CADD SPECIFICATIONS FOR MICROSTATION V8

CONSULTANTS MANUAL



DECEMBER 2009



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RECORD OF REVISIONS

DATE	SECTION	PAGE	DETAILS	NAME
Sept.16, 2008	Whole document		Compiled for Final Release	Paul Monteiro
Dec.4, 2008	2.01	8	Drawing numbering requirements	Chris Zolcinski
Jan. 2009	Appendix A	38,39	Added new levels for Process Piping & Instrumentation	Paul Monteiro
Feb. 2009	Appendix A	37	Added new levels for Structural	Paul Monteiro
	Appendix A	33-35	Added new levels for Civil	Paul Monteiro
April 2009	2.01.2	9	Addition of note on drawing numbers	Paul Monteiro
	3.03.1	19	Addition to level filters	Paul Monteiro
	4.03	29	Revision to cell library name	Paul Monteiro
	Appendix B	32	Revision of Cell Libraries and Part numbers	Paul Monteiro
	Appendix B	94-114	Added new surround cells, modified existing	Paul Monteiro
May 2009	3.03.1	19	Added new filter for Bridge discipline	Paul Monteiro
	Appendix B	33-39	Modified level symbology for existing levels and added new levels for Bridge discipline	Paul Monteiro
June 2009		5	Added new Traffic Staging cell library to CD content list.	Paul Monteiro
	3.10.1	23	Added Traffic Staging.cell to list	Paul Monteiro
	Appendices	32	Added Traffic Staging.cell to list	Paul Monteiro
	Appendix B	116	Added Part 10 - Traffic Staging Cell Library	Paul Monteiro
	Appendix B	94	Modified Part 9 – added "dwg_index_w" cell	
Sept. 2009	Appendix A	38-40	Updated Levels	Paul Monteiro
	Appendix B	115-117	Modified Part 9	Paul Monteiro
December 2009	Appendix B	38	Updated Electrical Levels	Paul Monteiro
December 2009	Appendix B	39	Updated Process Piping Levels	Paul Monteiro

CONTENT OF THE CD ROM

- Copy of CADD Specifications for MicroStation V8
- Copy of Seed File CADDS_seed2D.dgn & CADDS_seed3D.dgn
- Copies of designlib files.
 - Cadds_Levels.dgnlib
 - Cadds_TextStyles.dgnlib
 - Cadds_Dim.dgnlib
- Copy of Cadds_Font.rsc
- Copy of Cadds_LineStyles.rsc
- Copy of Cadds_Color.tbl
- Copy of Printer.plt
- Copies of all cell libraries. Many need to be verified in relation to scaling.
 - Architectural.cel
 - Civil.cel
 - Electrical.cel
 - Fire.cel
 - General.cel
 - HVAC.cel
 - Mechanical.cel
 - Process.cel
 - Surround.cel
 - Traffic Staging.cel
- Copies of configuration files for CADD Services to be used as examples for software setup: CADDS.ucf (Workspace) and CADDS_Metric.pcf (Project)
- Copy of pen table CADDS_bw.tbl for black and white (greyscale) plotting.

1.00 INTRODUCTION

1.01 GENERAL

As an integral component of information management Computer- Aided Design and Drafting (CADD) technology is utilized by Engineering Services to produce and maintain variety of digital drawing documentation. The Technical Services Division of City of Toronto has adopted BentleyTM as a standard software platform.

The CADD Services unit of Engineering Services- Works Facilities & Structures is currently operating within the following software environment:

MicrosoftTM XP Professional Service Pack 2 MicrosoftTM Office XP 2002 BentleyTM MicroStation 2004 Edition, version 08.05.02.55 BentleyTM InRoads 2004 Edition, version 08.08.00.46

As one of its functions CADD Services will carry out quality assurance of the CADD data files and printed drawings submitted by external agencies to Works Facilities & Structures. The review process will include:

- check for compliance with general drafting specifications (naming, standard components, legibility etc.)
- hard copy check against digital file (print correspondence to digital file)
- digital file check for adherence to CADD specifications (drawing file structure, graphics)

CADD files and corresponding prints should be submitted to CADD Services at the midpoint (50%), 95% and final (100%) of the scheduled work to conduct a CADD drafting review. The content of the digital CADD data file is just as important as the printed content and no drawings will be accepted as final until all issues are resolved.

1.02 OBJECTIVE

This document describes basic requirements and expectations related to acceptable submissions of drawing documentation for engineering projects managed by Works Facilities and Structures section of Technical Services, City of Toronto.

This manual is not a textbook. It is intended to provide guidelines to uniform procedures and standards for organizations that perform CADD related services and provide drawing documentation for projects managed by Works Facilities & Structures group.

The requirements presented in this document are to ensure that submitted CADD data files can be used by the entire project team throughout all phases of the project development as well as to allow archiving and maintenance of infrastructure records.

The standard organization of files, levels and graphic elements, as well as standardized software applications are essential for effective work and communication. Standards are necessary to ensure that drawings and data are:

- Compatible with the available CADD equipment and software

- Applicable for the intended use
- Easily transferred and integrated with other applications
- Adherent to industry standards

The professional (contractor) shall have final responsibility for the accuracy of all input and output of computer-based applications.

1.03 REVISIONS

CADD Services is responsible for revisions and updates of this document. Issued revisions will be documented in the table on page 4 of this document. Any comments, inquiries and suggestions for improvement should be forwarded to:

Chris Zolcinski Supervisor, CADD Services Engineering Services-Works Facilities and Structures Technical Services 416-397-5358 czolcin@toronto.ca

1.04 TRADEMARKS

MicroStation is a registered trademark of Bentley Systems, Incorporated. Other trade names, computer protocols, and file formats mentioned in this manual are the trademarks of the respective owners.

1.05 DISTRIBUTION

This document is supplemented with setup and configuration files necessary to implement submission requirements as outlined in these specifications.

This manual, in its entirety, may be freely copied and distributed for the purpose of providing consistent guide to the CADD requirements of the Works Facilities and Structures section.

2.00 FILE MANAGEMENT

File management explains how documents are organized and stored. The naming conventions must be followed in order to allow retrieval of information, efficient record keeping and to minimize the possibility of data lost.

2.01 FILE NAME FORMAT

File naming formats shown below must be used when creating a project file.

2.01.1 Project CADD Files

The Project number is issued by the Contract Tenders & Records unit of Works Facilities & Structures (Supervisor – Gino Marcoccia) upon contract award.

FFFF – YYYY – PP. dgn

FFFF – Facility code – a 3 or 4 characters (alphanumeric) designation of each facility.

YYYY – 4-digit Year of project.

PP - Project number - a designated project number supplied as noted above.

The Project number is to be used for naming all CADD files (master & reference) and related drawing documentation for the entire project. Any additional files used for project composition must retain the project number appended by "_" (underscore) and a suffix. Accepted suffixes could be SV for survey, E for electrical, M for mechanical, etc. Suffix designations must be consistent as to what they represent and what they are used for in relation to the project.

2.01.2 Drawing number

The drawing (sheet) number has to be shown on each sheet printed from the master (project) file. It is defined by appending the project number with:

S - sheet number (consecutive sheet number, no preceding zeros)

Optionally the drawing number might be expanded to include:

_DN - discipline designation followed by consecutive number (for discipline) as per list:

- **G** General
 - A Architectural
 - \mathbf{C} Civil
 - **M** Mechanical (includes HVAC)
 - \mathbf{E} Electrical
 - S Structural
 - **P** Process
 - I Instrumentation

Each project design file will comprise of 1 master design file and multiple sheet models that will be named as noted below.

Example:

Facility code = 1001, year = 2008, project number = 23, sheet number = 1 to 4, discipline = A

Master design file (design model) would be: 1001-2008-23.dgn

Sheet models would be named:



For more information on design models and sheet models see section 2.04.4 of this manual.

Note:

This is an example for illustration purposes only. Project number should be supplied to the consultant at initiation of assignment. If questions arise in regards to naming of the files call the CADD Services Supervisor.

2.02 SHEETS ORDER

Works Facility:

The following guidelines should be followed in organizing project sheets:

1. Title sheet – contains facility name, project title, contract number, a location plan and the list of all drawing sheets composing the set. Title sheet will always have drawing number as follows:

[project number]-1-G1

- 2. Additional Notes Addition to the Legend may be made in special circumstances
- 3. Site plan with a key plan geographically correct files should be used if available (see page 17 for more information)
- 4. Floor plan –plan should contain symbols of all elevations and sections shown in the project
- 5. Elevations
- 6. Cross Sections
- 7. Details standard details should be used whenever possible

<u>Civil (Linear Infrastructure):</u>

The following guidelines should be followed for organizing project sheets:

- 1. Title sheet contains facility name, project title, contract number, a location plan and the list of all drawing sheets composing the set.
- 2. Plan & Profiles
- 3. Various Details
- 4. Sample Erection Diagram
- 5. Traffic Control Plan
- 6. Borehole and Benchmarks Location

2.03 FILE ORGANIZATION

When organizing project files use the following guidelines:

- All design files belonging to the project should be kept together in one folder. They can be referenced easily if they are kept together and could become disconnected if placed in various folders. Submitted files, upon project completion, must adhere to standard naming convention and must not be renamed.
- An effort should be made to as much as possible contain project design in one master file (use of design model & multiple sheet models).
- Reference files should be updated regularly to ensure the most current versions of all design files are being used.

2.04 REFERENCE FILES & MODELS

References can be used to display the contents of one or more design files. All reference files used in the design should be stored in the same directory as the master working file. When attaching the reference file, unnecessary line weights should be turned off ("View Attributes" tool).

2.04.1 Referencing Path

To ensure project's portability, the attachment of reference files should be done under "Save Relative Path" condition.

Attach Reference		
<u>Fi</u> le <u>D</u> irectory		
F <u>i</u> les:	Directories:	
WS_2004_1524.dgn	H:\Design\Users\Transfer\	2D - V8 DGN
WS_2004_1524.dgn	 H:\ Design Users Transfer Agim brian_b cz Dan C DIMITAR edgar Eric ✓ 	
List Files of <u>T</u> ype:	Dri <u>v</u> es:	OK
CAD Files (*.dgn,*.dwg,*.dxf) 🔹 🔻	R:\\tornt423\users\	
🔽 Save <u>R</u> elative Path	DWG O <u>p</u> tions	Cancel

2.04.2 Scale

It is important to bring the reference file into the drawing in the proper scale. The "True Scale" checkbox should be always checked.

Attachment Settings: test_dwg.dwg		
File Name: test_dwg.dwg Browse Full Path: \0_lilianna\work\microstation\test_dwg.dwg Model: Model Logical Name: Viewport 1 Description:		
Mested Attachments: Live Nesting Image: Display Clip Back Image: Spap Clip Front Image: Display Raster References Display Raster References Image: True Scale Image: Display Raster References Image: Display Raster References Image: Display Raster References Image: Display Raster References Image: Display Raster References Image: Display Raster References Image: Display Raster References <td< th=""></td<>		

Attach Referenc	e Settings		
<u>F</u> ile Name:	200M-37-1.dwg		
Full Path:	C:\0_LILIANNA\200)M-37-1.dwg	
Model:	Model	▼	
Logical Name:			
D <u>e</u> scription:			
Orientation:	1		
Name	Description	▲	
Loincident	Aligned with Mas	ter File	
Тор	Standard View		
Bottom	Standard View		
Left	Standard View		
Inigu	Stanuaru view		
Scale (Master	:Ref) 1.00000(: [1.00000(🔽 <u>I</u> rue Scale	
<u>N</u> ested Attachm	ents: <u>No Nesting</u>	Depth: 1	
🔽 Display Raster	References		
<u> </u>	Cancel	Options	

2.04.3 Design & Sheet Models

MicroStation V8 allows creation of design & sheet MODELS.

The design model will contain all the relative information pertaining to the project design. The sheet model will contain all the information needed to produce the hard copy printouts for the project.

This method should be used to ease in the number of design files submitted for each project. Each SHEET model will be named according to the standard naming convention as shown in the drawing number field of surround cell (title block).

The setup for each SHEET MODEL should be as follows:

Create Model
<u>I</u> ype: <u>Sheet</u> ▼ <u>2D</u> ▼
Seed Model: I <not seed="" using=""></not>
Name: Untitled Sheet
Description:
Ref Logical:
Display Sheet Layout
Size: ANSLA H: 8,50000 W: 11,00000
Origin: X: 858993.458 Y: 858993.458
Rotation: 0,0000
Cell Properties
Cell Tupe: Graphic VI
I ⊂ Lreate a view Group
<u> </u>

The areas encircled should be the only ones modified.

Reference the Master DESIGN model to the SHEET model. Make sure the <u>live nesting toggle</u> is on so that all the reference files used are included within the SHEET MODEL.

Place the surround cell (title block) for the project in the desired location on the SHEET model. The surround cell will be placed within the SHEET model at 1:1 scale. Reference files will be scaled according to the plot desired, e.g. - if desired scale is to be 1:500, the reference file will be scaled to 1:500 in the reference display window.

Note that the surround cells are created at a 1:1 scale to ease in the calculation of scaling factors.

Once the surround cell is placed, use the fence to define extent of the plot required and clip the reference to show only the area to be displayed for the final plot. Continue this process until the entire project extent is fully covered with respective sheet models (drawing sheets).

All notes, dimensions, miscellaneous text and information to be displayed on the final plot will be placed on the SHEET Model.

Only static information that will not change will be annotated on the DESIGN model. Any changes that are required on the design will only be done on the DESIGN model. These changes will be shown on the SHEET models pertaining to the respective geographic area since the SHEET model is referencing in the DESIGN model.

There is no limit to the number of models that can be created within the design file using this process so limitations will not be an issue.

All SURROUND cell information will be maintained as a cell. The SURROUND cell being used should not be "dropped" in any way. Text needed to be changed will be done using the text editor.

All printing will be based on the SHEET model.

Models should use the annotation scale set for the final plot scale. This way any text placed within the SHEET model will be scaled correctly for the hard copy plot. When placing text and dimensions the annotation scale "lock" should be used to get proper effect.

Create Mode	əl	
<u>I</u> ype: Seed Model: <u>N</u> ame: <u>D</u> escription: <u>R</u> ef Logical:	Sheet · · · · · · · · · · · · · · · · · ·	▼ <u>2D</u> ▼ Q
4	1:1000 💌	1.00000 : 1.00000
Sheet Prope Display S Size: Origin: X: Rotation: Cell Propertie	1:2000 1:1000 1:500 1:400 1:300 1:250 1:200 1:100 1:50 CUSTOM Cell Type: Graphic	: 8.50000 W: 11.00000 8993.455 a cell
✓ Create a View Group		
	<u>0</u> K	Cancel

3.00 CADD SOFTWARE SET-UP_

NOTE:

Refer to <u>Read me first-CADDS V8 Set-up.pdf</u> (CD ROM) for implementing standard specifications in user's CADD system.

3.01 INSTALLATION & CONFIGURATION

MicroStation V8 is installed in the default location. For the current release the location is C:\Program Files\Bentley\

The CD containing all necessary configuration files is provided with the manual. These files should be placed within a common directory that could be accessed by users.

The WORKSPACE and PROJECT locations used by MicroStation Manager should be modified to point to the supplied files.

The UCF file (used for the workspace) and the UPF file (used for the project) should have pointers to the directory containing all the supplied files.

Copies of resource files used by CADD Services are also provided on the CD as a guide or template.

Modifications to the global user configuration file will also need to be done to reflect use of the supplied DGNLIB.

3.02 DRAWING SET-UP

This section describes how to organize and set-up CADD drawing files.

Consultants must obtain approval <u>prior</u> to implementing any modifications to the drawing set-up standard.

3.02.1 Working Units

All technical documentation is to be based on the Metric system.

The working units define and display real world coordinates and dimensions. Working units are expressed as Master Units (the largest units in common use in a design file, such as meters) and fractional Sub Units (such as centimetres). The provided by the CADD Services seed files define the following standard working units:

WORKING AREA MASTER UNITS – m

WORKING AREA SUB UNITS – cm

SUB UNITS PER MASTER UNIT – 100cm

NUMBER OF POSITIONAL UNITS PER SUB UNIT – 25

DGN File Settings	
<u>Category</u> Active Angle Active Scale Axis Color Coordinate Readout Element Attributes Fence Grid Isometric Locks Rendering Snaps Stream Views Working Units	Modify Working Unit Settings Unit Names Master Unit: Label: Meters Sub Unit: Label: Cancel Cancel Centimeters Custom Units
	Focus Item Description Select category to view.

3.02.2 Global Origin

Every seed file and subsequent design file has the Global Origin specified and should never be changed by users. The origin point must remain consistent between all model files in a project. The Global Origin for seed files is 0, 0.

The City of Toronto mapping is based on 3 degree MTM grid (Ontario Zone 10 – Modified Transverse Mercator). The files are co-ordinated on the grid, which is derived from Horizontal Control Network, and in the range of $(+\-)$ 4,800,000m (Northings) along the y axis and $(+\-)$ 300,000 (Eastings) along the x axis. The 4 million value is truncated in the northing (y axis), hence the northing values are in the $(+\-)$ 800,000 range. The Eastings stay in the same value. The base mapping and subsequent reference files are all co-ordinated to the same MTM grid system.

3.02.3 Drawing Scale

Appropriate drawing scale is an important element in design file creation. The Active scale for DESIGN files and subsequent design and sheet models should be at true 1:1 scale.

