS CROSSING ROAD ONLY)

NOTES

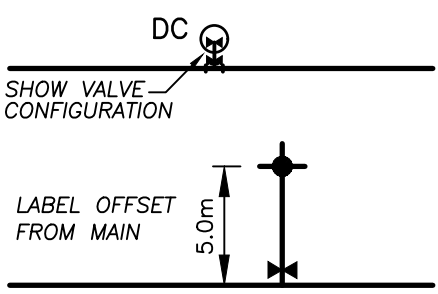
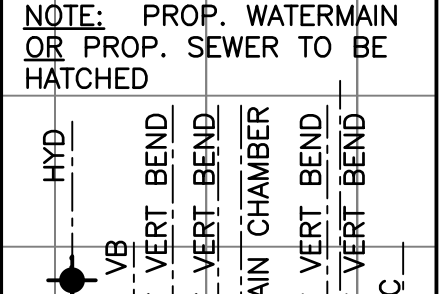
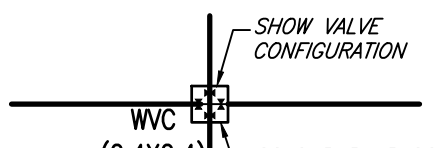
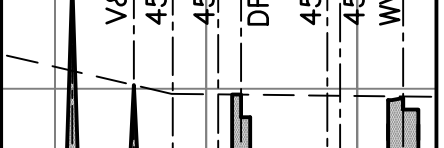
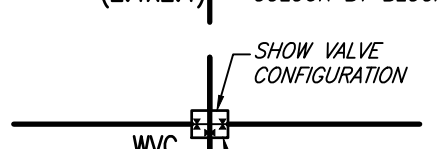
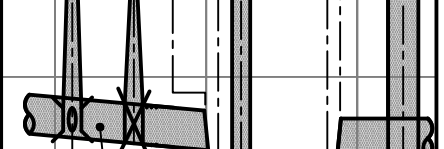
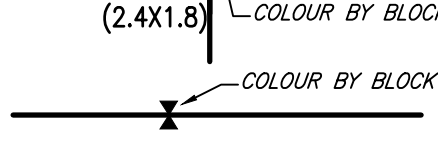
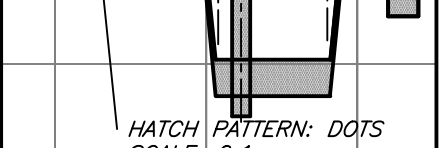
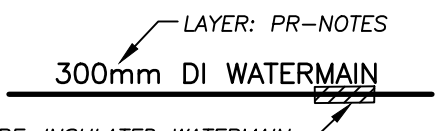
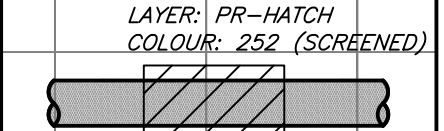
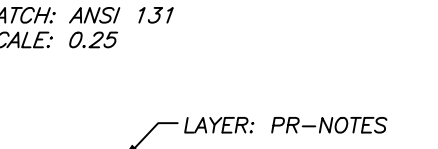
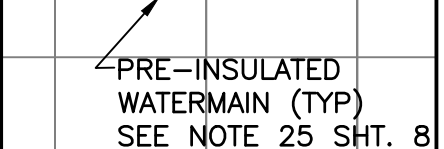
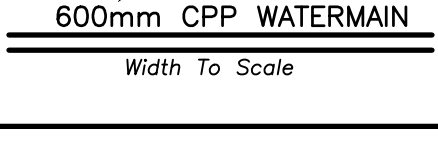
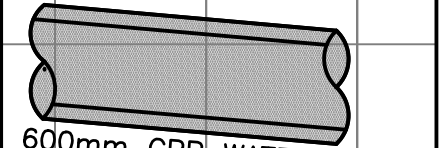
1. ALL INVERTS VALUES TO MIN. TWO DECIMAL ACCURACY.
2. ALL LETTERS UPPERCASE EXCEPT METRES m AND MILLIMETRES mm.
3. USE A L80 TEXT STYLE ON LAYER XFINE-PEN.
4. CHAINAGE STATIONS TO BE ASCENDING AS READ.
5. THE HEADINGS ARE PRE-DEFINED AS STMDATA WBLOCK AND CULVDATA WBLOCK
6. DO NOT REDUCE THE SIZE OF THIS TABLE.

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE	PROFILE	TEXT STYLE	
BMH	BELL AERIAL	EXBELL	WHITE		L80	ALL UTILITY INFORMATION IN PROFILE SHALL BE SHOWN AS REQUIRED		
	BELL CABLE (UNDERGROUND)	EXBELL	WHITE		L80			
	BELL CONDUIT (UNDERGROUND)	EXBELL	WHITE		L80			
	BELL FIBRE OPTICS	EXBELL-FO	YELLOW		L80			
	BELL MANHOLE	EXBELL	WHITE		L80			
					L80			
	BP	BELL POLE	EXBELL	WHITE				
	CAB	CABINET	EXMISC	WHITE				
	CV	CABLE VAULT	EXMISC	WHITE				
	GW	GUY WIRE	EXGP&GW	WHITE				
GP	GUY POLE	EXGP&GW	WHITE					
BPED	BELL PEDESTAL	EXBELL	WHITE					
EHH	ELECTRICAL HANDHOLE	EXHYDRO	WHITE		L80			
	GAS MAIN (UNDERGROUND)	EXGAS	WHITE		L80			
	GAS MAIN HIGH PRESSURE (UNDERGROUND)	EXGAS	WHITE		L80			
GV	GAS VALVE	EXGAS	WHITE					







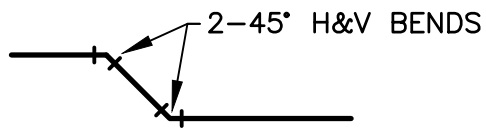





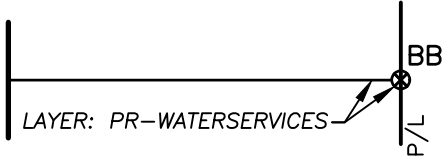
BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE	PROFILE	TEXT STYLE
LS	STREET LIGHT CABLE	EXSTLIGHT-CABLE	WHITE	LINETYPE: STLIGHTCABLE -----L-----		ALL UTILITY INFORMATION IN PROFILE SHALL BE SHOWN AS REQUIRED	
	LIGHTING CABLE AERIAL	EXSTLIGHT-CABLE	WHITE	LINETYPE: LCA -----LCA-----			
	LIGHTING CABLE	EXSTLIGHT-CABLE	WHITE	LINETYPE: LCU -----LCU-----			
	LIGHT STANDARD	EXHYDRO	WHITE	○ LS			
	ROGERS CABLE	EXROGERS	WHITE	LINETYPE: EXUROGERS -----R-----	L80		
	ROGERS FIBRE OPTIC CABLE	EXROGERS-FO	YELLOW	CAUTION: FIBRE OPTIC CABLE -----R-FO----- LINETYPE: R-FO	L80		
	TELEVISION AERIAL	EXTV	WHITE	LINETYPE: TCA -----TVCA-----	L80		
	TELEVISION CABLE	EXTV	WHITE	LINETYPE: EXUTV -----TV-----	L80		
	TELEVISION FIBRE OPTICS	EXTV-FO	YELLOW	CAUTION: FIBRE OPTIC CABLE -----TV-FO----- LINETYPE: TVFO	L80		
	FIBER OPTIC CABLE UNDERGROUND	EXMSC-FO	YELLOW	CAUTION: FIBRE OPTIC CABLE -----FO-----FO----- LINETYPE: FO	L80		
FIBER OPTIC CABLE AERIAL	EXMSC-FO	YELLOW	CAUTION: FIBRE OPTIC CABLE -----A-FO----- LINETYPE: A-FO	L80			





BLOCK	DESCRIPTION	LAYER:	COLOUR	PLAN	TEXT STYLE	PROFILE	TEXT STYLE
ARC	AIR RELEASE CHAMBER	EXWATER	WHITE		L80		
ARCV	AIR RELEASE CHAMBER VENT	EXWATER	WHITE		L80		
DC	DRAIN CHAMBER	EXWATER	WHITE		L80		
	<u>WATERMAIN</u>						
	PLAN	EXWATER	WHITE		L80		
	PROFILE	PRFEXWATER	YELLOW		L80		L80
					L80		
					L80		
CBOX	WATER SERVICE	EXWATER-SERVICE	WHITE				
	<u>HYDRANT</u>						
	PLAN	EXWATER	WHITE				
	PROFILE	PRFEXWATER	YELLOW				
	<u>SEC. VALVE</u>						
	PLAN	EXWATER	WHITE		L80		
	PROFILE				L80		
	(*USE OF HYDRPF BLOCK)						
	<u>WATER VALVE</u>						
	PLAN	EXWATER	WHITE				
	PROFILE	PRFEXWATER	YELLOW				
	<u>VALVE CHAMBER</u>						
	PLAN	EXWATER	WHITE		L80		
	PROFILE	PRFEXWATER	YELLOW		L80		L80

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE
AFS	AUTOMATIC FLUSHING STATION	EXWATER	WHITE	☒ AFS	L80
BB	BUFFALO BOX	EXWATER	WHITE	⊗ BB	L80
PIV	POST INDICATOR VALVE	EXWATER	WHITE	○ PIV	L80
REDUCER	REDUCER	EXWATER	WHITE	▷	
SPRK	SPRINKLER HEAD	EXWATER	WHITE	⊙ SPRK	L80
VCI	VALVE CHAMBER— IRRIGATION SYSTEMS	EXWATER	WHITE	○ VCI	
WMC	WATER METER CHAMBER	EXWATER	WHITE	○ WMC	L80

BLOCK	DESCRIPTION	LAYER:	COLOUR	PLAN	TEXT STYLE	PROFILE	TEXT STYLE
DC	DRAIN CHAMBER (PROPOSED) (REGIONAL STANDARD RH 406.02) PLAN PROFILE	PR-WATER PRFWATER	MAGENTA BLUE				
PRHYD PRHYDPRF	HYDRANT (PROPOSED) PLAN PROFILE	PR-WATER PRFWATER	MAGENTA BLUE				L100
PRWVC (2.4X2.4) PRWVCPRF	VALVE CHAMBER (PROPOSED) (REGIONAL STANDARD RH 402.020) PLAN PROFILE	PR-WATER PRFWATER	MAGENTA BLUE		L100		L100
PRWVC (2.4X1.8) PRWVCPRF	VALVE CHAMBER (PROPOSED) (REGIONAL STANDARD RH 402.080) PLAN PROFILE	PR-WATER PRFWATER	MAGENTA BLUE		L100		L100
PRWV PRWVPRF	WATER VALVE (PROPOSED) PLAN PROFILE	PR-WATER PRFWATER	MAGENTA BLUE		L100		L100
	WATERMAIN (PROPOSED) PLAN PROFILE	PR-WATER PRFWATER	MAGENTA BLUE		L100		L100
	WATERMAIN (PROPOSED) (600mmØ OR LARGER USE DOUBLE LINES) PLAN PROFILE	PR-WATER PRFWATER	MAGENTA BLUE		L100		L100

**\*\*AS CONSTRUCTED STAGE**  
INCLUDE PIPE MATERIAL IN PLAN & PROFILE E.G. 300mm PVC WATERMAIN

BLOCK	DESCRIPTION	LAYER:	COLOUR	PLAN	TEXT STYLE	PROFILE	TEXT STYLE
SLEEVE	SOLID SLEEVE COUPLING	PR-WATER	BLUE				
DEFLECTION	HORIZONTAL DEFLECTION	PR-WATER	BLUE				
BEND 5	5° BEND	PR-WATER	BLUE				
BEND11	11½° BEND	PR-WATER	BLUE				
BEND22	22½° BEND	PR-WATER	BLUE				
BEND45	45° BEND	PR-WATER	BLUE				
	BENDS HORIZONTAL AND VERTICAL PLAN PROFILE	PR-WATER PRFWATER	BLUE BLUE				
V BEND	VERTICAL BEND	PR-WATER	BLUE				
PLUG	CAP OR PLUG PLAN PROFILE	PR-WATER PRFWATER	BLUE BLUE				
PRREDUCER	REDUCER	PR-WATER	YELLOW				
PRTEE	PROPOSED TEE	PR-WATER	BLUE				
PRCBOX	WATER SERVICE	PR-WATERSERVICES	CYAN				
PRBBOX	BUFFALO BOX	PR-WATERSERVICES	CYAN				

BLOCK	DESCRIPTION	LAYER	COLOUR	PLAN	TEXT STYLE																																																																									
	LANDSCAPE LEGEND	L-LEGEND	CYAN	<b>LEGEND</b>	L140	* SEE SAMPLE LANDSCAPING DRAWING IN APPENDIX 6																																																																								
	PLANT KEY PLANT QUANTITY	L-PLANT KEY	CYAN	 PLANT KEY PLANT QUANTITY	L120																																																																									
	PROPOSED CONIFEROUS TREE PLANTING	L-CONIFEROUS	CYAN	 PROPOSED CONIFEROUS TREE PLANTING	L120																																																																									
	PROPOSED DECIDUOUS TREE PLANTING	L-DECIDUOUS	CYAN	 PROPOSED DECIDUOUS TREE PLANTING	L120																																																																									
	PROPOSED LARGE SHRUB PLANTINGS	L-SHRUBS	CYAN	 PROPOSED LARGE SHRUB PLANTINGS	L120																																																																									
				<b>NOTE: DIFFERENT BLOCKS MAY BE SUBSTITUTED</b>																																																																										
	PROPOSED PLANT LIST	L-PLANT LIST	CYAN	<b>PLANT LIST</b>																																																																										
	PROPOSED PLANT LIST TEXT	L-PLANT LIST-TEXT	YELLOW																																																																											
<b>NOTE TO THE LANDSCAPE ARCHITECT</b> 1. PREFIX ALL LAYERS WITH AN L-"LAYER NAME" 2. USE ETRANSMIT FOR ALL SUBMITTALS. ENSURE THAT YOUR COLOUR TABLE (CTB) IS INCLUDED. REFER TO SECTION 7.4 ELECTRONIC SUBMITTALS.				<table border="1"> <thead> <tr> <th>KEY</th> <th>QUANTITY</th> <th>BOTANICAL NAME / COMMON NAME</th> <th>CALIPER</th> <th>HEIGHT</th> <th>SPREAD</th> <th>ROOT</th> <th>REMARKS</th> </tr> </thead> <tbody> <tr> <td colspan="8"><b>DECIDUOUS TREES</b></td> </tr> <tr> <td>A</td> <td>3</td> <td>Acer saccharinum Clump Silver Maple</td> <td>45</td> <td></td> <td></td> <td>B&amp;B</td> <td>MULTI-STEM CLUMP (3) SPECIMEN QUALITY</td> </tr> <tr> <td>B</td> <td>28</td> <td>Fraxinus pennsylvanica lanceolata Green Ash</td> <td>70</td> <td></td> <td></td> <td>B&amp;B</td> <td>SPECIMEN QUALITY FULL &amp; EQUAL FORM</td> </tr> <tr> <td colspan="8"><b>LARGE DECIDUOUS SHRUBS</b></td> </tr> <tr> <td>D</td> <td>48</td> <td>Syringa vulgaris Mme. Lemoine Mme. Lemoine Lilac</td> <td></td> <td>1500</td> <td></td> <td>Potted</td> <td>SPECIMEN QUALITY FULL &amp; EQUAL FORM</td> </tr> <tr> <td>E</td> <td>32</td> <td>Viburnum lentago Nannyberry</td> <td></td> <td>1200</td> <td></td> <td>B&amp;B</td> <td>SPECIMEN QUALITY FULL &amp; EQUAL FORM</td> </tr> <tr> <td colspan="8"><b>CONIFEROUS TREES</b></td> </tr> <tr> <td>G</td> <td>3</td> <td>Pinus banksiana Jack Pine</td> <td></td> <td>2400</td> <td></td> <td>B&amp;B</td> <td>SPECIMEN QUALITY FULL &amp; EQUAL FORM</td> </tr> </tbody> </table> <p><b>NOTES</b></p> 1. USE AN "L80" TEXT STYLE ON LAYER L-PLANT LIST-TEXT 2. THE HEADING IS PRE-DEFINED AS A WBLOCK PLANTLIST.DWG			KEY	QUANTITY	BOTANICAL NAME / COMMON NAME	CALIPER	HEIGHT	SPREAD	ROOT	REMARKS	<b>DECIDUOUS TREES</b>								A	3	Acer saccharinum Clump Silver Maple	45			B&B	MULTI-STEM CLUMP (3) SPECIMEN QUALITY	B	28	Fraxinus pennsylvanica lanceolata Green Ash	70			B&B	SPECIMEN QUALITY FULL & EQUAL FORM	<b>LARGE DECIDUOUS SHRUBS</b>								D	48	Syringa vulgaris Mme. Lemoine Mme. Lemoine Lilac		1500		Potted	SPECIMEN QUALITY FULL & EQUAL FORM	E	32	Viburnum lentago Nannyberry		1200		B&B	SPECIMEN QUALITY FULL & EQUAL FORM	<b>CONIFEROUS TREES</b>								G	3	Pinus banksiana Jack Pine		2400		B&B	SPECIMEN QUALITY FULL & EQUAL FORM
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Ra-1/101/1101



Ra-1t



Ra-2/102



Ra-2t/102t



Ra-4



Ra-4t



Ra-6



Ra-7



Ra-8



Ra-9



Ra-9A



Ra-10



Ra-11



Ra-12



Ra-13



Rb-1



Rb-1A



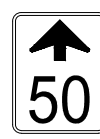
Rb-84t



Rb-2



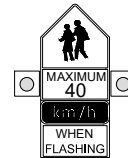
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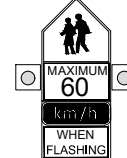
Rb-5



Rb-6



Rb-6A



Rb-106A



Rb-7t



Rb-10



Rb-10A



Rb-10t



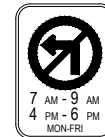
Rb-11



Rb-11A



Rb-12



Rb-12A



Rb-13



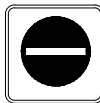
Rb-14



Rb-15



Rb-16



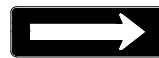
Rb-19



Rb-19t



Rb-20



Rb-21/121



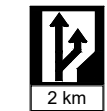
Rb-24/124



Rb-25/125



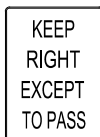
Rb-27/127



Rb-30



Rb-31



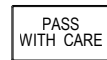
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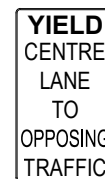
Rb-34



Rb-35



Rb-35t



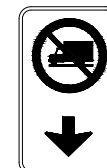
Rb-36



Rb-37



Rb-37t

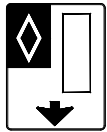


Rb-39

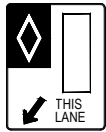


Rb-39A

Rb-40	Rb-40A	Rb-41	Rb-41t	Rb-42	Rb-42t	Rb-43	Rb-44	Rb-45
Rb-46	Rb-47	Rb-48	Rb-48A	Rb-51/151	Rb-51A/151A	Rb-52/152	Rb-53/153	Rb-54/154
Rb-54A/154A	Rb-55/155	Rb-55A/155A	Rb-56/156	Rb-57/157	Rb-58	Rb-60	Rb-61	Rb-61t(1)
Rb-61t(2)	Rb-61t(3)	Rb-62	Rb-62A	Rb-63/163	Rb-63A	Rb-64	Rb-65	Rb-67
Rb-68	Rb-69/169	Rb-76	Rb-77	Rb-78	Rb-79L	Rb-79R	Rb-80	Rb-81
Rb-82	Rb-82t	Rb-83	Rb-83t	Rb-84/184	Rb-84A/184A	Rb-85	Rb-85A	Rb-85T



Rb-86



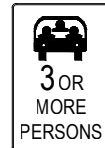
Rb-86A



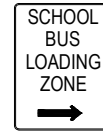
Rb-87



Rb-87A



Rb-88



Rb-89/189



Rb-90A



Rb-90B



Rb-91



Rb-92



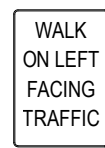
Rb-93



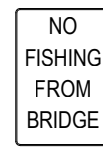
Rb-94



Rb-95



Rc-1



Rc-2



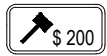
Rc-3



Rc-4



Rc-4A



Rc-4t



Rc-9



Rc-11















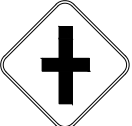



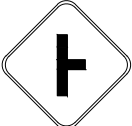








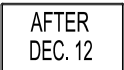

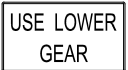


























Rc-12



Rc-13



Rc-13t

								
Wa-1(L/R)/101(L/R)	Wa-2(L/R)/102(L/R)	Wa-3(L/R)/103(L/R)	Wa-4(L/R)/104(L/R)	Wa-5(L/R)/101(L/R)	Wa-6(L/R)/106(L/R)	Wa-6t	Wa-7t	Wa-8/108
								
Wa-8(LR)/108(LR)	Wa-8(L/R)/108(L/R)	Wa-9/109	Wa-11	Wa-11A/111A	Wa-12	Wa-12A/112A	Wa-13	Wa-13A/113A
								
Wa-14	Wa-15	Wa-15A/115A	Wa-16/116/1116	Wa-17	Wa-18t/118t	Wa-19	Wa-19t	Wa-21/121
								
Wa-21t	Wa-22	Wa-22A	Wa-22T	Wa-23/123(L/R)	Wa-1123R	Wa-23Rt	Wa-23Lt	Wa-23t/123t
								
Wa-24/124	Wa-24A	Wa-24t	Wa-25/125	Wa-25t/125t	Wa-26/126	Wa-27	Wa-28/128	Wa-28t
								
Wa-29	Wa-30A	Wa-31	Wa-32/132/1132	Wa-32A/132A	Wa-32t/132t	Wa-33L	Wa-33R	Wa-33LR



Wa-34

DIVIDED ROAD BEGINS

Wa-34t



Wa-35

DIVIDED ROAD ENDS

Wa-35t



Wa-50(L/R)

LEFT LANE EXITS

Wa-56L/156L

RIGHT LANE EXITS

Wa-56R/156R

TWO RIGHT LANES EXIT

Wa-57R/157R

TWO LEFT LANES EXIT

Wa-57L/157L

MAXIMUM  
10  
tonnes

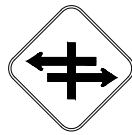
Wa-63

MAXIMUM  
00  
00  
00  
tonnes

Wa-63A

NARROW BRIDGE

Wa-70t



Wa-72

DO NOT BLOCK INTERSECTION

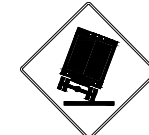
Wa-73



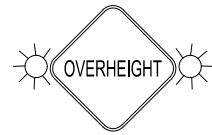
Wa-74

SPEED HUMP

Wa-74t



Wa-75/175



Wa-76/176

WHEN FLASHING

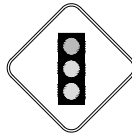
Wa-76t/176t



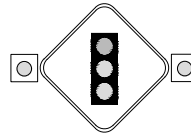
Wb-1/101/1101



Wb-1A/101A



Wb-2/102



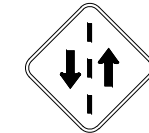
Wb-102A

PREPARE TO STOP WHEN FLASHING

Wb-102At



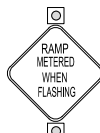
Wb-3



Wb-4/104



Wb-6



Wb-7



Wc-1/101



Wc-2/102

SCHOOL CROSSING

Wc-2t/102t



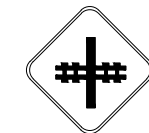
Wc-2A/102A

CROSSING AHEAD

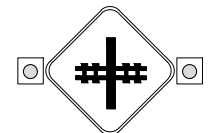
Wc-2At/102At



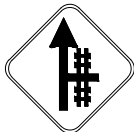
Wc-3



Wc-4/104



Wc-104A



Wc-4B/104B



Wc-5/105

SLIPPERY WHEN WET

Wc-5t



Wc-6L/R

WATCH FOR FALLEN ROCK

Wc-6t



Wc-7

SENIORS

Wc-7t



Wc-8/108(L/R)

TRUCK ENTRANCE

Wc-8t



Wc-10(L/R)



Wc-11/111



Wc-13



Wc-14

CENTRE LINE MARKING ENDS

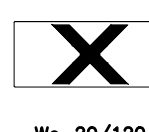
Wc-17



Wc-18

SNOWMOBILE CROSSING

Wc-18t



Wc-20/120



Wc-21

WATER OVER ROAD

Wa-21t



Wc-25(L/R)

FIRE TRUCK ENTRANCE

Wc-25t



Wc-26

SCHOOL BUS STOP AHEAD









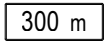





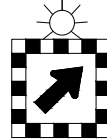
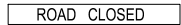





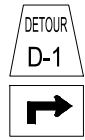
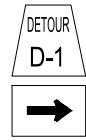
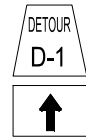



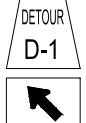
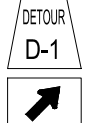
























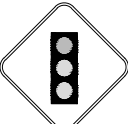
Wc-26t

WAIT FOR GAP

Wc-28

TWO STAGE PEDESTRIAN CROSSING

Wc-29

 CONSTRUCTION	 CONSTRUCTION 1 km					 RIGHT LANE CLOSED	 LEFT LANE CLOSED	 300 m
TC-1/101	TC-1A/101A	TC-2A/102A	TC-2B/102B	TC-3R/103R	TC-3L/103L	TC-1/101	TC-1/101	TC-3tA/103tA
		 DETOUR	 DETOUR 1 km	 DETOUR 2 km		 ROAD CLOSED	 LOCAL TRAFFIC ONLY	
TC-4L/104L	TC-4R/104R	TC-5/105/1105	TC-5A/105A/1105A	TC-5B/105B/1105B	TC-7(L/R)	TC-7tA	TC-7tB	TC-9R/109R
		 DETOUR D-1	 DETOUR D-1	 DETOUR D-1	 DETOUR D-1	 DETOUR D-1	 DETOUR D-1	 DETOUR D-1
TC-9L(2)/109L(2)	TC-4R/104R	TC-10	TC-10AR/110AR	TC-10BR/110BR	TC-10C/110C	TC-10D/110D	TC-10EL/110EL	TC-10ER/110ER
 DETOUR D-1	 DETOUR D-1	 NARROW LANES	 TRUCKS USE CENTRE LANE	 FOR ...km				
TC-10FL/110FL	TC-10FR/110FR	TC-11	TC-11t	TC-11tA/111tA	TC-13	TC-14	TC-15	TC-16A/116A(L/R)
								 30 km/h
TC-16BL/116BL(L/R)	TC-16C/116C(L/R)	TC-16D/116D(L/R)	TC-16E/116E(L/R)	TC-16EL2/116EL2	TC-16EL3/116EL3	TC-16ER2/116ER2	TC-16ER3/116ER3	TC-17t
		 GROOVED PAVEMENT	 PREPARE TO STOP	 PREPARE TO STOP	 WHEN FLASHING		 SLOW	
TC-18/118	TC-19	TC-19t	TC-20/120	TC-20A/120A	TC-20At/120At	TC-21/121	TC-22	TC-23/123



TC-23A/123A



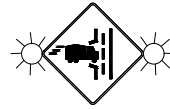
TC-23At



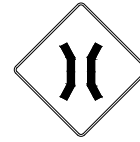
TC-24/124



TC-31(L/R)



TC-31A(L/R)



TC-32



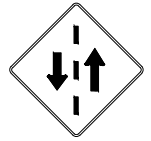
TC-32t



TC-33A/133A



TC-33B



TC-34



TC-35



TC-36



TC-37



TC-39



TC-40(L/R)



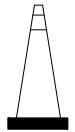
TC-44



TC-45



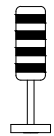
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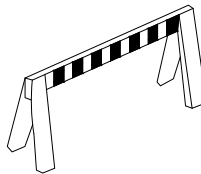
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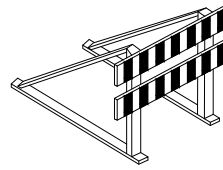
TC-51C



TC-52



TC-53A



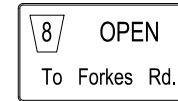
TC-53B



TC-54



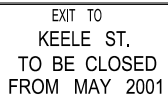
TC-54



TC-61



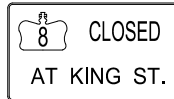
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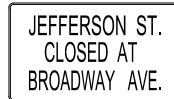
TC-64



