CITY OF BURNABY

Asset Identification Specifications

2014

Finance / Engineering

11/07/2013

Owner:	City of Burnaby Finance Department	Rev. No. (Rev. Date):	0 (01.Nov.13)

Title:	Asset Identification Specifications (2014), City Infrastructure Assets

Table of Contents

1. Introduction / Pre-Amble

Beginning in 2009, municipal government organizations have been required to track and report the financial impact of both planned and actual changes to City-owned infrastructure assets. This document describes a set of **supplementary** standards which are required by the City of Burnaby (the "City") for depiction and quantification of changes to City-owned infrastructure assets. These standards supplement the current City of Burnaby's **Engineering Drafting Standards, DRAFT 2.**

As part of the design and construction administration process, design consultants produce a set of design drawings, based on MMCD and City standards and requirements, which detail the proposed changes to existing civil infrastructure located within the bounds of a project site. These drawings are created by the design consultant at both the design and as-constructed stages of a construction project which has been approved by the City.

For purposes of asset life cycle management and valuation, the City groups the various systems and elements depicted and quanitified on civil design drawings into distinct asset categories by location.

Beginning October 2013, for any project delivering changes to City infrastructure assets in 2013, assigned design consultants were required to prepare and submit to the City a supplementary set of design drawings, produced in AutoCAD, with layers, notations (labels), and measurements specific to identifying and quantifying changes to City-owned infrastructure assets.

For **projects beginning construction during or after 2014**, in preparing the set of civil design drawing AutoCAD files for submission to the City, design consultants are required to supplement currently produced AutoCAD data-structures with layers, blocks and attributes specific to identifying and quantifying the creation of and changes to City-owned infrastructure assets in accordance to the specifications identified in this document.

This document provides a set of standards and specifications for civil design drawings, and the associated AutoCAD files, for identifying and quantifying proposed changes and actual changes delivered to City-owned infrastructure assets: referred to as City **Asset Identification drawings and Assets Delivered drawings**.

These standards and requirements are intended to **supplement** existing City of Burnaby drafting standards most recently published by the City of Burnaby's Engineering department in 2000. Design drawings identifying changes to City-owned assets, in compliance with the standards and requirements described in this document, must be submitted **in addition to** the design drawings currently required by the City's Engineering department. For additional details about existing City drafting standards, please refer to the City of Burnaby's **Engineering Drafting Standards, DRAFT 2**.

2. Purpose and Objectives

This document describes the City of Burnaby's standards and requirements for use by all design consultants for recording changes to City-owned infrastructure assets in AutoCAD design files.

Specific objectives of this document are to:

- Enable design consultants to clearly identify and quantify both proposed and actual changes to City-owned infrastructure assets in a manner that is consistent with existing Financial and Legislative requirements
- Ensure **changes to City-owned infrastructure are consistently measured** by different construction projects over the entire life cycle of those assets – consistent definition of network segments' boundaries and the assets located in segments
- Ensure a consistent and relevant measurement baseline is used for calculation of all bonding transactions and payment requests and subsequent valuation and capitalization of changes to City-owned assets
- Enable consistent, complete, **automated extraction of source data** from approved AutoCAD design drawing files

3.0 Scope

These standards and requirements must be employed by all design consultants on all construction projects proposing or delivering changes to City-owned infrastructure assets, for which assets will be available for use **beginning January 1, 2014**.

4.0 Deliverables

This section describes the specific items to be delivered by design consultants working on construction projects which are authorized by the City of Burnaby.

The following list of deliverables is to be produced by the **design consultant** and delivered to the City for each project:

- **Design Drawings *.dwg files** – in AutoCAD 2010 or later format (.dwg) with a set of notations on predefined layers identifying changes to City-owned assets
  - **Asset Identification Drawings** – the subset of drawing layers in a *.dwg file which, taken together, identify the proposed changes to City-owned assets: proposed layers.
  - **Assets Delivered Drawings** – the subset of drawing layers in a *.dwg file which, taken together, identify the delivered changes to City-owned assets: retirements and as-constructed layers.
- **Listing of changes to City-owned Assets** – in Excel 2007 (*.xls), provide an extract of the changes to City-owned assets identified in the design drawing files, per the requirements in this document, corresponding to either the **asset identification drawings** (proposed layers) or the **assets delivered drawings** (retired and as-constructed layers).
- **Design drawings *.pdf files - City of Burnaby** Asset identification drawings and Assets Delivered drawings, saved in an Acrobat-pdf file

5.0 Provided by the City

This section describes information to be provided by the City of Burnaby to design consultants who are responsible for producing detailed design drawings for projects falling within the scope of this document.

The City shall provide the following material to the design consultant who is responsible for development of the design drawings in compliance with the standards and requirements described in this document:

- **Standards and guidelines** for identification of changes to City-owned infrastructure assets – *this document*
- The City's **latest Drafting / AutoCAD** Layering and Linetype Standards.
- Standard AutoCAD drawing templates for Asset Identification, including:
  (1) **AutoCAD drawing template (*.dwt) files** , "AA_Template.dwt", for each asset class: roads, water, drainage, sewer, lights
  (2) Utilities and roads **data extraction (*.dxe) files**, "AA_Extract-UT.dxe", "AA_Extract-ROADS.dxe", and
  (3) **pen settings files**: "AA _Bby_Full.ctb"
- The **Provincial Asset Classification (PAC) table** containing standard Provincial codes and associated descriptions used to identify City-owned assets
- **Asset Table PAC Guidelines** – identifying drawing items to be quantified, attributed, and extracted to a table
- **Asset Table Cheat Sheet** – defining required attribution
- The City's **Standard Street and Segment ID Numbers** Mapping Document and a supporting list identifying the intersecting roads for each segment (also available on the City's external webmap)
- Relevant **existing background project drawings**, which may include Inspector Prints with red-line markups from on-site inspections as necessary
- City staff reviews and/or feedback in support of achieving compliance with the standards outlined in this document

6.0 Procedures by Category of Project

This section describes the general requirements and processes to be followed for identifying changes to City-owned assets based on general categories of construction project, delivering infrastructure **beginning January 1, 2014**.

There are two broad categories of construction project, based on ownership of the construction process and control over the design process, resulting in changes to City-owned assets:

- Land Development

- Capital Works – External Design Consultant

This document will address the processes and requirements to be followed for Land Development and and Capital Works performed by external design consultants, and any situation in which design drawings are used to identify changes to City-owned infrastructure assets.

6.1 Land Development

Land development projects are defined as construction projects delivering privately-owned (non-City-owned) assets on privately-owned land. The City's primary goal is to safeguard existing assets and services while adequately maintaining existing service levels or enhancing service-levels to meet projected requirements based on population growth and changes in the zoning. As part of the development application approval process, the Engineering department identifies requirements for changes to existing infrastructure assets resulting from the proposed private development.

6.1.1 Design Stage

As a prerequisite for approval of all development applications, the developer's design consultant will provide specifications for changes to City-owned infrastructure assets, in the form of design drawings and related asset identification drawings, to meet the requirements identified by the Engineering department. These requirements apply to applications for rezonings, subdivisions, preliminary plan approvals, building permits, and access work agreements to be approved by the City.

6.1.2 Bonding Deposit

All bonding deposited with the City of Burnaby for the purpose of securing changes to City-owned assets to be delivered by a developer will be supported by a set of issued for construction design drawings, a set of **asset identification drawings**, a set of Excel tables listing the proposed changes to City-owned assets, and supporting schedules (e.g. Asset Allocation forms) which comply with the standards and requirements described in this document. Bonding requirements will be based on the asset quantities identified in the asset identification drawings and the associated Excel tables identifying the proposed assets and changes to assets.

If completed issued for construction design drawings can not be provided in time for City approval of the development application, then a preliminary set of asset identification drawings and associated Excel tables listing the assets' quantities will be provided by the design consultant for calculation of bonding requirements. In this case, a bonding premium (calculated by the City's Engineering department) will be taken by the City until issued for construction drawings are available.

6.1.3 Bonding Reduction Requests

All bonding reduction (refund or release) requests submitted to the City will include an asset allocation form (signed by the developer's design consultant) supporting the bonding reduction requested and, if an asset (or system) being constructed on a street segment is **available for use**, a set of asset delivered drawings and an excel table listing assets delivered (see **section 8.18, table 11**) will be provided.

An asset is deemed to be **available for use** when all construction required to deliver the asset has been completed. Note, available for use does not necessarily mean or imply that the asset is in use or that the project is substantially complete.

6.1.4 Project Completion – Assets Delivered

Within **30 days** from the date that an asset (linear roads) or system (utilities) depicted on a drawing is **available for use**, the **asset delivered drawings** and an excel table listing assets delivered will be provided by the design consultant to the City. When not provided to the City, bonding retained to provision as-constructed drawings may be drawn upon to provide the required drawings.

6.2 City Capital Works - External Design Consultants

Capital works are defined as construction projects delivering changes to City-owned assets on City-owned land or within City-owned right-of-way. The City's primary goal is to safeguard existing assets and services while adequately maintaining existing service levels or enhancing service-levels to meet projected requirements.

6.2.1 Design Stage

As part of the design assignment for a City Capital Project, the design consultant will provide design drawings, **associated asset identification drawings,** an excel table listing proposed changes to City-owned assets, and supporting schedules as specified in the deliverables section.