DGN File Settings		
Category	Modify Active Scale Settings	
Active Angle	⊻Scale 1.000000	ОК
Active Scale	Y Scale 1.000000	
Axis Color		Cancel
Coordinate Readout Element Attributes	<u>1</u> .0 <u>H</u> alve <u>D</u> ouble	
Fence	🗖 <u>S</u> cale Lock	
Lisometric	<u>T</u> olerance: 1.000000	
Locks		
Rendering		
Snaps		
Stream		
Views Working Units		
in onling on the		
	Focus Item Description	
	Select category to view.	

3.03 LEVEL ASSIGMENTS

To maintain uniformity among different design files, it is essential that an organized leveling system be used. MicroStation V8 permits data to be organized in any fashion on an unlimited number of drawing levels. The CADD Services group has developed a standard set of levels to be used in design files, provided in CADDS_LEVELS.DGNLIB.

Consultants must not create own level structures. Any inquiries regarding element placement will be submitted to the Supervisor of CADD Services for further clarification and placement.

See <u>Appendix A</u> for a complete list of the CADD Services levels.

3.03.1 Filters

CADD Services has created a set of default level filters that can be used to control the display of levels based on their attributes. Users may add new filters deemed necessary to facilitate project development. Users shall not edit or delete the default filters. These filters are contained within the CADDS_LEVELS.DGNLIB

The default filters used are listed below:

FILTER	FILTER NAME	DETAILS
GENERAL	GENERAL	Display General levels
CIVIL	CIVIL	Display Civil levels
ARCHITECTURAL	ARCHITECTURAL	Display Architectural levels
STRUCTURAL	STRUCTURAL	Display Structural levels
MECHANICAL	MECHANICAL	Display Mechanical levels
ELECTRICAL	ELECTRICAL	Display Electrical levels
PROCESS PIPING	PROCESS PIPING	Display Process Piping levels
INSTUMENTATION	INSTUMENTATION	Display Instrumentation levels
BRIDGES	BRIDGES	Display Bridges levels. Also displays levels from Structural and Civil that pertain to this discipline

3.04 COLORS

Each element in a MicroStation design file has an assigned a color based on user placement. The CADD Services group uses a tool called "**SYNCBYLEVEL**" (a MicroStation supplied MDL - used in the main configuration file mentioned earlier) to make sure that elements placed on a particular level have a corresponding color and style associated with it.

MicroStation reads a color table to determine the correct color to display for that specific element.

The CADD Services group uses a custom color table called **CADDS_COLOR.TBL**. This file is supplied within the accompanying CD. The color values may vary or appear different on screen due to the graphics cards, monitors display capability, etc. Standard colors are specified to ensure consistency and to enable users to easily identify drawing elements in shared files.

3.05 LINE STYLES

Line styles are used to differentiate curvilinear elements in the design file and on the plotted sheets. There are eight default line styles available in MicroStation using the values zero (0) through seven (7). Additionally, CADD Services has developed a set of Custom Line Styles for drawing various graphic items requiring custom symbology.

The CADD Services standard line style resource file, **CADDS_LINESTYLES.RSC** is supplied on the accompanying CD.

The MicroStation configuration variable MS_SYMBRSC is used to specify the custom resource files to be used. Users must not create their own custom line styles.

The SYNCBYLEVEL MDL used in conjunction with the CADDS_LEVELS.DGNLIB will stipulate what style is used according to the used level.

The line styles are intended to be placed using a scale factor equivalent to the drawing plotting scale.

3.05.1 Line Type Scale

Line type scale must be set so that each line type is recognizable and easily identified. **3.05.2 Plotting Line Types**

During the development of a set of plans it is common to reference the same base-map design file into different detail sheet files that may be plotted at different scales. The custom line styles that are placed in the base-map design file at a specific plotting scale factor will appear out of scale on detail sheets with a plotting scale factor differing from the base-map. The MicroStation Level Manager can be used to override the custom line style scale factor for selected reference file levels.

3.06 LINE WEIGHTS

Standard line weights for plan graphics are specified in the CADD Services Standards. Most elements are affected by weight. Weight is controlled with the command "Active Weight", or "WT=". For technical reasons related to hardware, there is variation among screens and plotters in the thickness produced for each step from line weight 0 (thin) to line weight 31 (wide). Due to this issue CADD Services drawings are saved with **no weight visible**. This is done by turning off the Line Weight toggle in the View Attribute window.



Final printing weights are defined by pen tables, see section 3.11.

3.07 TEXT STYLES

Text Style is a new feature introduced in V8 to facilitate the placement of text. Text Style is a saved set of text parameters such as font type, text width, text height, color, etc. Text styles enable user to place text in a consistent and automated manner.

CADD Services standard text styles are defined in MicroStation DGN Library,

CADD_TEXTSTYLES.dgnlib. This file is attached by the MicroStation configuration variable MS_DGNLIB along with the other DGNLIB files.



3.07.1 Fonts

The Standard fonts to be used on all drawings are: ARIAL true type fonts and SIMPLEX MicroStation Font #171. It is important to use these fonts so that the final plotted version matches the electronic version of the file. Only the fonts included in standard font resource file, **CADDS_FONT.RSC** (supplied on the CD) are to be used.

The MicroStation configuration variable MS_SYMBRSC is used to specify the font library. The consultant may not use other fonts unless authorization is obtained from the CADD Services Supervisor.

SIMPLEX

abcdefghijklmnopqrstuvwxyz ABCDEFGHIJKLMNOPQRSTUVWXYZ 1234567890 -=[]\;',./ !@#\$%^&*()_+{}:"<>?

ARIAL abcdefghijklmnopqrstuvwxyz ABCDEFGHIJKLMNOPQRSTUVWXYZ 1234567890 -=[]\;',./ !@#\$%^&*()_+{}:"<>?

3.07.2 Text Parameters

The appearance of text in a MicroStation graphic file is controlled through the use of a font resource file.

Standard text sizes have been defined to ensure uniform legibility of all plan sheets. Standard text size refers to the size of the text on the finished plot, not the text size in the design file. The correct design file text size is dependent upon the intended plot scale. Uniformity in text size as well at style has to be maintained.

The minimal acceptable plotted text height is 1.6mm, however normal text height is 1.8mm. Planning is required to create text which has the proper plotted size. Since design work is done using actual physical measurements, often called "real world units", but plotters generate output on paper measured in "plotter units", some calculation is needed.

3.08 DIMENSION STYLES

The dimension styles to be used in drawings are defined in the **CADDS_DIM.DGNLIB**. This file is attached or used by the MicroStation configuration variable MS_DGNLIB.

Dimensions should be placed in the sheet model of the master project design file. This will insure proper scaling and will match final output of hard copy drawings.

Dimensions shall be placed in such a way that horizontal dimensions can be viewed from the bottom and vertical dimensions viewed from the right side of the drawing. Vertical and horizontal rows of dimensions should align, where possible. Dimension lines should stop clear of the item being dimensioned. If witness lines have to pass through the other work, they shall be broken at each side of the crossing. Text shall be placed **above** dimension lines where possible.

A unit measurement, for metric drawings is millimetre (mm), except Civil plan and profile drawings and the elevations which shall be specified in metres to two decimal places, e.g. 100.00. Dimensions five digits or more shall have a single space after every third digit from the right, e.g. 100 000.

Angular dimensions shall be in degrees, minutes and seconds and indicated along the arc line where possible.

Closely spaced dimension lines should use tickles rather than arrow heads.

The dimension placement should follow standard drafting practices, ensuring clear readability of drawing. Leader lines may be broken when crossing dimension lines. In order to keep broken lines to a minimum, it is recommended that the user relocate the dimension text or reposition the dimension.

The MicroStation Edit Text command is used to edit the dimension text.

Dimensions should be placed on levels associated with the type and discipline being dimensioned. Refer to **Appendix A** for dimension level placement.

3.09 SEED FILES

A "seed file" is used to create new MicroStation design file.

Seed files are MicroStation design files that contain standard parameters such as working units, active origin, coordinate readout formats, etc. New project design files are created from these seed files, which minimizes repetitive parameter set-up.

Provided on CD are standard seed files:

- CADDS_SEED2d.dgn 2 dimensional seed file
- CADDS_SEED3d.dgn 3 dimensional seed file

Note: all civil projects must be based on the CADDS_SEED3D.DGN file.

3.10 CELLS

3.10.1 Cell libraries

The discipline based cell libraries contain graphic symbology for various types of projects is provided on CD. They can be inserted to either design model or sheet model.

LIBRARY FILE	DESCRIPTION
General.cel	Typical cells for all drawings (north arrow, section symbol etc.)
Architectural.cel	Cells used in architectural drawings
Civil.cel	Cells for civil drawings (Plan & Profile)
Electrical.cel	Cells used for electrical drawings
Fire.cel	Common symbols for fire safety plans
HVAC.cel	Heating, Ventilation and Air Conditioning cells
Mechanical.cel	Cells for mechanical drawings
Process.cel	Process Piping symbols
Surround.cel	Plotting surrounds and title block cells
Traffic Staging.cel	Traffic staging cells (OTM Book 7)

See **Appendix B** for complete list of cells within each library.

3.10.2 Working cells

In general the cells' definition must be maintained (not dropped to single elements). The "working" cells are intended to be dropped and used to facilitate certain aspects of design process. Upon dropping the working cell status and required editing/modifications all elements must be placed on appropriate levels without restoration of the cell. The working cells are easily identified by suffix "w" in the cell name.

3.10.3 Cell Placement

Microstation V8 has the ability to place cells at **True Scale.** (e.g.: 1 meter in length will be placed in metric drawing as 1.0 m.) V8 will rectify the size of cell drawn in files with different units of resolution. The V8 cells have been created with units of resolution to match the standard seed files (meaning that they will always be true scale.) Nevertheless, it is recommended that users keep the **True Scale** checkbox turned on at all times just in case.

	名 Place Ac	tive Cell	
	Active <u>C</u> ell:		<u>م</u>
\mathbf{N}	Active <u>A</u> ngle:	0.0000*	÷
	<u>×</u> Scale:	1.000000	
	<u>Y</u> Scale:	1.000000	
			*
	True Sca	le	
	□ <u>R</u> elative		
	Interactiv	е	
	Elatten	Тор	~
	🗖 Ass <u>o</u> ciati	on	

The cells should be placed in the design file with a scale factor of 1:1 for true scale placement. Cells should be placed within their proper level as defined in the CADDS_Levels.DGNLIB (see **Appendix A**)

3.11 PLOTTING

Generation of prints is controlled by synchronized configuration of output device (hardware) and software application. This section outlines application specific aspect of plotting process.

8 Print Xerox 8825-137.15.220.18	(printer.plt)
<u>File</u> <u>Configuration</u> <u>Settings</u> <u>PenTable</u>	
🕘 🗟 🕀 🔚 🖥	4
General Settings	· · · · · · · · · · · · · · · · · · ·
Pri <u>n</u> t: <mark>Fence ▼</mark> Pen Table:	
Copi <u>e</u> s: 1 Vector: Color 💌	
Printer and Paper Size Windows Printer Q B Paper: [ISO A0 (841X1189 MM)	
Printable: 1.182 x 0.834 M	
Orientation: O P <u>o</u> rtrait 🖲 <u>L</u> andscape	☑ Show <u>D</u> esign 💄
Print Size/Scale Scale: 50000.0000 Q, m to 1 M X Y: 1.068 0.724	Print Position X_ <u>0</u> rigin: Y 0rigin: [0.057 M [0.055 M I Auto- <u>c</u> enter

3.11.1 Plot Driver

Plot drivers determine how the MicroStation elements are translated to the printer. Each plotter uses different plot driver or drivers.

CADD Services uses a modified version of the standard printer.plt driver supplied by MicroStation to create output using system printers.

This file is provided on the accompanying CD as guide as to what modifications are needed.

3.11.2 Pen Table

CADD Services uses pen tables that are applied to the graphical elements when a design file is plotted. Based on feature attribution the pen tables translate elements of the design file to the output device resulting in desired presentation (color, line thickness etc.).

The user determines the pen table to be used for the project file. Pen tables are used by many users and must not be overwritten.

The copy of the standard pen table CADDS_bw.tbl for black and white output is provided on the accompanying CD.

To address legacy issues the following color-line width assignment has to be maintained:

COLOD #	PLOTTED LINE WIDTH	PLOTTED LINE
COLOR #	(mm)	COLOR
4, 26	0.13	black
1, 36	0.18	black
7,46	0.25	black
3, 56	0.32	black
2, 66	0.38	black
30, 76	0.44	black
5, 116	0.50	black
8, 126	0.57	black
9, 136	0.64	black
6, 146	0.70	black
60, 156	0.75	black
120, 186	0.80	black
140, 206	0.90	black
200, 216	0.95	black
230, 226	1.00	black
240, 236	1.20	black
86	0.25	grey
166	0.18	grey
246	0.32	grey

3.11.3 Plot Scale

Plot scale is the ratio of design file master units to plotting units.

Standard Metric Drawing Scales:

1:5	1:100
1:10	1:200
1:20	1:400
1:50	1:500

3.11.4 Plot Area

The extent of the plot area can be identified by one of two methods: **Plot by View** or **Plot by Fence.** Hard copies supplied to the CADD Service group should be on a modified D sized sheet. Technical Services uses a modified D size of 863mm x 603mm to accommodate various printers/ plotters available to the group. The surround cells are created with this same size on a 1:1 scale. Use Preview to verify and control the desired output.

The drawing (sheet models) must be saved as to be printed without any page setup. The main layout must be active and all the viewports adjusted and locked to the correct scale.

4.00 SHEET INFORMATION & PROCEDURES

4.01 SURROUNDS

The CADD Services group developed various Surround cells incorporating Title Blocks and information pertinent to the project. These cells are contained within the cell library called SURROUND.CEL (which is provided within the accompanying CD). The Title Blocks within the given surround cells have text information which is to be edited to include information on the given project. This information will include title information, location, scaling date, contract number, drawing number and sheet number.

The surround cell should remain as such (a cell) and inserted within the Sheet Model as noted earlier in this manual.

Refer to Appendix B – Part 9 as to which surround cell is to be used for each project type.

ROSEHILL PUMPING STATION INSTALLATION OF PUMP NO. 4 MAIN FLOOR							
	PARTIAL PLAN						
DESIGN:	P. A.	DRAFTING:	R.SORIANO	CHECK:	C. Z.	CONTRACT No.	
SCALE:		AS SHOWN		DRAWING	100	2000 20 1	N#4
DATE:		MAY 2008		NUMBER:	IOP	-2006-20-1	IVIII

Example of Title Block within Surround Cell:

4.02 TITLE SHEET

A title page is the first drawing sheet in the set (discipline designation G1).

Example of title sheet:



4.02.1 Drawing Index

Drawing index is part of the title page and must list all the drawing sheets associated with the project.

Example of drawing index:

DRAWING INDEX					
SHEET No.	CITY EWG No.	DISCIPLINE	DRAWING DESCRIPTION		
•	4021-3085-01-1	en 🖉	TITLE MAR		
1					
3					
4					
8					
•	TEN-2008-01-0	6	WAR FLOOR FLAN- BROTIONE AND DITAL		
,					
•					

4.02.2 Key Plan & Location Plan

The location plans are maps showing general location of the project illustrating site accessibility. The location plan is placed in the designated space of title sheet.

Key plans are schematic maps showing project's working area in relation to streets' or facility layout. They are presented "not to scale", with intent to show the access to the site (closest streets, their names, adjacent structures etc.). Key plans are placed at the top right corner on the first sheet of the design set.

4.03 PLAN & PROFILE SHEETS

The plan & profile layout shows the horizontal and vertical view of the linear infrastructure. The drawing is divided into two sections: Plan View and Profile View. The profile is drawn on a grid. The CADDS Services group has created various grid cells to facilitate different design projects. The grids are cells that are also contained within the CIVIL.CEL library. See **Appendix B – Part 9** for further description as to their use. The grid used is dependent on the plan & profile sheet.

Example of Plan & Profile Grid:



Plotted drawings scale: Horizontal scale is 1:500 or 1:200 and Vertical 1:100. The North Arrow should be shown in each plan view.

The metric note should be shown on each sheet.

5.00 DRAWING DOCUMENTATION

5.01 GENERAL

The drawing documentation shall be submitted for review at:

- 50% reduced (11x17) paper print samples and corresponding digital files
- 95% set of paper prints and corresponding digital files
- 100% set of full size final signed prints on mylar and corresponding digital files

of the project completion as specified contract documentation.

A transmittal letter including:

- contract number
- project title
- list of deliverables
- a contact name (consultant)
- project manager (City)

should be attached.

All documentation files should be compatible with the current versions of the software in use by the CADD Services group as noted in this manual.

All electronic files shall be checked for computer viruses before submission.

5.02 HARD COPY REQUIREMENTS

All hard copy drawings are to be generated from corresponding CADD files. All drawings shall adhere to common drafting practices applied to technical documentation. All drawing sheets composing the set have to be listed on the title page.

5.03 CADD FILE REQUIREMENTS

All graphic files submitted to CADD Services shall be in MicroStation V8 (dgn) file format and should conform to applicable chapters in this manual.