TC-65



TC-66



TC-67

## **Appendices**

**Appendix 1:** Sample Watermain and Sanitary Sewer Project

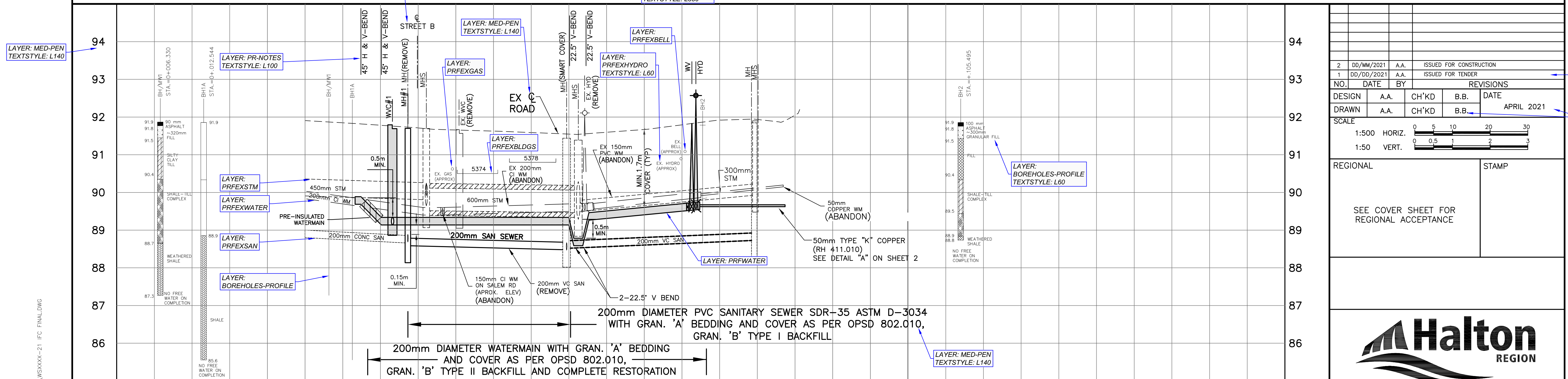
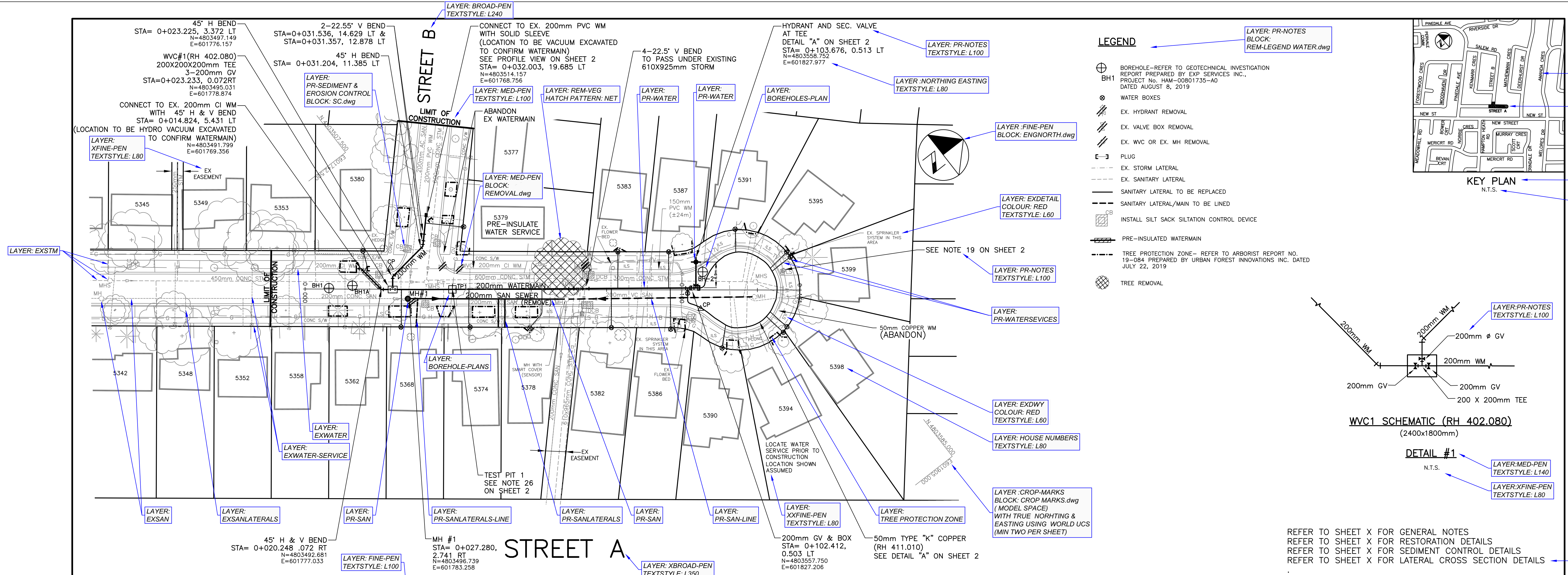
**Appendix 2:** Sample As Constructed and Shop Drawings

**Note:**

***Sample Drawings are provided for general information only and to illustrate the type of information and level of detail required to ensure drawings meet our standards.***

***Some sheets like the plan and profiles have been update. Always ensure that you are using the most current typical sheets and title block requirements before starting a project for Halton Region.***

**Appendix 1-Sample Watermain and Sanitary Sewer Project**



**REVISIONS**

NO.	DATE	BY	REVISIONS
2	DD/MM/2021	A.A.	ISSUED FOR CONSTRUCTION
1	DD/DD/2021	A.A.	ISSUED FOR TENDER

DESIGN A.A. CH'KD B.B. DATE  
DRAWN A.A. CH'KD B.B. APRIL 2021

**SCALE**  
1:500 HORIZ.  
1:50 VERT.

**REGIONAL**

SEE COVER SHEET FOR REGIONAL ACCEPTANCE

**Halton REGION**

**200mm WATERMAIN REPLACEMENT ON STREET A**  
FROM STREET B TO CUL-DE-SAC  
FROM STA. 0+000 TO STA. 0+131  
IN THE CITY OF BURLINGTON

CONSULTANT FILE NO. REGIONAL DRAWING NO.  
CONTRACT NO. WS-XXXX-21 DRAWING NO. SHEET 1 OF 3

**WS-XXXX-21**  
Drawing: CA\007T\_A\CAD\_STANDARDS 2020 REVIEW\WSXXXX-21.FC\_FINAL.DWG  
Layout: Tab: UNDERCUL-ROAD  
Date: 03/20/2021 Time: 03:07:19 PM

**LAYER: BROAD-PEN TEXTSTYLE: L240**

**LAYER: PR-NOTES TEXTSTYLE: L100**

**LAYER: FINE-PEN TEXTSTYLE: L60**

**LAYER: BROAD-PEN TEXTSTYLE: L175**

**LAYER: FINE-PEN TEXTSTYLE: L120**

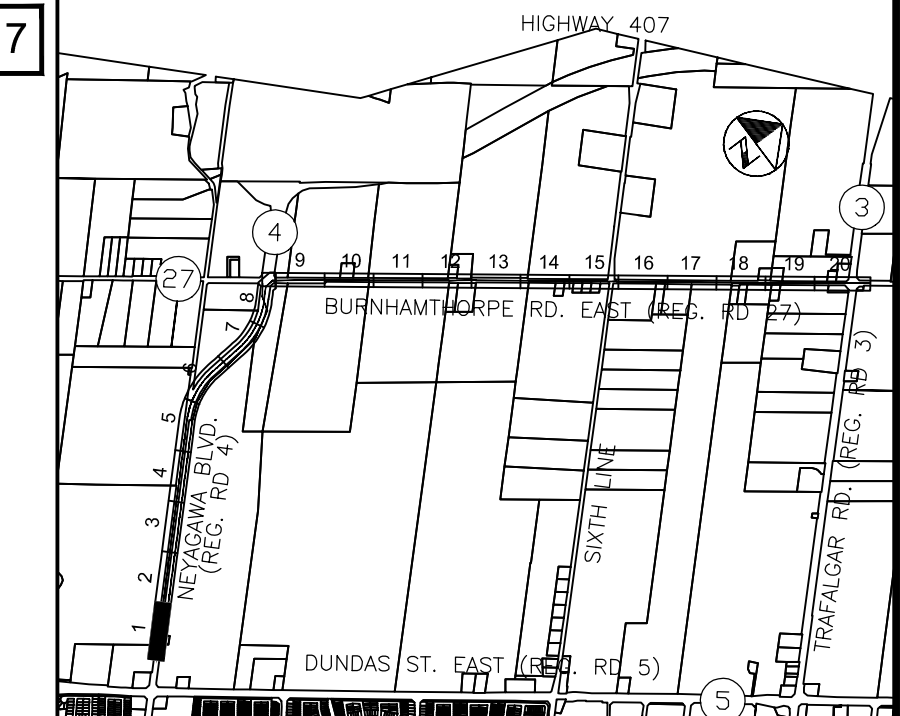
**LAYER: BROAD-PEN TEXTSTYLE: L140**

**LAYER: BROAD-PEN TEXTSTYLE: L175**

**Appendix 2-Sample As Constructed and Shop Drawings**



UTM NAD 83, ZONE 17



KEY PLAN N.T.S.

NOTES:  
1. SEE INDEX SHEET FOR GENERAL NOTES.

AS CONSTRUCTED WATERMAIN DATA

PI No.	EASTING	NORTHING	DESCRIPTION
P1	601445.89	4813240.89	CLOSURE
P2	601433.85	4813253.04	VERT. DEFL. 6.1'
P3	601419.74	4813267.21	VERT. DEFL. 6.1'
P4	601391.43	4813295.41	HOR. DEFL. 0.6'
P5	601353.74	4813332.30	HOR. DEFL. 4.5'
P6	601307.81	4813371.07	HOR. DEFL. 4.6'
P7	601294.49	4813383.73	HOR. DEFL. 0.9'

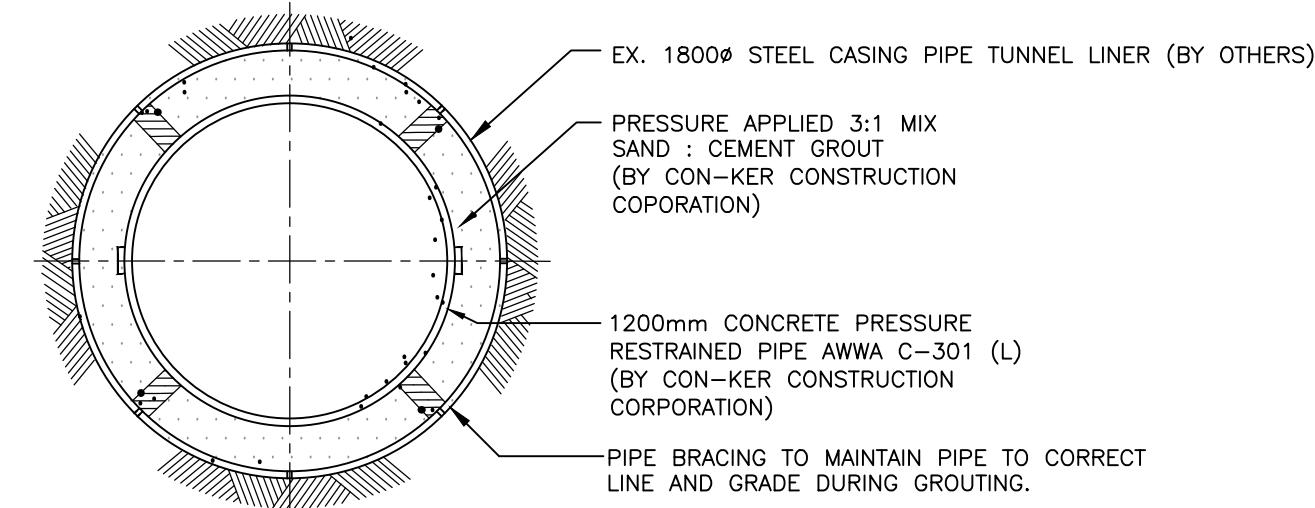
HORIZONTAL REFERENCE POINTS C/L WM

HR#	EASTING	NORTHING	DESCRIPTION
1	601442.67	4813244.19	TOP OF PIPE
2	601400.96	4813286.06	TOP OF PIPE
3	601370.41	4813316.05	TOP OF PIPE
4	601310.41	4813368.65	TOP OF PIPE
5	601299.00	4813379.26	TOP OF PIPE

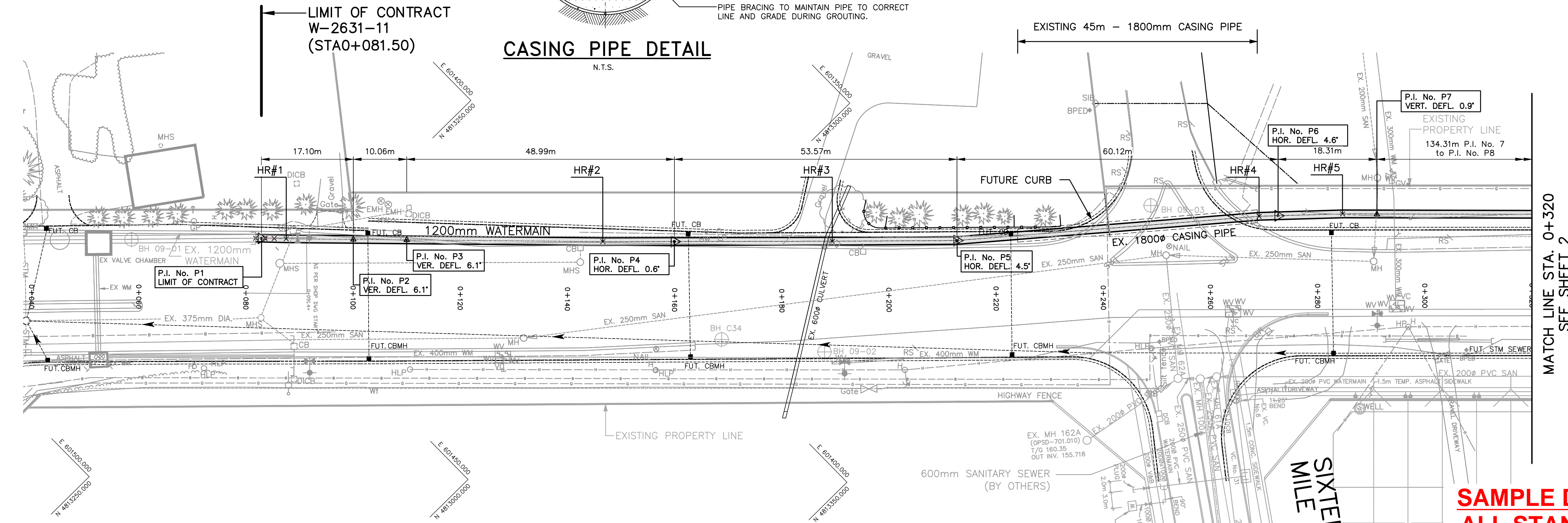
ELEVATIONS AND DIMENSIONS ARE FOR REFERENCE ONLY AND MUST BE CONFIRMED PRIOR TO USE FOR DESIGN, LAY-OUT OR CONSTRUCTION PURPOSES.

AS CONSTRUCTED INFORMATION SUPPLIED BY CON-KER CONSTRUCTION CORPORATION DATED APRIL 24, 2012

**SAMPLE DRAWING ONLY  
ALL STANDARD SHEETS  
HAVE BEEN UPDATED.  
PLEASE ENSURE THAT  
YOU ARE USING THE  
MOST CURRENT SHEET  
STYLE**

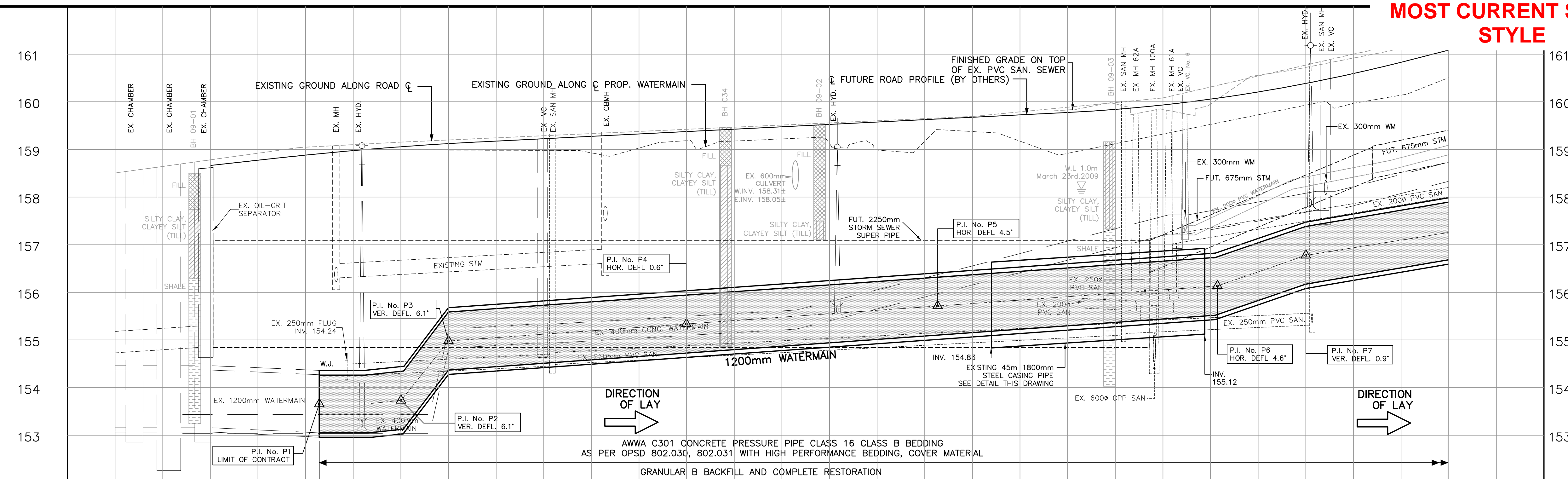


CASING PIPE DETAIL N.T.S.



NEYAGAWA BOULEVARD (REG. RD. 4)

SIXTEEN MILE DRIVE

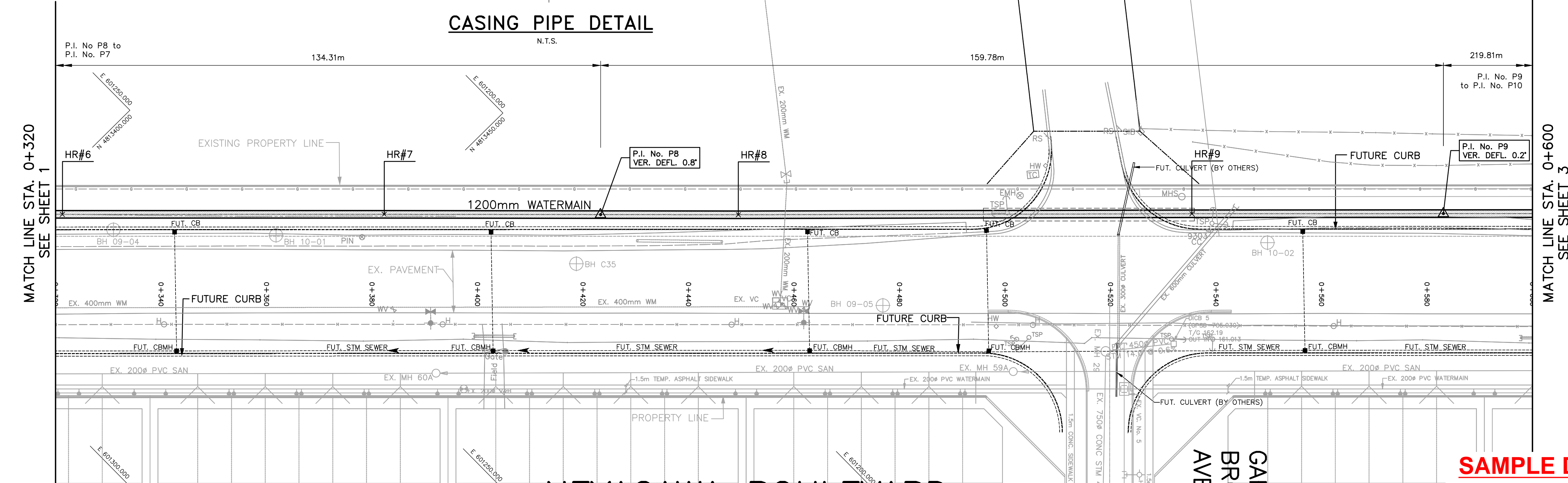
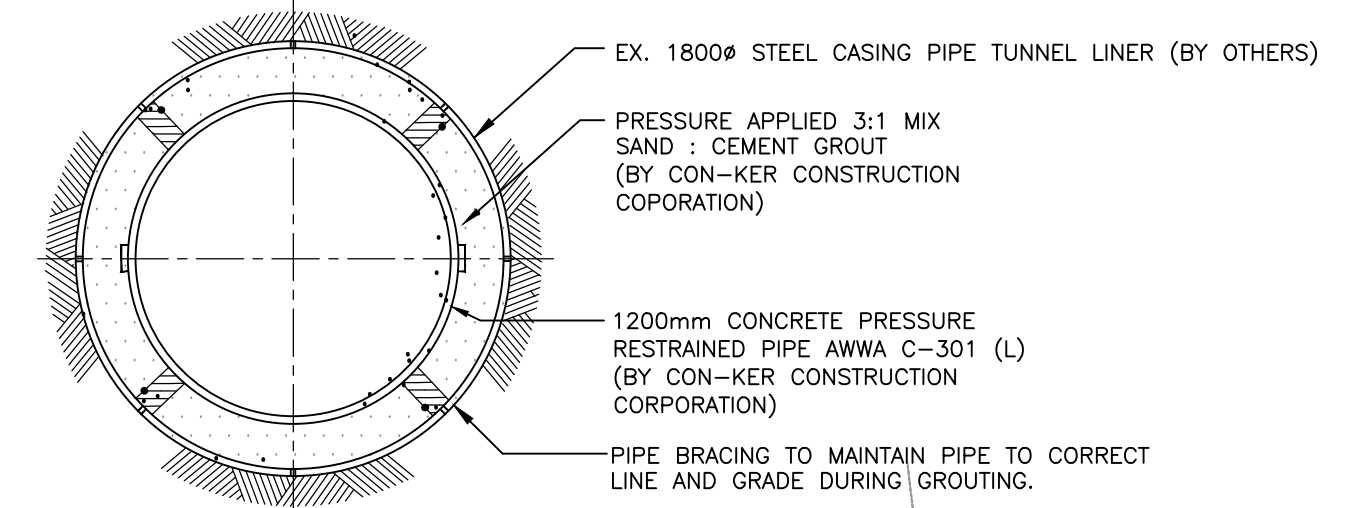
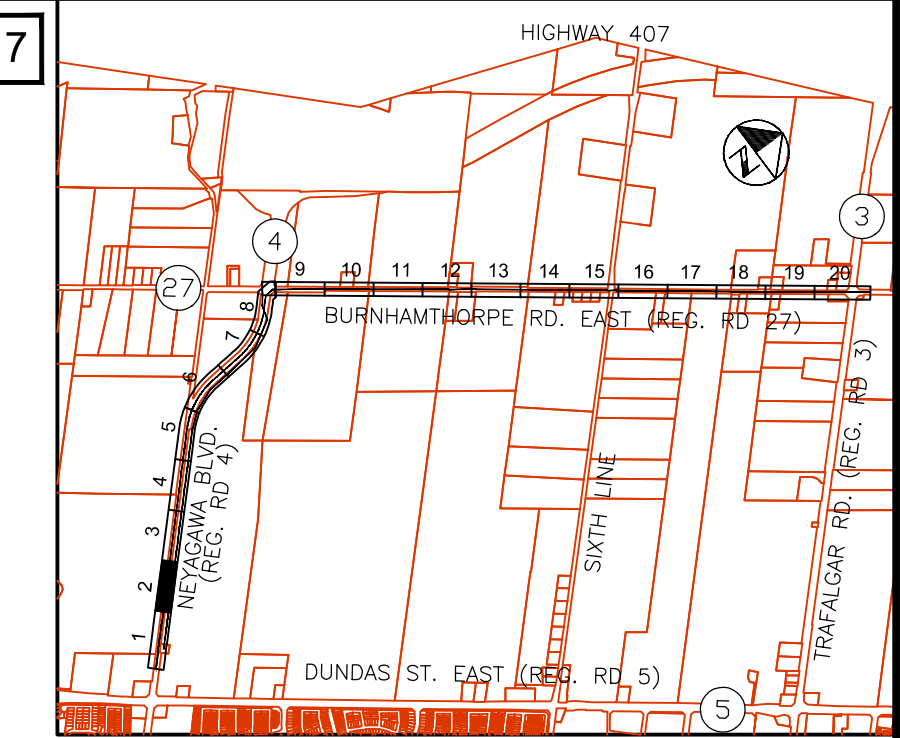


NO	Date	By	REVISIONS	MANU CAD
1	MAR 2014	P.B.	AS CONSTRUCTED	
DESIGN: WYC, Ch'kd J.S., Date FEBRUARY 2011				
DRAWN: 10-12, Ch'kd WYC				
Scale: 1:500 Horiz., 1:50 Vert.				
REGIONAL				
SEE COVER SHEET FOR REGIONAL ACCEPTANCE				
 100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1 T: 905-882-1100 F: 905-882-0025 www.mmm.ca				

WATERMAIN INSTALLATION ON NEYAGAWA BLVD. & BURNHAMTHORPE ROAD NEYAGAWA BOULEVARD FROM 75m NORTH OF DUNDAS STREET TO 305m NORTH OF DUNDAS STREET STA 0+040 TO STA 0+320 TOWN OF OAKVILLE	
Consultant File NO 10-08093	Regional Drawing NO
CONTRACT NO W-2631-11	Drawing NO SHEET 1 OF 31

Drawing: C:\USERS\CHAM\DOCUMENTS\ENGINEERING\_2014\CD-PR2631\_NEYA-WM\08093\PROFILES 1-B.DWG Date: 01/21/2015 Time: 11:29:39 AM

W-2631-11 1 of 31



NEYAGAWA BOULEVARD  
(REG. RD. 4)

GARDEN  
BROOK  
AVENUE

**SAMPLE DRAWING ONLY  
ALL STANDARD SHEETS  
HAVE BEEN UPDATED.  
PLEASE ENSURE THAT  
YOU ARE USING THE  
MOST CURRENT SHEET  
STYLE**

ELEVATIONS AND DIMENSIONS ARE FOR REFERENCE ONLY AND MUST BE CONFIRMED PRIOR TO USE FOR DESIGN, LAY-OUT OR CONSTRUCTION PURPOSES.

AS CONSTRUCTED INFORMATION SUPPLIED BY CON-KER CONSTRUCTION CORPORATION DATED APRIL 24, 2012

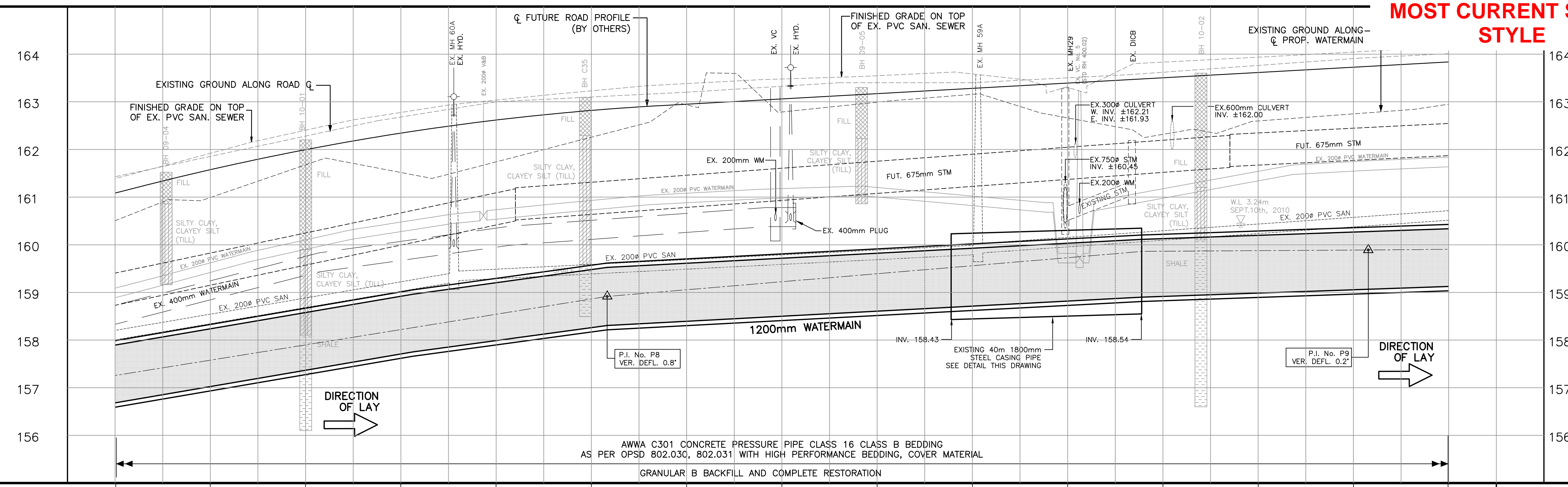
NOTE:  
1. SEE INDEX SHEET FOR GENERAL NOTES.