The City's Engineering department identifies and approves final requirements for changes to City-owned infrastructure.

6.2.2 Invoice / Payment Request

If construction of an asset (system) on a block is complete, the progress payment submitted to the City will include asset delivered drawings along with an Excel file listing quantities of assets delivered, and invoices provided in a standardized City-specified format.

6.2.3 Assets Delivered Drawings

Within **30 days** of an asset or service depicted on a design drawing being **available for use**, asset delivered drawings and an associated excel table listing assets delivered will be provided by the assigned consultant to the City.

7.0 Asset Identification Drawings - Technical Process

This section describes the general process to be followed by design consultants in delivering AutoCAD-based detailed design drawings used for identifying and quantifying changes to City-owned infrastructure assets.

7.1 Project Familiarization

The design consultant will familiarize themselves with all pertinent aspects of the construction project and the specifications and requirements outlined in this document for identification of changes to City-owned assets. Where further clarification is required, the design consultant will follow-up with the City as required.

7.2 Creation of Project Drawings

The design consultant will create a set of project drawing files, which will identify all proposed (design) or actual (as-constructed) changes to City-owned infrastructure assets. These drawing files will contain a set of layers, blocks, notes, lines, and polygons specific to identifying and quantifying changes to City-owned infrastructure assets.

The design consultant must identify and quantify changes to City-owned infrastructure assets detailed on all project drawings used to identify specifications for the construction process, including:

- *Supporting* drawings and schedules - project/roadworks indices, general notes, title pages, details, and other miscellaneous drawings
- Roadworks drawings
- Drainage drawings
- Illumination, electrical/information technology drawings
- Sanitary sewer drawings
- Water drawings
- Any other civil drawings the City deems necessary

Title Page / Index drawings. For each project design package, an index / title page sheet will be provided. This sheet will identify all drawing sheets to be included in the complete package, with an indication of the asset class described (e.g road works) and the content provided.

7.3 Identification of Assets on Drawings

The design consultant must identify and quantify all changes to City-owned assets on the project, organized by drawing and clearly identified using AutoCAD layers, blocks, and polylines as detailed in ***tables 1*** *through* ***9****.*

Drawing sheets depicting changes to City-owned infrastructure assets in accordance with the specifications in this document (asset identification or assets delivered drawings) will have the notation "***City Assets***" displayed on the drawing sheet, in the lower right corner, above the title block.

7.4 Data Validation

The design consultant is responsible validating the completeness and accuracy of the labels and layers used to depict changes as well as the attributes used to identify and quantify specific changes associated with each asset. Supporting this requirement, AutoCAD provides functionality for performing complex selection, filtering, and counts of blocks and attributes.

7.5 Recording Changes

Beginning Jan 1, 2014, the assigned design consultant will identify and quantify each net new, retirement, or change to City–owned assets or system depicted on the design drawings using the attribute fields identified in in **section 8.18.**

The design consultant must ensure that they strictly follow the standards summarized in this document so that the data extraction process can be independently repeated at any time by the City or agents of the City.

Following confirmation that all attributes have been accurately extracted, the design consultant will provide this spreadsheet to the City.

8.0 Asset Identification Drawings,Technical Specifications

This section describes the detailed technical specifications to be used by the design consultant when recording changes to City-owned infrastructure assets in AutoCAD design drawing files.

8.1 AutoCAD Drawing Files – Naming Conventions

All proposed and actual changes to City-owned infrastructure assets will be captured by the assigned design consultant in AutoCAD *.dwg files,without security restrictions and comply with predefined naming standards:

FORMAT: A_ddddd_S.dwg

A Asset identification reference

ddddd Project ID/Design No (e.g. 82105)

S Drawing Status :

- D = Design/Tender (Asset Identification)
- A = As-Constructed (Assets Delivered)

.dwg AutoCAD file type for drawings

Example filename

o *Filename Example = A_82105_ D.DWG*

8.1 PDF Drawing Files – Naming Conventions

All proposed and actual changes to City-owned infrastructure assets will be captured by the assigned design consultant in Acrobat *.pdf files. Each file will contain a single-sheet planned view of the infrastructure assets, by facility type, that conform to the standard A1 metric drawing size (841mm x 594mm), without security restrictions, landscape format and comply with the following predefined naming standards:

FORMAT: A_ddddd_C_##_S.PDF

A Asset identification reference

ddddd Project ID/Design No (e.g. 82105)

C	Facility type, one of: D – drainage R – roads W – water S – sanitary I – illumination or signal
##	Sheet Number (e.g. 01)
S	Drawing Status : • D = Design/Tender (Asset Identification) • A = Assets Delivered.
.pdf	Acrobat file extension

Example filenames

- *Filename Example = A_82105_R_01_D.*pdf

  Sheet number 1, a road work drawing, for project / design 82105

- *Filename Example = A_82105_S_03_A.pdf*

  Sheet number 3, a sanitary drawing, for project / design 82105

8.2 AutoCAD Layers – Naming Conventions

Identification and quantification of changes to City-owned infrastructure assets will be recorded within an Autocad *.dwg design drawing file on a distinct set of layers which supplement existing layers. Layer naming is based on the use of predefined standard prefixes in combination with standard base layer names (see the City's current Drafting Standards for details). Beginning in **2014**, a subset of the full set of drawing layers will be used to identify infrastructure assets delivered by construction projects. See **tables 1 through 9 in section 8.8** for details.

8.3 Project Phase

On each printed drawing sheet, a note above the title box, will identify the phase of construction as one of the following:

- "DESIGN" – notation identifying changes proposed as part of project planning / design, recorded in the *AA_PDwg_TblkGrd* layer
- "DELIVERED" – notation identifying changes delivered during project construction, recorded in the *AA_ADwg_TblkGrd* layer

8.4 Asset Layer Identification

On each drawing sheet, a note above the title box, suffixing the "DESIGN" or "DELIVERED" notation should identify that the drawing is for "***CITY ASSETS***".

Drawings which do not identify changes to City-owned infrastructure assets will not contain this notation. This notation should be recorded in the ***AA_xDwg_TblkGrd*** layer.

8.5 Title Block

Asset identification drawings are to include the City's standard title block, and should be created using the City's standard drawing template (.dwt) file.

This notation should be recorded in the ***AA_xDwg_TblkGrd*** layer.

8.6 Scale

Asset identification drawings are to be presented in the same scale as the original design drawing for which they represent. Typically this will be 1:500 however it may vary.

8.7 Plotting

The Asset identification drawings are to be plotted using the the City of Burnaby's current standard pen settings file (see Drafting Standards, Draft 2), producing full-size A1 size drawings which are almost entirely in black & white and greyscale, aside from the Asset identification polylines which will plot in colour based on the colour standards in **Tables 1** through **9** below so that they are distinguishable from the original design drawing linework which will plot in grayscale.

8.8 Identifying Changes to City Assets – Blocks, Polylines, Attributes

Within AutoCAD, the design consultant will use a standard set of prescribed blocks, polylines, and attributes to identify proposed and actual changes to City-owned infrastructure assets on the previously mentioned layers. See **Table 1** through **Table 9** below for details.

The design consultant must identify all assets that have been added, removed, or otherwise changed as a result of a project's construction work. Changes to each individual

City-owned infrastructure asset must be identified and blocked-out using standards defined in **tables 1** through **9**, and have attributes assigned in accordance with specifications in **section 8.18**.

Changes to linear road assets require identification and measurement of both the asset and area being changed. Upon identifying changes to **linear road assets** needing to be quantified, the design consultant will draw a closed polylines encompassing the entire area of the change being quantified. Each area of change will then be attributed and quantified by grouping the closed polyline area with a predefined block. The required characteristics to be recorded for these changes are detailed in **section 8.18** and **Table 6**.

Changes to discrete assets (such as lights, signals, individual segments of utility main, service connections, hydrants, and pieces of equipment located on mains), are identified, quantified, and attributed using predefined blocks.

Polyline attributes such as linetype, layer, and colour are to match the specifications shown in **Table 1** through **Table 9** below.

Note that all blocks identified in tables 1 through 9 below use **LINETYPE = CONTINUOUS**.