The files should be delivered in the state described below:

- Cells must not be dropped to primary elements except "working" cells as described in
- Design model should be zoomed to full extents
- Sheet models should be saved displaying plotted sheet extents
- Drawings should be saved in design model for visual & specification checking

The supplier shall ensure that all support files (ie. Raster references, InRoads support data files, etc.) are included and that the contents of all electronic files are the same as on the submitted hard copies.

The submitted electronic files must comply with naming convention as stated in this Manual.

5.04 REJECTION OF SUBMISSION

Submitted files that do not meet the requirements outlined in this manual will be returned to the supplier for corrections and resubmissions. Upon return of any files, the CADD Services group will provide a report of review listing the deficiencies and errors encountered with original submission. The consultant is responsible for revising the materials and addressing deficiencies prior to the next scheduled drawing submission.

Any CADD related inquiries should be directed to the Supervisor, CADD Services or designate.

APPENDICES

Appendix A - LEVELS, LEVEL NAMES & SYMBOLOGY

Appendix B – CELL LIBRARIES

- Part 1 ARHITECTURAL
- Part 2 CIVIL
- Part 3 ELECTRICAL
- **Part 4 FIRE SAFETY**
- Part 5 GENERAL
- Part 6 HVAC
- Part 7 MECHANICAL
- **Part 8 PROCESS PIPING**
- Part 9 SURROUND
- Part 10 TRAFFIC STAGING

<u>APPENDIX A</u> – LEVEL STRUCTURE

NameNumberDescriptionLevel ColorLevel StyleLevel WeightDefault0Default MicroStation Level000 $G_surround_WFS$ 100000General Title Block Linework3600 G_inte_WFS 100010General Title Block Text700 G_note_WFS 100020General Notes (Text)700 G_symb_WFS 100030General Symbology (metric, as-built, section)500CIVIL LEVELSNameNumberDescriptionLevel ColorLevel StyleMeight C_surv_WFS 110000Civil Survey Symbology (BM, HCM, CC, traverse)100 C_surv_WFS 110000Civil Proposed Title Symbology00 C_symb_WFS 110020Civil Proposed Title Symbology00 C_symb_WFS 110030Civil Proposed Dimensioning700 $C_sird_166_WFS$ 110040Civil Proposed Dimensioning700 $C_grid_166_WFS$ 110050Civil Plan and Profile Grid16600 $C_grid_26_WFS$ 110080Civil Plan and Profile Grid2600 $C_grid_anote_WFS$ 110080Civil Plan and Profile Grid2600 $C_grid_anote_WFS$ 110041Civil Plan and Profile Grid2600 $C_grid_anote_WFS$ 110040Civil Plan and Profile Grid2600 $C_grid_anote_WFS$ <th colspan="9">GENERAL LEVELS</th>	GENERAL LEVELS								
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Name	Number	Description	Level Color	Level Style	Level Weight			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Default	0	Default MicroStation Level	0	0	0			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	G_surround_WFS	100000	General Title Block Linework	36	0	0			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	G_title_WFS	100010	General Title Block Text	7	0	0			
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	G_note_WFS	100020	General Notes (Text)	7	0	0			
CIVIL LEVELSNameNumberDescriptionLevel ColorLevel StyleLevel WeightC_surv_WFS110000HCM, CC, traverse)100C_note_WFS110010Civil Proposed Notes200C_symb_WFS110020(legend, specials)300C_dim_WFS110030Civil Proposed Dimensioning700C_grid_166_WFS110050Civil Plan and Profile Grid16600C_grid_26_WFS110070Civil Plan and Profile Grid2600C_grid_note_WFS110080Civil Plan and Profile Grid Notes700C_synd_MFS110070Civil Plan and Profile Grid16600C_structure_bldg_WFS110040Civil Plan and Profile Grid Notes700	G_symb_WFS	100030	General Symbology (metric, as-built, section)	5	0	0			
NameNumberDescriptionLevel ColorLevel StyleLevel Weight C_surv_WFS 110000HCM, CC, traverse)100 C_onte_WFS 110010Civil Proposed Notes200 C_symb_WFS 110010Civil Proposed Notes200 C_symb_WFS 110020(legend, specials)300 C_dim_WFS 110030Civil Proposed Dimensioning700 C_dim_WFS 110040Civil Proposed Hatching400 $C_grid_166_WFS$ 110050Civil Plan and Profile Grid16600 $C_grid_26_WFS$ 110070Civil Plan and Profile Grid2600 $C_grid_note_WFS$ 110080Civil Plan and Profile Grid Notes700 $C_structure_bldg_WFS$ 110041Civil Proposed Building Outline600			CIVIL LEVELS						
C_surv_WFS110000HCM, CC, traverse)100C_note_WFS110010Civil Proposed Notes200C_symb_WFS110020(legend, specials)300C_dim_WFS110030Civil Proposed Dimensioning700C_hatch_WFS110040Civil Proposed Hatching400C_grid_166_WFS110050Civil Plan and Profile Grid16600C_grid_26_WFS110070Civil Plan and Profile Grid2600C_grid_note_WFS110080Civil Plan and Profile Grid Notes700C_structure_bldg_WFS1100110Civil Proposed Building Outline600	Name	Number	Description	Level Color	Level Style	Level Weight			
C_surv_WFS110000HCM, CC, traverse)100C_note_WFS110010Civil Proposed Notes200C_symb_WFS110020(legend, specials)300C_dim_WFS110030Civil Proposed Dimensioning700C_hatch_WFS110040Civil Proposed Hatching400C_grid_166_WFS110050Civil Plan and Profile Grid16600C_grid_26_WFS110060Civil Plan and Profile Grid2600C_grid_note_WFS110080Civil Plan and Profile Grid Notes700C_structure_bldg_WFS110110Civil Proposed Building Outline600			Civil Survey Symbology (BM,						
C_note_WFS110010Civil Proposed Notes200C_symb_WFS110020(legend, specials)300C_dim_WFS110030Civil Proposed Dimensioning700C_hatch_WFS110040Civil Proposed Hatching400C_grid_166_WFS110050Civil Plan and Profile Grid16600C_grid_26_WFS110060Civil Plan and Profile Grid2600C_grid_note_WFS110080Civil Plan and Profile Grid Notes700C_structure_bldg_WFS110041Civil Existing Hatching16600	C_surv_WFS	110000	HCM, CC, traverse)	1	0	0			
C_symb_WFS110020(legend, specials)300C_dim_WFS110030Civil Proposed Dimensioning700C_hatch_WFS110040Civil Proposed Hatching400C_grid_166_WFS110050Civil Plan and Profile Grid16600C_grid_26_WFS110060Civil Plan and Profile Grid2600C_grid_note_WFS110080Civil Plan and Profile Grid Notes700C_x_hatch_WFS110041Civil Existing Hatching16600	C_note_WFS	110010	Civil Proposed Notes	2	0	0			
C_symb_WFS110020(legend, specials)300C_dim_WFS110030Civil Proposed Dimensioning700C_hatch_WFS110040Civil Proposed Hatching400C_grid_166_WFS110050Civil Plan and Profile Grid16600C_grid_86_WFS110060Civil Plan and Profile Grid8600C_grid_26_WFS110070Civil Plan and Profile Grid2600C_grid_note_WFS110080Civil Plan and Profile Grid Notes700C_X_hatch_WFS110041Civil Existing Hatching166C_structure_bldg_WFS110110Civil Proposed Building Outline600			Civil Proposed Title Symbology						
C_dim_WFS110030Civil Proposed Dimensioning700C_hatch_WFS110040Civil Proposed Hatching400C_grid_166_WFS110050Civil Plan and Profile Grid16600C_grid_86_WFS110060Civil Plan and Profile Grid8600C_grid_26_WFS110070Civil Plan and Profile Grid2600C_grid_note_WFS110080Civil Plan and Profile Grid Notes700C_X_hatch_WFS110041Civil Existing Hatching16600C_structure_bldg_WFS110110Civil Proposed Building Outline600	C_symb_WFS	110020	(legend, specials)	3	0	0			
C_hatch_WFS 110040 Civil Proposed Hatching 4 0 0 C_grid_166_WFS 110050 Civil Plan and Profile Grid 166 0 0 C_grid_86_WFS 110060 Civil Plan and Profile Grid 86 0 0 C_grid_26_WFS 110070 Civil Plan and Profile Grid 26 0 0 C_grid_note_WFS 110080 Civil Plan and Profile Grid Notes 7 0 0 C_X_hatch_WFS 110041 Civil Existing Hatching 166 0 C_structure_bldg_WFS 110110 Civil Proposed Building Outline 6 0 0	C_dim_WFS	110030	Civil Proposed Dimensioning	7	0	0			
C_grid_166_WFS 110050 Civil Plan and Profile Grid 166 0 0 C_grid_86_WFS 110060 Civil Plan and Profile Grid 86 0 0 C_grid_26_WFS 110070 Civil Plan and Profile Grid 26 0 0 C_grid_note_WFS 110080 Civil Plan and Profile Grid Notes 7 0 0 C_structure_bldg_WFS 110041 Civil Existing Hatching 166 0 0	C_hatch_WFS	110040	Civil Proposed Hatching	4	0	0			
C_grid_86_WFS110060Civil Plan and Profile Grid8600C_grid_26_WFS110070Civil Plan and Profile Grid2600C_grid_note_WFS110080Civil Plan and Profile Grid Notes700C_X_hatch_WFS110041Civil Existing Hatching16660C_structure_bldg_WFS110110Civil Proposed Building Outline600	C_grid_166_WFS	110050	Civil Plan and Profile Grid	166	0	0			
C_grid_26_WFS110070Civil Plan and Profile Grid2600C_grid_note_WFS110080Civil Plan and Profile Grid Notes700C_X_hatch_WFS110041Civil Existing Hatching166C_structure_bldg_WFS110110Civil Proposed Building Outline600	C_grid_86_WFS	110060	Civil Plan and Profile Grid	86	0	0			
C_grid_note_WFS110080Civil Plan and Profile Grid Notes700C_X_hatch_WFS110041Civil Existing Hatching166C_structure_bldg_WFS110110Civil Proposed Building Outline600	C_grid_26_WFS	110070	Civil Plan and Profile Grid	26	0	0			
C_X_hatch_WFS110041Civil Existing Hatching166C_structure_bldg_WFS110110Civil Proposed Building Outline600	C_grid_note_WFS	110080	Civil Plan and Profile Grid Notes	7	0	0			
C_structure_bldg_WFS 110110 Civil Proposed Building Outline 6 0 0	C_X_hatch_WFS	110041	Civil Existing Hatching	166					
	C_structure_bldg_WFS	110110	Civil Proposed Building Outline	6	0	0			
C_structure_infra_WFSCivil Proposed Structures (garage, shed, porch, pedestal, stairs)300	C_structure_infra_WFS	110120	Civil Proposed Structures (garage, shed, porch, pedestal, stairs)	30	0	0			
C structure wall WES 110130 berm) Civil Proposed Wall (retaining, 2 0 0	C structure wall WES	110130	Civil Proposed Wall (retaining, berm)	2	0	0			
Civil Proposed Structure Symbology		110150	Civil Proposed Structure Symbology	2	0	0			
C structure symb WFS 110140 (flag pole landscape) 3 0 0	C structure symb WFS	110140	(flag pole_landscape)	3	0	0			
C X structure bldg WFS 110111 Civil Existing Building Outline 3 0 0	C X structure bldg WFS	110111	Civil Existing Building Outline	3	0	0			
C V structures infor WES 110121 shad earth as datal string)		110101	Civil Existing Structures (garage,	1	0	0			
C_X_structure_initra_WFS 110121 shed, porch, pedestal, stairs) 1 0 0	C_X_structure_initra_wFS	110121	sned, porch, pedestal, stairs)	1	0	0			
C_X_structure_wall_WFS 110131 Civil Existing Wall (retaining, berm) 1 0 0 Civil Existing Structure Symbology	C_X_structure_wall_wFS	110131	Civil Existing Wall (retaining, berm) Civil Existing Structure Symbology	1	0	0			
C_X_structure_symb_WFS 110141 (flag pole, landscape) 1 0 0	C_X_structure_symb_WFS	110141	(flag pole, landscape)	1	0	0			
C street lin WES 110210 sidewalk driveway pavement) 7 0 0	C street lin WFS	110210	Civil Proposed Street (curb, sidewalk_driveway_payement)	7	0	0			
C_succt_IM_W15 110210 sidewark, diffeewark, pavement) 7 0 0	C_succi_iii_wrs	110210	Civil Existing Street (ourb. sidewalk	/	0	0			
C X street lin WFS 110211 driveway pavement) 1 0 0	C X street lin WFS	110211	driveway pavement)	1	0	0			
Civil Proposed Street Infrastructure		110211	Civil Proposed Street Infrastructure	1	0	0			
C street infra WFS 110220 (bench planter guardrail railing) 2 0 0	C street infra WES	110220	(bench planter guardrail railing)	2	0	0			
Civil Existing Street Infrastructure		110220	Civil Existing Street Infrastructure	2	0				
C X street infra WFS 110221 (bench. planter, guardrail, railing) 1 0 0	C X street infra WFS	110221	(bench, planter, guardrail, railing)	1	0	0			
C_street_symb_WFS110230Civil Proposed Street Symbology400	C_street_symb_WFS	110230	Civil Proposed Street Symbology	4	0	0			

		(signage)			
		Civil Existing Street Symbology			
C_X_street_symb_WFS	110231	(signage)	1	0	0
		Civil Existing TTC Infrastructure			
C_X_street_ttc_lin_WFS	110241	(tracks, stop shelters)	1	0	0
		Civil Existing TTC Symbology			
C_X_street_ttc_symb_WFS	110251	(signage)	1	0	0
		Civil Existing Railway Infrastructure			
C_X_street_rail_lin_WFS	110261	(tracks, platforms)	1	0	0
		Civil Existing Railway Symbology			
C_X_street_rail_symb_WFS	110271	(signage)	1	0	0
		Civil Proposed Topography (shore,			
C topo lin WFS	110310	creek, pit, ditch, bank)	7	0	0
		Civil Existing Topography (shore,			
C X topo lin WFS	110311	creek, pit, ditch, bank)	1	0	0
		Civil Proposed Topography			
C topo symb WFS	110320	Symbology (ground,)	7	0	0
		Civil Existing Topography			
C X topo symb WFS	110321	Symbology (ground,)	1	0	0
		Civil Proposed Vegetation (treed			
C X veget lin WFS	110330	area, bush, shrub, grass)	3	0	0
		Civil Existing Vegetation (treed area.			
C X veget lin WFS	110331	bush. shrub. grass)	1	0	0
		Civil Proposed Vegetation			
C veget symb WFS	110340	Symbology	3	0	0
C X veget symb WFS	110341	Civil Existing Vegetation Symbology	1	0	0
C X property sl WFS	110411	Civil Existing Street Line	30	0	0
C X property lin WES	110421	Civil Existing Property (fence gate)	1	0	0
	110121	Civil Existing Property Symbology	1		0
C X property symb WFS	110431	(post)	1	0	0
	110101	Civil Existing Legal Fabrics	1		0
C X property legal WFS	110441	(property lines)	1	0	0
C X property leg symb WF	110111	Civil Existing Legal Symbology	1		0
S	110451	(survey monumentation)	1	0	0
5	110101	Civil Existing Hydro Infrastructure	1		0
C X hydro lin WFS	110511	(wire, cable, conduit, transformer)	1	0	0
C X hydro symb WFS	110521	Civil Existing Hydro Symbology	1	0	0
	110021	Civil Existing Gas Infrastructure			, , , , , , , , , , , , , , , , , , ,
C X gas lin WFS	110631	(pipeline)	1	0	0
	110001	Civil Existing Gas Symbology	1		0
C X gas symb WES	110641	(marker)	1	0	0
	110011	Civil Existing Oil Infrastructure	1	0	0
C X oil lin WES	110711	(nineline)	1	0	0
	110/11	Civil Existing Oil Symbology	1	0	0
C X oil symb WFS	110721	(marker pump)	1	0	0
	110721	Civil Existing Telecommunication	1	0	0
C X telecom lin WFS	110811	Infrastructure (cable_duct)	1	0	Ο
	110011	Civil Existing Telecommunication	1	0	0
C X telecom symb WFS	110821	Symbology (box switch)	1	Δ	0
C bh WES	110021	Civil Proposed Boreholes	1	0	0
	110910	Civil r toposed Bolelloles	Z	0	0
C X bh WFS	110911	Civil Existing Boreholes (record)	1	0	0
--------------------	----------	-------------------------------------	----------------------------	---	---
C water cl_WFS	111010	Civil Proposed Watermain Centreline	6	6	0
C water lin WFS	111320	Civil Proposed Watermain	3	0	0
		Civil Proposed Water Structures			
C water struct_WFS	111330	(chamber walls)	30	0	0
		Civil Proposed Water Infrastructure			
C water symb WFS	111340	(symbology)	3	0	0
C X wat cl WFS	111311	Civil Existing Watermain Centreline	1	6	
C X wat lin WFS	111321	Civil Existing Watermain	1	0	0
		Civil Existing Water Structures			
C X wat struct WFS	111331	(chamber walls)	1	0	0
		Civil Existing Water Infrastructure			
C X wat symb WFS	111341	(symbology)	1	0	0
		Civil Proposed Storm Sewer			
C stm cl WFS	112410	Centreline	6	6	0
C stm lin WFS	112420	Civil Proposed Storm Sewer	3	0	0
	-	Civil Proposed Storm Sewer			
C stm struct WFS	112430	Structures (chamber walls)	30	0	0
		Civil Proposed Storm Sewer		~	
C stm symb WFS	112440	Infrastructure (symbology)	3	0	0
		Civil Existing Storm Sewer	-	~	~
C X stm cl WFS	112411	Centreline	1	6	
C X stm lin WFS	112421	Civil Existing Storm Sewer	1	0	0
	112121	Civil Existing Storm Structures	*	~	v
C X stm struct WFS	112431	(chamber walls)	1	0	0
	112121	Civil Existing Storm Sewer	×	~	
C X stm symb WFS	112441	Infrastructure (symbology)	1	0	0
	11-11-11	Civil Proposed Sanitary Sewer	il Pronosed Sanitary Sewer		
C san cl WES	113410	Centreline	6	6	0
C san lin WFS	113420	Civil Proposed Sanitary Sewer	3	0	0
C_Sun_nn_ WI C	115120	Civil Proposed Sanitary Sewer	5	~	
C san struct WFS	113430	Structures (chamber walls)	30	0	0
	115450	Civil Proposed Sanitary Sewer	50		
C can symb WFS	113440	Infrastructure (symbology)	3	0	0
C_San_Symo_W15	11540	Civil Existing Sanitary Sewer	5	0	0
C X san cl WFS	113411	Centreline	1	6	
C X san lin WFS	113421	Civil Existing Sanitary Sewer	<u> </u>	0	0
	115721	Civil Existing Sanitary Sewer	1	V	0
C X can struct WFS	113431	Structures (chamber walls)	1	0	0
	113431	Civil Existing Sonitary Sower	1	U	U
C V can symb WES	113//1	Livii Existilig Sallial y Sewei	1	0	0
	113441	Civil Proposed Combined Sewer	1	U	U
C comb of WES	11///10	Civil Floposeu Comonicu Sewei	6	6	0
C_comb_lin_WES	11//20	Civil Proposed Combined Sewer	2	0	0
	114420	Civil Proposed Combined Sewer	<i>L</i>	U	U
C comb struct WES	114430	Civil Proposed Combined Sewer	30	0	0
	114450	Structures (chamber walls)	30	0	0
C comb symb WES	114440	Livit Proposed Combined Sewer	2	0	0
C_comb_symb_wF5	114440	Civil Evicting Combined Server	3	0	0
C V comb of WES	114411	Civil Existing Combined Sewer	1	C	0
C_A_COMD_CI_WFS	114411	Centreline	1	6	0