AS CONSTRUCTED WATERMAIN DATA

PI No.	EASTING	NORTHING	DESCRIPTION
P8	601200.32	4813476.70	VERT. DEFL. 0.8'
P9	601086.52	4813588.86	VERT. DEFL. 0.2'

HORIZONTAL REFERENCE POINTS C/L WM

HR#	EASTING	NORTHING	DESCRIPTION
6	601272.96	4813405.05	TOP OF PIPE
7	601229.50	4813447.86	TOP OF PIPE
8	601181.74	4813495.05	TOP OF PIPE
9	601120.37	4813555.27	TOP OF PIPE



NO	Date	By	REVISIONS	MANU	CAD
1	MAR 2014	P.B.	AS CONSTRUCTED		
Design	WYC	Ch'kd	J.S.		
Drawn	10-12	Ch'kd	WYC		FEBRUARY 2011

Scale: 1:500 Horiz. 1:50 Vert.

REGIONAL	Field Notes
	REGION BOOK
SEE COVER SHEET FOR REGIONAL ACCEPTANCE	Stamp

**MMM GROUP**  
100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1  
T: 905.882.1100 F: 905.882.0025 www.mmm.ca

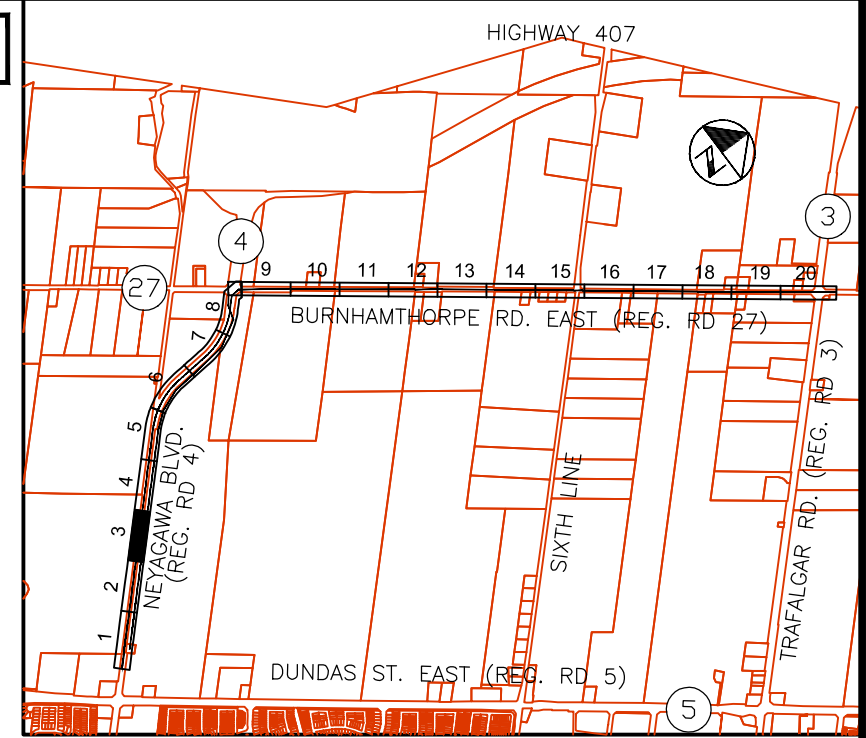
**Halton REGION**

WATERMAIN INSTALLATION ON NEYAGAWA BLVD. & BURNHAMTHORPE ROAD NEYAGAWA BOULEVARD FROM 305m NORTH OF DUNDAS STREET TO 585m NORTH OF DUNDAS STREET STA 0+320 TO STA 0+600 TOWN OF OAKVILLE

Consultant File NO <b>10-08093</b>	Regional Drawing NO
CONTRACT NO <b>W-2631-11</b>	Drawing NO SHEET <b>2</b> OF <b>31</b>

161.43	161.85	162.28	162.68	163.00	163.10	163.20	163.33	163.40	163.40	163.50	163.62	163.76	163.91	164.01	EX. ROAD C ELEVATIONS
93.4m @ 1.69%		157.75		40.0m @ 1.40%		156.31		112.0m @ 0.53%				64.0m @ 0.11%		156.97	AS CONSTRUCTED WATERMAIN INVERTS
0+320	0+340	0+360	0+380	0+400	0+420	0+440	0+460	0+480	0+500	0+520	0+540	0+560	0+580	0+600	STATIONS

UTM NAD 83, ZONE 17



KEY PLAN  
N.T.S.

NOTE:  
1. SEE INDEX SHEET FOR GENERAL NOTES.

AS CONSTRUCTED 1200Ø WATERMAIN DATA

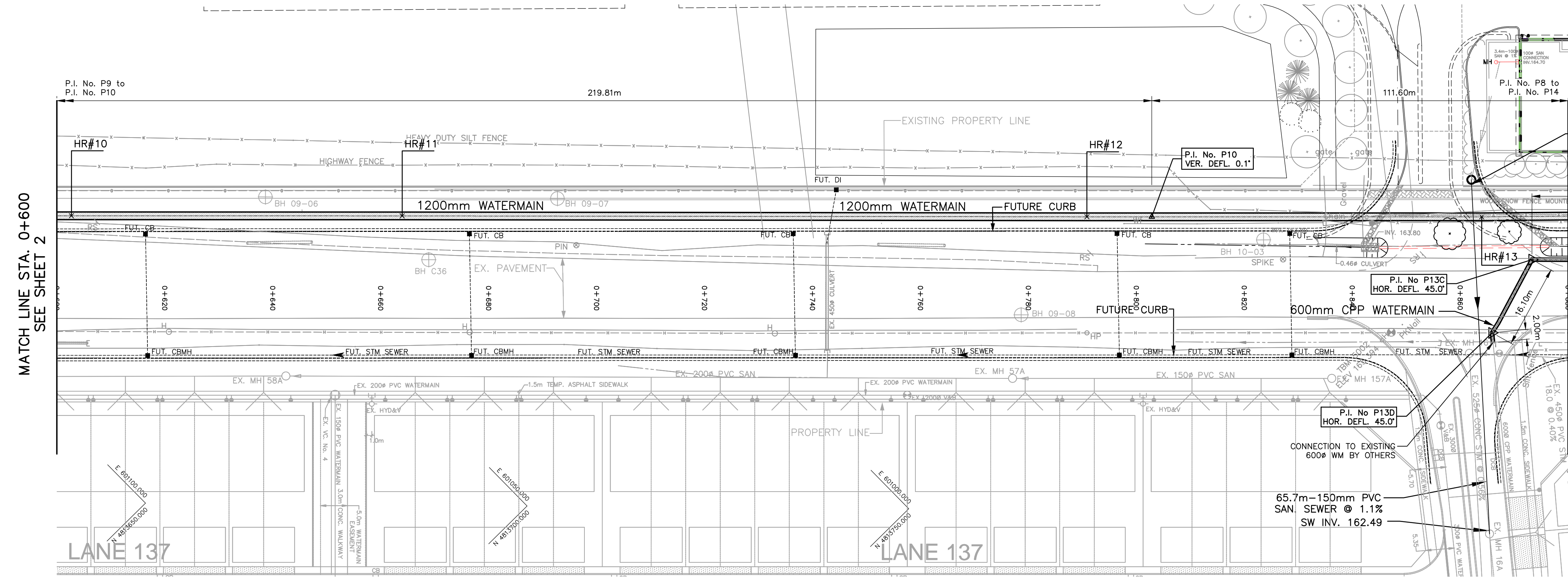
PI No.	EASTING	NORTHING	DESCRIPTION
P10	600930.00	4813743.11	VERT. DEFL. 0.10'

HORIZONTAL REFERENCE POINTS C/L WM

HR#	EASTING	NORTHING	DESCRIPTION
10	601072.43	4813602.48	TOP OF PIPE
11	601028.80	4813645.50	TOP OF PIPE
12	600938.56	4813734.68	TOP OF PIPE
13	600886.47	4813786.02	TOP OF PIPE

ELEVATIONS AND DIMENSIONS ARE FOR REFERENCE ONLY AND MUST BE CONFIRMED PRIOR TO USE FOR DESIGN, LAY-OUT OR CONSTRUCTION PURPOSES.

AS CONSTRUCTED INFORMATION SUPPLIED BY CONKER CONSTRUCTION CORPORATION DATED APRIL 24, 2012

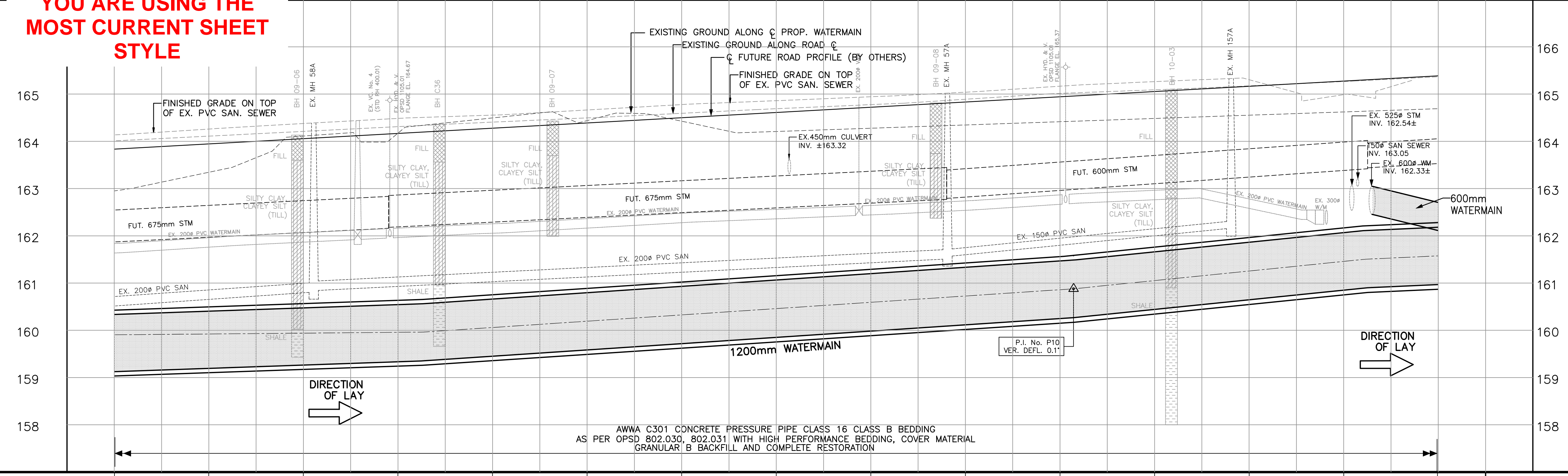


NEYAGAWA BOULEVARD  
(REG. RD. 4)

AS CONSTRUCTED 600Ø WATERMAIN DATA

PI No.	EASTING	NORTHING	DESCRIPTION
P13C	600885.39	4813798.21	HOR. DEFL. 45.0'
P13D	600900.18	4813802.66	HOR. DEFL. 45.0'
CONNECTION	BY OTHERS		CLOSURE PIECE

**SAMPLE DRAWING ONLY  
ALL STANDARD SHEETS  
HAVE BEEN UPDATED.  
PLEASE ENSURE THAT  
YOU ARE USING THE  
MOST CURRENT SHEET  
STYLE**



NO	Date	By	AS CONSTRUCTED	REVISIONS	MANU	CAD
1	MAR 2014	P.B.	AS CONSTRUCTED			
Design	WYC	Ch'kd	J.S.	Date	FEBRUARY 2011	
Drawn	10-12	Ch'kd	WYC			

Scale: 1:500 Horiz. 1:50 Vert.

REGIONAL

Field Notes: REGION BOOK

Stamp: SEE COVER SHEET FOR REGIONAL ACCEPTANCE

**MMM GROUP**  
100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1  
T: 905.882.1100 F: 905.882.0025 www.mmm.ca

**Halton REGION**

WATERMAIN INSTALLATION ON NEYAGAWA BLVD. & BURNHAMTHORPE ROAD  
NEYAGAWA BOULEVARD  
FROM 585m NORTH OF DUNDAS STREET TO 865m NORTH OF DUNDAS STREET  
STA 0+600 TO STA 0+880  
TOWN OF OAKVILLE

Consultant File NO: 10-08093  
Regional Drawing NO:

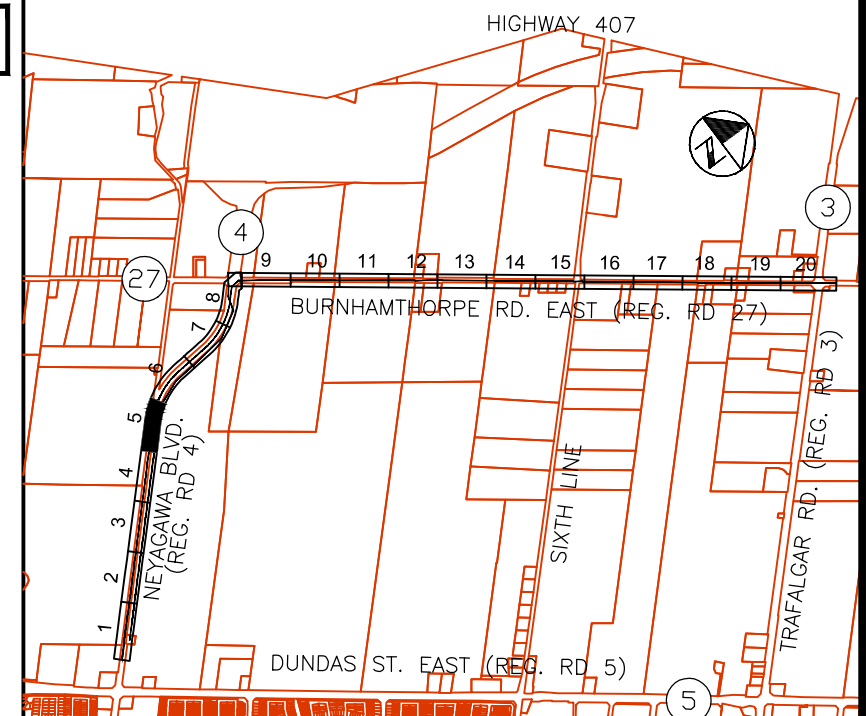
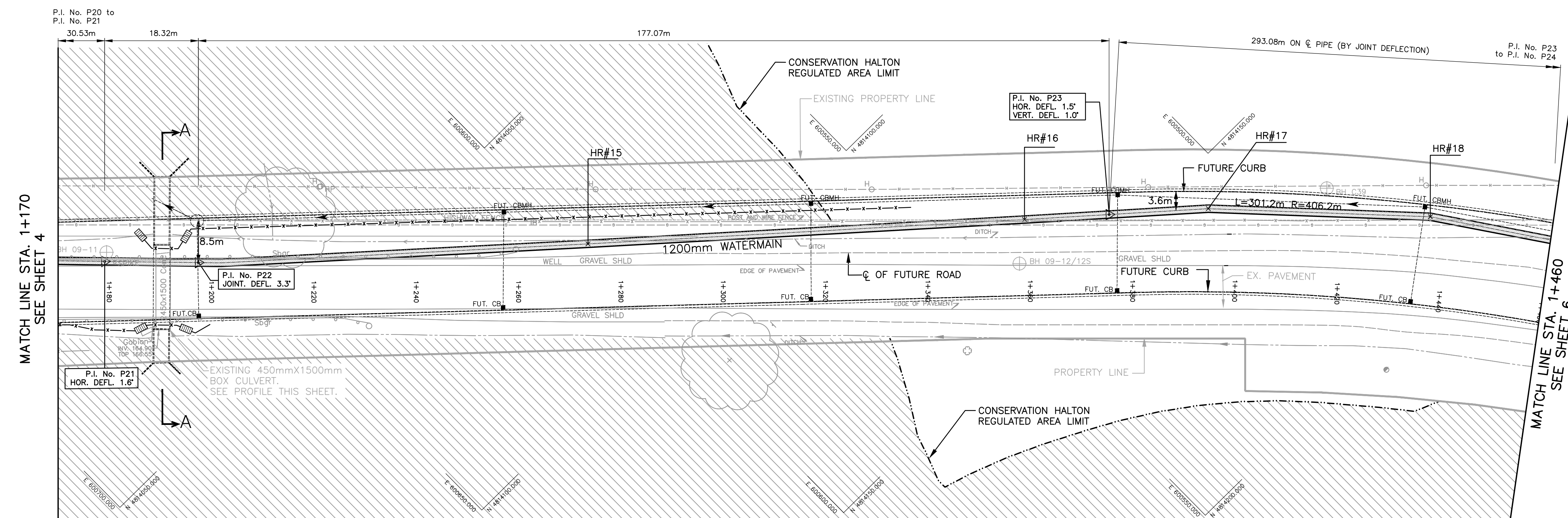
CONTRACT NO: W-2631-11  
Drawing NO: SHEET 3 of 31

STATIONS	EX. ROAD C ELEVATIONS	AS CONSTRUCTED WATERMAIN INVERTS
0+600	164.01	164.01
0+620	164.11	164.11
0+640	164.21	164.21
0+660	164.31	164.31
0+680	164.41	164.41
0+700	164.50	164.50
0+720	164.59	164.59
0+740	164.69	164.69
0+760	164.78	164.78
0+780	164.89	164.89
0+800	165.01	165.01
0+820	165.09	165.09
0+840	165.17	165.17
0+860	165.27	165.27
0+880	165.37	165.37

Grades: 64.0m @ 0.59%, 139.0m @ 0.66%, 160.27, 62.5m @ 0.87%, 160.90, 44.0m @ 0.45%

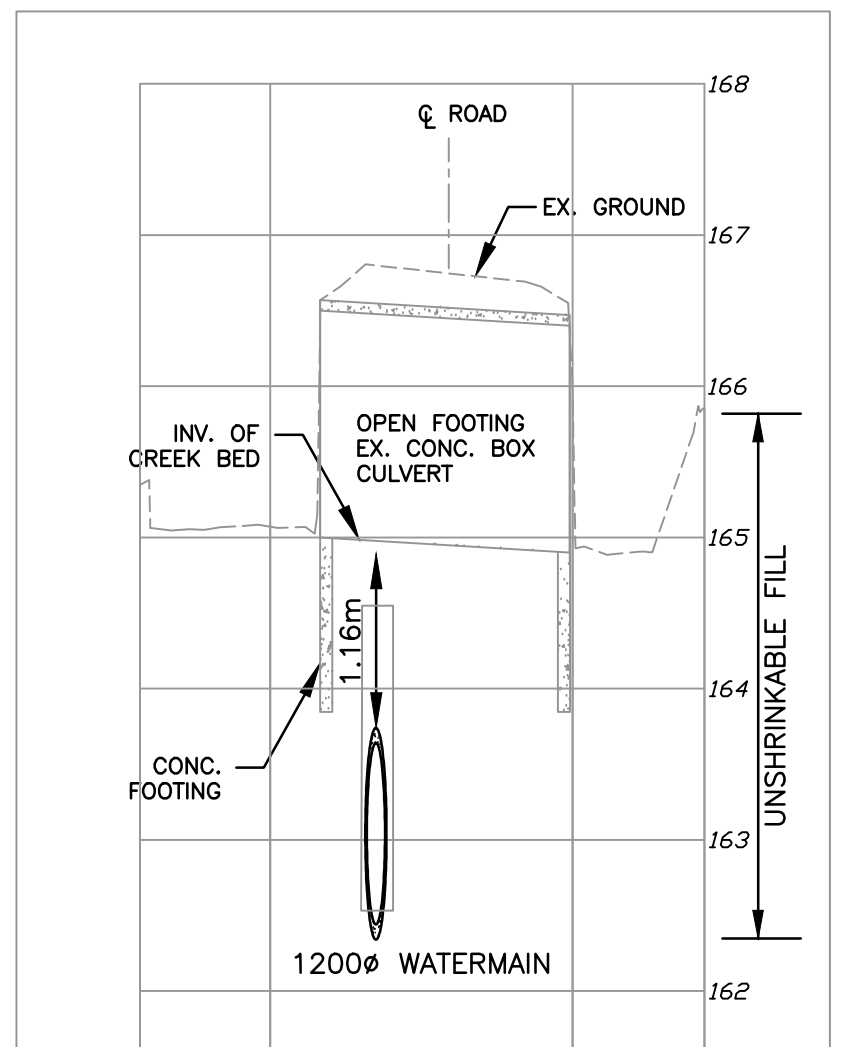
W-2631-11 3 of 31  
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 Date: 07/21/2015 Time: 11:32:00 AM





KEY PLAN  
N.T.S.

NOTE:  
1. SEE INDEX SHEET FOR GENERAL NOTES.



SECTION A-A  
SCALE: HORIZ. 1:500  
VERT. 1:50

# NEYAGAWA BOULEVARD (REG. RD. 4)

ELEVATIONS AND DIMENSIONS ARE FOR REFERENCE ONLY AND MUST BE CONFIRMED PRIOR TO USE FOR DESIGN, LAY-OUT OR CONSTRUCTION PURPOSES.

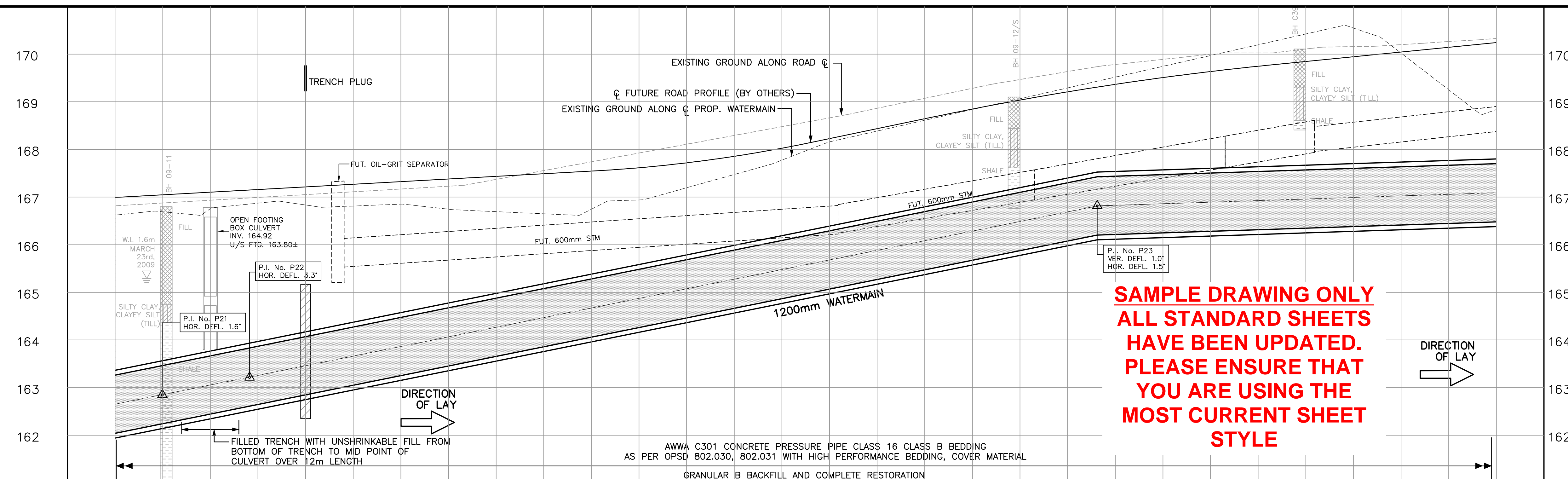
AS CONSTRUCTED INFORMATION SUPPLIED BY CON-KER CONSTRUCTION CORPORATION DATED APRIL 24, 2012

AS CONSTRUCTED WATERMAIN DATA

PI No.	EASTING	NORTHING	DESCRIPTION
P21	600668.57	4814013.87	HOR. DEFL. 1.6'
P22	600655.52	4814026.70	HOR. DEFL. 3.3'
P23	600522.17	4814144.96	JOINT DEFL. VERT. DEFL. 1.0' HOR. DEFL. 1.5'

HORIZONTAL REFERENCE POINTS C/L WM

HR#	EASTING	NORTHING	DESCRIPTION
15	600598.72	4814077.55	TOP OF PIPE
16	600534.62	4814134.05	TOP OF PIPE
17	600507.56	4814157.75	TOP OF PIPE
18	600477.76	4814189.33	TOP OF PIPE



**SAMPLE DRAWING ONLY  
ALL STANDARD SHEETS  
HAVE BEEN UPDATED.  
PLEASE ENSURE THAT  
YOU ARE USING THE  
MOST CURRENT SHEET  
STYLE**

NO	Date	By	AS CONSTRUCTED REVISIONS	MANU CAD
1	MAR 2014	P.B.	AS CONSTRUCTED	

Design WYC Ch'kd J.S. Date FEBRUARY 2011  
 Drawn 10-12 Ch'kd WYC  
 Scale 1:500 Horiz. 10 5 0 10  
 1:50 Vert. 1 0.5 0 1

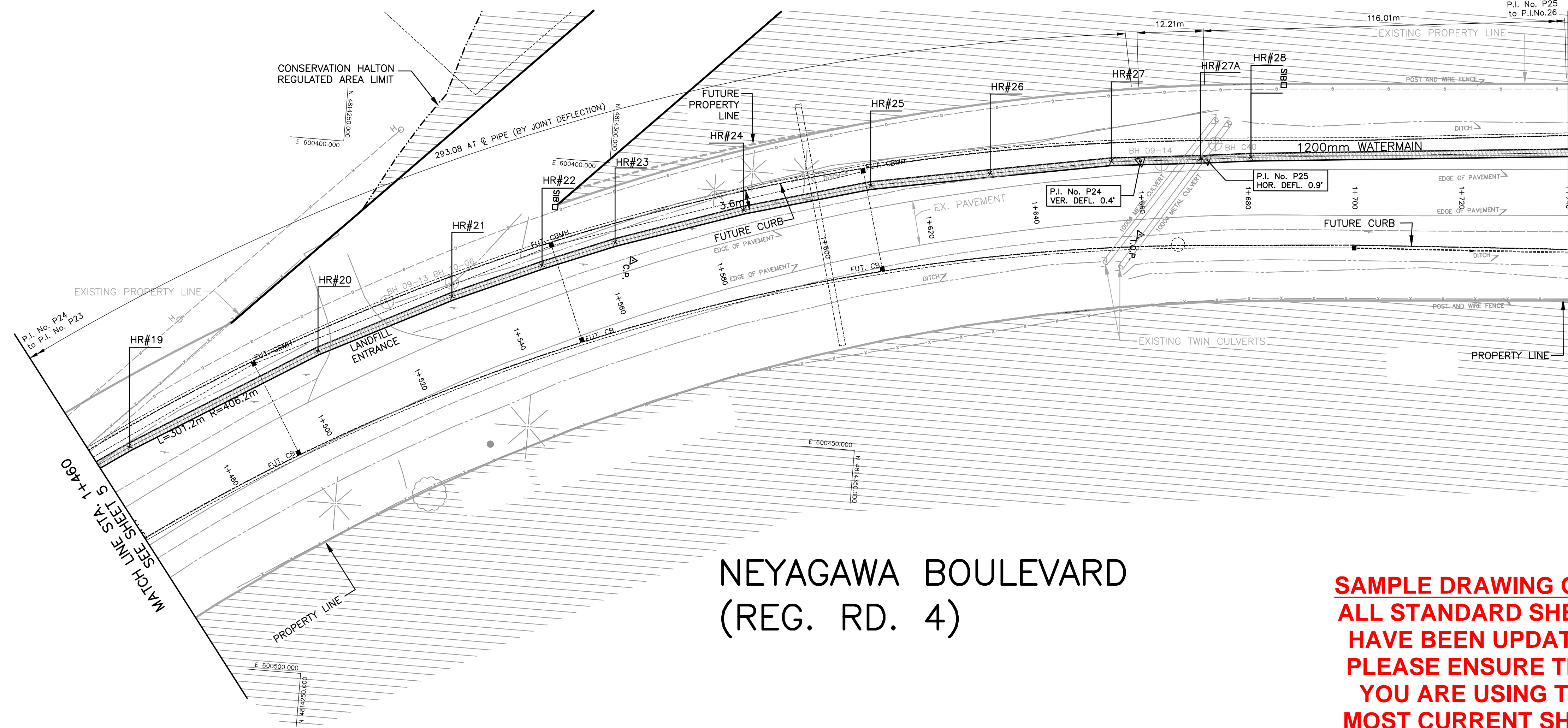
REGIONAL Field Notes  
 REGION BOOK  
 Stamp  
 SEE COVER SHEET FOR REGIONAL ACCEPTANCE



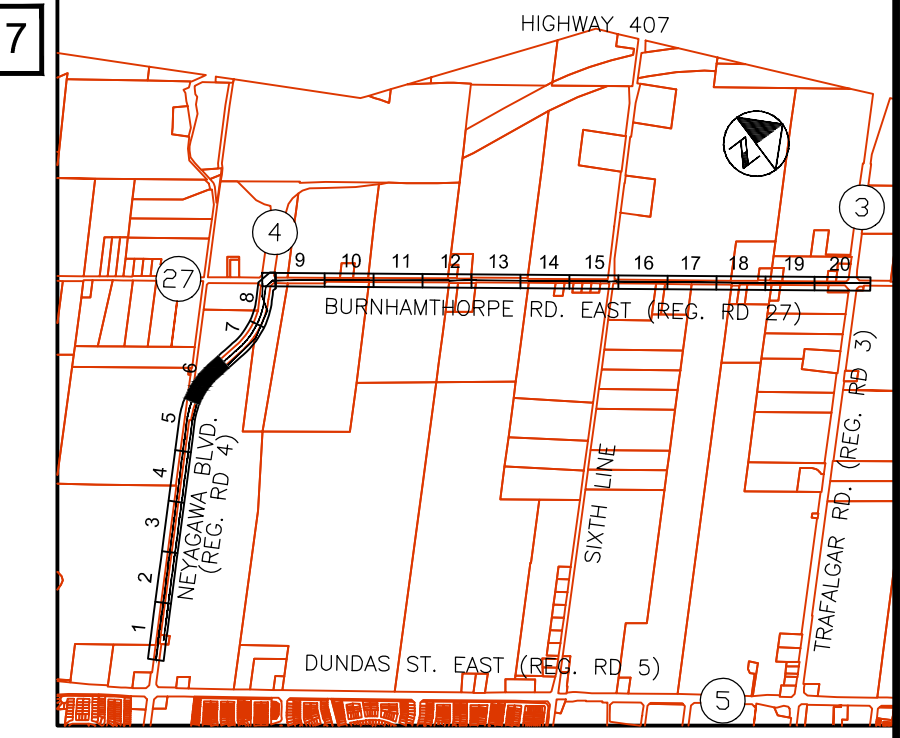
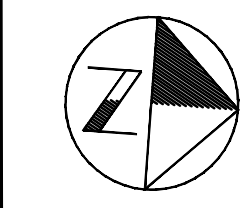
WATERMAIN INSTALLATION ON NEYAGAWA BLVD. & BURNHAMTHORPE ROAD  
**NEYAGAWA BOULEVARD**  
 FROM 790m SOUTH OF BURNHAMTHORPE ROAD TO 1080m SOUTH OF BURNHAMTHORPE ROAD  
 STA 1+170 TO STA 1+460  
 TOWN OF OAKVILLE

Consultant File NO <b>10-08093</b>	Regional Drawing NO
CONTRACT NO <b>W-2631-11</b>	Drawing NO SHEET 5 of 31

Drawing: C:\USERS\CHAM\DOCUMENTS\ENGINEERING\_2014\CD-PR2631\_NEYA-WM\08093\PROFILES 1-8.DWG  
 Date: 07/21/2015 Time: 11:34:38 AM



MATCH LINE STA. 1+740  
SEE SHEET 7



KEY PLAN  
N.T.S.