Table 1: Blocks for identifying changes to Combined systems

Description	(Proposed)			(Existing)			(Abandoned/Retired)			(As-Constructed)		
	Block Name	Layer Name	Color	Block Name	Layer Name	Color	Block Name	Layer Name	Color	Block Name	Layer Name	Color
Catch Basin	PCCB	AA_PCmb_Sym	64	ECCB	AA_ECmb_Sym	67	XCCB	AA_XCmb_Sym	67	ACCB	AA_ACmb_Sym	64
Culvert Structure	PCCUL	AA_PCmb_Sym	64	ECCUL	AA_ECmb_Sym	67	XCCUL	AA_XCmb_Sym	67	ACCUL	AA_ACmb_Sym	64
Cleanout	PCCO	AA_PCmb_Sym	64	ECCO	AA_ECmb_Sym	67	XCCO	AA_XCmb_Sym	67	ACCO	AA_ACmb_Sym	64
Manhole	PCMH	AA_PCmb_CM	64	ECMH	AA_ECmb_CM	67	XCMH	AA_XCmb_CM	67	ACMH	AA_ACmb_CM	64
Valve (type 1)	PCVAL1	AA_PCmb_Sym	64	ECVAL1	AA_ECmb_Sym	67	XCVAL1	AA_XCmb_Sym	67	ACVAL1	AA_ACmb_Sym	64
Closed Valve (type 1)	PCCVAL1	AA_PCmb_Sym	64	ECCVAL1	AA_ECmb_Sym	67	XCCVAL1	AA_XCmb_Sym	67	ACCVAL1	AA_ACmb_Sym	64
Valve (type 2)	PCVAL2	AA_PCmb_Sym	64	ECVAL2	AA_ECmb_Sym	67	XCVAL2	AA_XCmb_Sym	67	ACVAL2	AA_ACmb_Sym	64
Closed Valve (type 2)	PCCVAL2	AA_PCmb_Sym	64	ECCVAL2	AA_ECmb_Sym	67	XCCVAL2	AA_XCmb_Sym	67	ACCVAL2	AA_ACmb_Sym	64
Air Valve	PCAIR	AA_PCmb_Sym	64	ECAIR	AA_ECmb_Sym	67	XCAIR	AA_XCmb_Sym	67	ACAIR	AA_ACmb_Sym	64
Swale	PCSWL	AA_PCmb_Sym	64	ECSWL	AA_ECmb_Sym	67	XCSWL	AA_XCmb_Sym	67	ACSWL	AA_ACmb_Sym	64
Coupling	PCCOUP	AA_PCmb_Sym	64	ECCOUP	AA_ECmb_Sym	67	XCCOUP	AA_XCmb_Sym	67	ACCOUP	AA_ACmb_Sym	64
Cap	PCCAP	AA_PCmb_Sym	64	ECCAP	AA_ECmb_Sym	67	XCCAP	AA_XCmb_Sym	67	ACCAP	AA_ACmb_Sym	64
Reducer	PCRED1	AA_PCmb_Sym	64	ECRED1	AA_ECmb_Sym	67	XCRED1	AA_XCmb_Sym	67	ACRED1	AA_ACmb_Sym	64
Thrust Block	PCTBLK	AA_PCmb_Sym	64	ECTBLK	AA_ECmb_Sym	67	XCTBLK	AA_XCmb_Sym	67	ACTBLK	AA_ACmb_Sym	64
Tee	PCTEE1	AA_PCmb_Sym	64	ECTEE1	AA_ECmb_Sym	67	XCTEE1	AA_XCmb_Sym	67	ACTEE1	AA_ACmb_Sym	64
Cross	PCCRS1	AA_PCmb_Sym	64	ECCRS1	AA_ECmb_Sym	67	XCCRS1	AA_XCmb_Sym	67	ACCRS1	AA_ACmb_Sym	64
Elbow 90 Degree	PCELB90	AA_PCmb_Sym	64	ECELB90	AA_ECmb_Sym	67	XCELB90	AA_XCmb_Sym	67	ACELB90	AA_ACmb_Sym	64
Elbow 45 Degree	PCELB45	AA_PCmb_Sym	64	ECELB45	AA_ECmb_Sym	67	XCELB45	AA_XCmb_Sym	67	ACELB45	AA_ACmb_Sym	64
Elbow 22 Degree	PCELB22	AA_PCmb_Sym	64	ECELB22	AA_ECmb_Sym	67	XCELB22	AA_XCmb_Sym	67	ACELB22	AA_ACmb_Sym	64
Elbow 11 Degree	PCELB11	AA_PCmb_Sym	64	ECELB11	AA_ECmb_Sym	67	XCELB11	AA_XCmb_Sym	67	ACELB11	AA_ACmb_Sym	64
Repair	PCREP	AA_PCmb_Sym	64	ECREP	AA_ECmb_Sym	67	XCREP	AA_XCmb_Sym	67	ACREP	AA_ACmb_Sym	64
Pump Station	PCPS	AA_PCmb_Sym	64	ECPS	AA_ECmb_Sym	67	XCPS	AA_XCmb_Sym	67	ACPS	AA_ACmb_Sym	64
Check Valve	PCCHKV1	AA_PCmb_Sym	64	ECCHKV1	AA_ECmb_Sym	67	XCCHKV1	AA_XCmb_Sym	67	ACCHKV1	AA_ACmb_Sym	64
Manhole Label Large	PCCLL	AA_PCmb_Txt	64	ECCLL	AA_ECmb_Txt	67	XCCLL	AA_XCmb_Txt	67	ACCLL	AA_ACmb_Txt	64
Manhole Label Small	PCCLS	AA_PCmb_Txt	64	ECCLS	AA_ECmb_Txt	67	XCCLS	AA_XCmb_Txt	67	ACCLS	AA_ACmb_Txt	64
Main	PCMAIN	AA_PCmb_Main	64	ECMAIN	AA_ECmb_Main	67	XCMAIN	AA_XCmb_Main	67	ACMAIN	AA_ACmb_Main	64
Service	PCSRVC	AA_PCmb_Srv	64	ECSRVC	AA_ECmb_Srv	67	XCSRVC	AA_XCmb_Srv	67	ACSRVC	AA_ACmb_Srv	64

Label	PCLBL	AA_PCmb_Txt	7	ECLBL	AA_ECmb_Txt	7	XCLBL	AA_XCmb_Txt	7	ACLBL	AA_ACmb_Txt	7

Table 2: Blocks for identifying changes to Drainage systems

Description	(Proposed)			(Existing)			(Abandoned/Retired)			(As-Constructed)		
	Block Name	**Layer Name**	**Color**	**Block Name**	**Layer Name**	**Color**	**Block Name**	**Layer Name**	**Color**	**Block Name**	**Layer Name**	**Color**
Catch Basin	PDCB	AA_PDra_Sym	114	EDCB	AA_EPDra_Sym	117	XDCB	AA_XDra_Sym	117	ADCB	AA_ADra_Sym	114
Catch Basin Lead	PDCBLEAD	AA_PDra_Main	114	EDCBLEAD	AA_EDra_Main	117	XDCBLEAD	AA_XDra_Main	117	ADCBLEAD	AA_ADra_Main	114
Lawn Basin	PDLB	AA_PDra_Sym	114	EDLB	AA_EDra_Sym	117	XDLB	AA_XDra_Sym	117	ADLB	AA_ADra_Sym	114
Lawn Basin Lead	PDLBLEAD	AA_PDra_Main	114	EDLBLEAD	AA_EDra_Main	117	XDLBLEAD	AA_XDra_Main	117	ADLBLEAD	AA_ADra_Main	114
Culvert Structure	PDCUL	AA_PDra_Sym	114	EDCUL	AA_EPDra_Sym	117	XDCUL	AA_XDra_Sym	117	ADCUL	AA_ADra_Sym	114
Cleanout	PDCO	AA_PDra_Sym	114	EDCO	AA_EPDra_Sym	117	XDCO	AA_XDra_Sym	117	ADCO	AA_ADra_Sym	114
Manhole	PDMH	AA_PDra_DM	114	EDMH	AA_EPDra_DM	117	XDMH	AA_XDra_DM	117	ADMH	AA_ADra_DM	114
Valve (type 1)	PDVAL1	AA_PDra_Sym	114	EDVAL1	AA_EPDra_Sym	117	XDVAL1	AA_XDra_Sym	117	ADVAL1	AA_ADra_Sym	114
Closed Valve (type 1)	PDCVAL1	AA_PDra_Sym	114	EDCVAL1	AA_EPDra_Sym	117	XDCVAL1	AA_XDra_Sym	117	ADCVAL1	AA_ADra_Sym	114
Valve (type 2)	PDVAL2	AA_PDra_Sym	114	EDVAL2	AA_EPDra_Sym	117	XDVAL2	AA_XDra_Sym	117	ADVAL2	AA_ADra_Sym	114
Closed Valve (type 2)	PDCVAL2	AA_PDra_Sym	114	EDCVAL2	AA_EPDra_Sym	117	XDCVAL2	AA_XDra_Sym	117	ADCVAL2	AA_ADra_Sym	114
Air Valve	PDAIR	AA_PDra_Sym	114	EDAIR	AA_EPDra_Sym	117	XDAIR	AA_XDra_Sym	117	ADAIR	AA_ADra_Sym	114
Swale	PDSWL	AA_PDra_Sym	114	EDSWL	AA_EPDra_Sym	117	XDSWL	AA_XDra_Sym	117	ADSWL	AA_ADra_Sym	114
Coupling	PDCOUP	AA_PDra_Sym	114	EDCOUP	AA_EPDra_Sym	117	XDCOUP	AA_XDra_Sym	117	ADCOUP	AA_ADra_Sym	114
Cap	PDCAP	AA_PDra_Sym	114	EDCAP	AA_EPDra_Sym	117	XDCAP	AA_XDra_Sym	117	ADCAP	AA_ADra_Sym	114
Reducer	PDRED1	AA_PDra_Sym	114	EDRED1	AA_EPDra_Sym	117	XDRED1	AA_XDra_Sym	117	ADRED1	AA_ADra_Sym	114
Thrust Block	PDTBLK	AA_PDra_Sym	114	EDTBLK	AA_EPDra_Sym	117	XDTBLK	AA_XDra_Sym	117	ADTBLK	AA_ADra_Sym	114
Tee	PDTEE1	AA_PDra_Sym	114	EDTEE1	AA_EPDra_Sym	117	XDTEE1	AA_XDra_Sym	117	ADTEE1	AA_ADra_Sym	114
Cross	PDCRS1	AA_PDra_Sym	114	EDCRS1	AA_EPDra_Sym	117	XDCRS1	AA_XDra_Sym	117	ADCRS1	AA_ADra_Sym	114
Elbow 90 Degree	PDELB90	AA_PDra_Sym	114	EDELB90	AA_EPDra_Sym	117	XDELB90	AA_XDra_Sym	117	ADELB90	AA_ADra_Sym	114
Elbow 45 Degree	PDELB45	AA_PDra_Sym	114	EDELB45	AA_EPDra_Sym	117	XDELB45	AA_XDra_Sym	117	ADELB45	AA_ADra_Sym	114
Elbow 22 Degree	PDELB22	AA_PDra_Sym	114	EDELB22	AA_EPDra_Sym	117	XDELB22	AA_XDra_Sym	117	ADELB22	AA_ADra_Sym	114
Elbow 11 Degree	PDELB11	AA_PDra_Sym	114	EDELB11	AA_EPDra_Sym	117	XDELB11	AA_XDra_Sym	117	ADELB11	AA_ADra_Sym	114
Repair	PDREP	AA_PDra_Sym	114	EDREP	AA_EPDra_Sym	117	XDREP	AA_XDra_Sym	117	ADREP	AA_ADra_Sym	114