C_X_comb_lin_WFS	114421	Civil Existing Combined Sewer	1	0	0
		Civil Existing Combined Sewer			
C_X_comb_struct_WFS	114431	Structures (chamber walls)	1	0	0
		Civil Existing Combined Sewer			
C_X_comb_symb_WFS	114441	Infrastructure (symbology)	1	0	0
	AR	CHITECTURAL LEVELS			
Nomo	Numbor	Description	Level	Level	Level
Name	INUILIDEI	Description	Color	Style	Weight
A_note_WFS	120010	Arch. Proposed Notes	2	0	0
		Arch. Proposed Title Symbology			
A_symb_WFS	120020	(legend, specials)	6	0	0
A_dim_WFS	120030	Arch. Proposed Dimensioning	7	0	0
A_hatch_WFS	120040	Arch. Proposed Hatching	4	0	0
A_grid_WFS	120050	Arch. Proposed Grid	3	0	0
A_cl_WFS	120060	Arch. Proposed Centreline	2	6	0
A_X_note_WFS	120011	Arch. Existing Notes	1	0	0
A_X_dim_WFS	120021	Arch. Existing Dimensioning	1	0	0
A_X_hatch_WFS	120031	Arch. Existing Hatching	166	0	0
A_X_grid_WFS	120041	Arch. Existing Grid	11	0	0
A_X_cl_WFS	120051	Arch. Existing Centreline	1	0	0
A_floor_WFS	120110	Arch. Proposed Floor Finishes	3	0	0
		Arch. Proposed Floor Special			
A_floor_special_WFS	120120	Features	3	0	0
		Arch. Proposed External Walls (non			
A_wall_ext_WFS	120210	structural)	5	0	0
A_wall_int_WFS	120220	Arch. Proposed Internal Walls	2	0	0
A_wall_partition_WFS	120230	Arch. Proposed Partition Walls	2	0	0
	Arch. Proposed Frames (door &				
A_wall_frame_WFS	120240	window headers)	7	0	0
		Arch. Proposed Acoustic Ceiling			
A_ceiling_grid_WFS	120310	Grid	3	0	0
		Arch. Proposed Acoustic Ceiling			
A_ceiling_fin_WFS	120320	Finishes	3	0	0
A_roof_WFS	120410	Arch. Proposed Roof Features	3	0	0
A_roof_opening_WFS	120420	Arch. Proposed Roof Openings	3	0	0
A_door_ext_WFS	120510	Arch. Proposed External Doors	2	0	0
A_door_int_WFS	120520	Arch. Proposed Internal Doors	3	0	0
A_window_ext_WFS	120610	Arch. Proposed External Windows	2	0	0
A_window_int_WFS	120620	Arch. Proposed Internal Windows	3	0	0
A_stair_WFS	120710	Arch. Proposed Stairs, Ladders	3	0	0
		Arch. Proposed Elevators,			
A_lift_WFS	120720	Escalators, Lift Platforms	3	0	0
A_X_floor_WFS	120111	Arch. Existing Floor Finishes	1	0	0
A_X_floor_special_WFS	120121	Arch. Existing Floor Special Features	1	0	0
		Arch. Existing External Walls (non			
A_X_wall_ext_WFS	120211	structural)	1	0	0
A_X_wall_int_WFS	120221	Arch. Existing Internal Walls	1	0	0
A_X_wall_partition_WFS	120231	Arch. Existing Partition Walls	1	0	0
A_X_wall_frame_WFS	120241	Arch. Existing Frames (door &	1	0	0

		· 1 1 1 \			
	100011	window headers)	1	0	0
A_X_ceiling_grid_WFS	120311	Arch. Existing Acoustic Ceiling Grid	1	0	0
	100001	Arch. Existing Acoustic Ceiling		0	0
A_X_ceiling_fin_WFS	120321	Finishes	1	0	0
A_X_root_WFS	120411	Arch. Existing Roof Features	1	0	0
A_X_roof_opening_WFS	120421	Arch. Existing Roof Openings	1	0	0
A_X_door_ext_WFS	120511	Arch. Existing External Doors	1	0	0
A_X_door_int_WFS	120521	Arch. Existing Internal Doors	1	0	0
A_X_window_ext_WFS	120611	Arch. Existing External Windows	1	0	0
A_X_window_int_WFS	120621	Arch. Existing Internal Windows	1	0	0
A_X_stair_WFS	120711	Arch. Existing Stairs, Ladders	1	0	0
		Arch. Existing Elevators, Escalators,			0
A_X_lift_WFS	120721	Lift Platforms	1	0	
		STRUCTURAL LEVELS			
Name Number Description			Level	Level	Level
1 vanie	Tumber	Description	Color	Style	Weight
S_note_WFS	130010	Struct. Proposed Notes	2	0	0
		Struct. Proposed Title Symbology			
S_symb_WFS	130020	(legend, specials)	6	0	0
S_dim_WFS	130030	Struct. Proposed Dimensioning	7	0	0
S_hatch_WFS	130040	Struct. Proposed Hatching	4	0	0
S_grid_WFS	130050	Struct. Proposed Grid	3	0	0
S_cl_WFS	130060	Struct. Proposed Centreline	2	6	0
S_X_dim_WFS	130021	Struct. Existing Dimensioning	1	0	0
S X hatch WFS	130031	Struct. Existing Hatching	166	0	0
S X grid WFS	130041	Struct. Existing Grid	1	0	0
S X cl WFS	130051	Struct. Existing Centreline	1	6	0
S wall WFS	130100	Struct. Proposed Bearing Walls	5	0	0
S beam WFS	130110	Struct. Proposed Beams	30	0	0
S slab WFS	130120	Struct. Proposed Slabs	5	0	0
S column WFS	130130	Struct. Proposed Columns	2	0	0
S deck WFS	130140	Struct. Proposed Decks	3	0	0
	100110	Struct, Proposed Joints (incl.		Ű	0
S joint WFS	130150	expansion and construction)	3	0	0
S brace WFS	130160	Struct. Proposed Bracing	3	0	0
S joist WFS	130170	Struct. Proposed Joists	3	0	0
S open WFS	130180	Struct, Proposed Openings	3	0	0
S X wall WFS	130101	Struct, Existing Bearing Walls	7	0	0
S X beam WFS	130111	Struct, Existing Beams	1	0	0
S X slab WFS	130121	Struct, Existing Slabs	1	0	0
S X column WFS	130131	Struct. Existing Columns	1	0	0
S X deck WFS	130141	Struct, Existing Decks	1	0	0
		Struct. Existing Joints (incl.			
S X joint WFS	130151	expansion and construction)	1	0	0
S X brace WFS	130161	Struct. Existing Bracing	1	0	0
S X joist WFS	130171	Struct. Existing Joists	1	0	0
S X open WFS	130181	Struct. Existing Openings	1	0	0
S rebar WFS	130190	Struct. Proposed Rebar	2	0	0
S X rebar WFS	130191	Struct. Existing Rebar	7	0	0

		Struct. Proposed Piles, Footings,			
S_foundation_WFS	130200	Caisons	3	0	0
		Struct. Exisitng Piles, Footings,			
S_X_foundation_WFS	130201	Caisons	1	0	0
	Ν	MECHANICAL LEVELS			
Nome	Namehon	Description	Level	Level	Level
Name	Number	Description	Color	Style	Weight
M_note_WFS	140010	Mechanical Proposed Notes	2	0	0
		Mechanical Proposed Title			
M_symbT_WFS	140020	Symbology (legend, specials)	6	0	0
M_dim_WFS	140030	Mechanical Proposed Dimensioning	7	0	0
M_hatch_WFS	140040	Mechanical Proposed Hatching	4	0	0
M_grid_WFS	140050	Mechanical Proposed Grid	3	0	0
M_cl_WFS	140060	Mechanical Proposed Centreline	2	6	0
M_X_dim_WFS	140021	Mechanical Existing Dimensioning	1	0	0
M_X_hatch_WFS	140031	Mechanical Existing Hatching	166	0	0
M_X_grid_WFS	140041	Mechanical Existing Grid	1	0	0
M_X_cl_WFS	140051	Mechanical Existing Centreline	1	6	0
M_lin_WFS	140110	Mechanical Proposed Linework	5	0	0
M_symb_WFS	140120	Mechanical Proposed Symbology	3	0	0
M_X_lin_WFS	140111	Mechanical Existing Linework	1	0	0
M_X_symb_WFS	140121	Mechanical Existing Symbology	1	0	0
		Mechanical Proposed HVAC			
M_hvac_lin_WFS	140210	Linework	5	0	0
		Mechanical Proposed HVAC			
M_hvac_symb_WFS	140220	Symbology	3	0	0
		Mechanical Existing HVAC			
M_X_hvac_lin_WFS	140211	Linework	1	0	0
		Mechanical Existing HVAC			
M_X_hvac_symb_WFS	140221	Symbology	1	0	0
]	ELECTRICAL LEVELS			
Name	Number	Description	Level	Level	Level Weight
E noto WES	150010	Electrical Droposed Notes		Style	weight
	130010	Electrical Proposed Title Symbology	Z	0	0
E symbT WES	150020	(legend specials)	6	0	0
E_Symb1_W15	150020	Flectrical Existing Dimensioning	1	0	0
E_A_unit_W15	150021	Electrical Proposed Dimensioning	7	0	0
E_ullin_WFS	150030	Electrical Existing Hatching	166	0	0
E_A_natch_wr5	150031	Electrical Proposed Hatching	100	0	0
E_hatch_wr5	150040	Electrical Existing Grid		0	0
E_A_gind_WTS	150041	Electrical Proposed Grid	1	0	0
E_gild_wild E_X_cl_W/FS	150050	Electrical Existing Controling	/	6	0
E_A_WES	150051	Electrical Droposed Controline	1	6	0
E_CI_WIS E_lin_WES	150110	Electrical Proposed Linework	5	0	0
	150110	Electrical Existing Linework	<u> </u>	0	0
E_A_IIII_WFS E_sumb_WES	150120	Electrical Existing Linework	1	0	0
E_SyIIID_WFS E_X_symb_W/ES	150120	Electrical Proposed Symbology	1	0	0
E_A_SYMD_WFS	150121	Electrical Existing Symbology	1	0	0

		Estant Electrical Description		I	
F F lin WFS	150501	SUD Linework	1	0	0
	130301	Future Electrical Record Drawing	1	0	
E F symb WFS	150511	SLD Symbology	1	0	0
		Future Electrical Record Drawing			
E_F_note_WFS	150521	SLD Notes	1	0	0
		Existing Electrical Record Drawing			
E_R_lin_WFS	150531	SLD Linework	2	0	0
E D avent WES	150541	Existing Electrical Record Drawing	5	0	0
E_K_SYIIID_WFS	130341	SLD Symbology Existing Electrical Record Drawing	5	U	U
E R note WFS	150551	SLD Notes	7	0	0
		Existing Electrical Record Drawing		~	~
E_R_ctrl_WFS	150561	SLD Control Elements	7	0	0
	PF	ROCESS PIPING LEVELS			
Nieme	Nhow	Description	Level	Level	Level
Iname	Number	Description	Color	Style	Weight
P_note_WFS	160010	Process Piping Proposed Notes	2	0	0
		Process Piping Proposed Title			
P_symbT_WFS	160020	Symbology (legend, specials)	6	0	0
P_X_grid_WFS	160041	Process Piping Existing Grid	1	0	0
P_grid_WFS	160050	Process Piping Proposed Grid	0	0	0
P_X_cl_WFS	160051	Process Piping Existing Centreline	1	6	0
P_cl_WFS	160060	Process Piping Proposed Centreline	2	6	0
P_lin_WFS	160110	Process Piping Proposed Linework	5	0	0
P_X_lin_WFS	160111	Process Piping Existing Linework	1	0	0
P_symb_WFS	160120	Process Piping Proposed Symbology	3	0	0
P_X_symb_WFS	160121	Process Piping Existing Symbology	1	0	0
P_X_Wat_Sys_WFS	165001	Existing Plant Water System	162	0	2
		Existing Plant Potable Water (City)			
P_X_CtyWat Sys_WFS	165011	System	140	0	2
P_X_Ng_Sys_WFS	165021	Existing Plant Gas (Natural) System	50	0	2
P_X_DG_Sys_WFS	165031	Existing Plant Digester Gas System	52	0	2
P_X_PAir_Sys_WFS	165041	Existing Plant Process Air System	61	0	2
		Existing Plant Instrumental Air			
P_X_InstrAir_Sys_WFS	165051	System	65	0	2
P_X_HVAC_Sys_WFS	165061	Existing Plant HVAC System	251	0	2
P_X_Fp_Sys_WFS	165071	Existing Plant Fire Protection System	240	0	2
P_X_Oc_Sys_WFS	165081	Existing Plant Odour Control System	250	0	2
P_X_HtWat_Sys_WFS	165091	Existing Plant Hot Water System	171	0	2
P_X_Ste_Sys_WFS	165101	Existing Plant Steam System	14	0	2
P_X_Cond_Sys_WFS	165111	Existing Plant Condensate System	144	0	2
P_X_Dr_Sys_WFS	165121	Existing Plant Drain System	92	0	2
P_X_RS_Sys_WFS	165141	Existing Plant Raw Sludge System	84	0	2
	1 < 7 1 7 1	Existing Plant Waste Activated	05		
P_X_WAS_Sys_WFS	165151	Sludge System	85	0	2
P_X_TWAS_Sys_WFS	165161	Existing Plant Thickened Waste	76	0	2