NOTE:  
1. SEE INDEX SHEET FOR GENERAL NOTES.  
AS CONSTRUCTED WATERMAIN DATA

PI No.	EASTING	NORTHING	DESCRIPTION
P24	600391.66	4814399.11	VERT. DEFL. 0.4'
P25	600390.46	4814410.61	VERT. DEFL. 0.9'

HORIZONTAL REFERENCE POINTS C/L WM

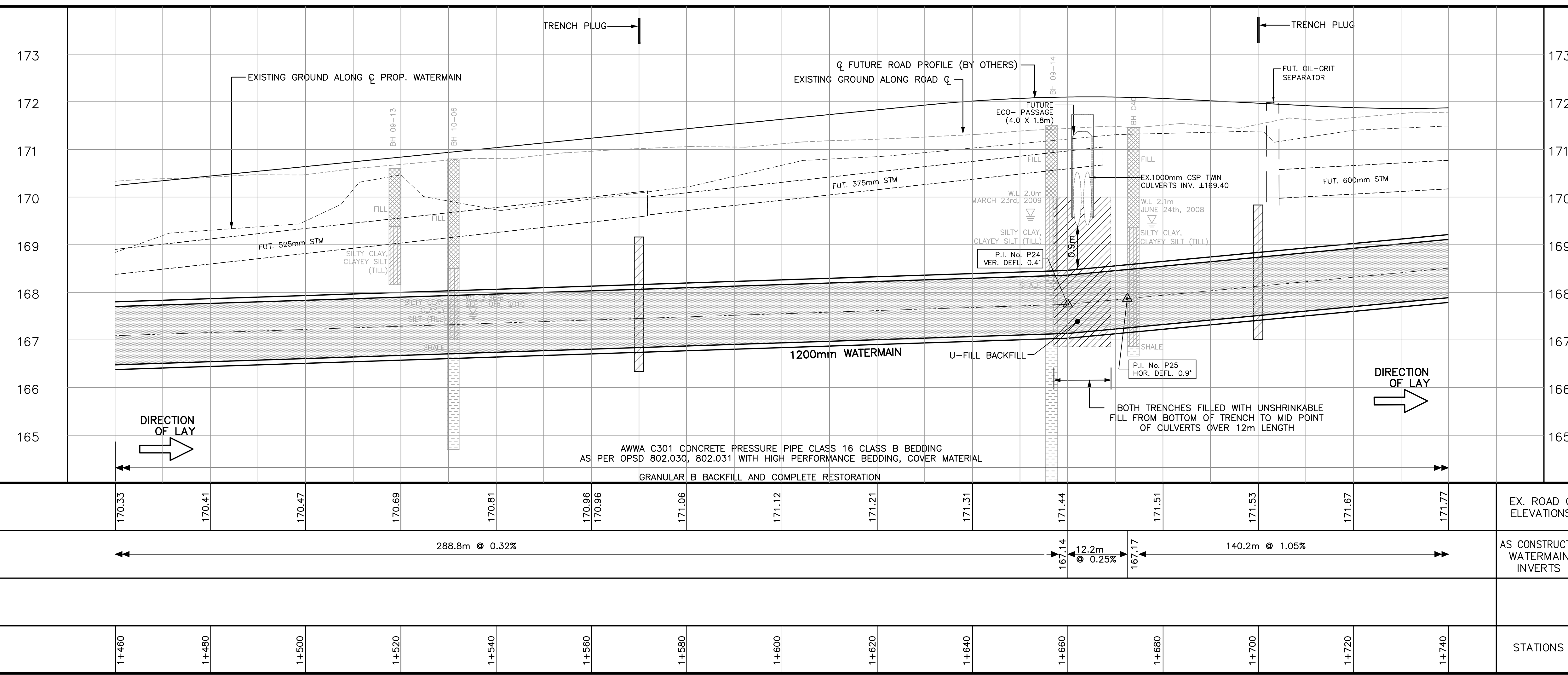
HR#	EASTING	NORTHING	DESCRIPTION
19	600460.33	4814214.65	TOP OF PIPE
20	600439.56	4814248.38	TOP OF PIPE
21	600427.38	4814272.54	TOP OF PIPE
22	600420.19	4814288.90	TOP OF PIPE
23	600414.83	4814302.20	TOP OF PIPE
24	600406.86	4814325.70	TOP OF PIPE
25	600400.35	4814349.02	TOP OF PIPE
26	600396.27	4814371.16	TOP OF PIPE
27	600392.25	4814393.58	TOP OF PIPE
27A	600390.48	4814410.17	TOP OF PIPE
28	600389.30	4814419.58	TOP OF PIPE

ELEVATIONS AND DIMENSIONS ARE FOR REFERENCE ONLY AND MUST BE CONFIRMED PRIOR TO USE FOR DESIGN, LAY-OUT OR CONSTRUCTION PURPOSES.

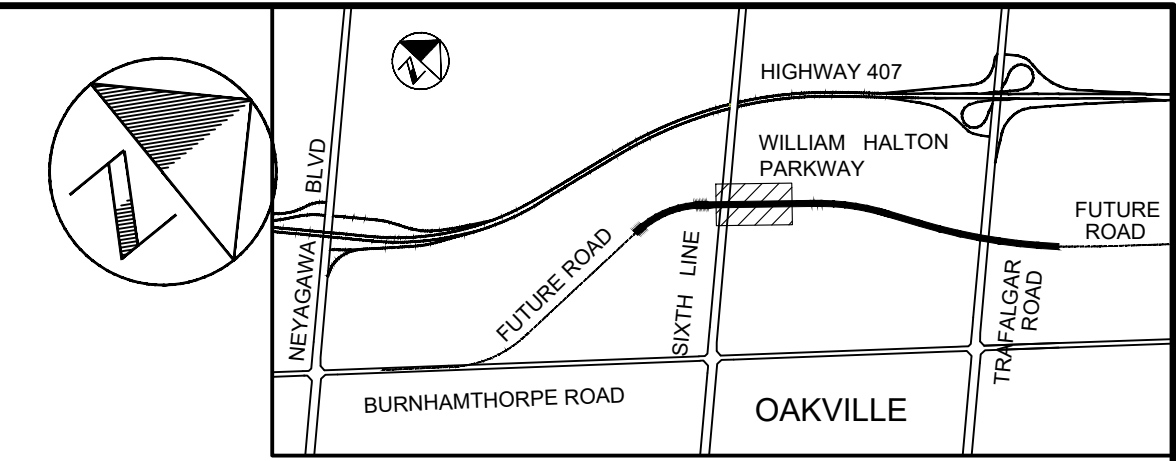
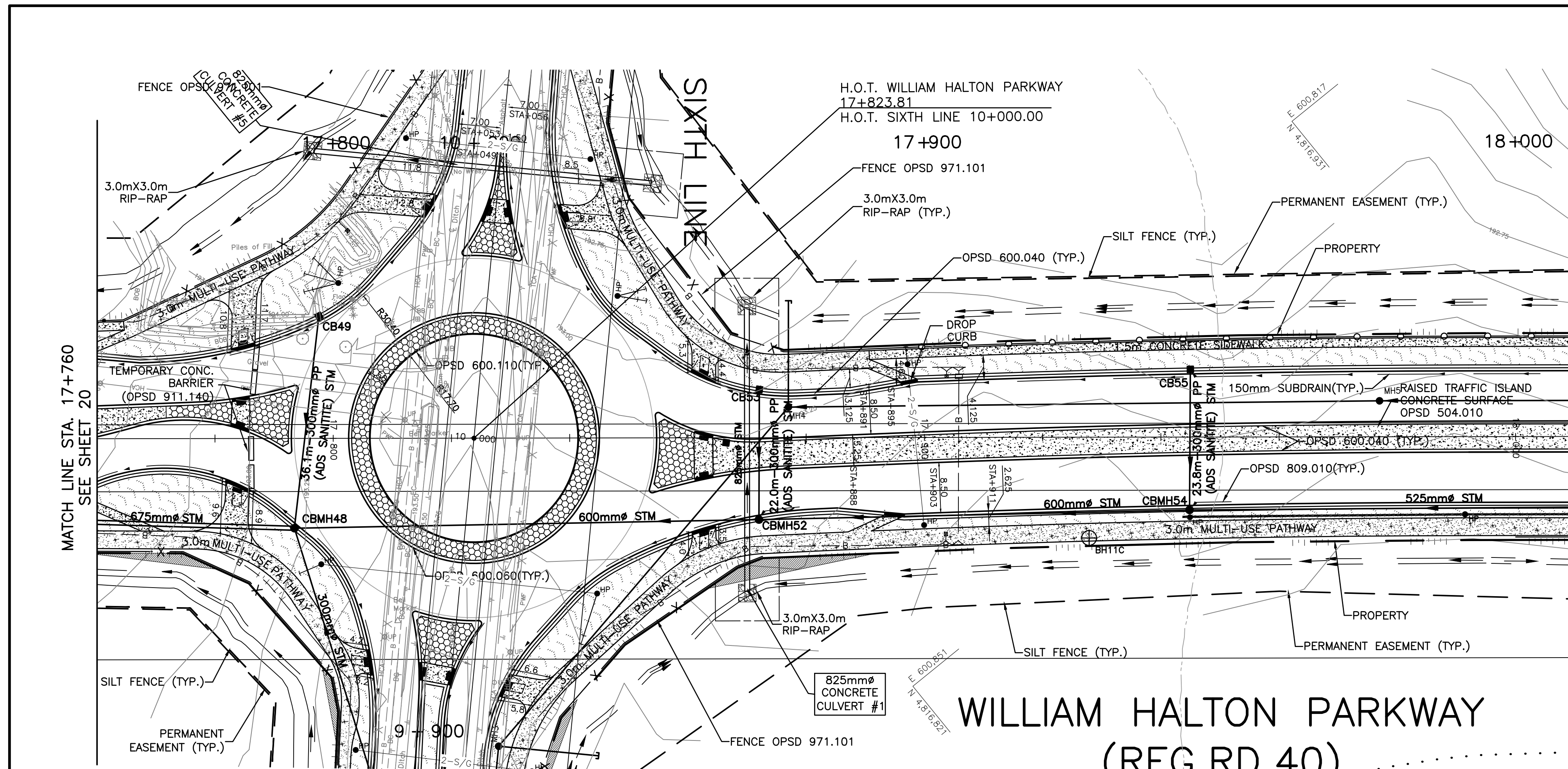
AS CONSTRUCTED INFORMATION SUPPLIED BY CON-KER CONSTRUCTION CORPORATION DATED APRIL 24, 2012

# NEYAGAWA BOULEVARD (REG. RD. 4)

**SAMPLE DRAWING ONLY  
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HAVE BEEN UPDATED.  
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STYLE**



1	MAR 2014	P.B.	AS CONSTRUCTED		
NO	Date	By	REVISIONS	MANU	CAD
Design	WYC	Ch'kd	J.S.		
Drawn	10-12	Ch'kd	WYC		FEBRUARY 2011
Scale	1:500 Horiz.	1:500 Vert.			References
REGIONAL					Field Notes
					REGION BOOK
					Stamp
					SEE COVER SHEET FOR REGIONAL ACCEPTANCE
 100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1 T: 905-882-1100 F: 905-882-0025 www.mmm.ca					
WATERMAIN INSTALLATION ON NEYAGAWA BLVD. & BURNHAMTHORPE ROAD NEYAGAWA BOULEVARD FROM 510m SOUTH OF BURNHAMTHORPE ROAD TO 790m SOUTH OF BURNHAMTHORPE ROAD STA 1+460 TO STA 1+740 TOWN OF OAKVILLE					
Consultant File NO			Regional Drawing NO		
10-08093					
CONTRACT NO			Drawing NO		
W-2631-11			SHEET 6 OF 31		



- NOTES:**
- ALL CONCRETE PIPES ARE CLASS 65-D WITH CLASS 'B' BEDDING, UNLESS OTHERWISE NOTED. CONTRACTOR MAY INSTALL HDPE STORM SEWERS WHERE DIA. IS LESS OR EQUAL TO 450mm.
  - OFFSET OF MANHOLES AND SIDE INLET CATCHBASINS ARE TO CENTRE OF COVER.
  - ALL CATCHBASIN LEADS ARE #300mm.
  - ALL CATCHBASIN LEADS @0.50% SLOPE MINIMUM UNLESS OTHERWISE NOTED.
  - CONTRACTOR VERIFIED 3.0m HORIZONTAL CLEARANCE AND 0.5m VERTICAL CLEARANCE BETWEEN ALL STORM SEWERS AND WATERMAIN. CLEARANCE TO BE MEASURED TO OUTSIDE OF PIPE WALL.
  - ALL FENCES ARE 0.3m INSIDE OF RIGHT-OF-WAY.
  - PLACED SEEDING AND EROSION CONTROL BLANKET ON ALL SLOPES STEEPER THAN 3:1 AND HIGHER THAN 2.0m.
  - FOR ALL HDPE PIPES GRANULAR 'A' USED AS BEDDING MATERIAL.
  - CONCRETE STRIP OPSD 504.010.

MH. #	STATION	CONSTR. OFFSET	MH. STD. DWG.	INVERTS		FRAME & COVER STD.	TOP OF FRAME ELEV.	REMARKS
				INLET	OUTLET			
CBMH48	17+793.41	15.20 RT	701.011	190.57 NE 191.46 NW 191.24 SE	190.48 SW	400.082	193.411	
CB49	17+797.62	20.68 LT	705.010		191.65 SE	400.082	193.405	
CBMH52	17+872.00	13.86 LT	701.010	190.88 NE 192.19 NW	190.84 SW	400.082	194.048	
CB53	17+872.00	8.16 LT	705.010		192.30 SE	400.082	194.125	
CBMH54	17+945.00	12.34 RT	701.010	191.39 NE 192.82 NW	191.34 SW	400.082	194.492	
CB55	17+945.00	11.45 LT	705.010		192.94 SE	400.082	194.511	

CULVERT NO.	DIA. (mm)	LENGTH (m)	INLET		OUTLET		REMARKS		
			STATION	CONSTR. OFFSET	STATION	CONSTR. OFFSET			
1	825	48	17+870.00	25.99 RT	192.07	17+870.00	21.98 LT	191.93	

## WILLIAM HALTON PARKWAY (REG.RD.40)

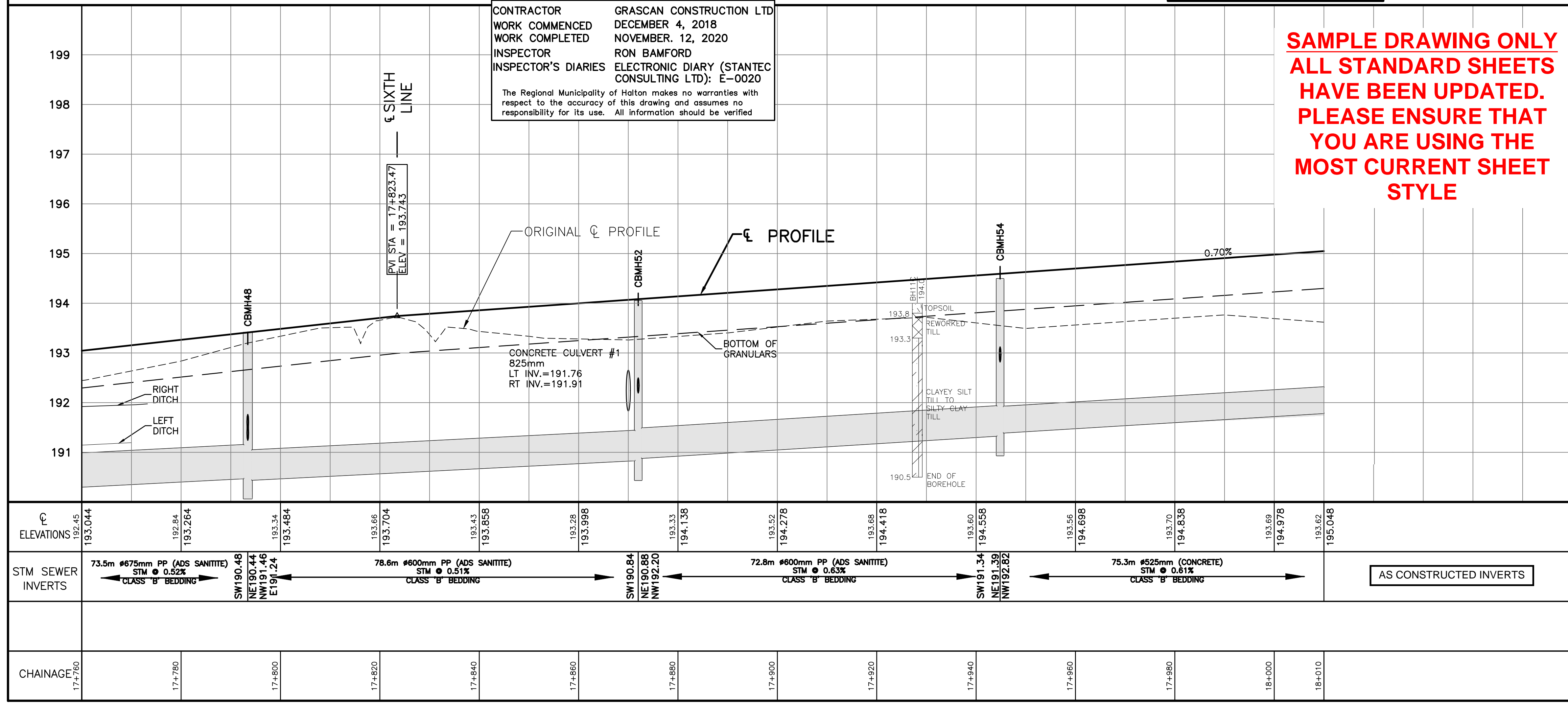
FOR WATERMAIN AND SANITARY SEWER CONSTRUCTION REFER TO WATERMAIN AND SANITARY SEWER DRAWINGS

**AS-CONSTRUCTED DRAWING**

CONTRACTOR GRASCAN CONSTRUCTION LTD  
 WORK COMMENCED DECEMBER 4, 2018  
 WORK COMPLETED NOVEMBER 12, 2020  
 INSPECTOR RON BAMFORD  
 INSPECTOR'S DIARIES ELECTRONIC DIARY (STANTEC CONSULTING LTD): E-0020

The Regional Municipality of Halton makes no warranties with respect to the accuracy of this drawing and assumes no responsibility for its use. All information should be verified