Pump Station	PDPS	AA_PDra_Sym	114	EDPS	AA_EPDra_Sym	117	XDPS	AA_XDra_Sym	117	ADPS	AA_ADra_Sym	114
Check Valve	PDCHKV1	AA_PDra_Sym	114	EDCHKV1	AA_EPDra_Sym	117	XDCHKV1	AA_XDra_Sym	117	ADCHKV1	AA_ADra_Sym	114
Manhole Label Large	PDCLL	AA_PDra_Txt	7	EDCLL	AA_EPDra_Txt	7	XDCLL	AA_XDra_Txt	7	ADCLL	AA_ADra_Txt	7
Manhole Label Small	PDCLS	AA_PDra_Txt	7	EDCLS	AA_EPDra_Txt	7	XDCLS	AA_XDra_Txt	7	ADCLS	AA_ADra_Txt	7
Trench Dam	PDTDAM	AA_PDra_Sym	114	EDTDAM	AA_EDra_Sym	117	XDTDAM	AA_XDra_Sym	117	ADTDAM	AA_ADra_Sym	114
Inspection Chamber	PDIC	AA_PDra_Sym	114	EDIC	AA_EDra_Sym	117	XDIC	AA_XDra_Sym	117	ADIC	AA_ADra_Sym	114
Main	PDMAIN	AA_PDra_Main	114	EDMAIN	AA_EPDra_Main	117	XDMAIN	AA_XDra_Main	117	ADMAIN	AA_ADra_Main	114
Service	PDSRVC	AA_PDra_Srv	114	EDSRVC	AA_EPDra_Srv	117	XDSRVC	AA_XDra_Srv	117	ADSRVC	AA_ADra_Srv	114
Label	PDLBL	AA_PDra_Txt	7	EDLBL	AA_EPDra_Txt	7	XDLBL	AA_XDra_Txt	7	ADLBL	AA_ADra_Txt	7

Table 3: Blocks for identifying changes to Drawing elements

Description	**Block Name**	**Layer Name**	**Color**
Large Size North Arrow with DI No	DNARW1	AA_Dwg_Sym	7
Medium Size North Arrow with DI No	DNARW2	AA_Dwg_Sym	7
Small Size North Arrow with DI No	DNARW3	AA_Dwg_Sym	7
Universal North Arrow	DNARW4	AA_Dwg_Sym	7
Station Mark / Elevation Mark	DINFMRK	AA_Dwg_Sym	7
Matchline	DMATCHL	AA_Dwg_Sym	7

Table 4: Blocks for identifying changes to Foreign Utilities and Miscellaneous Civil Works

Not required

Table 5: Blocks for identifying changes to Illumination Systems

Description	**(Proposed)**			**(Existing)**			**(Abandoned/Retired)**			**(As-Constructed)**		
	Block Name	**Layer Name**	**Color**	**Block Name**	**Layer Name**	**Color**	**Block Name**	**Layer Name**	**Color**	**Block Name**	**Layer Name**	**Color**
Davit Street Lighting Pole	PILS01	AA_PIll_Sym	25	EILS01	AA_EIll_Sym	23	XILS01	AA_XIll_Sym	23	AILS01	AA_AIll_Sym	25
Dls with Service Box & Photo Cell	PILS02	AA_PIll_Sym	25	EILS02	AA_EIll_Sym	23	XILS02	AA_XIll_Sym	23	AILS02	AA_AIll_Sym	25

Dls with Duplex Receptacle	PILS03	AA_PIll_Sym	25	EILS03	AA_EIll_Sym	23	XILS03	AA_XIll_Sym	23	AILS03	AA_AIll_Sym	25
Dls with Traffic Signal Davit Arm	PICMB01	AA_PIll_Sym	25	EICMB01	AA_EIll_Sym	23	XICMB01	AA_XIll_Sym	23	AICMB01	AA_AIll_Sym	25
Post Top Street Lighting	PIPTLS	AA_PIll_Sym	25	EIPTLS	AA_EIll_Sym	23	XIPTLS	AA_XIll_Sym	23	AIPTLS	AA_AIll_Sym	25
Future Dls	PIFLS	AA_PIll_Sym	25	EIFLS	AA_EIll_Sym	23	XIFLS	AA_XIll_Sym	23	AIFLS	AA_AIll_Sym	25
Service On Or From Hydro Pole	PIHSR	AA_PIll_Sym	25	EIHSR	AA_EIll_Sym	23	XIHSR	AA_XIll_Sym	23	AIHSR	AA_AIll_Sym	25
Hydro Service Box	PIHSB	AA_PIll_Sym	25	EIHSB	AA_EIll_Sym	23	XIHSB	AA_XIll_Sym	23	AIHSB	AA_AIll_Sym	25
Service In Hydro Kiosk	PIKSK	AA_PIll_Sym	25	EIKSK	AA_EIll_Sym	23	XIKSK	AA_XIll_Sym	23	AIKSK	AA_AIll_Sym	25
Junction Box	PIJB	AA_PIll_Sym	25	EIJB	AA_EIll_Sym	23	XIJB	AA_XIll_Sym	23	AIJB	AA_AIll_Sym	25
Future Junction Box	PIFJB	AA_PIll_Sym	25	EIFJB	AA_EIll_Sym	23	XIFJB	AA_XIll_Sym	23	AIFJB	AA_AIll_Sym	25
Photo Cell	PIPC	AA_PIll_Sym	25	EIPC	AA_EIll_Sym	23	XIPC	AA_XIll_Sym	23	AIPC	AA_AIll_Sym	25
2#6 Feeders & 1#8 Bond	PICT2	AA_PIll_Cond	25	EICT2	AA_EIll_Cond	23	XICT2	AA_XIll_Cond	23	AICT2	AA_AIll_Cond	25
3#6 Feeders & 1#8 Bond	PICT3	AA_PIll_Cond	25	EICT3	AA_EIll_Cond	23	XICT3	AA_XIll_Cond	23	AICT3	AA_AIll_Cond	25
Trolley Pole & Wire	PITLY	AA_PIll_Sym	25	EITLY	AA_EIll_Sym	23	XITLY	AA_XIll_Sym	23	AITLY	AA_AIll_Sym	25
Dls with Trolley Wire	PILSTLY	AA_PIll_Sym	25	EILSTLY	AA_EIll_Sym	23	XILSTLY	AA_XIll_Sym	23	AILSTLY	AA_AIll_Sym	25
Ground Light	PILSGRD	AA_PIll_Sym	25	EILSGRD	AA_EIll_Sym	23	XILSGRD	AA_XIll_Sym	23	AILSGRD	AA_AIll_Sym	25
Curricular Box (Street Lighting)	PIJBC	AA_PIll_Sym	25	EIJBC	AA_EIll_Sym	23	XIJBC	AA_XIll_Sym	23	AIJBC	AA_AIll_Sym	25
Conduit	PICOND	AA_PIll_Cond	25	EICOND	AA_EIll_Cond	23	XICOND	AA_XIll_Cond	23	AICOND	AA_AIll_Cond	25
Label	PILBL	AA_PIll_Txt	7	EILBL	AA_EIll_Txt	7	XILBL	AA_XIll_Txt	7	AILBL	AA_AIll_Txt	7