		Activated Sludge System			
		Existing Plant Transfer Sludge			_
P_X_TSS_Sys_WFS	165171	System	87	0	2
	165101	Existing Plant Recirculated Sludge	0.0	0	
P_X_RSS_Sys_WFS	165181	System	88	0	2
P_X_Sc_Sys_WFS	165191	Existing Plant Sludge Cake System	89	0	2
P_X_OF_Sys_WFS	165201	Existing Plant OverFlow System	7	0	2
P_X_DWat_Sys_WFS	165211	Existing Plant Dewatering System	142	0	2
P_X_Ash_Sys_WFS	165221	Existing Plant Ash System	249	0	2
P_X_Oil_Sys_WFS	165231	Existing Plant Oil System	55	0	2
P_X_Chl_Sys_WFS	165241	Existing Plant Chlorine System	253	0	2
P_X_Poly_Sys_WFS	165251	Existing Plant Polymer System	32	0	2
P X Sump Sys WFS	165261	Existing Plant Sump System	107	0	2
P X DeC Sys WFS	165271	Existing Plant Decantate System	42	0	2
P X Cntr Svs WFS	165281	Existing Plant Centrate System	211	0	2
		Existing Plant Sodium Hypochlorite			
P_X_SHp_Sys_WFS	165291	System	242	0	2
		Existing Plant Sulphur Dioxide			
P_X_SDi_Sys_WFS	165301	System	244	0	2
P_X_SewCon_Sys_WFS	165311	Existing Plant Sewage Conduit	44	0	2
		Plant Hilite Display for Record			
		drawings (Thicker Line Weight for			
P_HilLite_WFS	165500	plotting)	200	0	6
	INS	IRUMENTATION LEVELS			
Name	INS'. Number	IRUMENTATION LEVELS	Level	Level	Level
Name	INS'	Description	Level Color	Level Style	Level Weight
Name I_note_WFS	Number 170010	Description Instrumentation Proposed Notes	Level Color 2	Level Style	Level Weight
Name I_note_WFS	Number 170010	Description Instrumentation Proposed Notes Instrumentation Proposed Title	Level Color 2	Level Style	Level Weight
Name I_note_WFS I_symbT_WFS	INS' Number 170010 170020	Instrumentation Proposed Notes Instrumentation Proposed Title Symbology (legend, specials)	Level Color 2 6	Level Style 0	Level Weight 0
Name I_note_WFS I_symbT_WFS I_X_cl_WFS	INS' Number 170010 170020 170051	Instrumentation Proposed Notes Instrumentation Proposed Title Symbology (legend, specials) Instrumentation Existing Centreline	Level Color 2 6 1	Level Style 0 0 6	Level Weight 0 0 0
Name I_note_WFS I_symbT_WFS I_X_cl_WFS I_cl_WFS I_thereau	INS' Number 170010 170020 170051 170060	Instrumentation Proposed Notes Instrumentation Proposed Title Symbology (legend, specials) Instrumentation Existing Centreline Instrumentation Proposed Centreline	Level Color 2 6 1 2	Level Style 0 0 6 6	Level Weight 0 0 0 0
Name I_note_WFS I_symbT_WFS I_X_cl_WFS I_cl_WFS I_lin_WFS	INS' Number 170010 170020 170051 170060 170110	Instrumentation Proposed Notes Instrumentation Proposed Notes Instrumentation Proposed Title Symbology (legend, specials) Instrumentation Existing Centreline Instrumentation Proposed Centreline	Level Color 2 6 1 2 5	Level Style 0 0 6 6 6 0	Level Weight 0 0 0 0 0
NameI_note_WFSI_symbT_WFSI_X_cl_WFSI_cl_WFSI_lin_WFSI_X_lin_WFS	INS' Number 170010 170020 170051 170060 170110 170111	Instrumentation Proposed Notes Instrumentation Proposed Notes Instrumentation Proposed Title Symbology (legend, specials) Instrumentation Existing Centreline Instrumentation Proposed Centreline Instrumentation Proposed Linework	Level Color 2 6 1 2 5 5	Level Style 0 0 6 6 6 0 0 0	Level Weight 0 0 0 0 0 0 0
Name I_note_WFS I_symbT_WFS I_X_cl_WFS I_cl_WFS I_lin_WFS I_X_lin_WFS	INS' Number 170010 170020 170051 170060 170110 170111	Instrumentation Proposed Notes Instrumentation Proposed Notes Instrumentation Proposed Title Symbology (legend, specials) Instrumentation Existing Centreline Instrumentation Proposed Centreline Instrumentation Proposed Linework Instrumentation Existing Linework	Level Color 2 6 1 2 5 1	Level Style 0 0 0 6 6 6 0 0 0	Level Weight 0 0 0 0 0 0 0
Name I_note_WFS I_symbT_WFS I_X_cl_WFS I_cl_WFS I_lin_WFS I_X_lin_WFS I_symb_WFS I_NEC	INS [*] Number 170010 170020 170051 170060 170110 170110 170111	Instrumentation Proposed Notes Instrumentation Proposed Notes Instrumentation Proposed Title Symbology (legend, specials) Instrumentation Existing Centreline Instrumentation Proposed Centreline Instrumentation Proposed Linework Instrumentation Existing Linework Instrumentation Proposed Symbology	Level Color 2 6 1 2 5 1 3	Level Style 0 0 6 6 6 0 0 0 0	Level Weight 0 0 0 0 0 0 0 0 0
NameI_note_WFSI_symbT_WFSI_X_cl_WFSI_cl_WFSI_lin_WFSI_X_lin_WFSI_symb_WFSI_X_symb_WFS	INS' Number 170010 170020 170051 170060 170110 170120 170121	Instrumentation Proposed Notes Instrumentation Proposed Notes Instrumentation Proposed Title Symbology (legend, specials) Instrumentation Existing Centreline Instrumentation Proposed Centreline Instrumentation Proposed Linework Instrumentation Proposed Linework Instrumentation Proposed Symbology Instrumentation Proposed Symbology Instrumentation Existing Symbology	Level Color 2 6 1 2 5 1 3 1	Level Style 0 0 6 6 6 0 0 0 0 0 0	Level Weight 0 0 0 0 0 0 0 0 0 0 0
NameI_note_WFSI_symbT_WFSI_X_cl_WFSI_cl_WFSI_lin_WFSI_X_lin_WFSI_symb_WFSI_X_symb_WFS	INS' Number 170010 170020 170051 170060 170110 170120 170121	Instrumentation Proposed Notes Instrumentation Proposed Notes Instrumentation Proposed Title Symbology (legend, specials) Instrumentation Existing Centreline Instrumentation Proposed Centreline Instrumentation Proposed Linework Instrumentation Existing Linework Instrumentation Proposed Symbology Instrumentation Existing Symbology BRIDGE LEVELS	Level Color 2 6 1 2 5 1 3 1 3	Level Style 0 0 0 6 6 0 0 0 0 0 0 0 0 0 0 0 0 0	Level Weight 0 0 0 0 0 0 0 0 0 0
Name I_note_WFS I_symbT_WFS I_X_cl_WFS I_cl_WFS I_lin_WFS I_X_lin_WFS I_symb_WFS I_X_symb_WFS Name	INS' Number 170010 170020 170051 170060 170110 170111 170120 170121 Number	Instrumentation Proposed Notes Instrumentation Proposed Notes Instrumentation Proposed Title Symbology (legend, specials) Instrumentation Existing Centreline Instrumentation Proposed Centreline Instrumentation Proposed Centreline Instrumentation Proposed Linework Instrumentation Proposed Symbology Instrumentation Existing Linework Instrumentation Proposed Symbology Instrumentation Existing Symbology BRIDGE LEVELS Description	Level Color 2 6 1 2 5 1 3 1 Level	Level Style 0 0 0 6 6 0 0 0 0 0 0 Level	Level Weight 0 0 0 0 0 0 0 0 0 0 0 0 0
Name I_note_WFS I_symbT_WFS I_X_cl_WFS I_cl_WFS I_lin_WFS I_X_lin_WFS I_symb_WFS I_X_symb_WFS Name	INS' Number 170010 170020 170051 170060 170110 170120 170121 Number	Instrumentation Proposed Notes Instrumentation Proposed Notes Instrumentation Proposed Title Symbology (legend, specials) Instrumentation Existing Centreline Instrumentation Proposed Centreline Instrumentation Proposed Centreline Instrumentation Proposed Linework Instrumentation Proposed Symbology Instrumentation Existing Linework Instrumentation Proposed Symbology Instrumentation Existing Symbology BRIDGE LEVELS Description	Level Color 2 6 1 2 5 1 3 1 2 5 1 1 2 5 1 1 2 5 1 1 2 5 5 1 1 2 5 5 1 1 2 5 5 1 1 2 5 5 1 1 2 5 5 1 1 2 5 5 1 1 1 2 5 5 1 1 1 1	Level Style 0 0 0 0 0 0 0 0 0 Level Style	Level Weight 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Name I_note_WFS I_symbT_WFS I_X_cl_WFS I_cl_WFS I_lin_WFS I_X_lin_WFS I_symb_WFS I_X_symb_WFS Name	INS' Number 170010 170020 170051 170060 170110 170120 170121 Number	IRUMENTATION LEVELS Description Instrumentation Proposed Notes Instrumentation Proposed Title Symbology (legend, specials) Instrumentation Existing Centreline Instrumentation Proposed Centreline Instrumentation Proposed Linework Instrumentation Proposed Linework Instrumentation Proposed Symbology Instrumentation Proposed Symbology Instrumentation Existing Linework Instrumentation Proposed Symbology Instrumentation Existing Symbology BRIDGE LEVELS Description Bridges Proposed Approach Slab, Abutment Wingurall, Description	Level Color 2 6 1 2 5 1 3 1 3 1 Level Color	Level Style 0 0 0 6 6 0 0 0 0 0 0 1 Level Style	Level Weight 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Name I_note_WFS I_symbT_WFS I_X_cl_WFS I_cl_WFS I_lin_WFS I_X_lin_WFS I_symb_WFS I_x_symb_WFS Name P_bwall_WES	INS' Number 170010 170020 170051 170060 170110 170120 170121 Number 180000	IRUMENTATION LEVELS Description Instrumentation Proposed Notes Instrumentation Proposed Title Symbology (legend, specials) Instrumentation Existing Centreline Instrumentation Proposed Centreline Instrumentation Proposed Linework Instrumentation Proposed Linework Instrumentation Proposed Symbology Instrumentation Existing Linework Instrumentation Proposed Symbology Instrumentation Existing Symbology BRIDGE LEVELS Description Bridges Proposed Approach Slab, Abutment, Wingwall, Bearing Wall Piage	Level Color 2 6 1 2 5 1 3 1 2 5 1 1 2 5 1 1 2 5 1 1 2 5 5 1 1 2 5 1 1 2 5 1 1 2 5 5 1 1 2 5 5 1 1 2 3 1 1 2 3 1 1 2 3 1 1 2 3 3 1 1 2 3 3 1 2 3 3 1 2 3 3 1 2 3 3 1 3 3 1 3 3 1 3 3 1 3 3 3 3	Level Style 0 0 0 6 6 0 0 0 0 0 0 Level Style	Level Weight 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Name I_note_WFS I_symbT_WFS I_X_cl_WFS I_cl_WFS I_lin_WFS I_symb_WFS I_symb_WFS I_x_symb_WFS Name B_bwall_WFS P_cable_WES	INS' Number 170010 170020 170051 170060 170110 170120 170121 Number 180090 180100	IRUMENTATION LEVELS Description Instrumentation Proposed Notes Instrumentation Proposed Title Symbology (legend, specials) Instrumentation Existing Centreline Instrumentation Proposed Centreline Instrumentation Proposed Centreline Instrumentation Proposed Linework Instrumentation Proposed Symbology Instrumentation Proposed Symbology Instrumentation Existing Symbology BRIDGE LEVELS Description Bridges Proposed Approach Slab, Abutment,Wingwall, Bearing Wall,Piers Bridges Proposed Cable & Tandon	Level Color 2 6 1 2 5 1 3 1 2 5 1 1 2 5 1 1 2 5 1 1 2 5 5 1 1 2 5 5 1 1 2 5 5 1 1 2 5 5 1 1 2 3 1 2 3 3 3 3 3 3	Level Style 0 0 0 0 0 0 0 0 0 0 0 0 0	Level Weight 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Name I_note_WFS I_symbT_WFS I_X_cl_WFS I_cl_WFS I_cl_WFS I_lin_WFS I_X_lin_WFS I_symb_WFS I_symb_WFS I_x_symb_WFS Mame B_bwall_WFS B_cable_WFS B_cl_WFS	INS' Number 170010 170020 170051 170060 170110 170120 170121 Number 180090 180100 180050	IRUMENTATION LEVELS Description Instrumentation Proposed Notes Instrumentation Proposed Title Symbology (legend, specials) Instrumentation Proposed Centreline Instrumentation Proposed Centreline Instrumentation Proposed Linework Instrumentation Proposed Linework Instrumentation Proposed Symbology Instrumentation Existing Linework Instrumentation Existing Symbology BRIDGE LEVELS Description Bridges Proposed Approach Slab, Abutment, Wingwall, Bearing Wall, Piers Bridges Proposed Cable & Tendon Bridges Proposed Cable & Tendon	Level Color 2 6 1 2 5 1 3 1 1 Level Color 3 3 3	Level Style 0 0 0 6 0 0 0 0 0 0 0 0 0 0 0 0 0	Level Weight 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Name I_note_WFS I_symbT_WFS I_X_cl_WFS I_cl_WFS I_lin_WFS I_X_lin_WFS I_symb_WFS I_symb_WFS I_x_symb_WFS Mame B_bwall_WFS B_cable_WFS B_cl_WFS B_dim_WES	INS' Number 170010 170020 170051 170060 170110 170120 170121 Number 180090 180050 180030	IRUMENTATION LEVELS Description Instrumentation Proposed Notes Instrumentation Proposed Title Symbology (legend, specials) Instrumentation Existing Centreline Instrumentation Proposed Centreline Instrumentation Proposed Linework Instrumentation Proposed Linework Instrumentation Proposed Symbology Instrumentation Existing Linework Instrumentation Proposed Symbology Instrumentation Existing Symbology BRIDGE LEVELS Description Bridges Proposed Approach Slab, Abutment, Wingwall, Bearing Wall, Piers Bridges Proposed Cable & Tendon Bridges Proposed Centreline Bridges Proposed Centreline	Level Color 2 6 1 2 5 1 3 1 2 5 1 1 2 5 1 1 2 5 1 1 2 5 5 1 1 2 5 5 1 1 2 5 1 1 2 5 5 1 1 2 5 5 1 1 2 5 5 1 1 2 5 5 1 1 1 2 5 5 1 1 1 2 5 5 1 1 1 1	Level Style 0 0 0 6 0 0 0 0 0 0 0 0 0 0 0 0 0	Level Weight 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Name I_note_WFS I_symbT_WFS I_X_cl_WFS I_cl_WFS I_lin_WFS I_X_lin_WFS I_symb_WFS I_symb_WFS I_x_symb_WFS I_symb_WFS B_bwall_WFS B_cable_WFS B_cl_WFS B_dim_WFS B_bwach_WES	INS' Number 170010 170020 170051 170060 170110 170120 170121 Number 180090 180100 180030 180040	IRUMENTATION LEVELS Description Instrumentation Proposed Notes Instrumentation Proposed Title Symbology (legend, specials) Instrumentation Existing Centreline Instrumentation Proposed Centreline Instrumentation Proposed Linework Instrumentation Proposed Linework Instrumentation Proposed Symbology Instrumentation Proposed Symbology Instrumentation Existing Symbology BRIDGE LEVELS Description Bridges Proposed Approach Slab, Abutment, Wingwall, Bearing Wall, Piers Bridges Proposed Cable & Tendon Bridges Proposed Dimensioning Bridges Proposed Dimensioning	Level Color 2 6 1 2 5 1 3 1 2 5 1 1 3 1 2 5 1 1 2 5 1 1 2 5 1 1 2 5 1 1 3 3 1 1 2 5 5 1 1 3 1 1 2 5 5 1 1 3 1 1 2 5 5 1 1 1 2 5 5 1 1 1 2 5 5 1 1 1 2 5 5 1 1 1 1	Level Style 0 0 0 0 0 0 0 0 0 0 0 0 0	Level Weight 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Name I_note_WFS I_symbT_WFS I_X_cl_WFS I_cl_WFS I_lin_WFS I_x_lin_WFS I_symb_WFS I_symb_WFS I_x_symb_WFS B_bwall_WFS B_cable_WFS B_cl_WFS B_dim_WFS B_hatch_WFS B_lin_WFS	INS ['] Number 170010 170020 170051 170060 170110 170110 170111 170120 170121 Number 180090 180090 180090 180050 180030 180040 180060	IRUMENTATION LEVELS Description Instrumentation Proposed Notes Instrumentation Proposed Title Symbology (legend, specials) Instrumentation Existing Centreline Instrumentation Proposed Centreline Instrumentation Proposed Linework Instrumentation Proposed Linework Instrumentation Proposed Symbology Instrumentation Existing Linework Instrumentation Existing Symbology BRIDGE LEVELS Description Bridges Proposed Approach Slab, Abutment, Wingwall, Bearing Wall, Piers Bridges Proposed Cable & Tendon Bridges Proposed Dimensioning Bridges Proposed Linework	Level Color 2 6 1 2 5 1 3 1 1 2 5 1 1 3 1 2 5 1 1 2 5 1 1 2 5 1 1 3 3 1 1 2 5 5 1 1 3 1 1 2 5 5 1 1 3 1 1 2 5 5 1 1 2 5 5 1 1 1 2 5 5 1 1 1 2 5 5 1 1 1 2 5 5 1 1 1 2 5 5 1 1 1 1	Level Style 0 0 0 0 0 0 0 0 0 0 0 0 0	Level Weight 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