**SAMPLE DRAWING ONLY  
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 STYLE**

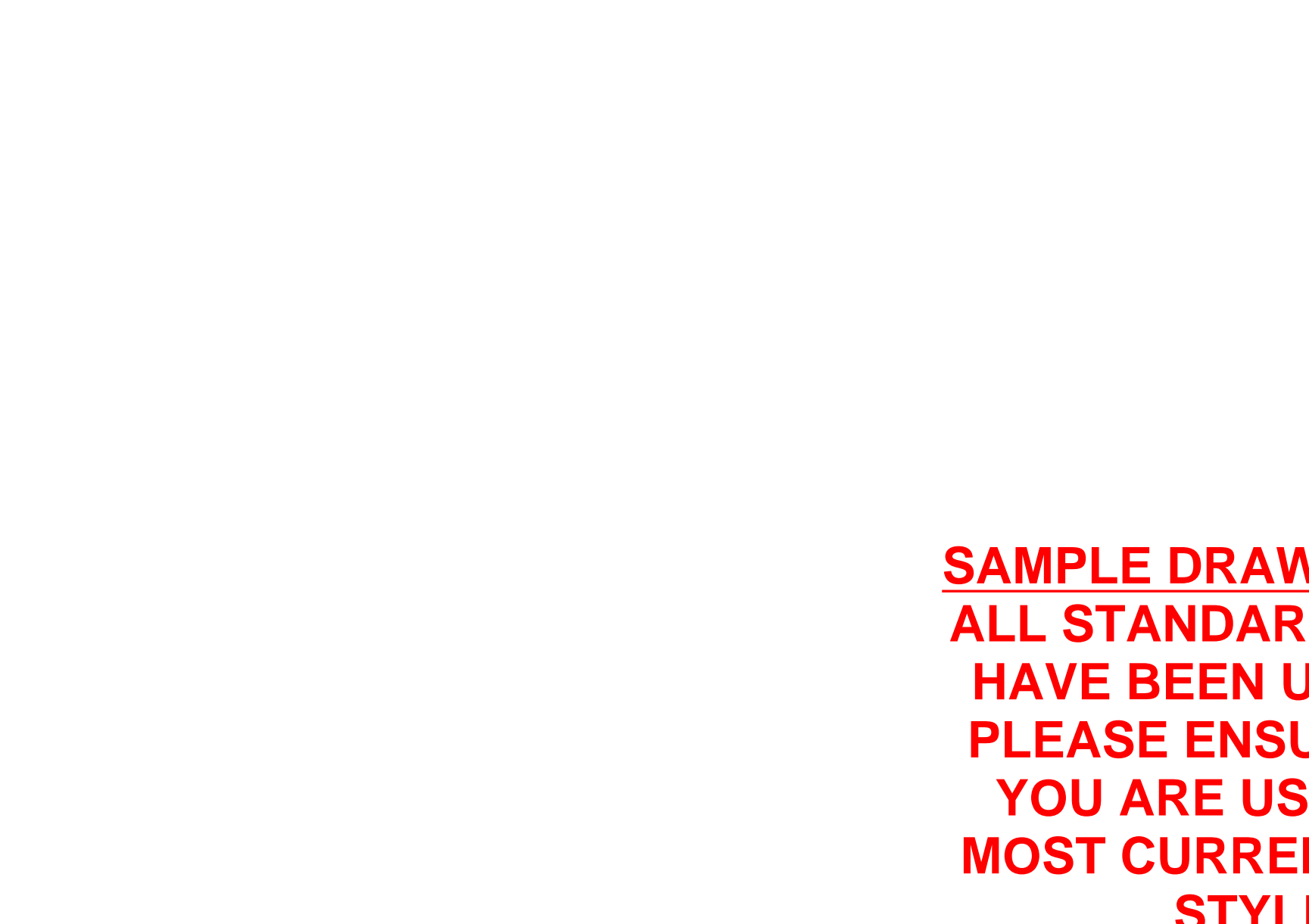
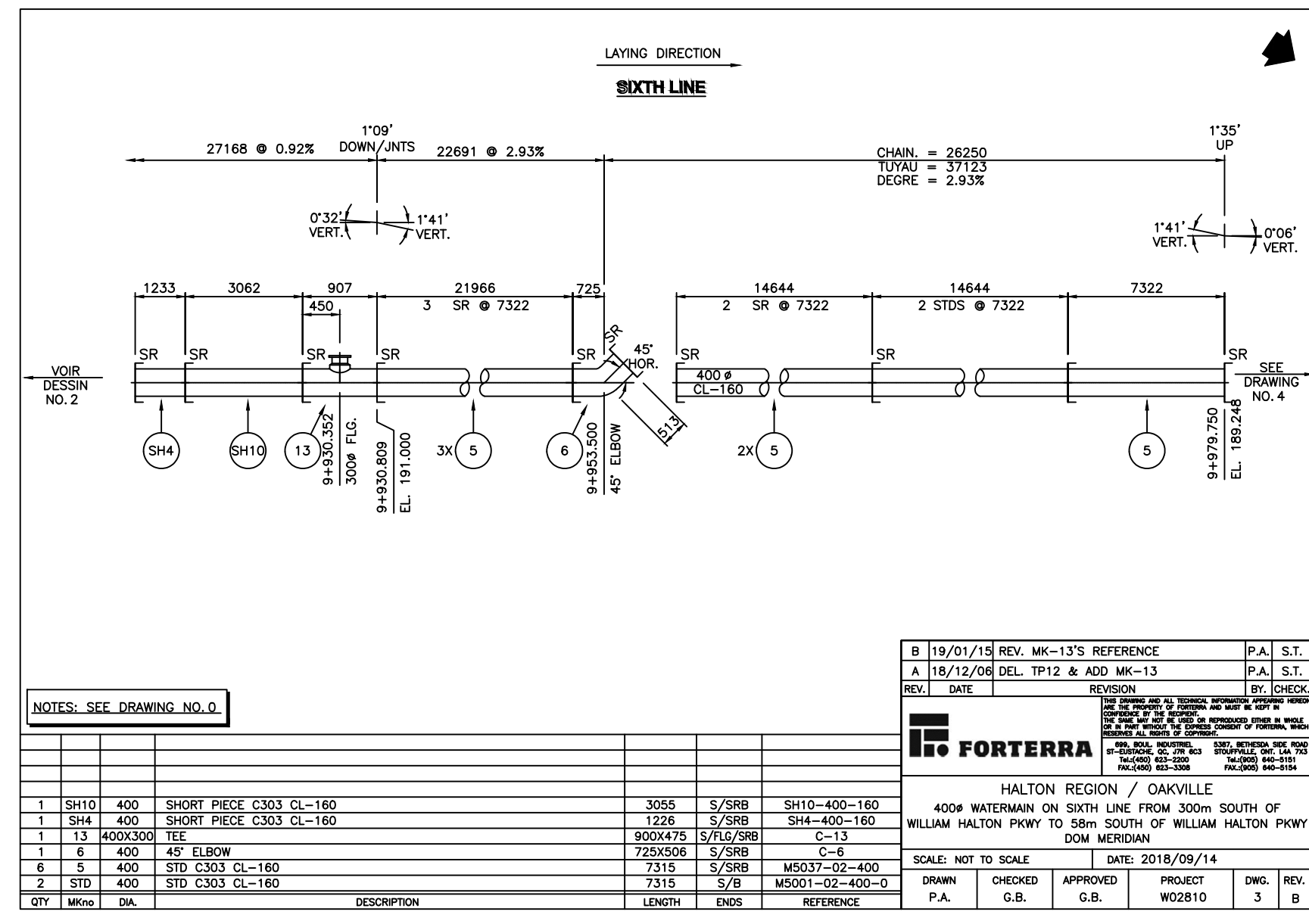
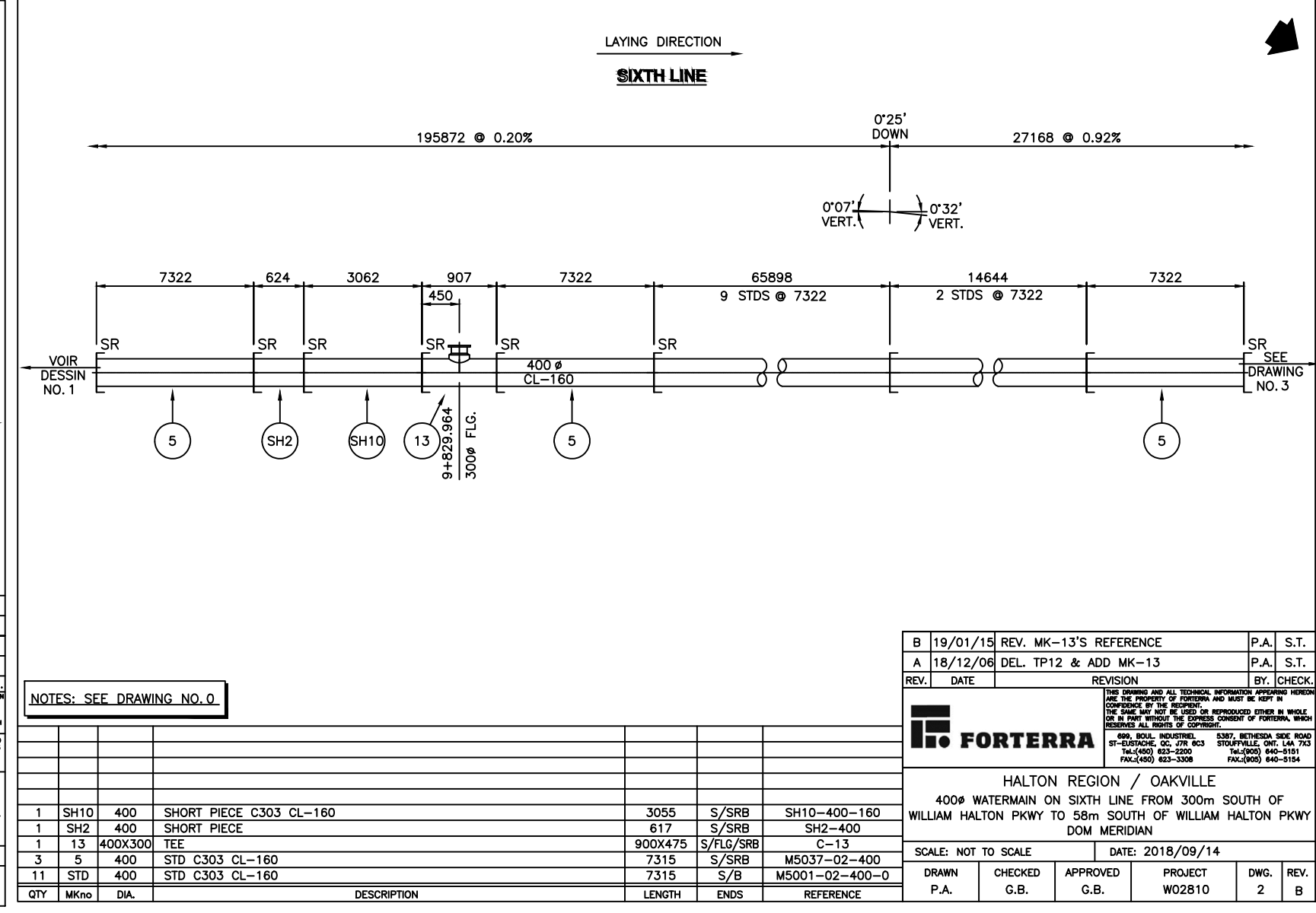
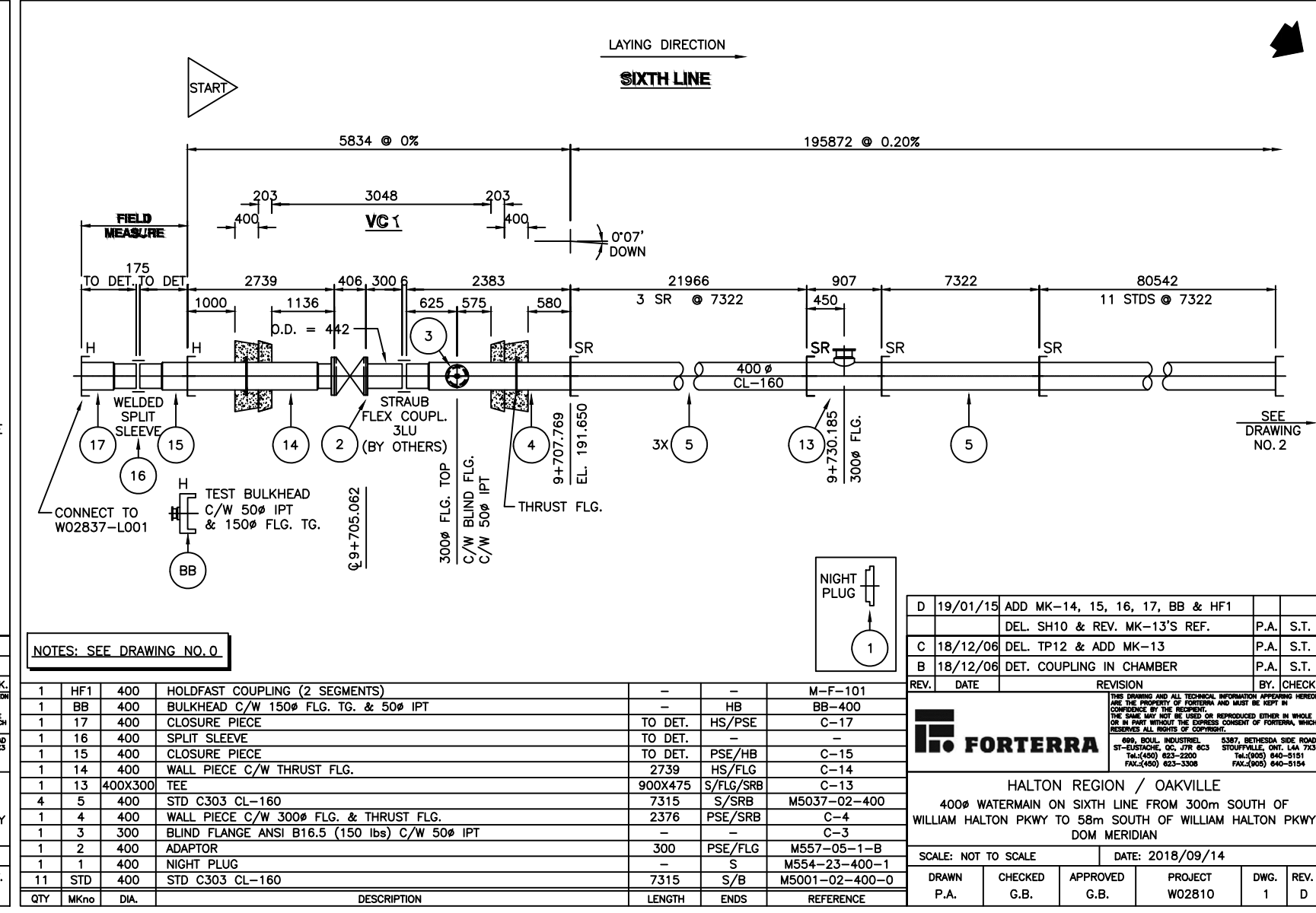
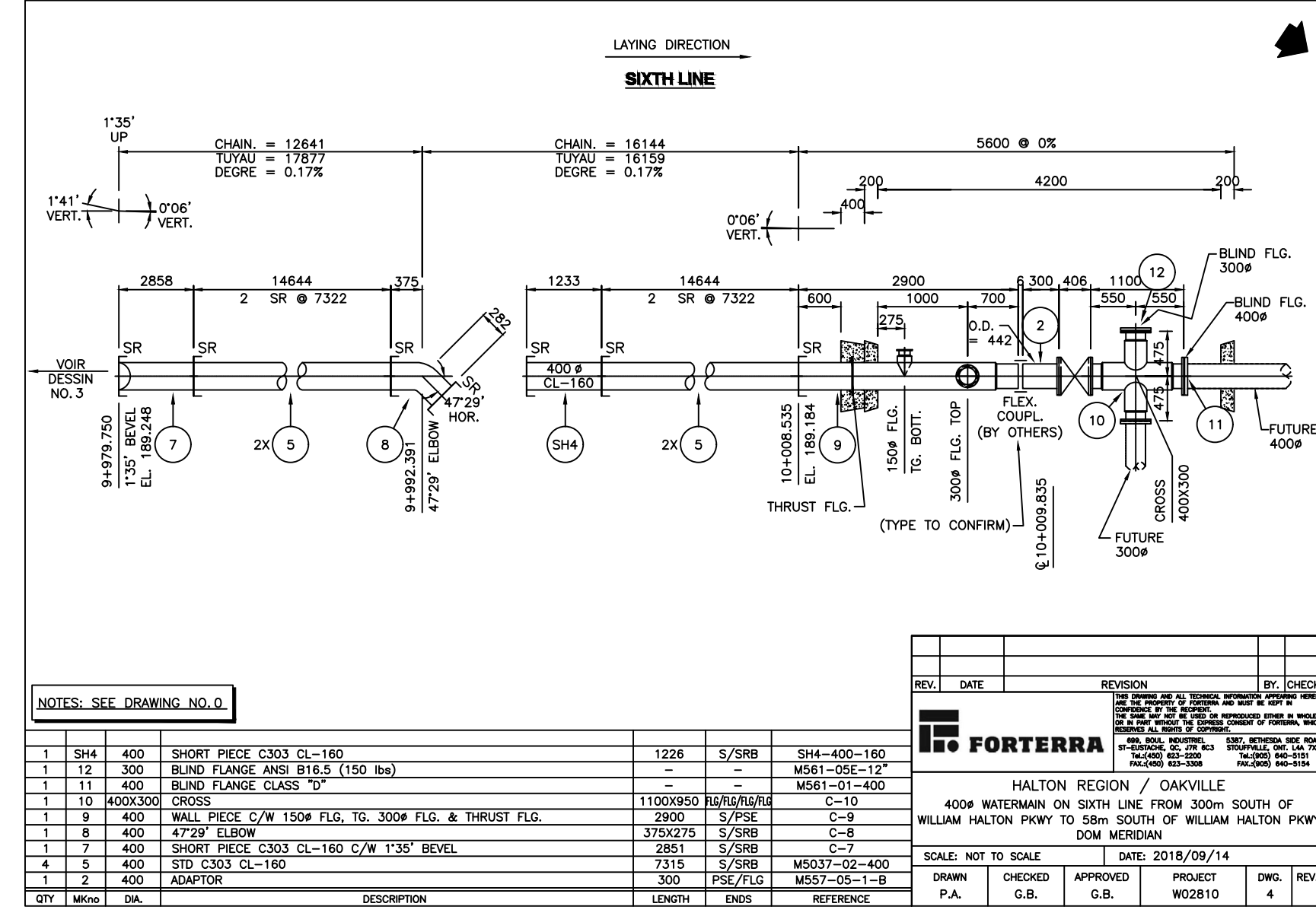
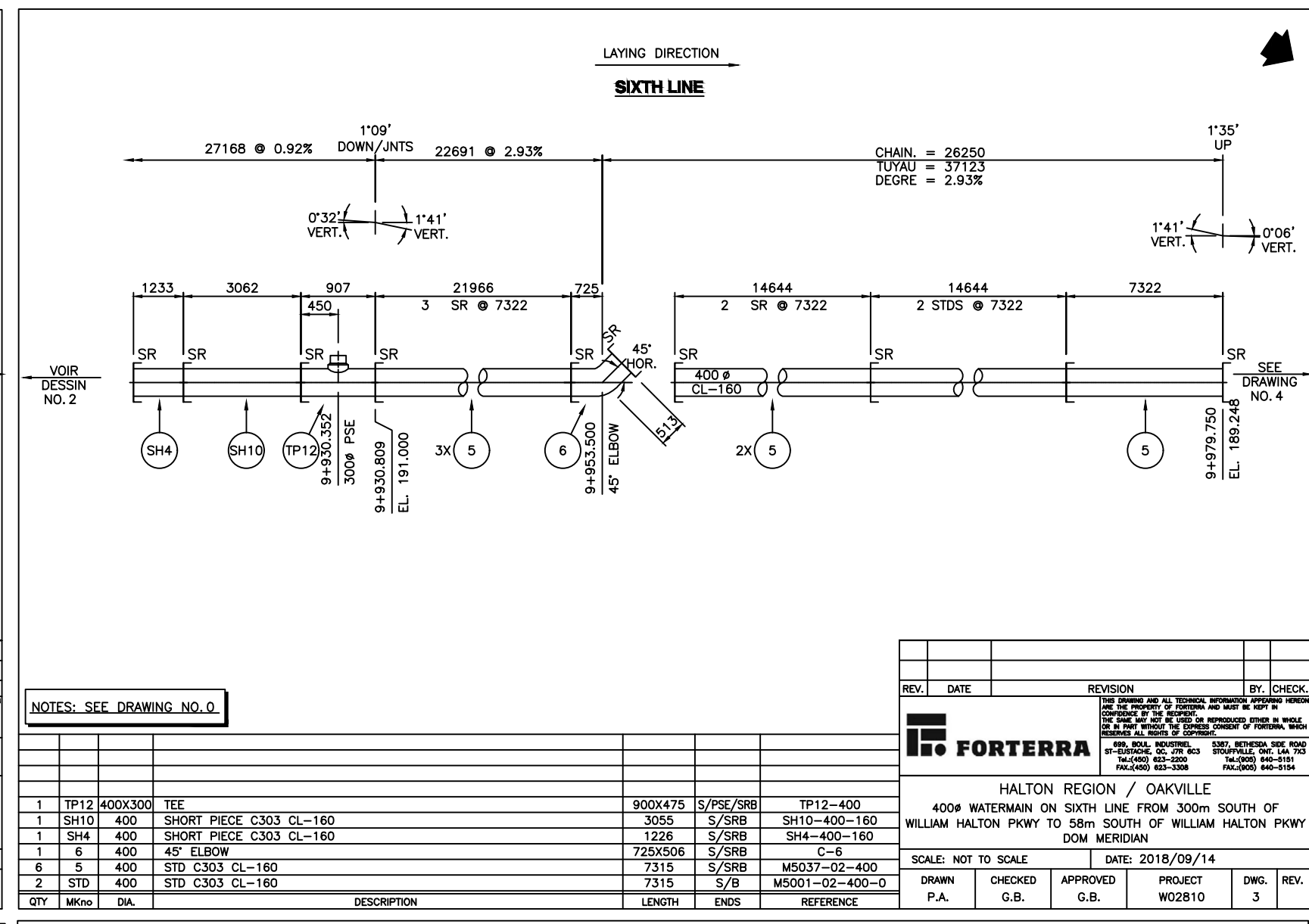
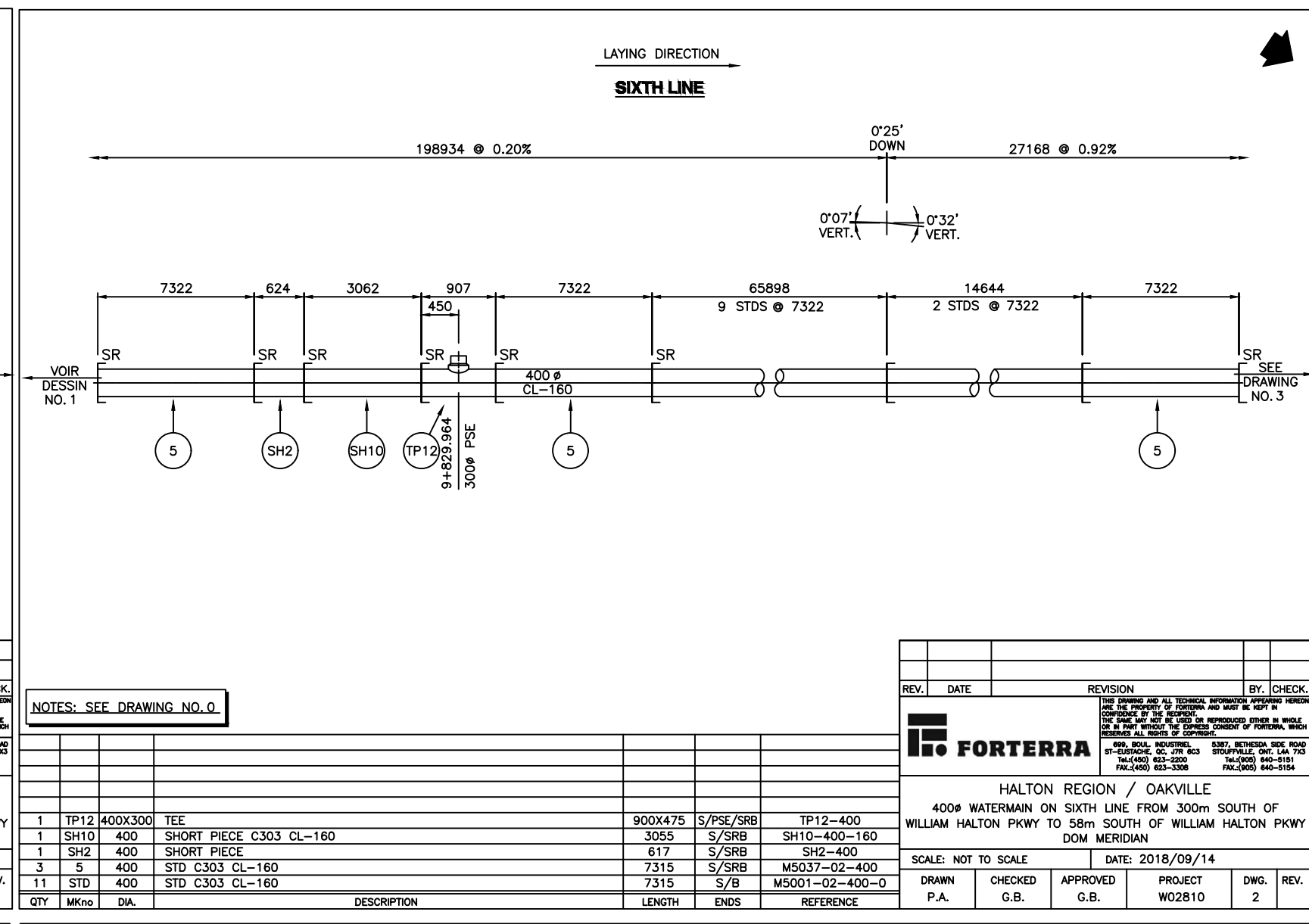
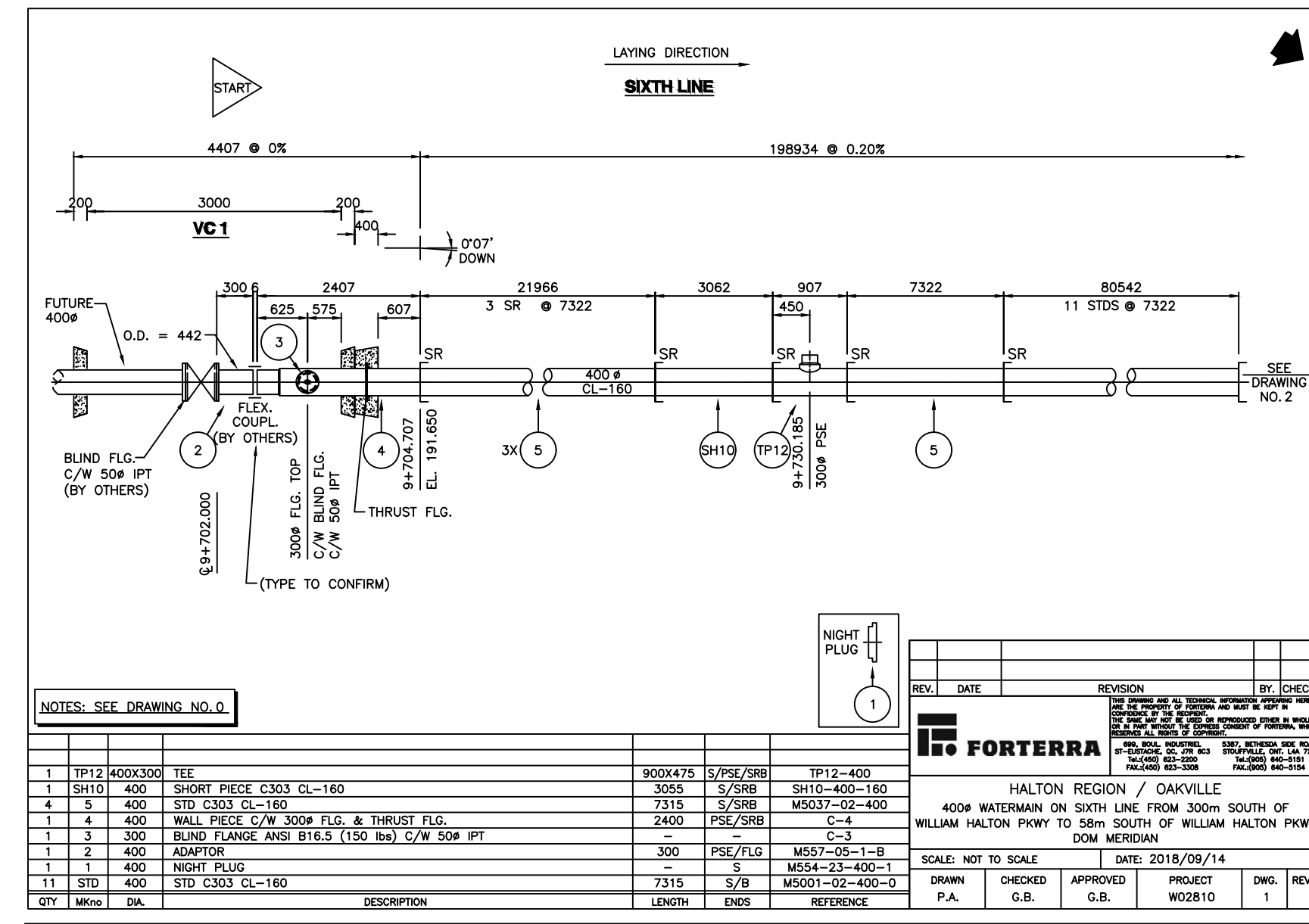


CHAINAGE	ELEVATIONS	AS CONSTRUCTED INVERTS
17+760	193.044	73.5m #675mm PP (ADS SANITITE) STM @ 0.52% CLASS 'B' BEDDING
17+780	192.84	
17+800	193.264	
17+820	193.34	
17+840	193.484	
17+860	193.66	
17+880	193.704	
17+900	193.43	
17+920	193.856	
17+940	193.26	
17+960	193.996	
17+980	194.138	
18+000	193.52	
18+010	194.278	
	193.68	
	194.418	
	193.60	
	194.556	
	193.56	
	194.698	
	193.70	
	194.838	
	193.69	
	194.978	
	193.62	
	195.048	

199																																													
198	198	197	196	195	194	193	192	191	191																																				
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Design</td> <td>J.Z</td> <td>Ch'kd</td> <td>G.M</td> <td>Date</td> <td></td> </tr> <tr> <td>Drawn</td> <td>N.V</td> <td>Ch'kd</td> <td>T.B.</td> <td colspan="2">JULY 2017</td> </tr> <tr> <td>Scale</td> <td colspan="2">1:500 Horiz.</td> <td colspan="2">1:50 Vert.</td> <td>References</td> </tr> <tr> <td colspan="5">REGIONAL</td> <td>Field Notes</td> </tr> <tr> <td colspan="5"></td> <td>REGION BOOK</td> </tr> <tr> <td colspan="5">SEE COVER SHEET FOR REGIONAL ACCEPTANCE</td> <td>Stamp</td> </tr> </table>										Design	J.Z	Ch'kd	G.M	Date		Drawn	N.V	Ch'kd	T.B.	JULY 2017		Scale	1:500 Horiz.		1:50 Vert.		References	REGIONAL					Field Notes						REGION BOOK	SEE COVER SHEET FOR REGIONAL ACCEPTANCE					Stamp
Design	J.Z	Ch'kd	G.M	Date																																									
Drawn	N.V	Ch'kd	T.B.	JULY 2017																																									
Scale	1:500 Horiz.		1:50 Vert.		References																																								
REGIONAL					Field Notes																																								
					REGION BOOK																																								
SEE COVER SHEET FOR REGIONAL ACCEPTANCE					Stamp																																								
<p><b>PROPOSED CONSTRUCTION</b>                  WILLIAM HALTON PARKWAY (REG.RD.40)                  FROM 76m EAST OF SIXTH LINE TO 356m EAST OF SIXTH LINE                  STA. 17+760 TO STA. 18+010                  IN THE TOWN OF OAKVILLE</p>																																													
Consultant File No					Regional Drawing No																																								
165010557																																													
CONTRACT No					Drawing No																																								
PR-2263D(PART 1)-18					SHEET 21 OF 57																																								



PR-2263D(PART 1)- SHP2 OF SHP7  
 Drawing: K:\1650\ACTIVE\165010557 - WHP-C1\3-9 ROADWAY DESIGN\SUBMISSION DRAWINGS\AS-BUILT\SHOP DRAWINGS\165010557\_SH02\_W02.DWG  
 Date: 02/25/2021 Time: 08:05:42 AM



**AS-CONSTRUCTED DRAWING**

CONTRACTOR GRASCAN CONSTRUCTION LTD  
 WORK COMMENCED DECEMBER 4, 2018  
 WORK COMPLETED NOVEMBER 12, 2020  
 INSPECTOR RON BAMFORD  
 INSPECTOR'S DIARIES ELECTRONIC DIARY (STANTEC CONSULTING LTD): E-0020

The Regional Municipality of Halton makes no warranties with respect to the accuracy of this drawing and assumes no responsibility for its use. All information should be verified

1.	20.12.12	XX	AS CONSTRUCTED (STANTEC)	X
NO.	DATE	BY	REVISIONS	MANU CAD
DESIGN	CH'KD		DATE	
DRAWN	CH'KD		DATE	
SCALE	N.T.S.		REFERENCES	

FIELD NOTES

REGIONAL

SEE COVER SHEET FOR REGIONAL ACCEPTANCE

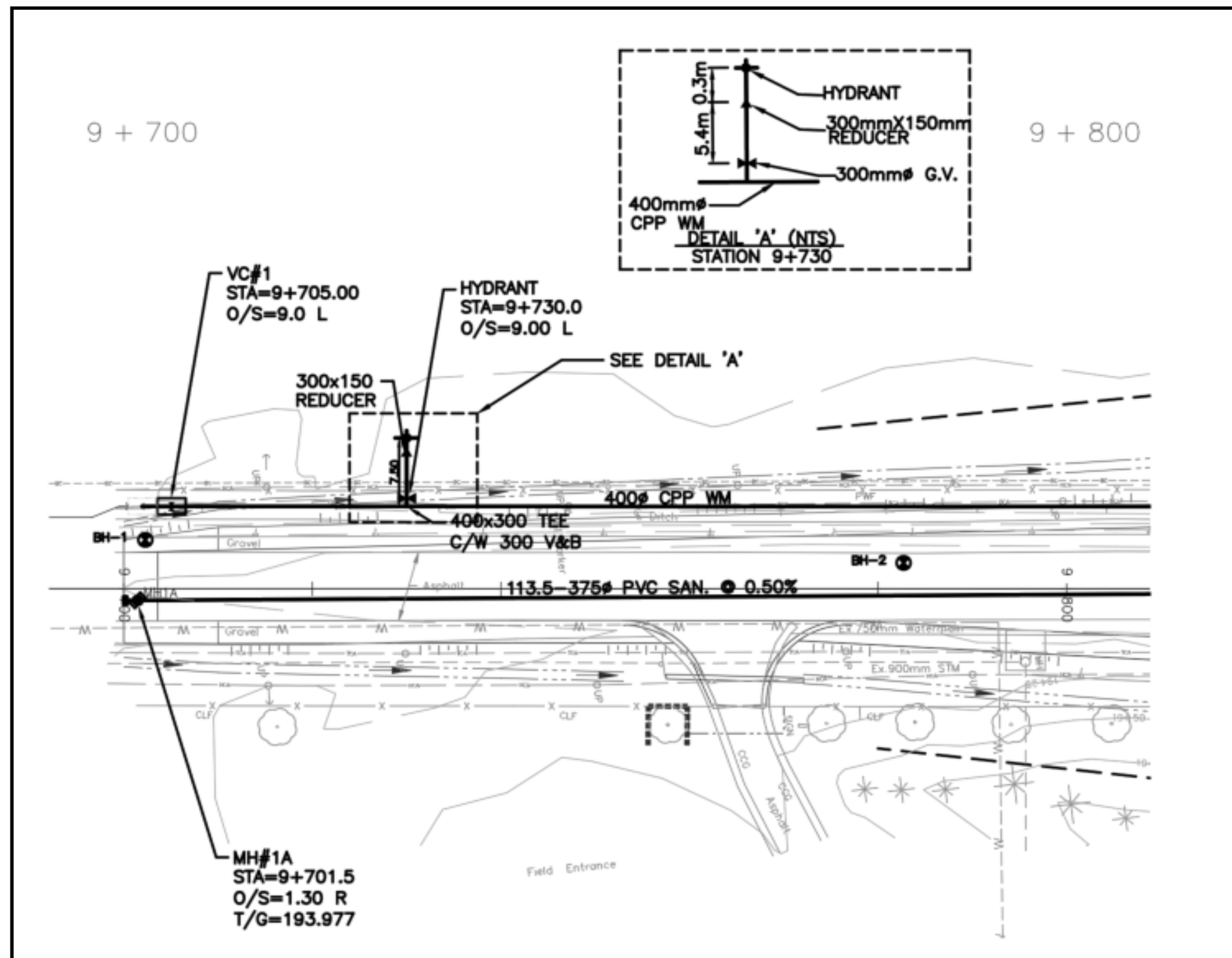


SHOP DRAWINGS  
 400mm DIA. CPP WATERMAIN  
**SIXTH LINE**  
 FROM 300m SOUTH OF WILLIAM HALTON PARKWAY TO 58m SOUTH OF WILLIAM HALTON PARKWAY IN THE TOWN OF OAKVILLE

CONSULTANT FILE NO. REGIONAL DRAWING NO.