Table 6: Blocks for identifying changes to Roads

Description	(Proposed)			(Existing)			(Abandoned/Retired)			(As-Constructed)		
	Block Name	**Layer Name**	**Color**	**Block Name**	**Layer Name**	**Color**	**Block Name**	**Layer Name**	**Color**	**Block Name**	**Layer Name**	**Color**
MMCD Concrete Barrier Curb – Type C	PRCGTC	AA_PRd_CG	160	ERCGTC	AA_ERd_CG	25	XRCGTC	AA_XRd_CG	25	ARCGTC	AA_ARd_CG	160
MMCD Concrete Barrier Curb – Type D	PRCGTD	AA_PRd_CG	160	ERCGTC	AA_ERd_CG	25	XRCGTC	AA_XRd_CG	25	ARCGTD	AA_ARd_CG	160
MMCD Concrete Barrier Curb – Type E	PRCGTE	AA_PRd_CG	160	ERCGTD	AA_ERd_CG	25	XRCGTD	AA_XRd_CG	25	ARCGTE	AA_ARd_CG	160
MMCD Concrete Barrier Curb – Type F	PRCGTF	AA_PRd_CG	160	ERCGTE	AA_ERd_CG	25	XRCGTE	AA_XRd_CG	25	ARCGTF	AA_ARd_CG	160
MMCD Concrete Barrier Curb – Wide Base (Dwg C5)	PRCGC5	AA_PRd_CG	160	ERCGTF	AA_ERd_CG	25	XRCGTF	AA_XRd_CG	25	ARCGC5	AA_ARd_CG	160
MMCD Concrete Barrier Curb – Wide Base (Dwg C5) reverse curb	PRCGC5R	AA_PRd_CG	160	ERCGC5	AA_ERd_CG	25	XRCGC5	AA_XRd_CG	25	ARCGC5R	AA_ARd_CG	160
Road Pavement*	PRPAVE	AA_PRd_Srf	160	ERCGC5R	AA_ERd_Srf	25	XRCGC5R	AA_XRd_Srf	25	ARPAVE	AA_ARd_Srf	160

Road CG*	PRCG	AA_PRd_CG	160	ERPAVE	AA_ERd_CG	25	XRPAVE	AA_XRd_CG	25	ARCG	AA_ARd_CG	160
Road Structure*	PRSTRUCT	AA_PRd_Str	160	ERCG	AA_ERd_Str	25	XRCG	AA_XRd_Str	25	ARSTRUCT	AA_ARd_Str	160
Road Blvd*	PRBLVD	AA_PRd_BLVD	160	ERSTRUCT	AA_ERd_BLVD	25	XRSTRUCT	AA_XRd_BLVD	25	ARBLVD	AA_ARd_BLVD	160
Road Median*	PRMED	AA_PRd_MED	160	ERBLVD	AA_ERd_MED	25	XRBLVD	AA_XRd_MED	25	ARMED	AA_ARd_MED	160
Sidewalk*	PRSW	AA_PRd_SW	160	ERMED	AA_ERd_SW	25	XRMED	AA_XRd_SW	25	ARSW	AA_ARd_SW	160
Urban Trail*	PRUT	AA_PRd_UT	160	ERSW	AA_ERd_UT	25	XRSW	AA_XRd_UT	25	ARUT	AA_ARd_UT	160
Traffic Calming Area*	*PRTC*	AA_PRd_TC	160	*ERTC*	AA_ERd_TC	25	*XRTC*	AA_XRd_TC	160	*ARTC*	AA_ATrf_TC	160
Label	*PRLBL*	AA_PRd_Txt	7	*ERLBL*	AA_ERd_Txt	7	*XRLBL*	AA_XRd_ Txt	7	*ARLBL*	AA_ARd_ Txt	7

*****note – blocks for identifying changes to areas of a road asset or system must be identified using a closed '*polyline*': a polyline must be drawn around the area of proposed/actual change and the closed polyline is grouped/combined with a block (containing attributes) from the above table. Changes to areas of a road asset are uniquely identified based on (1) the asset, (2) contiguous areas, and (3) treatments.

Table 7: Blocks for identifying changes to Sanitary Systems

Description	(Proposed)			(Existing)			(Abandoned/Retired)			(As-Constructed)		
	Block Name	Layer Name	Color	Block Name	Layer Name	Color	Block Name	Layer Name	Color	Block Name	Layer Name	Color
Catch Basin (type ?)	PSCB	AA_PSan_Sym	84	ESCB	AA_ESan_Sym	87	XSCB	AA_XSan_Sym	87	ASCB	AA_ASan_Sym	84
Culvert Structure	PSCUL	AA_PSan_Sym	84	ESCUL	AA_ESan_Sym	87	XSCUL	AA_XSan_Sym	87	ASCUL	AA_ASan_Sym	84
Cleanout	PSCO	AA_PSan_Sym	84	ESCO	AA_ESan_Sym	87	XSCO	AA_XSan_Sym	87	ASCO	AA_ASan_Sym	84
Manhole	PSMH	AA_PSan_SM	84	ESMH	AA_ESan_SM	87	XSMH	AA_XSan_SM	87	ASMH	AA_ASan_SM	84
Valve (type 1)	PSVAL1	AA_PSan_Sym	84	ESVAL1	AA_ESan_Sym	87	XSVAL1	AA_XSan_Sym	87	ASVAL1	AA_ASan_Sym	84
Closed Valve (type 1)	PSCVAL1	AA_PSan_Sym	84	ESCVAL1	AA_ESan_Sym	87	XSCVAL1	AA_XSan_Sym	87	ASCVAL1	AA_ASan_Sym	84
Valve (type 2)	PSVAL2	AA_PSan_Sym	84	ESVAL2	AA_ESan_Sym	87	XSVAL2	AA_XSan_Sym	87	ASVAL2	AA_ASan_Sym	84
Closed Valve (type 2)	PSCVAL2	AA_PSan_Sym	84	ESCVAL2	AA_ESan_Sym	87	XSCVAL2	AA_XSan_Sym	87	ASCVAL2	AA_ASan_Sym	84
Air Valve	PSAIR	AA_PSan_Sym	84	ESAIR	AA_ESan_Sym	87	XSAIR	AA_XSan_Sym	87	ASAIR	AA_ASan_Sym	84
Swale	PSSWL	AA_PSan_Sym	84	ESSWL	AA_ESan_Sym	87	XSSWL	AA_XSan_Sym	87	ASSWL	AA_ASan_Sym	84
Coupling	PSCOUP	AA_PSan_Sym	84	ESCOUP	AA_ESan_Sym	87	XSCOUP	AA_XSan_Sym	87	ASCOUP	AA_ASan_Sym	84
Cap	PSCAP	AA_PSan_Sym	84	ESCAP	AA_ESan_Sym	87	XSCAP	AA_XSan_Sym	87	ASCAP	AA_ASan_Sym	84
Reducer	PSRED1	AA_PSan_Sym	84	ESRED1	AA_ESan_Sym	87	XSRED1	AA_XSan_Sym	87	ASRED1	AA_ASan_Sym	84
Thrust Block	PSTBLK	AA_PSan_Sym	84	ESTBLK	AA_ESan_Sym	87	XSTBLK	AA_XSan_Sym	87	ASTBLK	AA_ASan_Sym	84
Tee	PSTEE1	AA_PSan_Sym	84	ESTEE1	AA_ESan_Sym	87	XSTEE1	AA_XSan_Sym	87	ASTEE1	AA_ASan_Sym	84
Cross	PSCRS1	AA_PSan_Sym	84	ESCRS1	AA_ESan_Sym	87	XSCRS1	AA_XSan_Sym	87	ASCRS1	AA_ASan_Sym	84
Elbow 90 Degree	PSELB90	AA_PSan_Sym	84	ESELB90	AA_ESan_Sym	87	XSELB90	AA_XSan_Sym	87	ASELB90	AA_ASan_Sym	84
Elbow 45 Degree	PSELB45	AA_PSan_Sym	84	ESELB45	AA_ESan_Sym	87	XSELB45	AA_XSan_Sym	87	ASELB45	AA_ASan_Sym	84
Elbow 22 Degree	PSELB22	AA_PSan_Sym	84	ESELB22	AA_ESan_Sym	87	XSELB22	AA_XSan_Sym	87	ASELB22	AA_ASan_Sym	84

Elbow 11 Degree	PSELB11	AA_PSan_Sym	84	ESELB11	AA_ESan_Sym	87	XSELB11	AA_XSan_Sym	87	ASELB11	AA_ASan_Sym	84
Repair	PSREP	AA_PSan_Sym	84	ESREP	AA_ESan_Sym	87	XSREP	AA_XSan_Sym	87	ASREP	AA_ASan_Sym	84
Pump Station	PSPS	AA_PSan_Sym	84	ESES	AA_ESan_Sym	87	XSXS	AA_XSan_Sym	87	ASAS	AA_ASan_Sym	84
Check Valve	PSCHKV1	AA_PSan_Sym	84	ESCHKV1	AA_ESan_Sym	87	XSCHKV1	AA_XSan_Sym	87	ASCHKV1	AA_ASan_Sym	84
Manhole Label Large	PSCLL	AA_PSan_Txt	7	ESCLL	AA_ESan_Txt	7	XSCLL	AA_XSan_Txt	7	ASCLL	AA_ASan_Txt	7
Manhole Label Small	PSCLS	AA_PSan_Txt	7	ESCLS	AA_ESan_Txt	7	XSCLS	AA_XSan_Txt	7	ASCLS	AA_ASan_Txt	7
Inspection Chamber	PSIC	AA_PSan_Sym	84	ESIC	AA_ESan_Sym	87	XSIC	AA_XSan_Sym	87	ASIC	AA_ASan_Sym	84
Main	PSMAIN	AA_PSan_Main	84	ESMAIN	AA_ESan_Main	87	XSMAIN	AA_XSan_Main	87	ASMAIN	AA_ASan_Main	84
Service Connections	PSSRVC	AA_PSan_Srv	84	ESSRVC	AA_ESan_Srv	87	XSSRVC	AA_XSan_Srv	87	ASSRVC	AA_ASan_Srv	84
Label	PSLBL	AA_PSan_Txt	7	ESLBL	AA_ESan_Txt	7	XSLBL	AA_XSan_Txt	7	ASLBL	AA_ASan_Txt	7