B_note_WFS	180010	Bridges Proposed Notes (Text)	2	0	0
B_rebar_WFS	180080	Bridges Proposed Rebar	5	0	0
		Bridges Proposed Gabion, Armour			
B_retsystem_WFS	180120	Stones, Slope Paving, RSS	3	0	0
B_symb_WFS	180070	Bridges Proposed Symbology	7	0	0
		Bridges Proposed Title Symbology			
B_symbT_WFS	180020	(legend, specials)	3	0	0
B_trafficIn_WFS	180110	Bridges Proposed Traffic Lanes	2	0	0
		Bridges Existing Approach Slab,			
		Abutment, Wingwall, Bearing			
B_X_bwall_WFS	180091	Wall,Piers	1	0	0
B_X_cable_WFS	180101	Bridges Existing Cable & Tendon	1	0	0
B_X_cl_WFS	180051	Bridges Existing Centreline	1	6	0
B_X_dim_WFS	180031	Bridges Existing Dimensioning	1	0	0
B_X_hatch_WFS	180041	Bridges Existing Hatching	1	0	0
B_X_lin_WFS	180061	Bridges Existing Linework	1	0	0
B_X_rebar_WFS	180081	Bridges Existing Rebar	1	0	0
		Bridges Existing Gabion, Armour			
B_X_retsystem_WFS	180121	Stones, Slope Paving, RSS	1	0	0
B_X_symb_WFS	180071	Bridges Existing Symbology	1	0	0
		Bridges Existing Title Symbology			
B_X_symbT_WFS	180021	(legend, specials)	1	0	0
B_X_trafficIn_WFS	180111	Bridges Existing Traffic Lanes	1	0	0
		Bridges Proposed Deck, Girder,			
B_superstructure_WFS	180210	Camber	3	0	0
		Bridges Existing Deck, Girder,			
B_X_superstructure_WFS	180211	Camber	1	0	0

APPENDIX B – CELL LIBRARIES

PART 1 - ARCHITECTURAL CELLS

Cell name	Cell description
AR010	SINK WALL HUNG
AR011	SINK SINGLE BOWL
AR012	SINK DOUBLE BOWL
AR013	SINK OVAL
AR014	SINK WALL HUNG PHYSICALLY CHALLENGED
AR015	RAIL PHYSICALLY CHALLENGED
AR016	TOWEL BAR
AR017	URINAL
AR018	TOILET WALL HUNG
AR019	TOILET STANDARD
AR020	BIDET
AR021	FOUNTAIN WASH (circular)
AR022	FOUNTAIN WASH (1/2 circle)
AR023	FOUNTAIN WASH (1/2 circle)
AR024	SHOWER
AR025	SHOWER CORNER
AR026	BATHTUB
AR027	SHOWER COLUMN
AR028	FOUNTAIN DRINKING
AR029	RANGE
AR030	WASHER
AR031	DRYER
AR032	DISHWASHER
AR033	DISHWASHER BUILT IN
AR034	WASHER/DRYER
AR035	REFRIGERATOR
AR036	REFRIGERATOR BUILT IN
AR037	FREEZER CHEST TYPE
AR038	FURNACE
AR039	DOOR
AR040	DOOR DOUBLE
AR041	DOOR DOUBLE ACTING
AR042	DOOR SWINGING IN AND OUT
AR043	DOOR FOLDING (type 1)
AR044	DOOR BIFOLDING
AR045	DOOR SLIDING
AR046	DOOR-FOLDING (type 2)
AR047	DOOR REVOLVING
AR048	ELEVATOR
AR049	WINDOW UNIT
AR050	LADDER

AR051	LADDER CAGED
AR052	WOODGRAIN PATTERN
AR053	INSULATION-BATT, 150mm
AR054	INSULATION-RIGID, 75mm
AR055	GRAVEL
AR056	ROCK



AR042	AR043	ARO44	AR045
AR046	ARO47	ARO48	AR049
AR050	AR05/	AR052	AR053 }????????????????
ARO54 ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	AR055	AR056	

PART 2 - CIVIL CELLS

Cell name	Cell description
CV01	BEACON
CV02	BENCH MARK
CV03	BIKE POST
CV04	BOLLARD
CV05	BOREHOLE
CV06	BRASS CAP
CV07	BUSH (CONIFEROUS)
CV08	CIRCULAR CATCH BASIN
CV09	DOUBLE CATCH BASIN
CV10	SINGLE CATCH BASIN
CV103_W	BORE HOLE CHART
CV105 W	BENDING CHART
CV109 2 W	PLAN & PROFILE ACCESSORIES 1:200
CV109 5 W	PLAN & PROFILE ACCESSORIES 1:500
 CV11	CENTER LINE SYMBOL
CV110 W	PLAN & PROFILE NOTES
	COMBINED EWER MAINTENANCE HOLE
CV12	COVER
CV13	CUT CROSS
CV14	DRAIN
CV15 W	DUCT IN PROFILE
CV16	FIRE STAND PIPE
CV17	FLOW ARROW
CV18	GAS MAINTENANCE HOLE COVER
CV19	GAS PUMP
CV20	GAS REGULATOR BOX
CV21	GAS VALVE
CV22	GAS VENT
CV23	FENCE GATE
CV24	GATE VALVE
CV25	GRATE
CV26	GUY POLE
CV27	HORIZONTAL CONTROL MARKER
CV28	HANDWELL (VARIOUS)
CV29	HEDGE
CV30	HUB ON LINE
CV31	FIRE HYDRANT AND VALVE
CV32	LEVEL RAILWAY CROSSING
CV33	LIGHT STANDARD
CV34	MARSH
	STORM SEWER MAINTENANCE HOLE
CV35	COVER
CV36	PARKING METER
CV37	TV/ ELECTRIC PEDESTAL
CV38	POINT/TICK

	CADD	Specifications	for MicroStation	V8
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CV39	POLE (VARIOUS)
CV40	POST
CV41	CPR/CNR MAINTENANCE HOLE COVER
CV42	RIB or IP
CV43	RAILROAD CROSSING
CV44	RAILWAY SWITCH
	SANITARY SEWER MAINTENANCE
CV45	HOLE COVER
CV46	SEWER BREATHER
CV47	SEWER VALVE
CV48	SHRUB
CV49	SIB or IB
CV50	SIGN
CV51	SPRINKLER
CV52	STORM METER CHAMBER
CV53	TREE STUMP
CV54	SWAMP
CV55	SWITCH SYMBOL
CV56	SIGNAL CONTROL BOX
CV57	TRAFFIC LIGHT
CV58	TRANSFORMER SWITCH
CV59	TRAVERSE POINT
CV60	CONIFEROUS TREE
CV61	DECIDUOUS TREE
CV62	RESIDENTIAL TV ANT
CV63_W	UTILITY IN PROFILE
CV64	VALVE
CV65	WATER KEY
CV66	WATER VALVE CHAMBER
CV67_W	PLAN & PROFILE GRID
CV68_W	PROFILE LEFT INSERT
CV69_W	PROFILE RIGHT INSERT







PART 3 - ELECTRICAL CELLS

Cell name	Cell description
EL-1A001	BUS DUCT (HORIZ)
EL-1A002	BUS DUCT (ROT) (VERT)
EL-1A009	POTENTIAL TRANSFORMER
EL-1A010	ZERO SEQUENCE POTENTIAL TRANSFORMER
EL-1A016	BUSHING CURRENT TRANSFORMER
EL-1A017	DISCONECT SWITCH, FUSED
EL-1A019	DISCONECT SWITCH
EL-1A020	DISCONECT SWITCH, NON ISOLATED
EL-1A021	BREAKER (ROTATED)
EL-1A025	RELAY COIL (GENERAL)
EL-1A028	VARIABLE SPEED DRIVE
EL-1A032	RESISTOR
EL-1A033	VARIABLE RESISTOR
EL-1A035	METERING
EL-1A036	DIGITAL METERING
EL-1A038	SWITCH (GENERAL)
EL-1A039	DISCONNECT SWITCH
EL-1A045	MISCELLANEOUS PROTECTION
EL-1A046	LIGHTING PANEL OR CONTROL STATION
EL-1A089	3-PHASE BREAKER
EL-1A090	BREAKER
EL-1A091	BREAKER (ROT)
EL-1A092	FUSE
EL-1A093	FUSE (ROT)
EL-1A094	RELAY CONTACT W/PIN (N.O.)
EL-1A095	RELAY CONTACT W/PIN (N.C.)
EL-1A096	PUSH BUTTON (N.O.)
EL-1A097	PUSH BUTTON (N.C.)
EL-1A098	2-POSITION SELECTOR SWITCH D.
EL-1A099	3-POSITION SELECTOR SWITCH D
EL-1A100	3-PHASE DICONNECT SWITCH
EL-1A101	SWITCH S.P.S.T.
EL-1A102	SWITCH S.P.D.T.
EL-1A103	4-POSITION SWITCH S.P
EL-1A104	2-POSITION SELECTOR SWITCH S.
EL-1A105	3-POSITION SELECTOR SWITCH D.
EL-1A106	BATTERY
EL-1A111	LIGHT (GENERAL)
EL-1A115	FAN (GENERAL)
EL-1A117	SOLENOID
EL-1A118	LIMIT SWITCH (N.O.)
EL-1A119	LIMIT SWITCH (N.C.)
EL-1A120	FLOW SWITCH (N.O.)
EL-1A121	FLOW SWITCH (N.C.)
EL-1A122	LEVEL SWITCH (N.O.)

EL-1A123	LEVEL SWITCH (N.C.)
EL-1A124	PRESSURE SWITCH (N.O.)
EL-1A125	PRESSURE SWITCH (N.C.)
EL-1A126	TEMPERATURE SWITCH (N.O.)
EL-1A127	TEMPERATURE SWITCH (N.C.)
EL-1A128	VIBRATION SWITCH (N.O.)
EL-1A129	VIBRATION SWITCH (N.C.)
EL-1A130	SWITCH (GENERAL - N.O.)
EL-1A131	SWITCH (GENERAL - N.C.)
EL-1A132	DIFFERENTIAL PRESSURE SWITCH (N.O.)
EL-1A133	DIFFERENTIAL PRESSURE SWITCH (N.C.)
EL-1A134	TIME SWITCH - DELAY TO OPEN WHEN DEENERGIZED
EL-1A135	TIME SWITCH - DELAY TO CLOSE WHEN DEENERGIZED
EL-1A136	TIME SWITCH - DELAY TO CLOSE WHEN ENERGIZED
EL-1A137	TIME SWITCH - DELAY TO OPEN WHEN ENERGIZED
EL-1N008	AUTOTRANSFORMER
EL-1N023	OVERLOAD
EL-1N024	MAGNETIC TRIP
EL-1N029	LIGHTNING ARRESTOR
EL-1N030	SURGE CAPACITOR
EL-1N052	EMERGENCY LIGHT
EL-1N056	FLUORESCENT FIXTURE
EL-1N057	WALL MOUNTED FIXTURE
EL-1N058	CEILING MOUNTED FIXTURE
EL-1N059	WALL MOUNTED FAN
EL-1N082	SEAL
EL-1N083	FLEX
EL-1N084	GROUND WELL
EL-1N085	GROUND WELL
EL-1N109	SURGE PROTECTION
EL-1N110	PHOTODIODE
EL-2A007	TRANSFORMER W/MAGNETIC CORE
EL-2A039	WOUND OR CAGE MOTOR
EL-2A040	SYNCHRONOUS MOTOR
EL-2A041	GENERATOR
EL-2A042	HEATER
EL-2A043	LIGHTING PANEL
EL-2A116	TIME RELAY COIL W/PIN
EL-2N089	JUNCTION BOX
EL-3A006	TRANSFER SWITCH H.V.
EL01N079	CONDUIT UP
EL01N080	CONDUIT DOWN
EL05A011	CURRENT TRANSFORMER
EL05A015	NEUTRAL GROUNDING W/RESISTOR
EL05A022	BREAKER
EL05A031	CAPACITOR
EL05A113	CONTROL LIGHT
EL05A114	SOUND ALARM
EL05A115	SENSOR

EL05A138	TERMINAL BLOCK
EL05A152	TERMINAL BLOCK
EL05A160	TERMINAL BLOCK
EL05A168	TERMINAL BLOCK
EL05A182	TERMINAL BLOCK
EL05A200	TERMINAL BLOCK W/NUMBER INSIDE
EL05N004	CONNECTOR ASSY. (MOVABLE)
EL05N005	STRESS CONE
EL05N012	DELTA
EL05N013	WYE
EL05N014	GROUNDED WYE
EL05N034	GROUND
EL05N052	BUZZER
EL05N053	BELL
EL05N055	SPEAKER, HORN
EL05N057	DOOR CARD READER
EL05N058	MOTION SENSOR
EL05N061	ROTATING BEACON
EL05N067	ANALOG THERMOMETER
EL05N071	THERMOSTAT
EL05N072	MOTOR STARTER
EL05N073	SINGLE RECEPTACLE
EL05N074	DUPLEX RECEPTACLE
EL05N075	WELDING RECEPTACLE
EL05N076	SPECIAL PURPOSE RECEPTACLE
EL05N077	SWITCH (CHOICE OF TYPE)
EL05N078	CONTROL STATION
EL05N086	ТАР
EL05N087	CONNECTION
EL05N107	DIODE
EL05N108	RECTIFIFIER
EL05N201	UNION
EL15A027	REVERSE CONTACTOR
EL15N100	MOTOR STARTER
EL25A026	CONTACT
EL25N003	DOT
EL25N004	PUSH BUTTON (GR) 1
EL25N005	DISCONNECT HANDLE (GR)
EL25N006	SELECTOR SWITCH (GR)
EL25N007	VALVE (GR)

EL-IAOOI	EL-1A002	EL-IA009	EL-IAOIO
BUS_SIZE	BUS_SIZE) (BJS_RATING	PT_RATIO } { NO	PT_RATIO €
EL-IAOIG	EL-IADI ELOSE AT FUSE AT	PISC_SIZE	EL-IA020
BKR_AT 0) BKR_AT BKR_AF	EL-IAO25	EL-IA028 VSD	EL-IA032
EL-IA033	EL-IA035 METER	<i>EL-IA036</i> MTR	EL-IA038
EL-IA039	<i>EL-IA045</i>	<i>EL-1A046</i>	EL-IA089
EL-1A039 SW EL-1A090 CCT_TAG O BKR_SIZE	EL-IA045	EL-IA046 EL-IA092 FUSE_SIZE	EL-IA089 CCTAG O O O O O O O O O O O O O
EL-IA039 SW SW $EL-IA090$ CCT_TAG O BKR_SIZE $EL-IA094$ $CONT_DESCRIPT1$ $CONT_DESCRIPT2$ O O O	EL-IA045 EL-IA09I $cct_size_{o}^{o}cct_tag$ EL-IA095 $cont_descript1$ $cont_descript2$ o+fo P_1P_2	EL-IA046 EL-IA092 FUSE_SIZE B_DESC RIPT1 PB_DESC RIPT2 0	EL-IA089 CC TAG 0

EL-IAIO2	EL-1A103	EL-IAI04	EL-IAI05
SW_TAG	POS_1 o POS_2 o O o POS_3 POS_4	POS_1POS_2	VOL- PIN_NO CUUPIN_NO PIN_NO COUPIN_NO VOLT
EL-IAIO6 VOLT + 	EL-IAIII SIZE IYPE	EL-IAII5 FAN_SZ FAN_RTG	EL-IAIT SOL_TAG1 SOL_TAG2 O-\-O
EL-IAII8 SW_TAG1 SW_TAG2	EL-IAII9 SW_TAG1 SW_TAG2 0~10	EL-IAI2O SW_TAG1 SW_TAG2	EL-IAI2I SW_TAG1 SW_TAG2
EL-IAI22 SW_TAG1 SW_TAG2	EL-IAI23 SW_TAG1 SW_TAG2	EL-IAI24 SW_TAG1 SW_TAG2	EL-IAI25 SW_TAG1 SW_TAG2
EL-IAI26 SW_TAG1 SW_TAG2	EL-IAI2T SW_TAG1 SW_TAG2	EL-IAI28 SW_TAG1 SW_TAG2	EL-IAI29 SW_TAG1 SW_TAG2 ○ ○ ○ ₹
<i>EL-IAI30</i> SW_TAG1 SW_TAG2 ○↓ ○	EL-IAI3I SW_TAG1 SW_TAG2 00	EL-IAI32 SW_TAG1 SW_TAG2	EL-IAI33 SW_TAG1 SW_TAG2
EL-IAI34 SW_TAG1 SW_TAG2 O TDDE	EL-IAI35 SW_TAG1 SW_TAG2 ○ ○ ○ ▼ TDDE	EL-IAI36 SW_TAG1 SW_TAG2	EL-IAI37 SW_TAG1 SW_TAG2 O_O A TDE
EL-INO08	EL-IN023		EL-INO29 னு





EL25A026	EL25N003	EL25N004	EL25N005
		\bigcirc	
EL25N006	EL25N007 R G		

PART 4 - FIRE SAFETY CELL LIBRARY

Cell name	Cell description
FS01	SPRINKLER SHUTOFF
FS02	STANDPIPE SHUTOFF
FS03	WATER SHUTOFF
FS04	ELECTRICAL SHUTOFF
FS05	GAS SHUTOFF
FS06	STANDPIPE RISER
FS07	ANNUNCIATION PANEL
FS08	FIRE ALARM CONTROL PANEL
FS09	CENTRAL ALARM & CONTROL FACILITY
FS10	FIREFIGHTERS ELEVATOR
FS11	ELEVATOR
FS12	VOICE COMMUNICATIONS
FS13	FIREFIGHTERS HANDSET
FS14	BUILDING ACCESS KEY
FS15	FIREFIGHTERS ACCESS PANEL
FS16	ELEVATOR ACCESS KEY
FS17	FIRE HOSE CABINET
FS18	FIRE ALARM BATTERY
FS19	FIRST AID KIT
FS20	FIRE BLANKET
FS21	FIRE ESCAPE
FS22	EXIT
FS23	EXIT
FS24	LEGEND
FS25	CHEMICALS
FS26	SIAMESE CONNECTION
FS27	TELEPHONE (LOCAL)
FS28	TELEPHONE
FS29	HOT WATER TANK
FS30	HYDROFLUOSILICIC ACID TANK
FS31	HALON PULL STATION
FS32	HALON ABORT STATION
FS33	ALARM BELL
FS34	IONIZATION SMOKE DETECTOR
FS35	AIR PACK
FS36	FIRE DETECTION & HALON RELEASE CENTRAL PANEL
FS37	SUBFLOOR DETECTOR ANNUNCIATOR
FS38	HALON STORAGE TANKS
FS39	AMMONIA TANK
FS40	DRINKING FOUNTAIN
FS41	WASHROOM
FS42	FLOOR DRAIN
FS43	PULL STATION
FS44	BEACON LIGHT
FS45	EMERGENCY LIGHTING