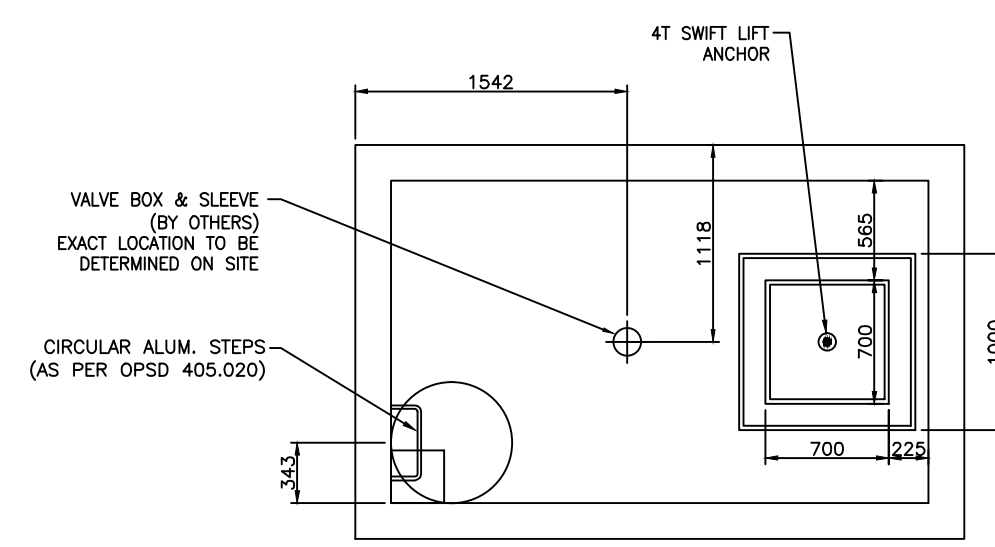
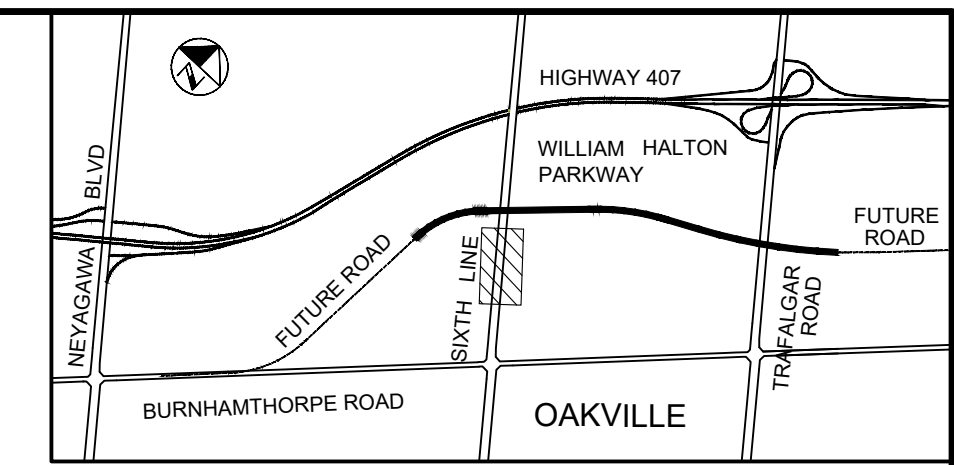
CONTRACT NO. DRAWING NO.  
 PR-2263D(PART 1)-18 SHEET SHP2 OF SHP7

**SAMPLE DRAWING ONLY  
 ALL STANDARD SHEETS  
 HAVE BEEN UPDATED.  
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 STYLE**

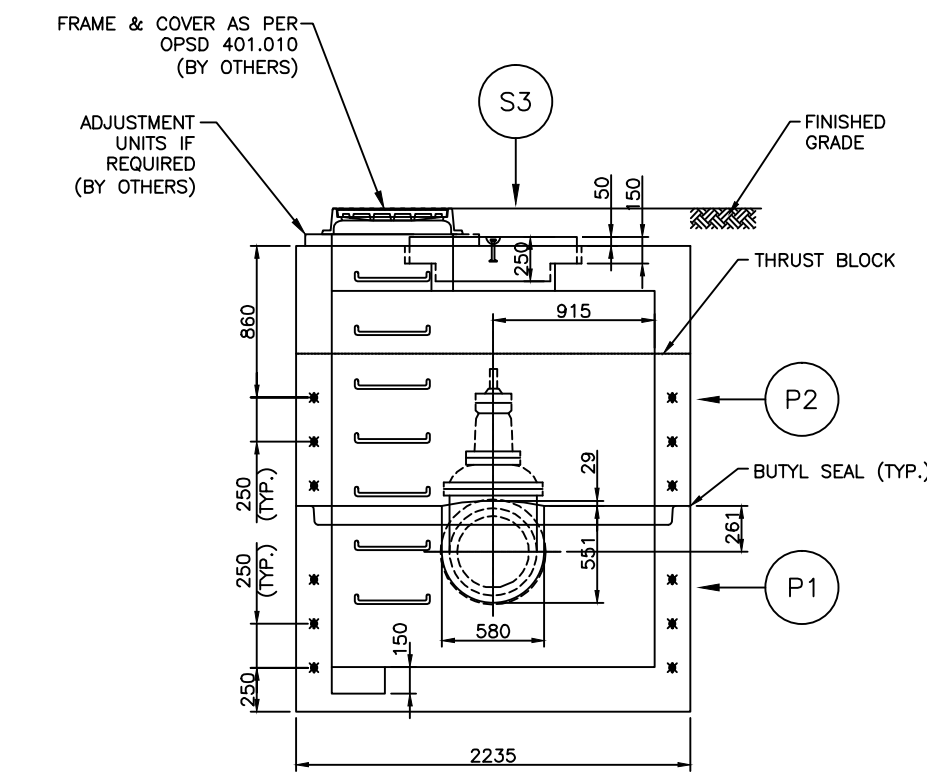


SIXTH LINE

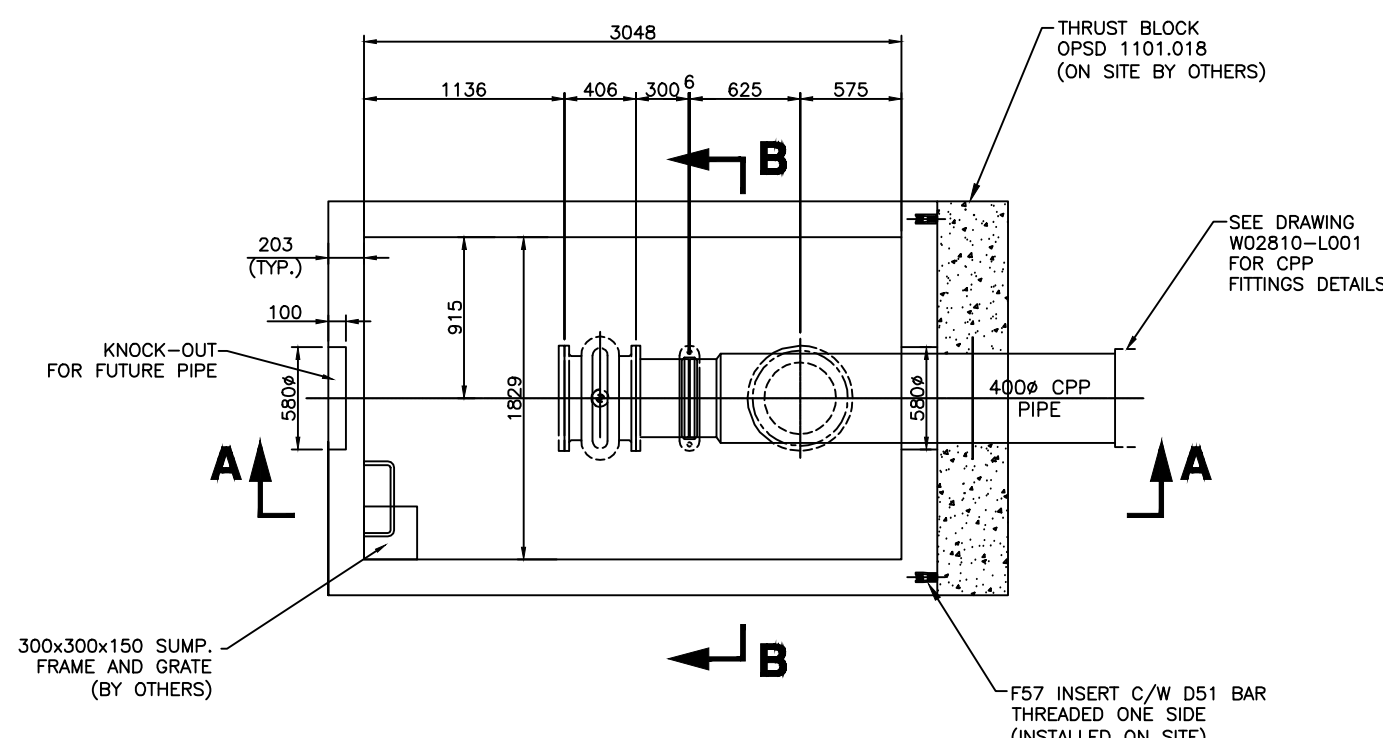
PLAN VIEW – WTM. VC @ STA. 9+705  
(NTS)



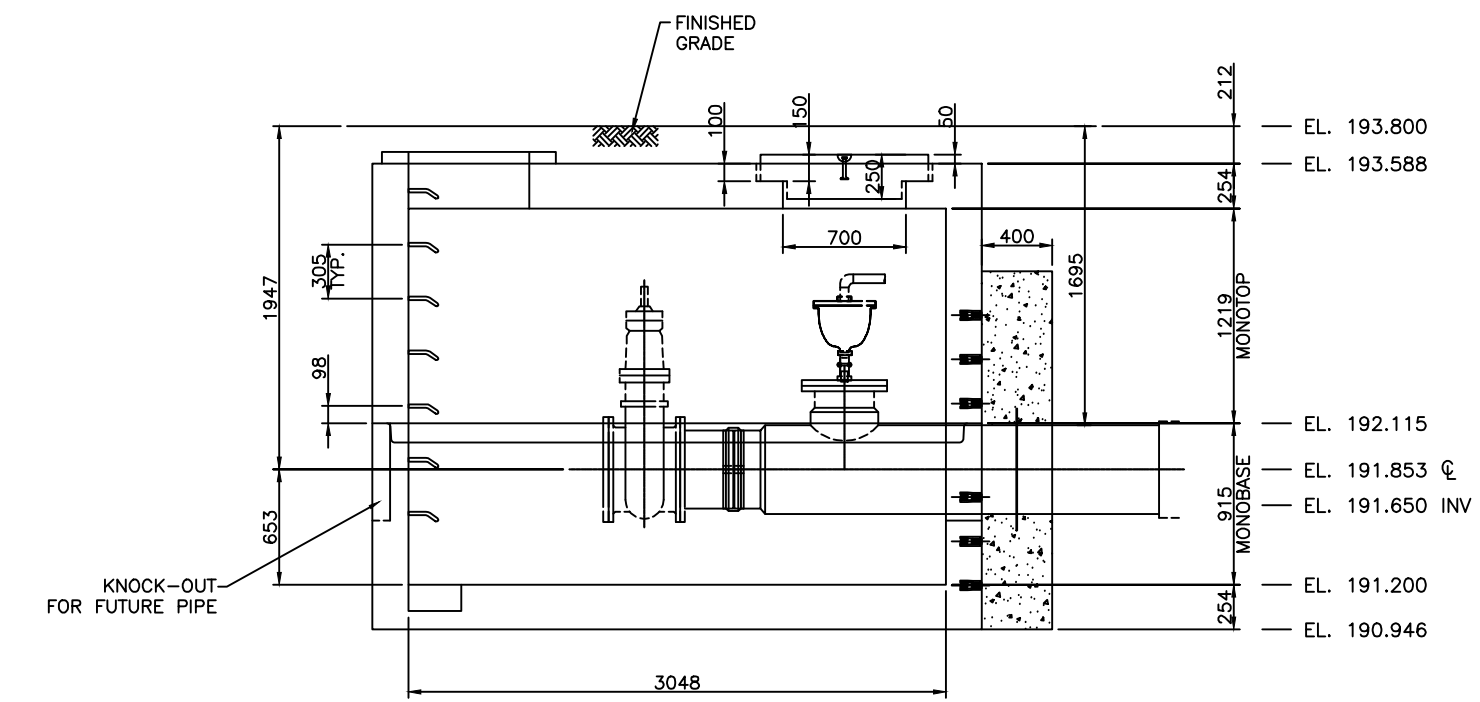
PLAN VIEW AT MONOTOP



SECTION B-B



PLAN VIEW AT MONOBASE



SECTION A-A

NOTES: SEE DRAWING NO. 0.

STEEL: Fy: 400W weldable CSA G30.18 Fy: 485-MESH ASTM A496/497		 5387 Sheppard Side Road, Scarthville, Ontario, L4A 3A6 Phone: 905-640-3151 Fax: 905-640-5154 www.forterra.com	<b>1829X3048 LINE VALVE CHAMBER (VC-1)</b> <b>TOWN OF OAKVILLE</b>		SCALE: NTS	PROJECT No. P00177
TOLERANCE: SEE CSA A23.4 (ch 12).			PROJECT: WATERMAIN ON SIXTH LINE AND WILLIAM HALTON PARKWAY CONTRACTOR: DOM MERIDIAN CONSTRUCTION LTD.		DRAWN: W.R.	CHAMBER No. VC-1
REV.	REVISION	DATE	BY	CHK.	CHECKED: G.B.	DRAWING No. 01
					DATE: 2018/10/05	REV.

**SAMPLE DRAWING ONLY**  
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**HAVE BEEN UPDATED.**  
**PLEASE ENSURE THAT**  
**YOU ARE USING THE**  
**MOST CURRENT SHEET**  
**STYLE**

PR-2263D(PART 1)-18 SHP3 OF SHP7

Drawing: C:\Users\mfarrisa\Desktop\PROJECT\185010557\_SHP3\_SHP7.dwg  
 Date: 02/22/2021 Time: 04:08:01 PM

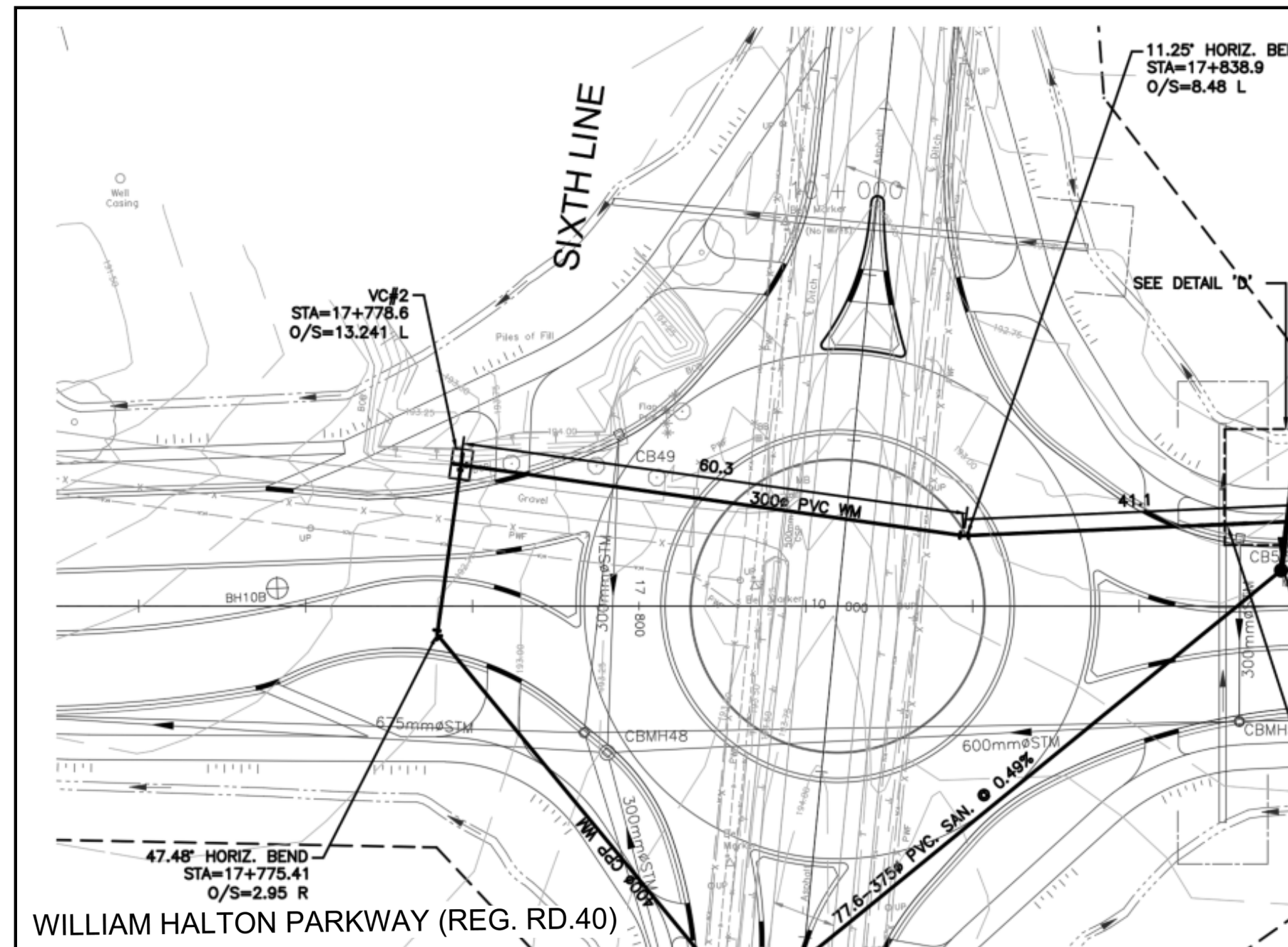
AS-CONSTRUCTED DRAWING	
CONTRACTOR	GRASCAN CONSTRUCTION LTD
WORK COMMENCED	DECEMBER 4, 2018
WORK COMPLETED	NOVEMBER 12, 2020
INSPECTOR	RON BAMFORD
INSPECTOR'S DIARIES	ELECTRONIC DIARY (STANTEC CONSULTING LTD): E-0020
The Regional Municipality of Halton makes no warranties with respect to the accuracy of this drawing and assumes no responsibility for its use. All information should be verified	

FIELD NOTES	
STAMP	
DESIGN	CH'KD
DRAWN	CH'KD
SCALE	N.T.S.
DATE	DATE
REFERENCES	

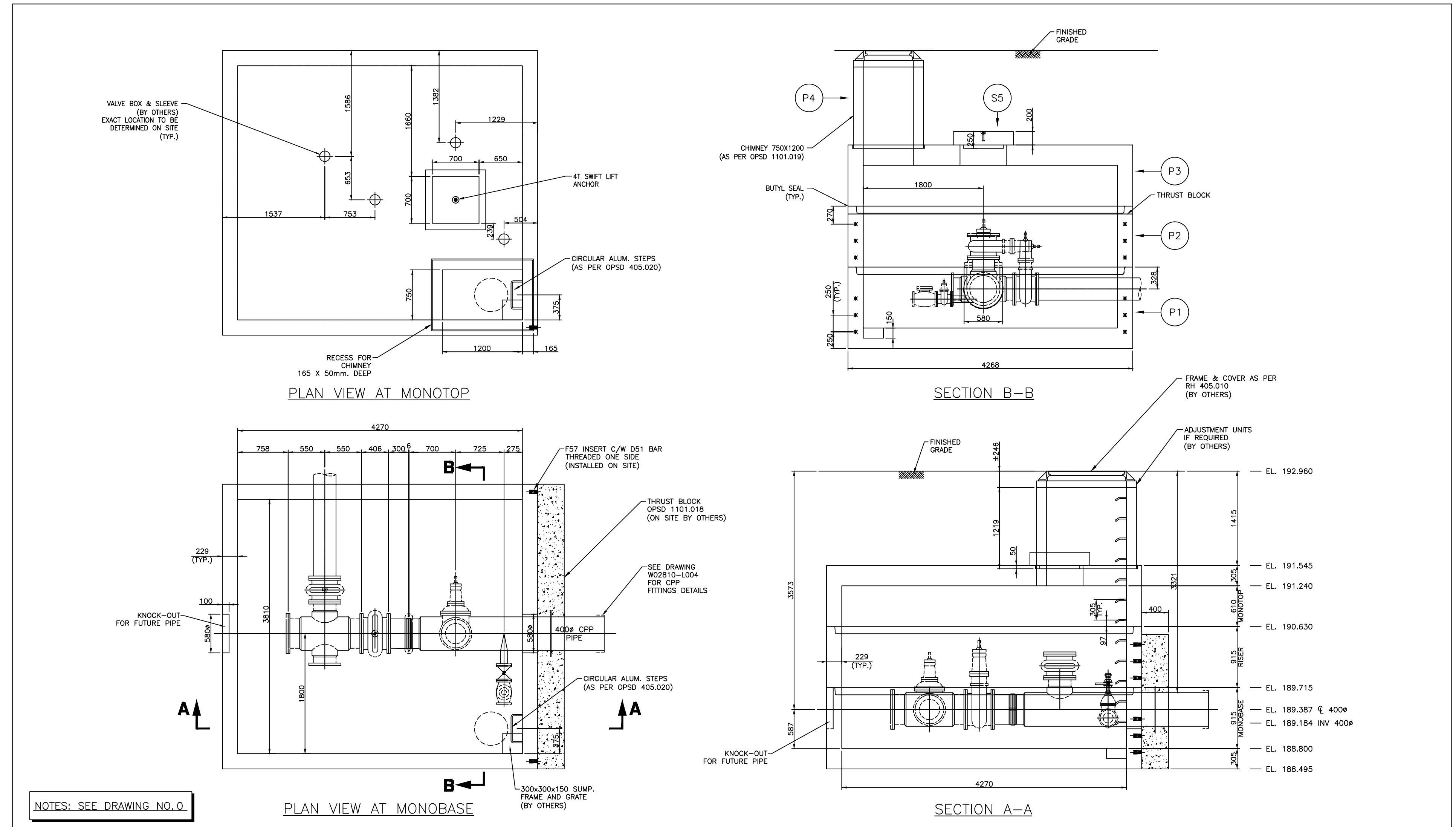
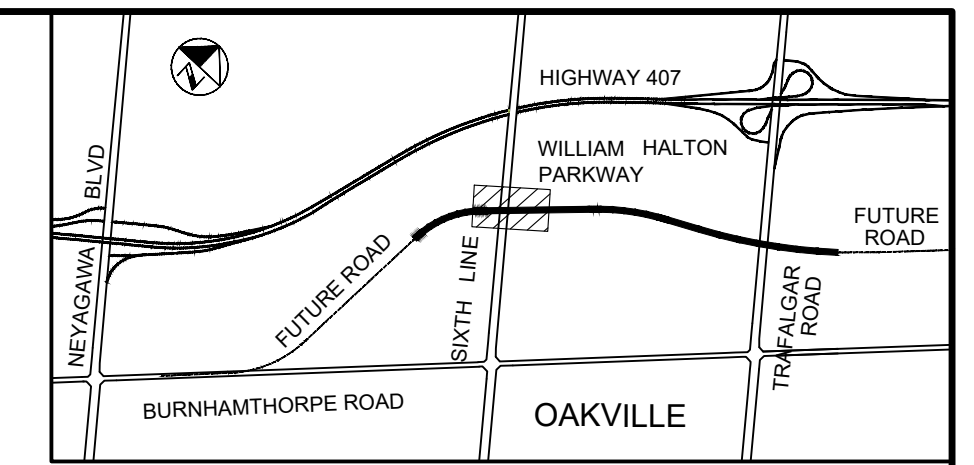
REGIONAL  
 SEE COVER SHEET FOR REGIONAL ACCEPTANCE



SHOP DRAWINGS WTM. VC @ STA 9+705 WILLIAM HALTON PARKWAY (REG. RD. 40) IN THE TOWN OF OAKVILLE	
CONSULTANT FILE NO.	REGIONAL DRAWING NO.
CONTRACT NO. PR-2263D(PART 1)-18	DRAWING NO. SHEET SHP3 OF SHP7



PLAN VIEW – WTM. VC @ STA. 17+778.6  
(NTS)



NOTES: SEE DRAWING NO. 0

REV.	REVISION	DATE	BY	CHK.	STEEL: Fy: 400W weldable CSA G30.18 Fy: 485-MESH ASTM A456/457 TOLERANCE: SEE CSA A23.4 (ch 12).	 <small>5387 Bathurst Side Road, Steelesville, Ontario, L4A 5A5          Phone: 905-840-0151 • Fax: 905-840-0154          www.forterra.com</small>	<b>3810x4270 LINE VALVE CHAMBER (VC-2)</b> <b>TOWN OF OAKVILLE</b> PROJECT: WATERMAIN ON SIXTH LINE AND WILLIAM HALTON PARKWAY CONTRACTOR: DOM MERIDIAN CONSTRUCTION LTD.	SCALE: NTS DRAWN: W.R. CHECKED: G.B. DATE: 2018/10/05	PROJECT No. <b>P00177</b> CHAMBER No. <b>VC-2</b> DRAWING No. <b>01</b>	REV.
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**SAMPLE DRAWING ONLY**  
**ALL STANDARD SHEETS**  
**HAVE BEEN UPDATED.**  
**PLEASE ENSURE THAT**  
**YOU ARE USING THE**  
**MOST CURRENT SHEET**  
**STYLE**

PR-2263D(PART 1)-18 SHP4 OF SHP7

Drawing: C:\Users\MPARISHA\Desktop\PROJECT\185010557\_SHP4\_SHP7\_WC2.DWG  
 Date: 02/22/2021 Time: 04:09:49 PM

AS-CONSTRUCTED DRAWING	
CONTRACTOR	GRASCAN CONSTRUCTION LTD
WORK COMMENCED	DECEMBER 4, 2018
WORK COMPLETED	NOVEMBER 12, 2020
INSPECTOR	RON BAMFORD
INSPECTOR'S DIARIES	ELECTRONIC DIARY (STANTEC CONSULTING LTD): E-0020
The Regional Municipality of Halton makes no warranties with respect to the accuracy of this drawing and assumes no responsibility for its use. All information should be verified	

NO.	DATE	BY	REVISIONS	MANU	CAD
1.	20.12.12	XX	AS CONSTRUCTED (STANTEC)		X
DESIGN		CH'KD			DATE
DRAWN		CH'KD			DATE
SCALE	N.T.S.		REFERENCES		