Table 8: Blocks for identifying changes to Traffic Systems

Description	**(Proposed)**			**(Existing)**			**(Abandoned/Retired)**			**(As-Constructed)**		
	Block Name	**Layer Name**	**Color**	**Block Name**	**Layer Name**	**Color**	**Block Name**	**Layer Name**	**Color**	**Block Name**	**Layer Name**	**Color**
Signage	PTSGN	AA_PTrf_Sgn	50	ETSGN	AA_ETrf_Sgn	53	XTSGN	AA_XTrf_Sgn	53	ATSGN	AA_ATrf_Sgn	50
Traffic Signal (head)	PTSGLO1	AA_PTrf_Sym	50	ETSGLO1	AA_ETrf_Sym	53	XTSGLO1	AA_XTrf_Sym	53	ATSGLO1	AA_ATrf_Sym	50
Traffic Signal (head Right)	PTSGLR	AA_PTrf_Sym	50	ETSGLR	AA_ETrf_Sym	53	XTSGLR	AA_XTrf_Sym	53	ATSGLR	AA_ATrf_Sym	50
Traffic Signal (head Left)	PTSGLL	AA_PTrf_Sym	50	ETSGLL	AA_ETrf_Sym	53	XTSGLL	AA_XTrf_Sym	53	ATSGLL	AA_ATrf_Sym	50
Traffic Signal (head Island)	PTSGLI	AA_PTrf_Sym	50	ETSGLI	AA_ETrf_Sym	53	XTSGLI	AA_XTrf_Sym	53	ATSGLI	AA_ATrf_Sym	50
Parking Meter – Single Head	PTPM1	AA_PTrf_Mtr	50	ETPM1	AA_ETrf_Mtr	53	XTPM1	AA_XTrf_Mtr	53	ATPM1	AA_ATrf_Mtr	50
Parking Meter – Double Head	PTPM2	AA_PTrf_Mtr	50	ETPM2	AA_ETrf_Mtr	53	XTPM2	AA_XTrf_Mtr	53	ATPM2	AA_ATrf_Mtr	50
Paint Marking – Diamond	PTDIAM	AA_PTrf_Mrk	50	ETDIAM	AA_ETrf_Mrk	53	XTDIAM	AA_XTrf_Mrk	53	ATDIAM	AA_ATrf_Mrk	50
Paint Marking – Left Arrow	PTARWL	AA_PTrf_Mrk	50	ETARWL	AA_ETrf_Mrk	53	XTARWL	AA_XTrf_Mrk	53	ATARWL	AA_ATrf_Mrk	50
Paint Marking – Straight & Left Arrow	PTARWSL	AA_PTrf_Mrk	50	ETARWSL	AA_ETrf_Mrk	53	XTARWSL	AA_XTrf_Mrk	53	ATARWSL	AA_ATrf_Mrk	50
Paint Marking – Straight Arrow	PTARWS	AA_PTrf_Mrk	50	ETARWS	AA_ETrf_Mrk	53	XTARWS	AA_XTrf_Mrk	53	ATARWS	AA_ATrf_Mrk	50
Paint Marking – Straight & Right Arrow	PTARWSR	AA_PTrf_Mrk	50	ETARWSR	AA_ETrf_Mrk	53	XTARWSR	AA_XTrf_Mrk	53	ATARWSR	AA_ATrf_Mrk	50
Paint Marking – Right Arrow	PTARWR	AA_PTrf_Mrk	50	ETARWR	AA_ETrf_Mrk	53	XTARWR	AA_XTrf_Mrk	53	ATARWR	AA_ATrf_Mrk	50
Pavement Markings - Linear	PTMARK	AA_PTrf_Mrk	50	ETMARK	AA_ETrf_Mrk	53	XTMARK	AA_XTrf_Mrk	53	ATMARK	AA_ATrf_Mrk	50
Traffic Signal Detector Loop	PTSGLDLOOP	PTrf_Sym	50	ETSGLDLOOP	ETrf_Sym	53	XTSGLDLOOP	XTrf_Sym	53	ATSGLDLOOP	ATrf_Sym	50
Traffic Signal Controller	PTSGLCONT	PTrf_Sym	50	ETSGLCONT	ETrf_Sym	53	XTSGLCONT	XTrf_Sym	53	ATSGLCONT	ATrf_Sym	50
Label	PTLBL	AA_PTrf_Txt	7	ETLBL	AA_ETrf_Txt	7	XTLBL	AA_XTrf_Txt	7	ATLBL	AA_ATrf_Txt	7

Table 9: Blocks for identifying changes to Water Systems

Description	(Proposed)			(Existing)			(Abandoned/Retired)			(As-Constructed)		
	Block Name	Layer Name	Color	Block Name	Layer Name	Color	Block Name	Layer Name	Color	Block Name	Layer Name	Color
Manhole	PWMH	AA_PWtr_Sym	20	EWMH	AA_EWtr_Sym	21	XWMH	AA_XWtr_Sym	21	AWMH	AA_AWtr_Sym	20
Valve (type 1)	PWVAL1	AA_PWtr_WV	20	EWVAL1	AA_EWtr_WV	21	XWVAL1	AA_XWtr_WV	21	AWVAL1	AA_AWtr_WV	20
Closed Valve (type 1)	PWCVAL1	AA_PWtr_WV	20	EWCVAL1	AA_EWtr_WV	21	XWCVAL1	AA_XWtr_WV	21	AWCVAL1	AA_AWtr_WV	20
Valve (type 2)	PWVAL2	AA_PWtr_WV	20	EWVAL2	AA_EWtr_WV	21	XWVAL2	AA_XWtr_WV	21	AWVAL2	AA_AWtr_WV	20
Closed Valve (type 2)	PWCVAL2	AA_PWtr_WV	20	EWCVAL2	AA_EWtr_WV	21	XWCVAL2	AA_XWtr_WV	21	AWCVAL2	AA_AWtr_WV	20
Air Valve	PWAIR	AA_PWtr_WV	20	EWAIR	AA_EWtr_WV	21	XWAIR	AA_XWtr_WV	21	AWAIR	AA_AWtr_WV	20
Hydrant (type 1)	PWHYD1	AA_PWtr_WH	20	EWHYD1	AA_EWtr_WH	21	XWHYD1	AA_XWtr_WH	21	AWHYD1	AA_AWtr_WH	20
Coupling	PWCOUP	AA_PWtr_WF	20	EWCOUP	AA_EWtr_WF	21	XWCOUP	AA_XWtr_WF	21	AWCOUP	AA_AWtr_WF	20
Cap	PWCAP	AA_PWtr_WE	20	EWCAP	AA_EWtr_WE	21	XWCAP	AA_XWtr_WE	21	AWCAP	AA_AWtr_WE	20
Reducer	PWRED1	AA_PWtr_WR	20	EWRED1	AA_EWtr_WR	21	XWRED1	AA_XWtr_WR	21	AWRED1	AA_AWtr_WR	20
Thrust Block	PWTBLK	AA_PWtr_Sym	20	EWTBLK	AA_EWtr_Sym	21	XWTBLK	AA_XWtr_Sym	21	AWTBLK	AA_AWtr_Sym	20
Tee	PWTEE1	AA_PWtr_WT	20	EWTEE1	AA_EWtr_WT	21	XWTEE1	AA_XWtr_WT	21	AWTEE1	AA_AWtr_WT	20
Cross	PWCRS1	AA_PWtr_WX	20	EWCRS1	AA_EWtr_WX	21	XWCRS1	AA_XWtr_WX	21	AWCRS1	AA_AWtr_WX	20
Elbow 90 Degree	PWELB90	AA_PWtr_WB	20	EWELB90	AA_EWtr_WB	21	XWELB90	AA_XWtr_WB	21	AWELB90	AA_AWtr_WB	20
Elbow 45 Degree	PWELB45	AA_PWtr_WB	20	EWELB45	AA_EWtr_WB	21	XWELB45	AA_XWtr_WB	21	AWELB45	AA_AWtr_WB	20
Elbow 22 Degree	PWELB22	AA_PWtr_WB	20	EWELB22	AA_EWtr_WB	21	XWELB22	AA_XWtr_WB	21	AWELB22	AA_AWtr_WB	20
Elbow 11 Degree	PWELB11	AA_PWtr_WB	20	EWELB11	AA_EWtr_WB	21	XWELB11	AA_XWtr_WB	21	AWELB11	AA_AWtr_WB	20
Elbow Vertical Bend	PWELBV	AA_PWtr_VB	20	EWELBV	AA_EWtr_VB	21	XWELBV	AA_XWtr_VB	21	AWELBV	AA_AWtr_VB	20
Repair	PWREP	AA_PWtr_Sym	20	EWREP	AA_EWtr_Sym	21	XWREP	AA_XWtr_Sym	21	AWREP	AA_AWtr_Sym	20
Meter	PWMTR	AA_PWtr_WM	20	EWMTR	AA_EWtr_WM	21	XWMTR	AA_XWtr_WM	21	AWMTR	AA_AWtr_WM	20
Check Valve	PWCHKV1	AA_PWtr_WV	20	EWCHKV1	AA_EWtr_WV	21	XWCHKV1	AA_XWtr_WV	21	AWCHKV1	AA_AWtr_WV	20
Manhole Label Large	PWCLL	AA_PWtr_Txt	20	EWCLL	AA_EWtr_Txt	21	XWCLL	AA_XWtr_Txt	21	AWCLL	AA_AWtr_Txt	20
Manhole Label Small	PWCLS	AA_PWtr_Txt	20	EWCLS	AA_EWtr_Txt	21	XWCLS	AA_XWtr_Txt	21	AWCLS	AA_AWtr_Txt	20
Cathodic Surface Anode	PWCSANO	AA_PWtr_WC	20	EWCSANO	AA_EWtr_WC	21	XWCSANO	AA_XWtr_WC	21	AWCSANO	AA_AWtr_WC	20
Cathodic Deep Anode	PWCDANO	AA_PWtr_WC	20	EWCDANO	AA_EWtr_WC	21	XWCDANO	AA_XWtr_WC	21	AWCDANO	AA_AWtr_WC	20
Cathodic Rectifier	PWCRECT	AA_PWtr_WC	20	EWCRECT	AA_EWtr_WC	21	XWCRECT	AA_XWtr_WC	21	AWCRECT	AA_AWtr_WC	20
Cathodic Test Station	PWCSTA	AA_PWtr_WC	20	EWCSTA	AA_EWtr_WC	21	XWCSTA	AA_XWtr_WC	21	AWCSTA	AA_AWtr_WC	20
Main	PWMAIN	AA_PWtr_Main	20	EWMAIN	AA_EWtr_Main	21	XWMAIN	AA_XWtr_Main	21	AWMAIN	AA_AWtr_Main	20
Service Connections	PWSRVC	AA_PWtr_Srvc	20	EWSRVC	AA_EWtr_Srvc	21	XWSRVC	AA_XWtr_Srvc	21	AWSRVC	AA_AWtr_Srvc	20
Label	PWLBL	AA_PWtr_Txt	7	EWLBL	AA_EWtr_Txt	7	XWLBL	AA_XWtr_Txt	7	AWLBL	AA_AWtr_Txt	7