FS46	FIRE EXTINGUISHER
FS47	DOWN LADDER
FS48	DOWN STAIRWAY
FS49	UP STAIRWAY
FS50	STAIRWELL PRESSURE FAN
FS51	EMERGENCY EYE WASH STATION
FS52	PORTABLE EYE WASH
FS53	SUMP PUMP PIT





PART 5 - GENERAL CELL LIBRARY

Cell name	Cell description
GE01	NORTH ARROW
GE02	NORTH ARROW
GE03	NORTH ARROW
GE04	NORTH ARROW
GE05	NORTH ARROW
GE06	BREAK LINE @ 50mm INTERVALS
GE07	BREAK LINE
GE08	CENTER LINE
GE09	PIPE BREAK 150mm
GE10	PIPE SECTION 150mm
GE11	METRIC NOTE MILLIMETERS
GE12	METRIC NOTE METERS
GE13	DISCLAIMER NOTE
GE14	SECTION ARROW HEAD
GE15	REVISION LOCATION
GE16	SECTION
GE17	SECTION
GE18	SECTION
GE19	SECTION
GE20	SECTION
GE21	SECTION
GE22	SECTION
GE23	SECTION
GE24	DETAIL
GE25	DETAIL
GE26	DETAIL
GE27	ELEVATION
GE28	ELEVATION
GE29	GRID BALLOON
GE30	REVISION NOTES
GE31	KEY PLAN
GE32	AS BUILT
GE33	SMALL LOGO
GE34	LARGE LOGO
GE35	CONVERTED BY
GE36	SECTION
GE50	WELDING
GE51	WELDING
GE53	WELDING
GE54	WELDING
GE55	WELDING
GE56	
0250	WELDING
GES/	WELDING WELDING
GE58	WELDING WELDING WELDING

GE60	WELDING
GE61	WELDING
GE62	WELDING
GE63	NO RECORDS NOTE
GE64	CITY OF TORONTO LOGO
GE65	TORONTO WATER LOGO



CADD SPECIFICATIONS



Cell name	Cell description
HV010	CONNECTION - FLEXIBLE
HV011	DAMPER VOLUME
HV012	DAMPER FIRE
HV013	ACCESS DOOR
HV014	DAMPER BLADE
HV015	DAMPER SPLITTER
HV016	DIFFUSER RECTANGULAR (CEILING)
HV017	DIFFUSER ROUND (CEILING)
HV018	GRILLE CEILING MOUNTED
HV019	GRILLE DOOR
HV020	DUCT SECTION POSITIVE PRESSURE
HV021	DUCT SECTION NEGATIVE PRESSURE
HV022	HEAT EXCHANGER
HV023	HEATER HORIZONTAL TYPE
HV024	HUMIDISTAT
HV025	THERMOSTAT ELECTRIC
HV026	THERMOSTAT PNEUMATIC
HV027	LOUVRE
HV028	TURNING VANE
HV029	BASEBOARD HEATER

PART 6 - HVAC CELL LIBRARY



PART 7 - MECHANICAL CELL LIBRARY

Cell name	Cell description
ME001A_W	VALVE DOUBLE CHECK, 200 LBS
ME001B_W	VALVE DOUBLE CHECK, 200LBS
ME004A_W	BUTTERFLY VALVE WITH ADJUST. SUPPORT, 750 lbs
ME004C_W	BUTTERFLY VALVE WITH ADJUST. SUPPORT, 750 lbs
ME005A_W	VALVE CHECK, 400 lbs
ME005B_W	VALVE CHECK, 400 lbs
ME006A_W	VALVE CHECK, 750 lbs
ME006B_W	VALVE CHECK, 750 lbs
ME007	CENTER LINE
ME008	HOSE COIL
ME009A_W	FLANGED ELBOW, CAST IRON, 150 lbs, 90°
	FLANGED ELBOW, CAST IRON, 150 lbs, 90°
 ME009C_W	FLANGED ELBOW, CAST IRON, 150 lbs, 90°
ME010A W	FLANGED ELBOW, CAST IRON, 150 lbs, 90°
ME010B W	FLANGED ELBOW, CAST IRON, 150 lbs, 90°
ME010C W	FLANGED ELBOW.CAST IRON, 150 lbs,90°
ME010D W	FLANGED ELBOW.CAST IRON, 150 lbs,90°
ME011	FLEX SYMBOL
ME012	HOSE LOOP SYMBOL
ME013	GASKET ALLOWANCE SYMBOL
ME014A	LEAD JOINT BELL. 600 lbs
ME015A	LEAD JOINT BELL. 750 lbs
ME016A	LEAD JOINT BELL. 900 lbs
ME016B_W	LEAD JOINT BELL, 900 lbs
ME017A	NUT HEX, 10 lbs
ME017B	NUT HEX, 10 lbs
ME018A	NUT HEX, 13 lbs
ME018B	NUT HEX, 13 lbs
ME019A	NUT HEX, 15 lbs
ME019B	NUT HEX, 15 lbs
ME020A	NUT HEX, 19 lbs
ME020B	NUT HEX, 19 lbs
ME021A	NUT HEX, 25 lbs
ME021B	NUT HEX, 25 lbs
ME022A	NUT HEX, 38 lbs
ME022B	NUT HEX, 38 lbs
ME023 W	PIPING PARTS LIST
ME024 W	BENDING SCHEDULE
ME025A W	COUPLING ROCKWELL/DRESSER
ME026	SECTION ARROW
ME027A W	FLANGE SLIP ON/SCREWED ON.400 lbs
ME028A W	FLANGE SLIP ON/SCREWED ON 450 lbs
ME029A W	FLANGE SLIP ON/SCREWED ON 500 lbs
ME020A W	FLANGE SLIP ON/SCREWED ON 600 lbs
ME031A W	FLANGE SLIP ON/SCREWED ON 750 lbs

ME032A_W	FLANGE SLIP ON/SCREWED ON,900 lbs
ME033	TRACTOR WITH STORAGE TANK
ME034	FLOW NOTE
ME035	FLOW NOTE
ME036_W	WELDING NOTES FOR FLANGE
ME037_W	WELDING DETAIL OF FLANGES
ME038_W	WELDING DETAIL OF VICTAULIC RING
ME039_W	VALVE MOTORIZED OPERATOR, 400 lbs
ME039A_W	VALVE MOTORIZED OPERATOR, 400 lbs
ME039B_W	VALVE MOTORIZED OPERATOR, 400 lbs
ME040A	PUMP METERING, 25 lbs
ME040B	PUMP METERING, 25 lbs
ME040C	PUMP METERING, 25 lbs
ME041A	PUMP TRANSFER
ME041B	PUMP TRANSFER
ME041C	PUMP TRANSFER
ME041D	PUMP TRANSFER
ME041E	PUMP TRANSFER
ME042A	PUMP SEWAGE, 150 lbs
ME042B_W	PUMP SEWAGE, 150 lbs
ME043A_W	JOINT ELBOW, 150 lbs,45°
ME043B_W	JOINT ELBOW, 150 lbs,45°
ME043C_W	JOINT ELBOW, 150 lbs,45°
ME044A_W	VICTAULIC ELBOW, 150 lbs,90°
ME045A_W	VICTAULIC ELBOW, 150 lbs,45°
ME045B_W	VICTAULIC ELBOW, 150 lbs,45°
ME045C_W	VICTAULIC ELBOW, 150 lbs,45°
ME046A_W	VICTAULIC ELBOW, 100 lbs,90°
ME046B_W	VICTAULIC ELBOW, 100 lbs,90°
ME046C_W	VICTAULIC ELBOW, 100 lbs,90°
ME047A_W	VICTAULIC ELBOW, 100 lbs,45°
ME047C_W	VICTAULIC ELBOW, 100 lbs,45°
ME048A_W	FLANGE ELBOW, CAST IRON, 100 lbs, 90°
ME048B_W	FLANGE ELBOW, CAST IRON, 100 lbs, 90°
ME049A_W	FLANGE ELBOW, CAST IRON, 100 lbs, 45°
ME050A_W	FLANGE ELBOW, CAST IRON, 100 lbs, 90° LR
ME051A_W	FLANGE SLIP ON/SCREWED ON, 50 lbs
ME052A_W	FLANGE SLIP ON/SCREWED ON, 63 lbs
ME053A_W	FLANGE SLIP ON/SCREWED ON, 75 lbs
ME054A_W	FLANGE SLIP ON/SCREWED ON, 89 lbs
ME055A_W	FLANGE SLIP ON/SCREWED ON,100 lbs
ME056A_W	FLANGE SLIP ON/SCREWED ON,150 lbs
ME057A_W	FLANGE SLIP ON/SCREWED ON,200 lbs
ME058A_W	FLANGE SLIP ON/SCREWED ON,250 lbs
ME059A_W	FLANGE SLIP ON/SCREWED ON,300 lbs
ME060A_W	FLANGE SLIP ON/SCREWED ON,350 lbs
ME061A_W	FLANGE REDUCER, CAST IRON, 150mm x 100mm
ME062A_W	VALVE DOUBLE CHECK, 100 lbs
ME062B_W	VALVE DOUBLE CHECK, 100 lbs
ME063A_W	VALVE GATE, NON RISING STEM, 100 lbs
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ME064A_W	VALVE GATE, RISING STEM, 100 lbs
ME065A_W	VICTAULIC COUPLING, 900 lbs
ME065B_W	VICTAULIC COUPLING, 900 lbs
ME066A_W	VICTAULIC ELBOW, 100 lbs, 22 1/2"
ME067B_W	PIPE SUPPORT, ADJUSTABLE
ME068B_W	PIPE SUPPORT,NON ADJUSTABLE
ME069B_W	PIPE HANGER
ME070A_W	BACKFLOW PREVENTER, 100 lbs
ME070B_W	BACKFLOW PREVENTER, 100 lbs
ME071A_W	PUMP-SUMP, 100 lbs (FLYGT-3085 MT)
ME071B_W	PUMP-SUMP, 100 lbs (FLYGT-3085 MT)
ME071C_W	PUMP-SUMP, 100 lbs (FLYGT-3085 MT)
ME072	ANCHOR ROD, 22mm lbs
ME073	ANCHOR - CONCRETE, 13mm lbs
ME074A	SLUICE GATE - 203mm FRONT VIEW
ME074B	SLUICE GATE - 203mm SIDE VIEW









PART 8 - PROCESS CELL LIBRARY

Cell name	Cell description
ME500A	VALVE GATE
ME500B	VALVE GATE
ME500C	VALVE GATE
ME500D	VALVE GATE
ME500E	VALVE GATE
ME500F	VALVE GATE
ME500G	VALVE GATE
ME501A	VALVE GLOBE
ME501B	VALVE GLOBE
ME501C	VALVE GLOBE
ME501D	VALVE GLOBE
ME501E	VALVE GLOBE
ME501F	VALVE GLOBE
ME501G	VALVE GLOBE
ME502A	VALVE BALL
ME502B	VALVE BALL
ME502C	VALVE BALL
ME502D	VALVE BALL
ME502E	VALVE BALL
ME502F	VALVE BALL
ME502G	VALVE BALL
ME503A	VALVE PLUG
ME503B	VALVE PLUG
ME503C	VALVE PLUG
ME503D	VALVE PLUG
ME503E	VALVE PLUG
ME503F	VALVE PLUG
ME503G	VALVE PLUG
ME504A	VALVE CONE
ME504B	VALVE CONE
ME504C	VALVE CONE
ME504D	VALVE CONE
ME504E	VALVE CONE
ME504F	VALVE CONE
ME504G	VALVE CONE
ME505A	VALVE BUTTERFLY
ME505B	VALVE BUTTERFLY
ME505C	VALVE BUTTERFLY
ME505D	VALVE BUTTERFLY
ME505E	VALVE BUTTERFLY
ME505F	VALVE BUTTERFLY
ME505G	VALVE BUTTERFLY
ME506A	VALVE COCK
ME506B	VALVE COCK
ME506C	VALVE COCK

ME506D	VALVE COCK
ME506E	VALVE COCK
ME506F	VALVE COCK
ME506G	VALVE COCK
ME507A	VALVE NEEDLE
ME507B	VALVE NEEDLE
ME507C	VALVE NEEDLE
ME507D	VALVE NEEDLE
ME507E	VALVE NEEDLE
ME507F	VALVE NEEDLE
ME507G	VALVE NEEDLE
ME508A	VALVE HOSE
ME508B	VALVE HOSE
ME508C	VALVE HOSE
ME508D	VALVE HOSE
ME508E	VALVE HOSE
ME508F	VALVE HOSE
ME508G	VALVE HOSE
ME509A	VALVE CHECK
ME509B	VALVE CHECK
ME509C	VALVE CHECK
ME509D	VALVE CHECK
ME509E	VALVE CHECK
ME509F	VALVE CHECK
ME509G	VALVE CHECK
ME510A	VALVE DIAPHRAGM
ME510B	VALVE DIAPHRAGM
ME510C	VALVE DIAPHRAGM
ME510D	VALVE DIAPHRAGM
ME510E	VALVE DIAPHRAGM
ME510F	VALVE DIAPHRAGM
ME510G	VALVE DIAPHRAGM
ME511A	VALVE PINCH
ME511B	VALVE PINCH
ME511C	VALVE PINCH
ME511D	VALVE PINCH
ME511E	VALVE PINCH
ME511F	VALVE PINCH
ME511G	VALVE PINCH
ME512A	VALVE SOLENOID
ME512B	VALVE SOLENOID
ME512C	VALVE SOLENOID
ME512D	VALVE SOLENOID
ME512E	VALVE SOLENOID
ME512F	VALVE SOLENOID
ME512G	VALVE SOLENOID
ME513A	VALVE THERMAL
ME513B	VALVE THERMAL

ME513C	VALVE THERMAL
ME513D	VALVE THERMAL
ME513E	VALVE THERMAL
ME513F	VALVE THERMAL
ME513G	VALVE THERMAL
ME514A	VALVE AIR RELEASE
ME514B	VALVE AIR RELEASE
ME514C	VALVE AIR RELEASE
ME514D	VALVE AIR RELEASE
ME514E	VALVE AIR RELEASE
ME514F	VALVE AIR RELEASE
ME514G	VALVE AIR RELEASE
ME515A	VALVE HYDROMOTOR
ME515B	VALVE HYDROMOTOR
ME515C	VALVE HYDROMOTOR
ME515D	VALVE HYDROMOTOR
ME515E	VALVE HYDROMOTOR
ME515F	VALVE HYDROMOTOR
ME515G	VALVE HYDROMOTOR
ME516A	VALVE PRESSURE RELIEF
ME516B	VALVE PRESSURE RELIEF
ME516C	VALVE PRESSURE RELIEF
ME516D	VALVE PRESSURE RELIEF
ME516E	VALVE PRESSURE RELIEF
ME516F	VALVE PRESSURE RELIEF
ME516G	VALVE PRESSURE RELIEF
ME517A	VALVE PRESSURE REGULATING
ME517B	VALVE PRESSURE REGULATING
ME517C	VALVE PRESSURE REGULATING
ME517D	VALVE PRESSURE REGULATING
ME517E	VALVE PRESSURE REGULATING
ME517F	VALVE PRESSURE REGULATING
ME517G	VALVE PRESSURE REGULATING
ME518A	VALVE BACK PRESSURE
ME518B	VALVE BACK PRESSURE
ME518C	VALVE BACK PRESSURE
ME518D	VALVE BACK PRESSURE
ME518E	VALVE BACK PRESSURE
ME518F	VALVE BACK PRESSURE
ME518G	VALVE BACK PRESSURE
ME519A	VALVE KNIFE GATE
ME519B	VALVE KNIFE GATE
ME519C	VALVE KNIFE GATE
ME519D	VALVE KNIFE GATE
ME519E	VALVE KNIFE GATE
ME519F	VALVE KNIFE GATE
ME519G	VALVE KNIFE GATE
ME520A	VALVE ANGLE