FIELD NOTES

REGIONAL

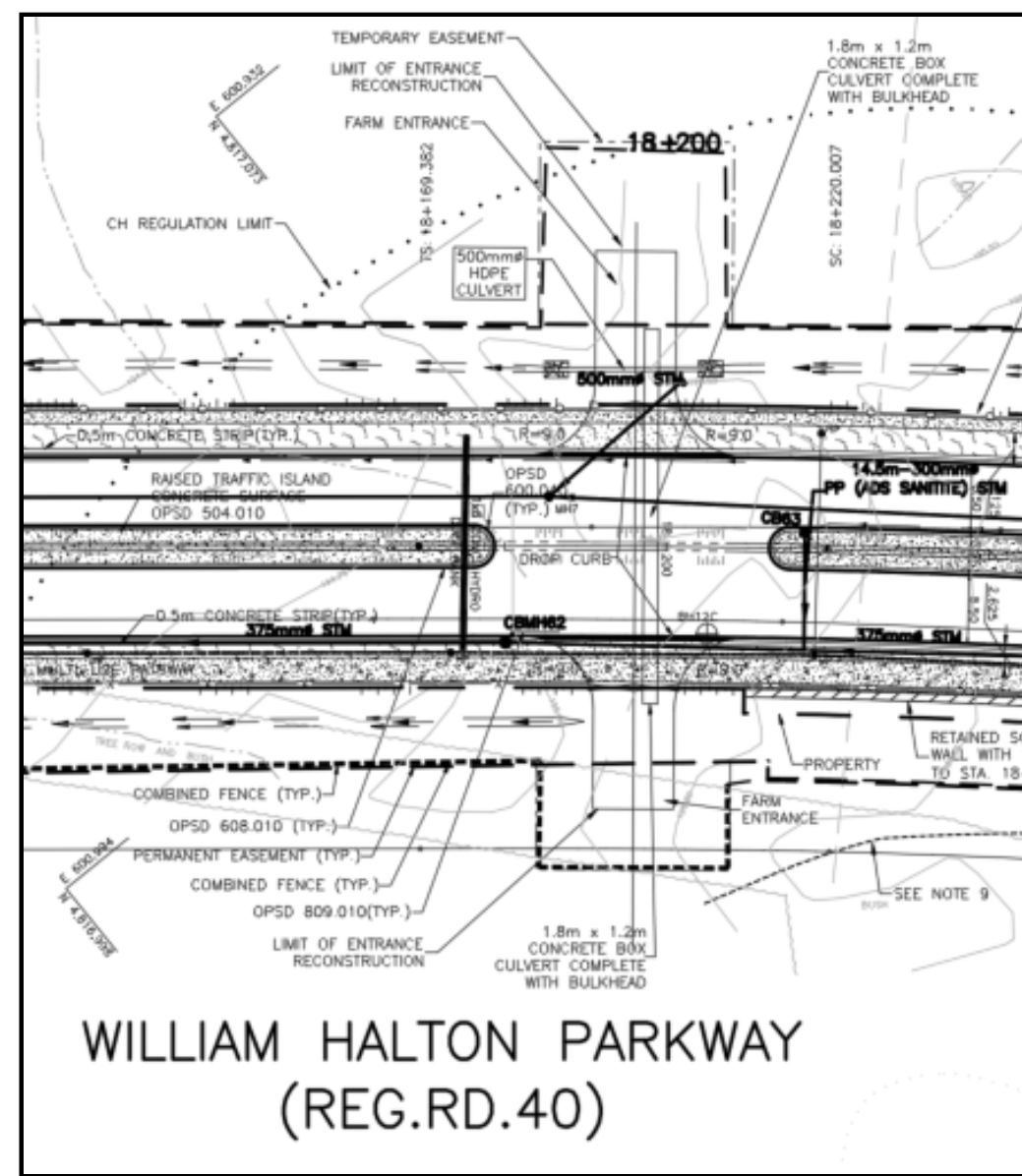
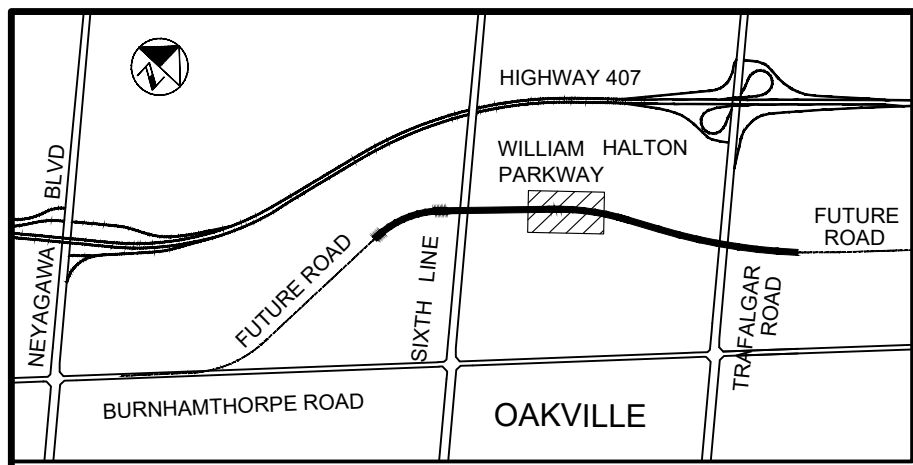
SEE COVER SHEET FOR REGIONAL ACCEPTANCE



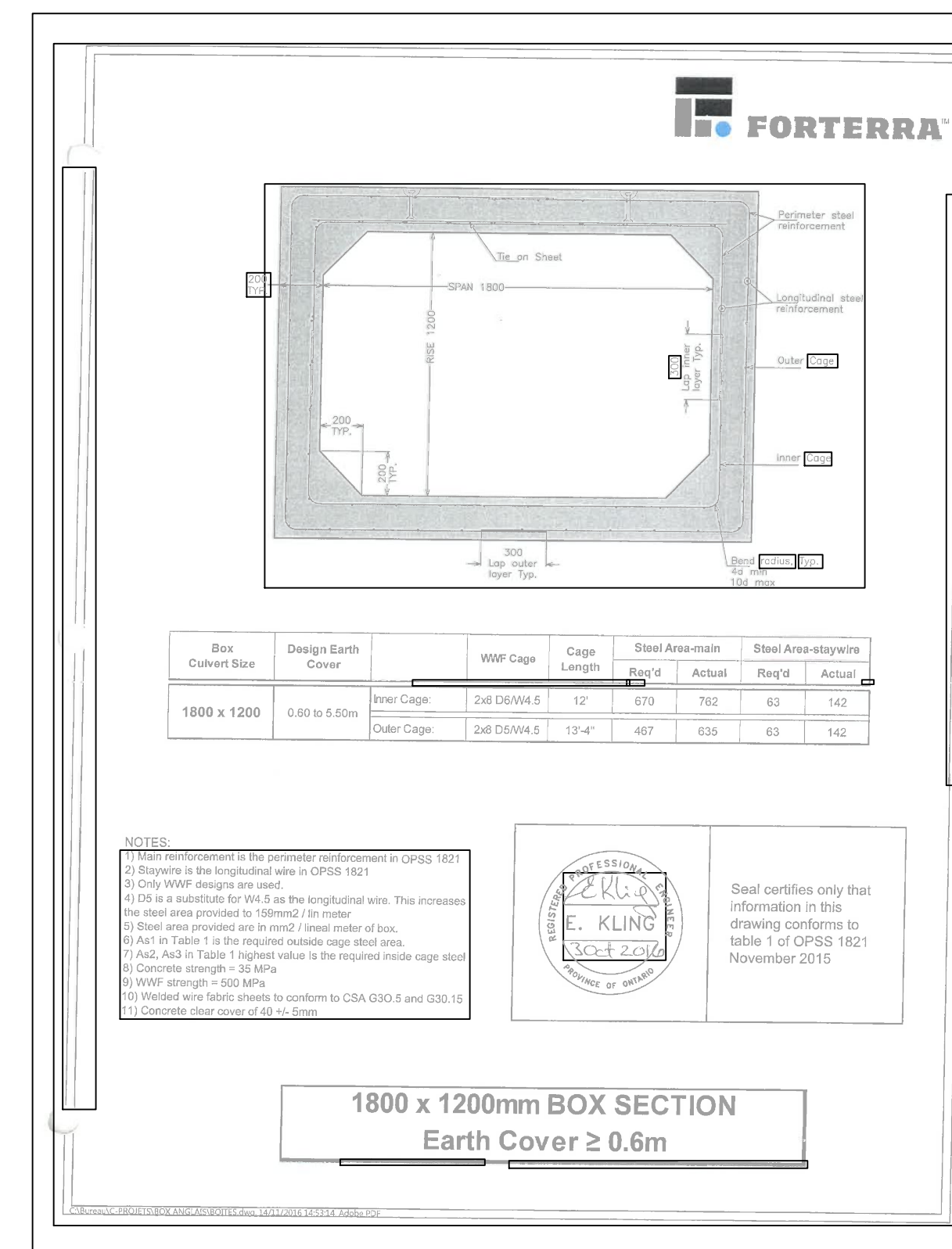
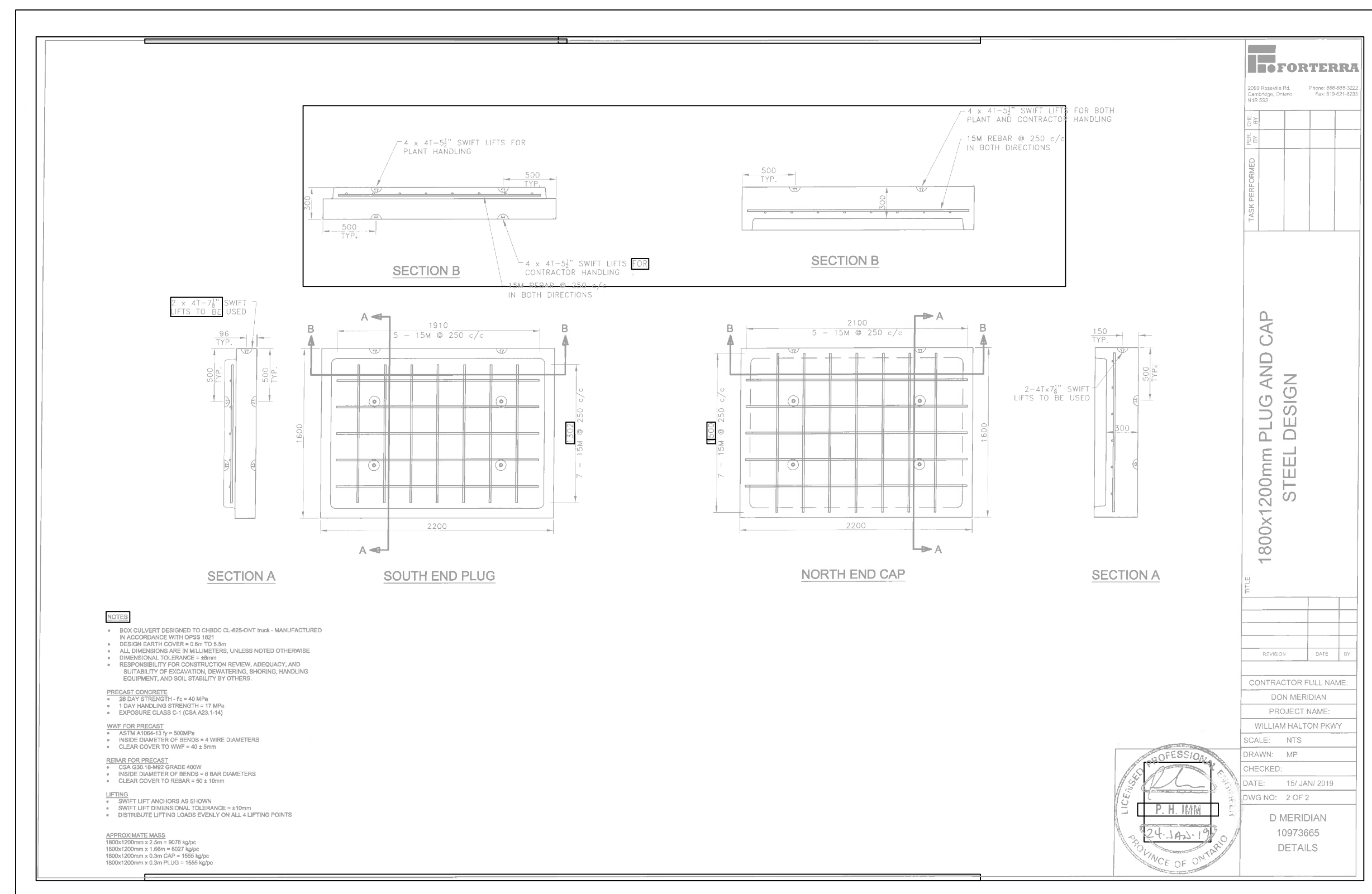
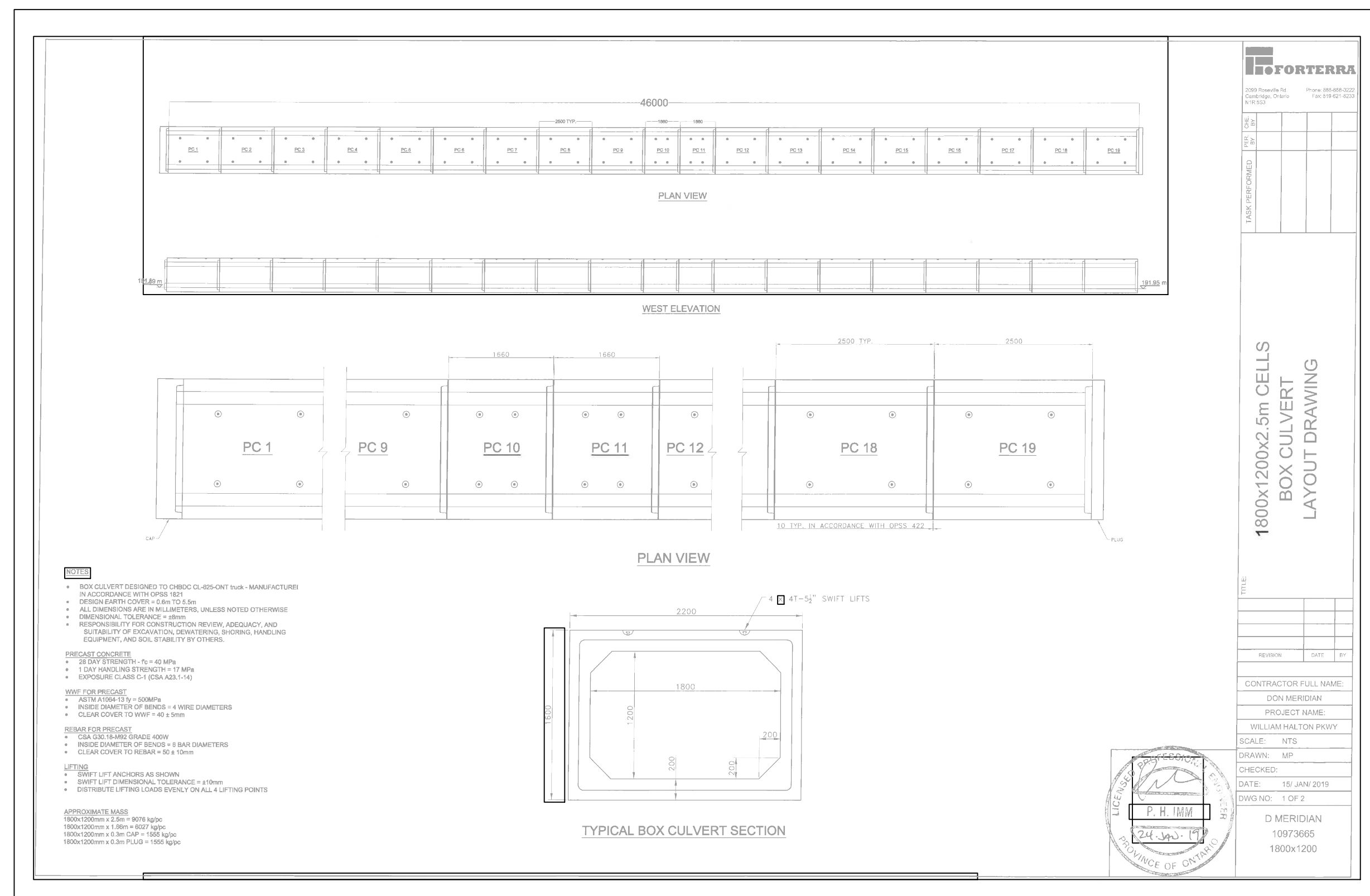
SHOP DRAWINGS  
 WTM. VC @ STA 17+778.6  
 WILLIAM HALTON PARKWAY (REG. RD. 40)  
 IN THE TOWN OF OAKVILLE

CONSULTANT FILE NO. REGIONAL DRAWING NO.

CONTRACT NO. DRAWING NO.  
 PR-2263D(PART 1)-18 SHEET SHP4 OF SHP7



WILLIAM HALTON PARKWAY—STA. 18+198.12  
1200X1800mm CONC. BOX  
(NTS)



**SAMPLE DRAWING ONLY  
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HAVE BEEN UPDATED.  
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STYLE**

PR-2263D-18 SHP5 OF SHP7  
Drawing: C:\Users\mfarisha\Desktop\WHPC\18010557\_SHP\_1200X1800\_BOXCULVERT.DWG  
Date: 02/22/2021 Time: 04:11:28 PM

AS-CONSTRUCTED DRAWING	
CONTRACTOR	GRASCAN CONSTRUCTION LTD
WORK COMMENCED	DECEMBER 4, 2018
WORK COMPLETED	NOVEMBER 12, 2020
INSPECTOR	RON BAMFORD
INSPECTOR'S DIARIES	ELECTRONIC DIARY (STANTEC CONSULTING LTD): E-0020

The Regional Municipality of Halton makes no warranties with respect to the accuracy of this drawing and assumes no responsibility for its use. All information should be verified

NO.	DATE	BY	REVISIONS	MANU	CAD
1.	20.12.12	XX	AS CONSTRUCTED (STANTEC)		X

DESIGN	CH'KD	DATE
DRAWN	CH'KD	DATE
SCALE	N.T.S.	REFERENCES

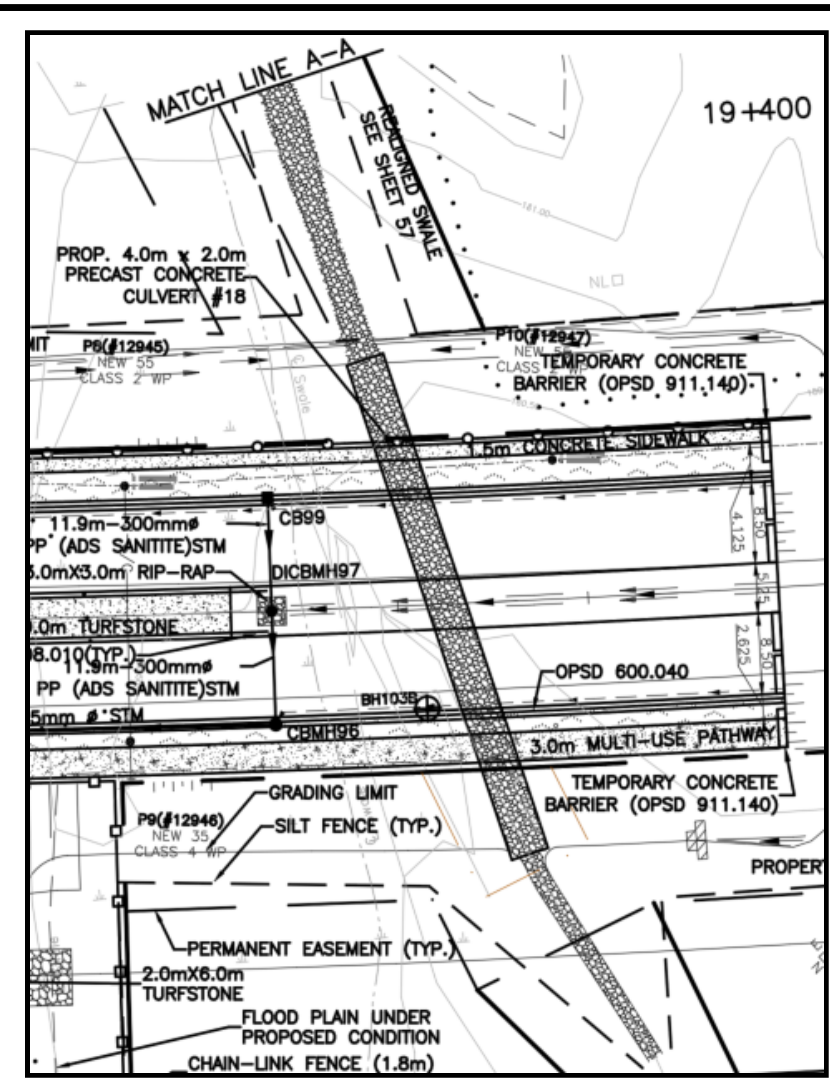
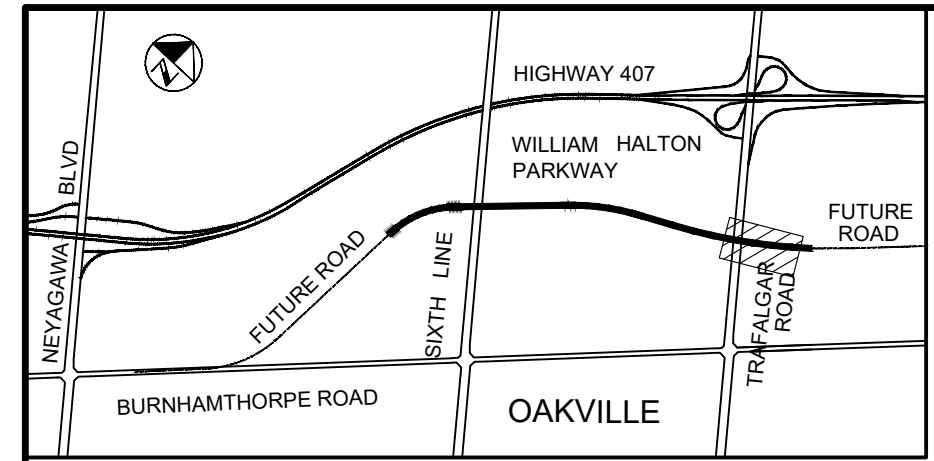
FIELD NOTES	REGIONAL
STAMP	SEE COVER SHEET FOR REGIONAL ACCEPTANCE



1200x1800mm CONC. BOX CULVERT WILLIAM HALTON PARKWAY (REG. RD. 40) IN THE TOWN OF OAKVILLE	
CONSULTANT FILE NO.	REGIONAL DRAWING NO.
CONTRACT NO. PR-2263D(PART 1)-18	DRAWING NO. SHEET SHP5 OF SHP7

PR-2263D (PART 1)-18 SHP6 OF SHP7  
 Drawing: C:\Users\mfarrish\Desktop\WHPC\165010557\_SHOP\_4000X2000\_BOX\CVLVERT.DWG  
 Date: 02/22/2021 Time: 04:13:27 PM

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 STYLE**



**WILLIAM HALTON PARKWAY - STA. 19+358.85  
 4000X2000mm CONC. BOX  
 (NTS)**

### GRASCAN WILLIAM HALTON PARKWAY (REGIONAL ROAD 40)

NO.	CONTENTS
S-1	GENERAL NOTES
S-2	LAYOUT
S-3	FOOTING LAYOUT
S-4	DETAIL LAYOUT
S-5	SPAN SECTION
S-6	PIECE A1
S-7	PIECE A2-A21
S-8	PIECE A22
S-9	REBAR LAYOUT 1
S-10	REBAR LAYOUT 2
S-11	FOOTING F1
S-12	FOOTING F2-F10
S-13	FOOTING F11
S-14	FOOTING F12
S-15	FOOTING F13-F21
S-16	FOOTING F22