8.9 Quantifying changes to Assets

Generally, all changes to City-owned assets shall be identified (including retirements, replacement, betterments, net new additions) according to the standards in **Tables 1** through **9**.

However there are specific details for some assets that require further clarification, as described in the following paragraphs.

Sidewalks, paths, and trails. All sidewalk and pathway quantities shall take precedence over other assets crossed. For example, where a sidewalk crosses a driveway, that overlapping area and length shall only be quantified as a sidewalk quantity.

Road Pavement and Structure. All pavement and road structure areas must account for the area that is actually placed. For example, if the road structure extends beyond the pavement to provide a gravel shoulder, that additional area would need to be considered.

Non-contiguous changes to road. Within a segment of road, the design consultant must be sure to identify each non-contiguous area of change distinctly. For example, a road may be widened on both sides and have partial-depth milling and overlay in one intersection. The design consultant must identify and measure a both areas of widening and the partial-depth milling and overlay as three distinct changes.

Trenching impacts for changes to utilities. The design consultant must ensure to identify and measure road pavement and road structure areas removed and replaced during the installation of underground utilities for purposes of trenching – so long as the road pavement and structure areas are not included as part of road-works on another drawing in the package.

These betterments to the existing road assets must be calculated based on the diameter of the pipe, depth of installation, geotechnical requirements, and existing MMCD and City standards. Areas of trenching will be recorded with a PAC = 399, unit of measurement (UOM) = M2, and the word “Trenching” prefixing the asset description.

See document “*Trenching Guidelines*” for additional details.

Sidewalks, Curbs and Guttters. For sidewalks and curbs (including curb & gutter), both an area and a length must be recorded: the area will be recorded using the quantity and unit of measture fields; while, the length will be recorded using the alternate quantity and alternate unit of measure fields.

Measurement of areas. All areas measured must be recorded using metres squared (M2) an must be the plan view projected area of the asset, irrespective of variations in elevation across that area.

Pipe lengths. Pipe lengths shall be the true length of the pipe with elevations considered, and therefore the design consultant must state the three-dimensional length of all pipes.

TABLE 10: Quantifying Changes to City Infrastructure – Units of Measure

Summarizes the various roadworks and utilities quantity measurements required.

Asset	Primary U.O.M	Measurement
Road Pavement	M2	Area measured in M2 (square metres) from the inner edge of curb and gutter on each side of the road. Exclusive of an area in medians or islands.
Curb and Gutter	M2	Measured in M2 (square metres), primary quantity; and M (lineal metres), secondary quantity. Standard width is 0.6M.
Road Structure	M2	Area measured in M2 (square metres), primary quantity.
Driveway	M2	City-owned driveway areas, measured in M2 (square metres). Use PAC 0399.
Sidewalk	M	Measured in M (lineal metres), primary quantity; and, M2 (square metres), secondary quantity.
Urban trail	M	Measured in M (lineal metres), primary quantity; and, M2 (square metres), secondary quantity.
Boulevard, landscaped	M2	Specific areas of boulevard which are landscaped as part of project construction. Areas are measured in M2 (square metres), primary quantity. Area measured from the outside of the Curb and Gutter to the property line, excluding sidewalk and urban trail. Where sidewalk or urban trail are present, the boulevard area should be split into two distinct areas: sidewalk to the property line; curb and gutter to the sidewalk. Use PAC 0399.
Boulevard, concrete	M2	Area measured in M2 (square metres), primary quantity. Area measured from the outside of the Curb and Gutter to the property line, excluding sidewalk and urban trail. Where sidewalk or urban trail are present, the boulevard area should be split into two distinct areas: sidewalk to the property line; curb and gutter to the sidewalk. Use PAC 0399.
Medians, Islands, and Roundabouts	M2	Measured as a combination of (1) Curb and Gutter, (2) Boulevard Surface Area in M2 (two distinct line items above).
Lights	EA	Measured as an individual item: EA. Each item is distinctly identified. Changes to existing lights are classified as betterments.
Signals	EA	Measured as an individual item: EA. Each item is distinctly identified. Changes to existing signals are classified as betterments.
Pipes – Mains (water, sewer, drainage)	M	Measured in M (lineal metres). Quantity should the the true length of the pipe section (including the impact of slope). Sections of main are measured from piece of equipment to piece of equipment. Note that pipe's diameter is recorded as an attribute of the pipe.
Service Laterals / Connections (water, drainage, sewer)	EA	Measured as EA (primary). Secondary measure will be M (lineal metres). Note that pipe's diameter is recorded as an attribute of the pipe.
Equipment (Nodes)	PC	Measured as PC (piece). PAC Code set to the same PAC as the main-pipe.

8.10 Classifying changes to Assets – Transaction Types

Changes to City-owned assets, whether proposed or actual (delivered) are classified as one of the following transaction types:

- **Partial Retirement –** retirement, removal, or abandonment of a portion of an existing asset: for example, if 500m2 of an existing 1000m2 segment of pavement is removed, this is a partial retirement. A portion of the existing asset is not retired and continues to exist.
- **Full Retirement** – retirement, removal, or abandonment of ALL of an existing asset: e.g. if 50m of a 50m segment of water main is abandoned, this is a full retirement.
- **Net New** – construction of a new asset; no previous asset existed: for example, when new road segment is built across previously forested land, this is a Net New road segment.
- **Replacement** – complete (100%) replacement of an existing asset. This transaction type identifies that there should be a "matching" (although, not necessarily equal) retirement.
- **Betterment** – partial replacement of an existing asset or addition to an existing asset; part of the original asset continues to exist: example, widening an existing road is a betterment.
- **Not Delivered –** identifies changes to a City asset described on the issued for construction (IFC) design drawings which is **not delivered** during the construction process - or, is replaced with a different set of assets. This transaction type will only be used on tables updated using inspection reports or tables created from inspection-print or as-constructed design drawings.
- **Original Quantity** – used only in special circumstances, this transaction identifies the pre-construction quantity of an existing asset. Currently, for any design drawing depicting an entire (intersection-to-intersection) segment of road, the original (pre-construction) area of road pavement, structure, and right-of way will be provided.
- **Final Quantity** – used only in special circumstances, this transaction identifies the post-construction quantity of an existing asset with all proposed changes included. Currently, for any design drawing depicting an entire (intersection-to-intersection) segment of road, the final (post-construction) area of road pavement, structure, and right-of way will be provided.
- **Not Capitalized** – items on a drawing which are identified but not capitalized. These items are assigned one of the following PAC's based on the class of asset to which they belong: 0399 (roads), 0499 (drainage), 0599 (sewer), 0699 (water). For example, areas of boulevard which are altered during a project are assigned PAC 0399.

8.11 Asset Location – Network Segmentation

All City-owned infrastructure assets are located within network segments (being either City 100-blocks of road-right-of-way, refered to as street segments, or easements across

privately owned land). All quantities related to proposed infrastructure changes must be recorded based on these segment boundaries and separated into line items accordingly.

8.11.1 Asset Location – Linear Road Assets

The location specified for linear road assets will be the network segment in which the linear asset is located.

8.11.2 Asset Location – Discrete Road Assets

The location specified for discrete road assets will be the network segment in which the linear asset is located.

8.11.3 Asset Location – Mains

The location specified for lengths of pipe main will be the network segment containing the majority of the main segment length.

8.11.4 Asset Location – Services

The location specified for service connections will be the network segment containing the point of connection to the main.

8.11.5 Asset Location – Discrete Utilities

The location specified for discrete road assets will be the network segment in which the linear asset is located.