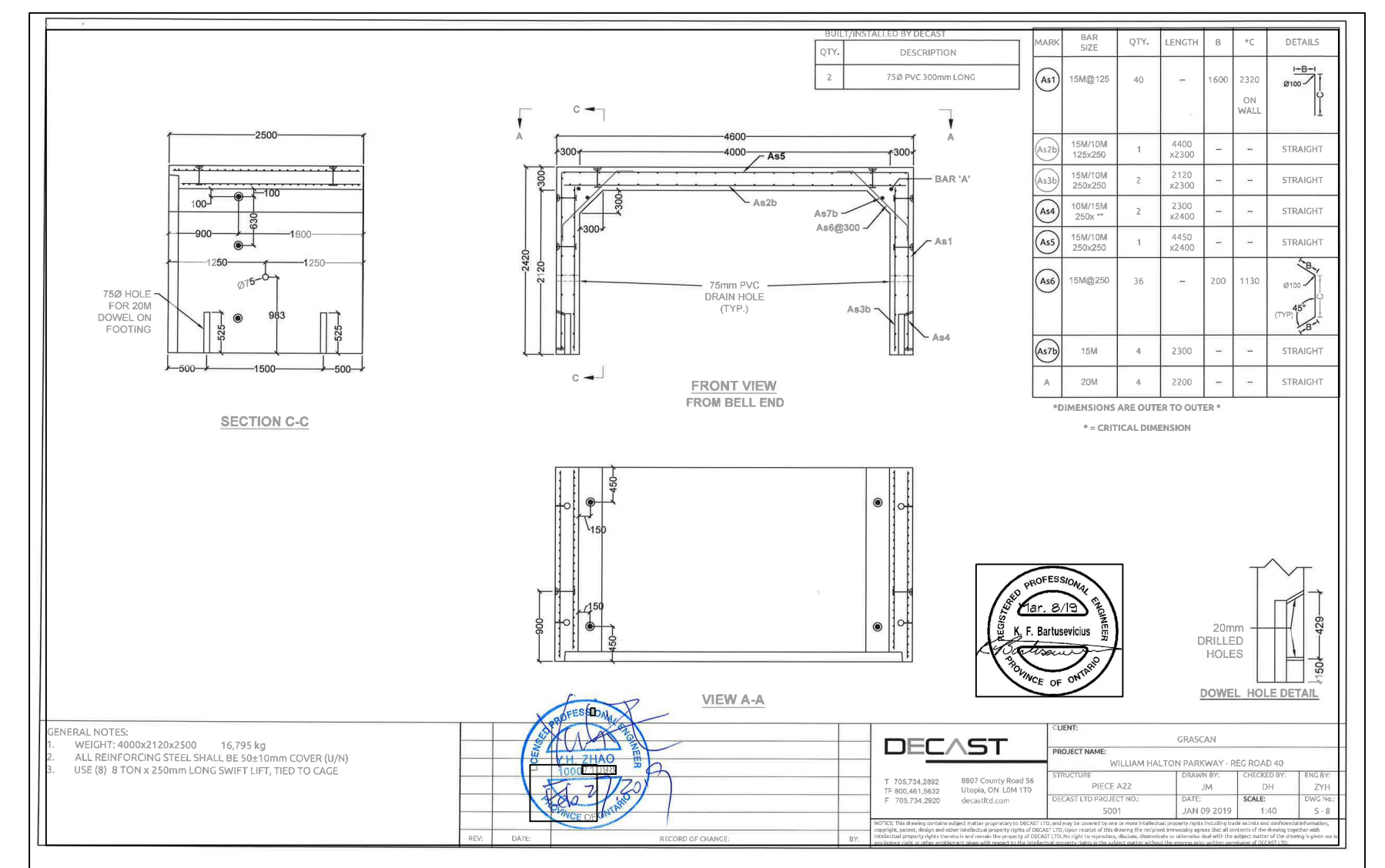
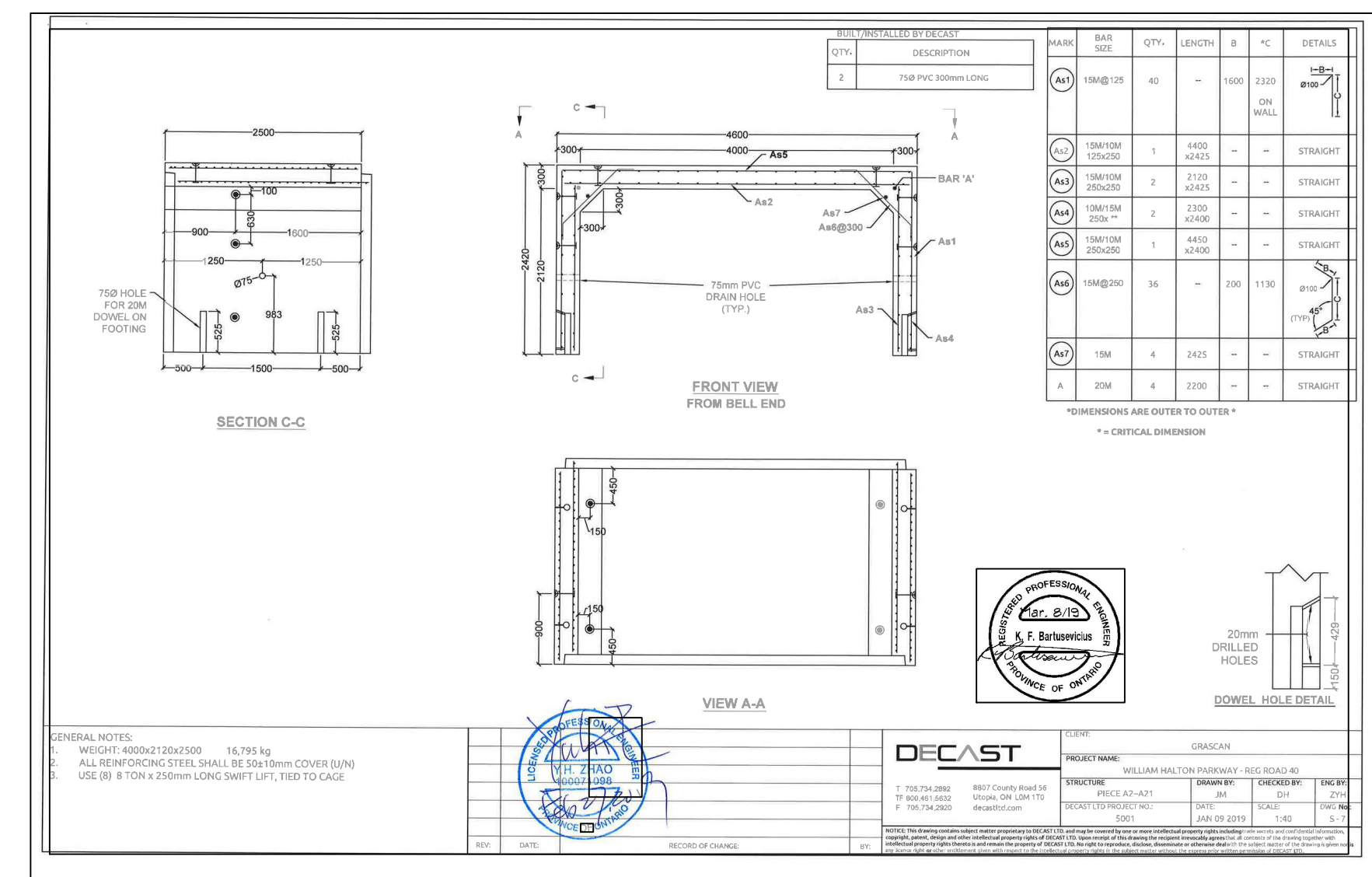
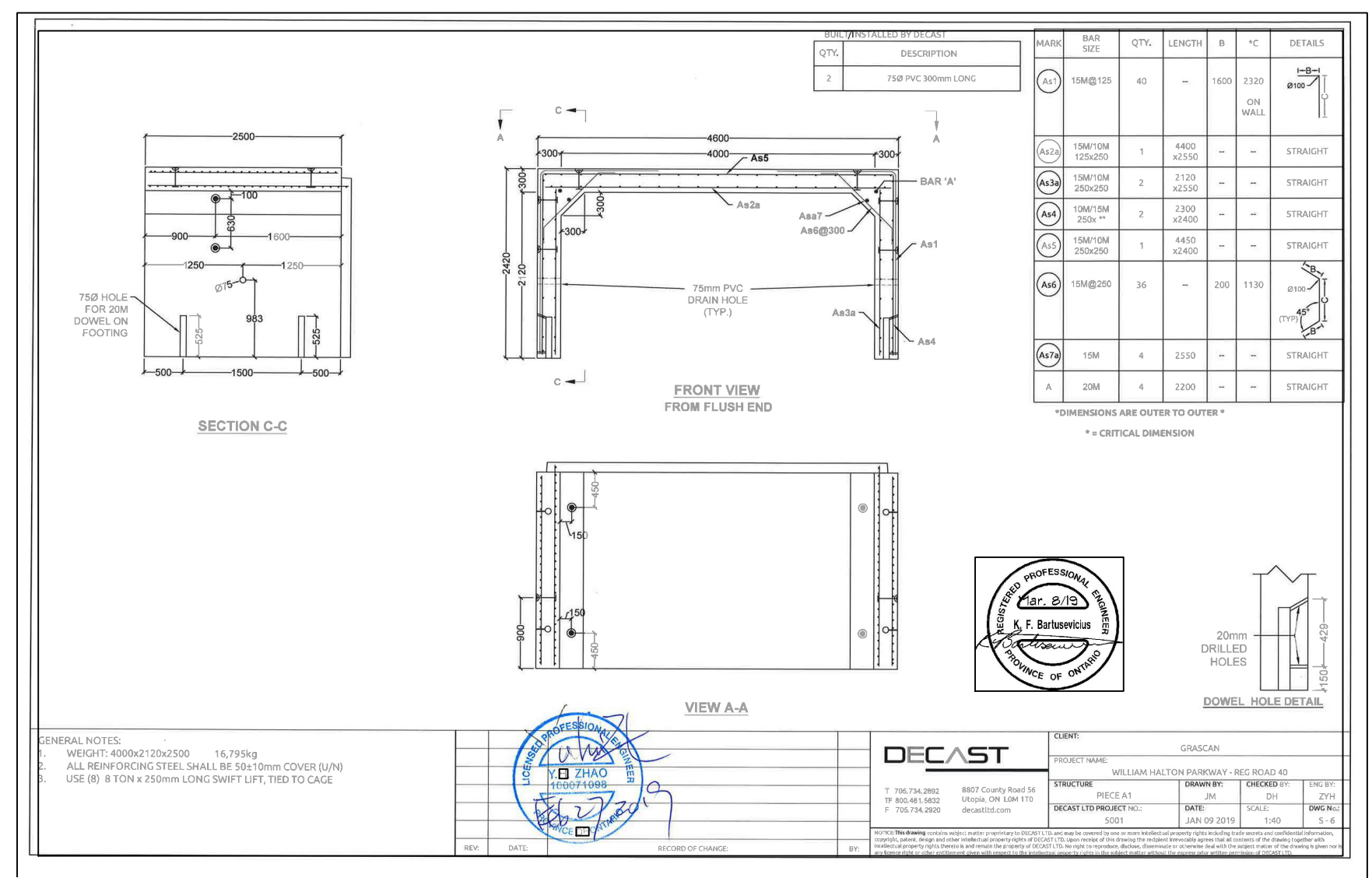
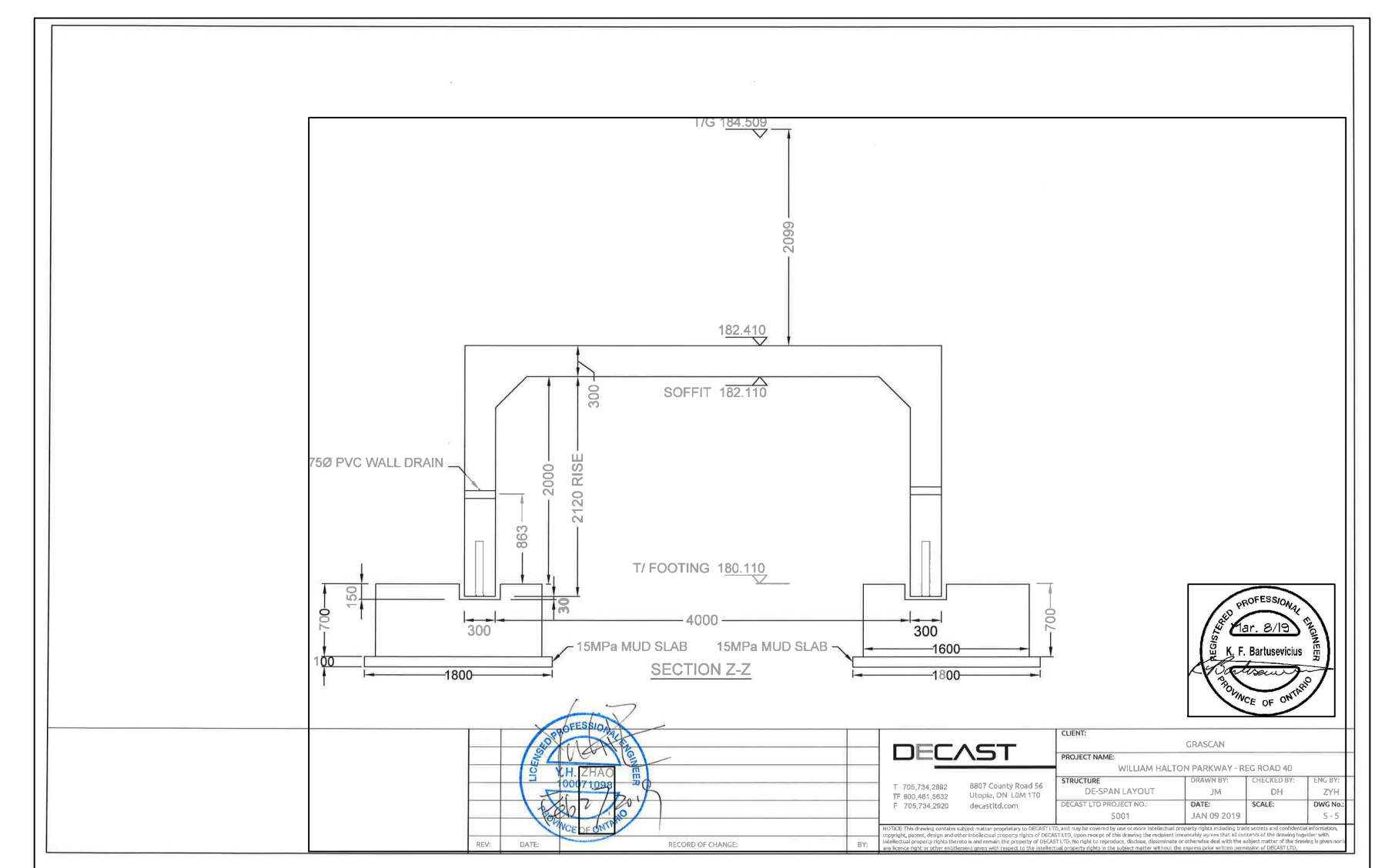
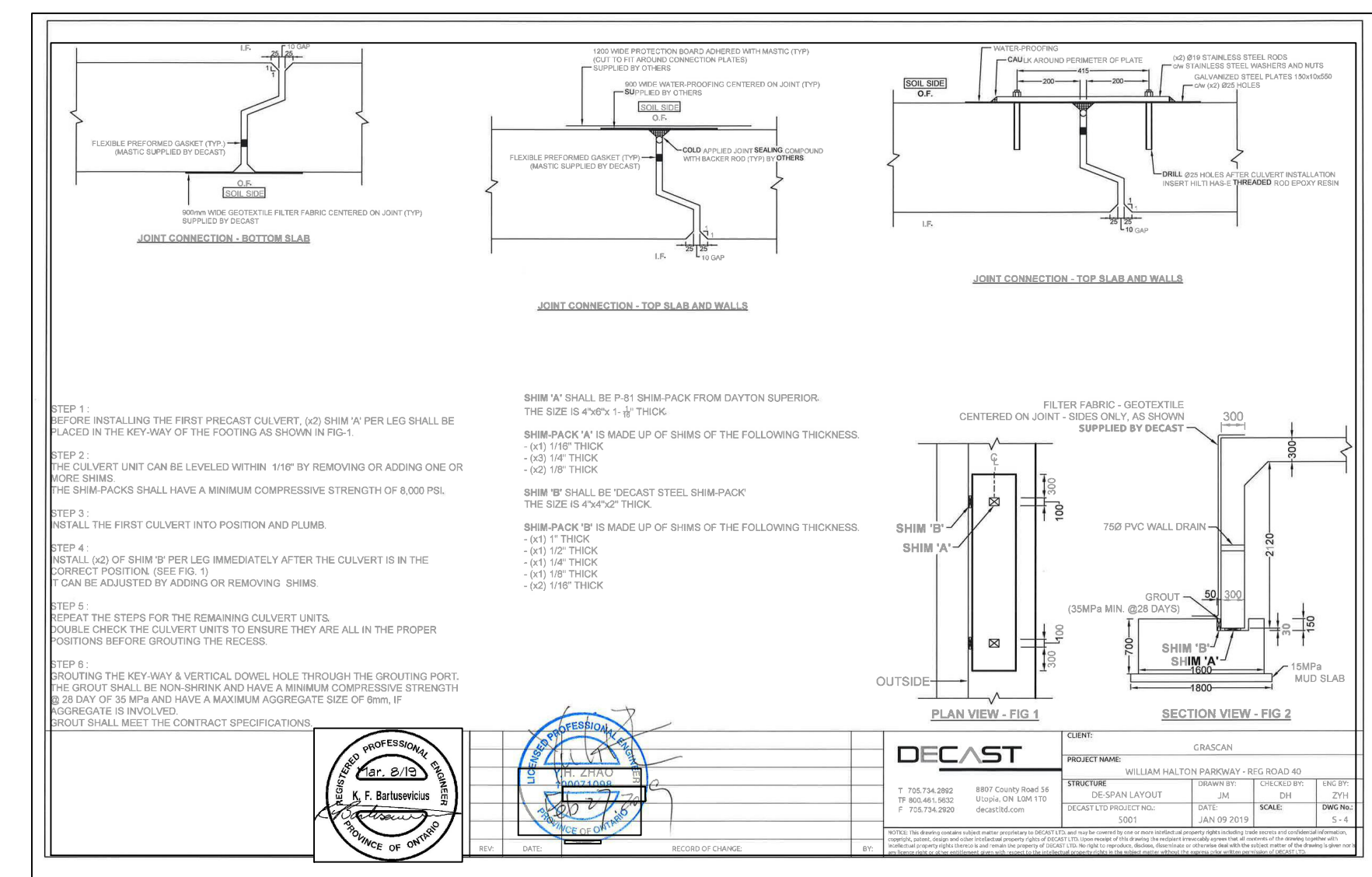
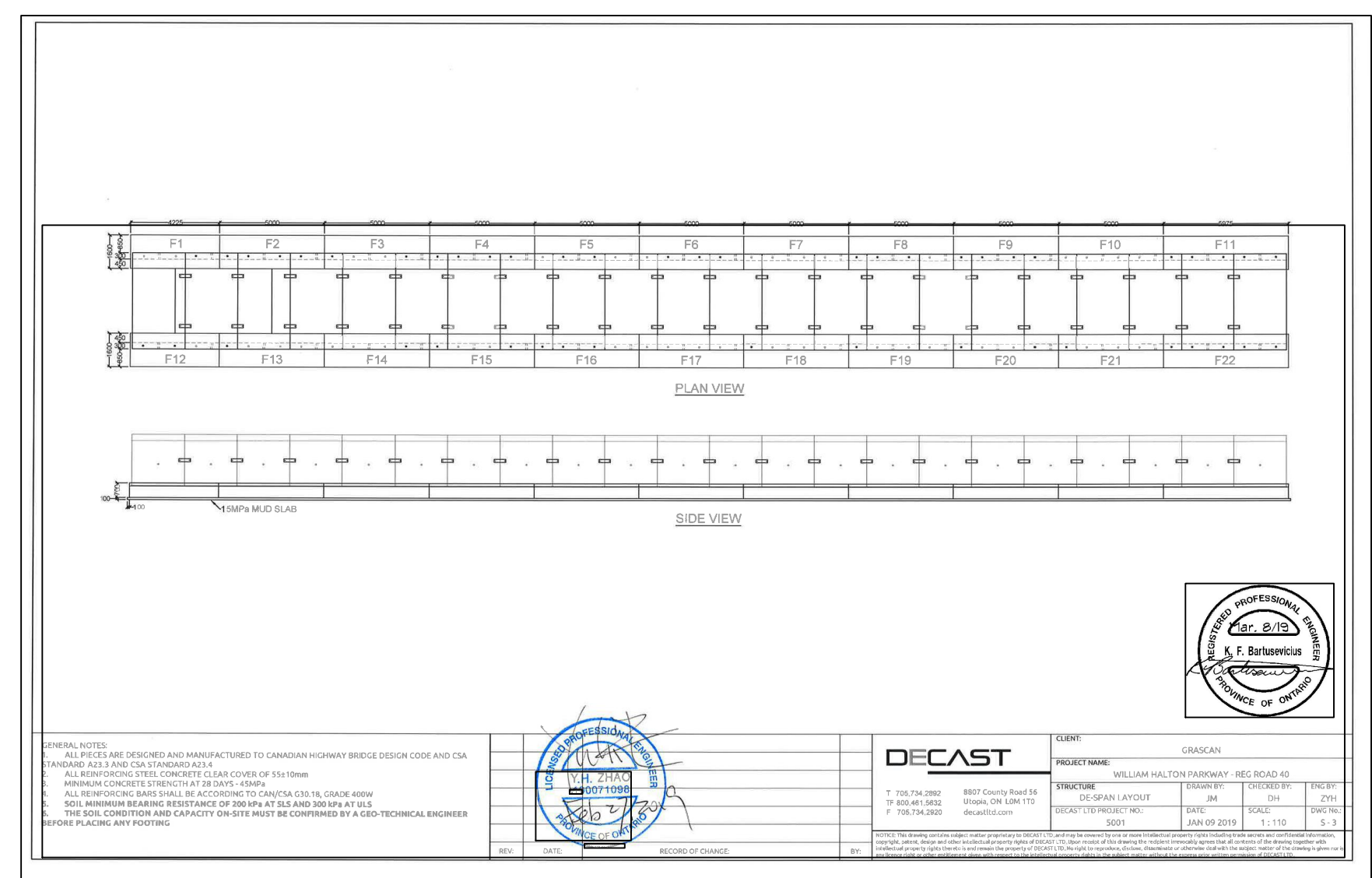
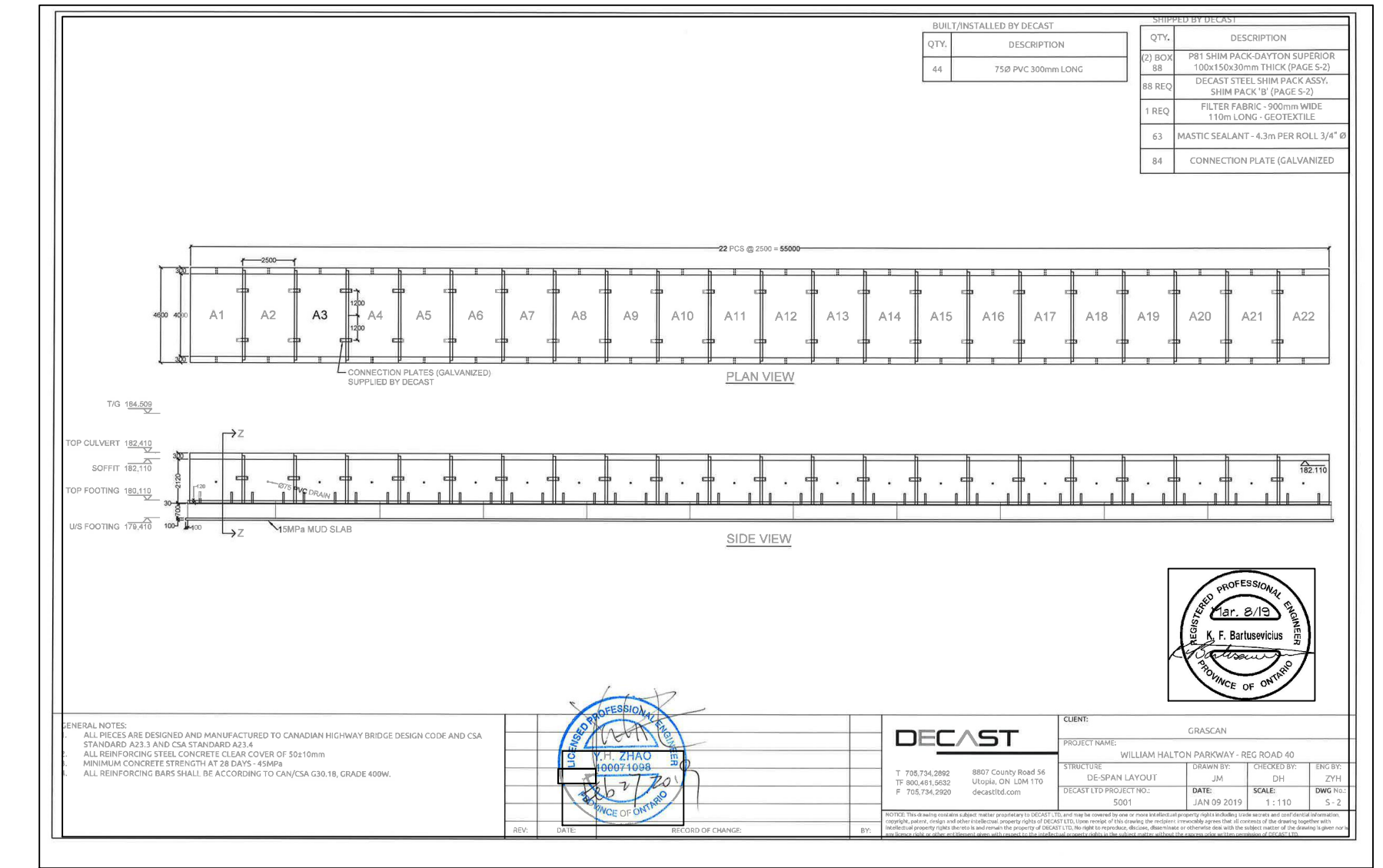
1. ALL DIMENSIONS ARE IN MILLIMETERS. ELEVATION ARE IN METERS  
 2. ALL PIECES ARE DESIGNED AND MANUFACTURED TO CAN/CSA 58 AND MTO STRUCTURAL MANUAL  
 3. CONCRETE EXPOSURE CLASS C1  
 4. ALL CONCRETE TO BE MIX # 150  
 5. CONCRETE STRIPPING STRENGTH TO BE 35 MPa  
 6. ALL CONCRETE CLEAR COVER OF REINFORCEMENT TO BE 50±10mm, TIP OF VERTICAL BARS TO BE 50±20  
 7. MINIMUM CONCRETE STRENGTH AT 28DAYS = 45 MPa  
 8. ALL REINFORCING BARS SHALL BE ACCORDING TO CAN/CSA G30 18, GRADE 400W; WELDED DEFORMED STEEL BAR MATS TO ASTM A164M  
 9. TACK WELDS TO CSA W186  
 10. ALL EXPOSED EDGES TO HAVE A 20mm CHAMFER

DESIGN LOAD:  
 1. LIVE LOAD: CL-625-ONT TRUCK LOAD  
 2. DEAD LOAD: SELFWEIGHT + 2.1M EARTH COVER  
 3. DENSITY OF CONCRETE: 24 KN/CU.M  
 4. DENSITY OF SOIL: 22 KN/CU.M  
 5. INSTALLATION TYPE: B1  
 6. MIN LATERAL COEFFICIENT: 0.3  
 MAX LATERAL COEFFICIENT: 0.5

SOIL NOTES:  
 SOIL MINIMUM BEARING RESISTANCE OF 200 kPa AT SLS AND 300 kPa AT ULS.  
 THE SOIL CONDITION AND CAPACITY ON-SITE MUST BE CONFIRMED BY A GEO-TECHNICAL ENGINEER BEFORE PLACING ANY FOOTING.

6400x2200(250), SPAN = 16,795 kg (x2)  
 5000x1600(75), FOOTING = 12,585 kg (x15)  
 4225x1500(75), FOOTING = 10,975 kg (x2)  
 3275x1500(75), FOOTING = 15,520 kg (x2)  
 TOTAL WEIGHT: = 655,520 kg

DECAST PROJECT: GRASCAN  
 PROJECT NAME: WILLIAM HALTON PARKWAY - REG. ROAD 40  
 DRAWN BY: [Signature]  
 CHECKED BY: [Signature]  
 DATE: JAN 29 2018



**AS-CONSTRUCTED DRAWING**

CONTRACTOR	GRASCAN CONSTRUCTION LTD
WORK COMMENCED	DECEMBER 4, 2018
WORK COMPLETED	NOVEMBER, 12, 2020
INSPECTOR	RON BAMFORD
INSPECTOR'S DIARIES	ELECTRONIC DIARY (STANTEC CONSULTING LTD): E-0020

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1.	20.12.12	XX	AS CONSTRUCTED (STANTEC)	X
NO.	DATE	BY	REVISIONS	MANU CAD
DESIGN	CH'KD	DATE	DATE	
DRAWN	CH'KD	DATE	REFERENCES	
SCALE	N.T.S.			

FIELD NOTES

REGIONAL

SEE COVER SHEET FOR REGIONAL ACCEPTANCE



4000X2000mm  
 CONC. BOX CULVERT  
 WILLIAM HALTON PARKWAY (REG. RD. 40)  
 IN THE TOWN OF OAKVILLE

CONSULTANT FILE NO. REGIONAL DRAWING NO.

CONTRACT NO. PR-2263D(PART 1)-18 SHEET SHP6 OF SHP7

DRAWING NO. SHEET SHP6 OF SHP7

PR-2263D(PART 1)-18 SHP7 OF SHP7  
 Drawing: C:\Users\mfarah\OneDrive\Desktop\WHPC\165010557\_SHP7\_4000X2000BOXCULVERT2.DWG  
 Date: 02/22/2021 Time: 04:14:32 PM

**SAMPLE DRAWING ONLY**  
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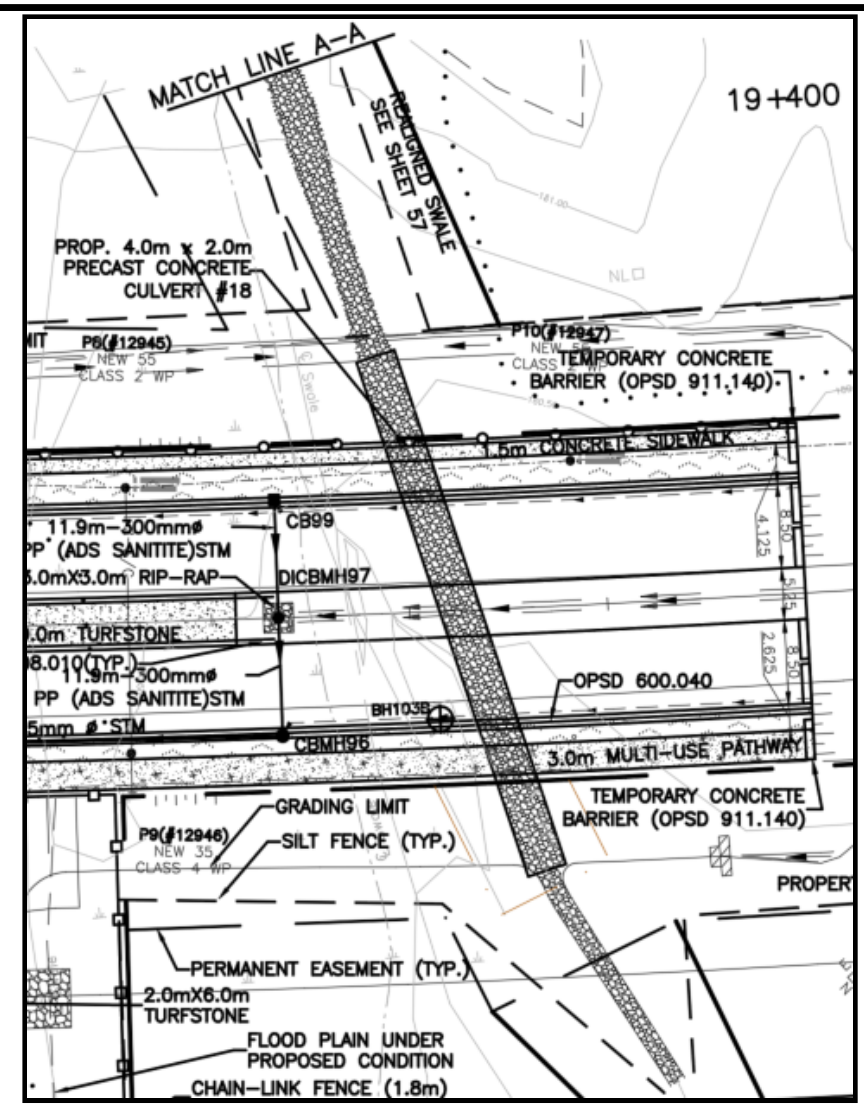
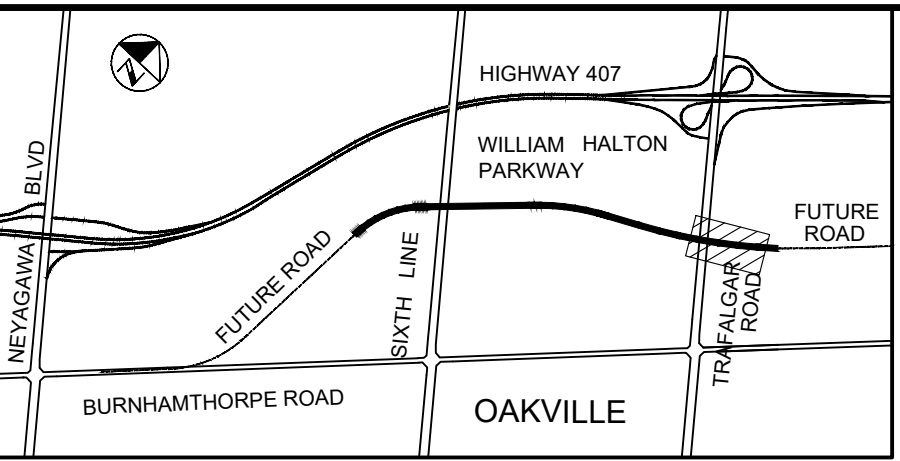
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FIELD NOTES					
1.	20.12.12 XX AS CONSTRUCTED (STANTEC) X				
NO.	DATE	BY	REVISIONS	MANU	CAD
DESIGN	A.A.	CH'KD			DATE
DRAWN	B.B.	CH'KD			DATE
SCALE	N.T.S.		REFERENCES		

REGIONAL	
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4000X2000mm CONC. BOX CULVERT WILLIAM HALTON PARKWAY (REG. RD. 40) IN THE TOWN OF OAKVILLE	
CONSULTANT FILE NO.	REGIONAL DRAWING NO.
CONTRACT NO. PR-2263D(PART 1)-18	DRAWING NO. SHEET SHP7 OF SHP7



WILLIAM HALTON PARKWAY-STA. 19+358.85  
 4000X2000mm CONC. BOX  
 (NTS)