8.11.6 Demarcating Segments boundaries

Segment Boundaries - Roads. Segment boundaries are created by drawing a polyline immediately adjacent (over) the existing property boundaries and intersecting within the centre of road intersections. In intersections, segment boundaries will align with manner in which the road is constructed: major road structure will take precedence over minor road structure.

The segmentation boundaries shall all be drawn with polylines on a layer entitled "**AA_Dwg_Segment**", in colour 20, continuous linetype, with a plotted line weight of 1.0mm.

Segment Boundaries - Easements. Segment boundaries are created by drawing a polyline over easement boundaries to segment assets within easements to strictly those easement areas.

The easement segmentation boundaries shall all be drawn with polylines on a layer entitled "**AA_Dwg_Segment**", in colour 20, continuous linetype, with a plotted line weight of 1.0mm.

Intersections – roads of the same class. The street segments are to be separated at each intersection by creating segment boundaries for all of the quantities on the drawing. These boundaries are created by drawing a polyline from the intersection of the roadway centerlines to the corner of the property lot lines at all four corners of the intersection.

Intersections – roads of the same class, non-standard. If there is a T-intersection then only three lines will be required for that intersection, with one being perpendicular to the property line directly across from the intersection (terminating) roadway centerline. If the property lot line is curved or chamfered and thus does not form a neat corner, then the segmentation boundary is to be drawn perpendicular to the curb return and then extended to the property lot line.

Intersecting roads of different classes. Where roads of differing classification intersect, the road pavement and road structure quantities shall carry through the intersection, irrespective of the street segment demarcation indicated above. They shall be segmented only at the center of the intersection with an imaginary line perpendicular to the major road control line to the edge of pavement extensions across the minor road approaches to that intersection.

8.11.7 Coordinates for Segments

The design consultant shall also specify the coordinates (using standard UTM format) of all points on the segmentation boundaries – 5 points for a 4-way intersection, and 4 points for a 3-way intersection. These boundaries and coordinates are evidently demonstrated on the Sample Drawing in Appendix C.

8.11.8 Segment identification

Roads. The respective City Street Segment ID numbers (from the City's Standard Street and Segment ID Numbers Mapping Document in Appendix B should be placed adjacent to the associated street name. Street segment labels are prefixed with "SS". The street segment label has the format 9999-999, where the first four digits, which identify the street id number, are zero-filled, right justified; and, the second set of three digits, which identify the specific segment, are zero-filled and right justified.

Note that **lane** segments use the format LANE-9999.

Easements. *Easements should be identified using the word "EASEMENT", placed adjacent to the area of easement identified on the drawing.*

8.11.9 Road Segment length

The road segment length shall be clearly shown on the drawing as a note for all full (intersection-to-intersection) City blocks depicted.

8.12 Survey Benchmark

A pair of survey benchmarks, each in standard UTM format,should also be shown on at least one drawing in the package for geo-referencing purposes.

8.13 Notes

Supporting notes will be recorded on the **AA_Dwg_Txt** layer of each drawing.

8.14 Call-Outs

All changes to City-owned assets identified on the drawing using call-outs, which are not already identified using polylines or blocks, must be labeled and included in the table listing changes to assets (see **section 8.18**).

8.15 Unforeseen Asset Types

If the technician encounters a type of asset that is not accurately described by any of the items on that table, they are to summarize all such instances and then document these in writing to the City and propose a suitable course of action to ensure proper identification and quantification of those assets for the City's approval.

8.16 Drawing Text

All text is to be the "STANDARD" text style – Arial font, Regular style, non-bolded, non-italicized, standard width, on a layer entitled "**AA_Dwg_Txt**", at colour 7 (white – to plot black).

8.17 Recording Changes to Assets

All changes to City-owned assets, whether proposed or actual, will be extracted and recorded in a Microsoft Excel table associated with the design drawing. The information describing each change to an asset will be used by the City for subsequent validation, valuation, and data load into various City systems.

The design consultant will record the following attributes for each asset block:

Table 11: Asset Attributes.

#	Field	Description
1	PROJECT	Project number
2	SHEET	Sheet number
3	REVISION	Revision number for sheet
4	ITEM	Item number used to identify a specific change to a City owned Asset on each drawing Sheet: label number from the drawing
5	COMPKEY	The unique index number used to identify an asset in GIS. *For internal City of Burnaby use only.*
6	LOCATION	Street ID – Segment ID or Easement ID
7	STREET NAME	Name of street
8	FROM	Name of Street intersecting the location – beginning of segment
9	TO	Name of Street intersecting the location – end of segment
10	PAC	Provincial Asset Class number (see ref. table)
11	DESCRIPTION	Description of the asset and change.
12	TRANSACTION_TYPE	**See section 8.10 - Transaction Types** **Net New**. To be used when an asset is created / constructed where no similar asset in that segment existed.

		Betterment. Changes are made to an existing asset and a portion of the original asset is unchanged. Example. Road betterment; betterment to a light. **Replacement.** Entire assets is retired and replaced. Note that partial replacement are classified as betterments. **Full Retirement.** Full retirement or abandonment of an asset. Existing asset no longer exists / is in-service. **Partial Retirement.** Partial retirement or abandonment of an asset. A portion of the existing asset continues to exist. **Not Delivered.** For Actual / delivered changes only. A planned change to an asset which is not delivered as part of this project. **Original Quantity**. Identifies the original (pre-construction) total quantity of an asset. **Final Quantity**. Identifies the final (post-construction) total quantity of an asset. **Not Capitalized.** Identifies items which are altered during the project but not currently capitalized as an asset. Assigned PAC 0399 (roads), 0499 (drainage), 0599 (sanitary), or 0699 (water) based on the type of asset.
13	QUANTITY (Primary)	Quantity - Used to identify quantities for current City capitalization purposes.
14	U.O.M.. (Primary)	Unit of Measurement - Used to identify quantities current capitalization of changes to assets.
15	QUANTITY_ALT (Secondary)	Alternative quantity measure – obtained for future capitalization requirements
16	U.O.M._ALT (Secondary)	Alternative unit of measure – obtained for future capitalization requirements
17	AVAILABLE FOR USE DATE	Date that proposed construction (addition or retirement) was completed for that asset. Completed on assets delivered drawings only.
18	PERCENT_COMPLETION	Used to identify % depth of pavement replacements

		(for milling and overlay only)
19	PIPE DIAMETER	Pipe Diameter – For pipes only
20	WBS	Work Breakdown Structure. Completed on Capital Program projects only.

8.18 Asset Data Extraction

The design consultant must follow the standards detailed in this document so that the finished AutoCAD drawing files can be processed by the City.

The standard, predefined layers, blocks and attributes are designed to facilitate the data extraction process. The City will provide predefined data extraction templates, enabling extraction of data recorded in the predefined attributes into Microsoft Excel files.

If errors are made during the data entry process, the City may require that the assigned consultant correct the errors and re-submit the impacted AutoCAD drawing files.

8.19 Revision Management

If revisions to the asset identification drawing are needed, they shall be tracked within the title block's revisions section so superseded versions are not to be confused. The revision number in the title block must also be updated, and the standard revision clouding and triangle-number label shall be applied to the revision cloud. The revision box should always identify that it is an assets identification drawing, with appropriate revision number and date.

8.20 Miscellaneous Standards and Exceptions

If there are any AutoCAD drafting, design, or construction standards that the design consultant feels are necessary for the production of the asset identification drawing but have not been explicitly mentioned herein, then the latest version of the City's contract documents, standards, and specifications (including AutoCAD layering standards) shall apply.

9.0 Definitions

Term	Description
Design Consultant	External engineering consulting firm assigned to complete Detailed Design Submissions for the City or for a Developer, and to account for the related assets as per this Master Specification document.
AutoCAD / Civil3D	The software applications for computer-aided design and drafting developed by Autodesk, Inc. typically used for municipal drawing production.
Master Municipal Contract Documents (MMCD)	The latest version of the standard set of contract documents, including municipal standards and specifications, produced by the Master Municipal Contract Documents Association of British Columbia.
Asset Capitalization	An account of as-constructed Capital Expenditure or Land Development infrastructure assets for given projects completed over a certain time frame in the City of Burnaby, to be executed according to this Master Specification document.
Data Extraction	A standard AutoCAD feature that automatically extracts large amounts of data from AutoCAD drawing objects (such as blocks, polylines, etc.) and exports that information to a Microsoft Excel table or other similar tabulation.
PAC Code	A Provincial Asset Class (PAC) Code is a number code assigned to various assets that are typically constructed in municipal civil works, and that must be clearly defined for City of Burnaby capitalization, payment, and bonding processes. Refer to Appendix A for the City's standard PAC Code Table.
Available for use	An asset is deemed to be **available for use** when all construction required to deliver the asset has been completed. Note, available for use does not necessarily mean or imply that the asset is in use or that the project is substantially complete.

10.0 References

Document Type	Document Title	Publisher
Contract Documents Standard	Master Municipal Contract Documents	MMCD Association of BC www.mmcd.net
Drafting Standards	DRAFTING STANDARDS DRAFT 2	City of Burnaby Engineering Department

11.0 Appendices

11.1 Appendix A: City of Burnaby PAC Code Table

11.2 Asset Table PAC Guidelines

11.3 Asset Table Cheat Sheet

11.4 Appendix B: Standard Street and Segment Id Numbers

11.5 Appendix C: Sample Drawing