ME520B	VALVE ANGLE
ME520C	VALVE ANGLE
ME520D	VALVE ANGLE
ME520E	VALVE ANGLE
ME520F	VALVE ANGLE
ME520G	VALVE ANGLE
ME521A	VACUUM RELIEF
ME521B	VACUUM RELIEF
ME521C	VACUUM RELIEF
ME521D	VACUUM RELIEF
ME521E	VACUUM RELIEF
ME521F	VACUUM RELIEF
ME521G	VACUUM RELIEF
ME522A	VALVE DOUBLE CHECK/BACK FLOW PREVENTER
ME522B	VALVE DOUBLE CHECK/BACK FLOW PREVENTER
ME522C	VALVE DOUBLE CHECK/BACK FLOW PREVENTER
ME522D	VALVE DOUBLE CHECK/BACK FLOW PREVENTER
ME522E	VALVE DOUBLE CHECK/BACK FLOW PREVENTER
ME522F	VALVE DOUBLE CHECK/BACK FLOW PREVENTER
ME522G	VALVE DOUBLE CHECK/BACK FLOW PREVENTER
ME523A	VALVE 3 WAY
ME523B	VALVE 3 WAY
ME523C	VALVE 3 WAY
ME523D	VALVE 3 WAY
ME523E	VALVE 3 WAY
ME523F	VALVE 3 WAY
ME523G	VALVE 3 WAY
ME524A	VALVE OPERATOR MOTORIZED (ELECTRIC)
ME524B	VALVE OPERATOR MOTORIZED (ELECTRIC)
ME524C	VALVE OPERATOR MOTORIZED (ELECTRIC)
ME524D	VALVE OPERATOR MOTORIZED (ELECTRIC)
ME524E	VALVE OPERATOR MOTORIZED (ELECTRIC)
ME524F	VALVE OPERATOR MOTORIZED (ELECTRIC)
ME524G	VALVE OPERATOR MOTORIZED (ELECTRIC)
ME525A	VALVE OPERATOR PNEUMATIC
ME525B	VALVE OPERATOR PNEUMATIC
ME525C	VALVE OPERATOR PNEUMATIC
ME525D	VALVE OPERATOR PNEUMATIC
ME525E	VALVE OPERATOR PNEUMATIC
ME525F	VALVE OPERATOR PNEUMATIC
ME525G	VALVE OPERATOR PNEUMATIC
ME526A	VALVE OPERATOR DIAPHRAGM
ME526B	VALVE OPERATOR DIAPHRAGM
ME526C	VALVE OPERATOR DIAPHRAGM
ME526D	VALVE OPERATOR DIAPHRAGM
ME526E	VALVE OPERATOR DIAPHRAGM
ME526F	VALVE OPERATOR DIAPHRAGM
ME526G	VALVE OPERATOR DIAPHRAGM
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ME527A	REDUCER
ME527B	REDUCER
ME527C	REDUCER
ME527D	REDUCER
ME527E	REDUCER
ME527F	REDUCER
ME527G	REDUCER
ME528A	BUSHING
ME528B	BUSHING
ME528C	BUSHING
ME528D	BUSHING
ME528E	BUSHING
ME528F	BUSHING
ME528G	BUSHING
ME529A	RUPTURE DISC
ME529B	RUPTURE DISC
ME529C	RUPTURE DISC
ME529D	RUPTURE DISC
ME529E	RUPTURE DISC
ME529F	RUPTURE DISC
ME529G	RUPTURE DISC
ME530A	FLEXIBLE PIPE (views A / C)
ME530B	FLEXIBLE PIPE (views A / C)
ME530C	FLEXIBLE PIPE (views A / C)
ME531A	FLEXIBLE CONNECTION (views A / C)
ME531B	FLEXIBLE CONNECTION (views A / C)
ME531C	FLEXIBLE CONNECTION (views A / C)
ME532A	EXPANSION BOOT (views A / C)
ME532B	EXPANSION BOOT (views A / C)
ME532C	EXPANSION BOOT (views A / C)
ME533A	UNION
ME533B	UNION
ME533C	UNION
ME533D	UNION
ME533E	UNION
ME533F	UNION
ME533G	UNION
ME534A	FLANGE CONNECTION
ME534B	FLANGE CONNECTION
ME534C	FLANGE CONNECTION
ME534D	FLANGE CONNECTION
ME534E	FLANGE CONNECTION
ME534F	FLANGE CONNECTION
ME534G	FLANGE CONNECTION
ME535A	BELL AND SPIGOT
ME535B	BELL AND SPIGOT
ME535C	BELL AND SPIGOT
ME535D	BELL AND SPIGOT

ME535E	BELL AND SPIGOT
ME535F	BELL AND SPIGOT
ME535G	BELL AND SPIGOT
ME536A	JOINT
ME536B	JOINT
ME536C	JOINT
ME536D	JOINT
ME536E	JOINT
ME536F	JOINT
ME536G	JOINT
ME537A	WELD CONNECTION
ME537B	WELD CONNECTION
ME537C	WELD CONNECTION
ME537D	WELD CONNECTION
ME537E	WELD CONNECTION
ME537F	WELD CONNECTION
ME537G	WELD CONNECTION
ME538A	SOLDER JOINT
ME538B	SOLDER JOINT
ME538C	SOLDER JOINT
ME538D	SOLDER JOINT
ME538E	SOLDER JOINT
ME539A	COUPLING DRESSER/ROCKWELL
ME539B	COUPLING DRESSER/ROCKWELL
ME539C	COUPLING DRESSER/ROCKWELL
ME539D	COUPLING DRESSER/ROCKWELL
ME539E	COUPLING DRESSER/ROCKWELL
ME539F	COUPLING DRESSER/ROCKWELL
ME539G	COUPLING DRESSER/ROCKWELL
ME540A	COUPLING VICTAULIC (views A / C)
ME540B	COUPLING VICTAULIC (views A / C)
ME540C	COUPLING VICTAULIC (views A / C)
ME541A	BLIND FLANGE
ME541B	BLIND FLANGE
ME541C	BLIND FLANGE
ME541D	BLIND FLANGE
ME541E	BLIND FLANGE
ME541F	BLIND FLANGE
ME541G	BLIND FLANGE
ME542A	CHLORINE FLANGE
ME542B	CHLORINE FLANGE
ME542C	CHLORINE FLANGE
ME542D	CHLORINE FLANGE
ME542E	CHLORINE FLANGE
ME542F	CHLORINE FLANGE
ME542G	CHLORINE FLANGE
ME543A	STRAINER
ME543B	STRAINER

ME543C	STRAINER
ME544A	PIPE TO DRAIN
ME544B	PIPE TO DRAIN
ME544C	PIPE TO DRAIN
ME545A	TRAP DRIP
ME545B	TRAP DRIP
ME545C	TRAP DRIP
ME546A	GAUGE PRESSURE
ME546B	GAUGE PRESSURE
ME546C	GAUGE PRESSURE
ME546D	GAUGE PRESSURE
ME546E	GAUGE PRESSURE
ME546F	GAUGE PRESSURE
ME546G	GAUGE PRESSURE
ME547A	GAUGE STEAM PRESSURE
ME547B	GAUGE STEAM PRESSURE
ME547C	GAUGE STEAM PRESSURE
ME547D	GAUGE STEAM PRESSURE
ME547E	GAUGE STEAM PRESSURE
ME548A	TRAP STEAM
ME548B	TRAP STEAM
ME548C	TRAP STEAM
ME548D	TRAP STEAM
ME548E	TRAP STEAM
ME548F	TRAP STEAM
ME548G	TRAP STEAM
ME549A	METER VENTURI
ME549B	METER VENTURI
ME549C	METER VENTURI
ME549D	METER VENTURI
ME549E	METER VENTURI
ME549F	METER VENTURI
ME549G	METER VENTURI
ME550A	ORIFICE PLATE
ME550B	ORIFICE PLATE
ME550C	ORIFICE PLATE
ME550D	ORIFICE PLATE
ME550E	ORIFICE PLATE
ME550F	ORIFICE PLATE
ME550G	ORIFICE PLATE
ME551A	SHOCK ABSORBER WITH HAMMER
ME551B	SHOCK ABSORBER WITH HAMMER
ME551C	SHOCK ABSORBER WITH HAMMER
ME551D	SHOCK ABSORBER WITH HAMMER
ME551E	SHOCK ABSORBER WITH HAMMER
ME552A	EJECTOR
ME552B	EJECTOR
ME552C	EJECTOR

ME552D	EJECTOR
ME552E	EJECTOR
ME552F	EJECTOR
ME552G	EJECTOR
ME553A	TRAP FLAME
ME553B	TRAP FLAME
ME553C	TRAP FLAME
ME553D	TRAP FLAME
ME553E	TRAP FLAME
ME553F	TRAP FLAME
ME553G	TRAP FLAME
ME554A	HEAT EXCHANGER
ME554B	HEAT EXCHANGER
ME554C	HEAT EXCHANGER
ME554D	HEAT EXCHANGER
ME554E	HEAT EXCHANGER
ME554F	HEAT EXCHANGER
ME554G	HEAT EXCHANGER
ME555A	FLOW METER
ME555B	FLOW METER
ME555C	FLOW METER
ME555D	FLOW METER
ME555E	FLOW METER
ME555F	FLOW METER
ME555G	FLOW METER
ME556A	FLOW SWITCH
ME556B	FLOW SWITCH
ME556C	FLOW SWITCH
ME556D	FLOW SWITCH
ME556E	FLOW SWITCH
ME556F	FLOW SWITCH
ME556G	FLOW SWITCH
ME557A	PUMP
ME557B	PUMP
ME557C	PUMP
ME558A	PIPE GOING UP
ME558B	PIPE GOING UP
ME558C	PIPE GOING UP
ME558D	PIPE GOING UP
ME559A	PIPE GOING DOWN
ME559B	PIPE GOING DOWN
ME559C	PIPE GOING DOWN
ME559D	PIPE GOING DOWN





ME509R	ME509C	ME509D	ME509E
ME509E	ME509G	MESIOA	ME5IOB
ME5IOC	́ МЕ5ЮД		ME5IOF
ME5IOG	MESIIA	ME5/IB	ME5/IC
MESIID	MESIIE	MESHE	MESUG
ME5IID	ME5IIE	ME5IIF	ME5IIG
ME5IID	ME5IIE	ME5IIF	ME5IIG
ME5IID	ME5IIE	ME5IIF	ME5IIG
ME5IID ME5I2A	ME5IIE	ME5/IF	ME5IIG ME5I2D
ME5IID ME5I2A	ME5IIE ME5I2B	ME5IIF ME5I2C	ME5IIG ME5I2D
ME5IID ME5I2A S	ME5IIE ME5I2B	ME5IIF ME5I2C	ME5IIG ME5I2D
ME5IID ME5I2A S	ME5IIE ME5I2B	ME5IIF ME5I2C	ME5IIG ME5I2D
ME5IID ME5I2A S ME5I2F	ME5IIE ME5I2B	ME5IIF ME5I2C ME5I2G	ME5IIG ME5I2D ME5I3A
ME5IID ME5I2A ME5I2E	ME5IIE ME5I2B	ME5IIF ME5I2C ME5I2G	ME5IIG ME5I2D ME5I3A
ME5IID ME5I2A ME5I2A ME5I2E	ME5IIE ME5I2B ME5I2F	ME5IIF ME5I2C ME5I2G ME5I2G	ME5IIG ME5I2D ME5I3A
ME5IID ME5I2A ME5I2E	ME5IIE ME5I2B ME5I2F K	ME5IIF ME5I2C ME5I2G ME5I2G	ME5IIG ME5I2D ME5I3A
ME5IID ME5I2A ME5I2E ME5I2E	ME5IIE ME5I2B ME5I2F ME5I2F S S ME5I3C	ME5IIF ME5I2C ME5I2G ME5I2G ME5I3D	ME5IIG ME5I2D ME5I3A T ME5I3F
ME5IID ME5I2A S ME5I2E ME5I2E ME5I3B	ME5IIE ME5I2B ME5I2F ME5I3C	ME5IIF ME5I2C ME5I2G ME5I3D	ME5IIG ME5I2D ME5I3A T ME5I3E
ME5IID ME5I2A S ME5I2E ME5I3B	ME5IIE ME5I2B ME5I2F KG	ME5IIF ME5I2C ME5I2G ME5I3D ME5I3D	ME5IIG ME5I2D ME5I3A T ME5I3E
ME5IID ME5I2A S ME5I2E ME5I3B	ME5IIE ME5I2B ME5I2F G ME5I3C	ME5IIF ME5I2C ME5I2G ME5I3D ME5I3D	ME5IIG ME5I2D ME5I3A T ME5I3E













NE5AAC	ME545A	NE545R	NE545C
P	P		MESTOD
ME546E	ME546F	ME546G	ME547A
ME54TB	ME547C	ME547D	ME547E
ME548A	ME548B	ME548C	ME548D
	A		
ME548E	ME548F	ME548G	ME549A
ME548E ME549B	ME548F ME549C	ME548G ME549D	ME549A ME549A ME549E



ME555B	ME555C	ME555D	ME555E
FM			(FZ)
ME555F MJ	ME555G	FS	ME556B
ME556C	ME556D	ME556E	ME556F
ME556G () Ц	ME557A	ME557B	ME557C
ME558A	ME558B	ME558C	ME558D
ME559A	ME559B	ME559C	ME559D
ME559A	ME559B	ME559C	ME559D

PART 9 - SURROUND 2009 CELL LIBRARY

Cell name	Cell description
11x8	General
17x11	General
22x17	General
36x24	General
36x24os	Operational Support
36x24se	Structures & Expressways
36x24sw	Solid Waste
36x24wim	Water Infrastructure Management
36x24wts	Water Treatment & Supply
36x24wwt	Waste Water Treatment
8x11	General
g1	General Cover Page
g1_se	Cover Page Structures & Expressways
g1_sw	Cover Page Solid Waste
g1_tw	Cover Page Toronto Water
pp_os	Plan & Profile Operational Support
pp_se	Plan & Profile Structures & Expressways
pp_sw	Plan & Profile Solid Waste
pp_wim	Plan & Profile Water Infrastructure Management
pp_wts	Plan & Profile Water Treatment & Supply
pp_wwt	Plan & Profile Waste Water Treatment
C36x24	General - for consultants use
C36x24_os	Operational Support - for consultants use
C36x24se	Structures & Expressways - for consultants use
C36x24sw	Solid Waste - for consultants use
C36x24sw_ls	Solid Waste (Landfill Sites) for consultants use
C36x24wim	Water Infrastructure Management - for consultants use
C36x24wts	Water Treatment & Supply - for consultants use
C36x24wwt	Waste Water Treatment - for consultants use
Cg1	General Cover Page - for consultants use
Cg1_se	Cover Page Structures & Expressways - for consultants use
Cg1_sw	Cover Page Solid Waste - for consultants use
Cg1_tw	Cover Page Toronto Water - for consultants use
Cpp_os	Plan & Profile Operational Support - for consultants use
Cpp_se	Plan & Profile Structures & Expressways - for consultants use
Cpp_sw	Plan & Profile Solid Waste - for consultants use
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Cpp_wts	Plan & Profile Water Treatment & Supply - for consultants use
Cpp_wwt	Plan & Profile Waste Water Treatment - for consultants use
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NOTE:

D Sized surround cells noted above are specific to various projects. Title block text within each cell varies according to operational client. Use appropriate surround cell for each project. Verify with Supervisor of CADD Services if questions arise.

Example:

Project for Water Treatment & Supply will use surround cell

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NOTES:

*** Surround cells delineated with a "<u>C</u>" prefix are designed for external (Consultants') use.

*** The *Dwg_index_w* cell should be dropped and edited (population of the table, removal of unused rows) as per project needs. Changes to the header and/or width of the table are not permitted.

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PART 10 - TRAFFIC STAGING CELL LIBRARY

Cell name	Cell description
RB11	NO RIGHT TURN
RB12	NO LEFT TURN
RB90A	CONSTRUCTION ZONE BEGINS
RB90B	CONSTRUCTION ZONE ENDS
RB91	YIELD TO ONCOMING TRAFFIC
RB92	ROAD CLOSED
TC1	CONSTRUCTION AHEAD SIGN
TC10	DETOUR MARKER
TC11	NARROW LANES
TC12	FLASHING ARROW BOARD
TC13	PAVEMENT ENDS
TC14	BUMP AHEAD
TC15	BUMP
TC16CL	CURVE (LEFT)
TC16CR	CURVE (RIGHT)
TC16EL	REVERSE CURVE (LEFT)
TC16ER	REVERSE CURVE (RIGHT)
TC17T	ADVISORY SPEED TAB
TC18	CHEVRON ALIGNMENT
TC1A	CONSTRUCTION AHEAD 1 KM
TC1B	CONSTRUCTION AHEAD 2KM
TC21	TRAFFIC CONTROL PERSON AHEAD
TC23	SIGNAL AHEAD
TC2B	ROAD WORK
TC31L	TRUCK ENTRANCE (LEFT)
TC31R	TRUCK ENTRANCE (RIGHT)
TC32	TEMPORARY BRIDGE
TC32T	TEMPORARY BRIDGE TAB
TC34	TWO WAY TRAFFIC
TC35	RAMP CLOSED AHEAD
TC36	MAXIMUM SPEED ADVISORY
TC39	NO EXIT
TC3L	LEFT LANE CLOSED AHEAD
TC3LT	LEFT LANE CLOSED TAB
TC3R	RIGHT LANE CLOSED AHEAD
TC3RT	RIGHT LANE CLOSED TAB
TC40L	PEDESTRIAN DIRECTION
TC4L	LANE CLOSURE ARROW (LEFT)
TC4R	LANE CLOSURE ARROW (RIGHT)
TC5	DETOUR AHEAD
TC51B	TRAFFIC CONE
TC52	CONSTRUCTION MARKER
TC54	FLEXIBLE DRUM (BARREL)
TC7L	DETOUR TURN OFF DIVERSION (LEFT)
TC7R	DETOUR TURN OFF DIVERSION (RIGHT)

TC9L	ROADSIDE DIVERSION WARNING (LEFT)
TC9R	ROADSIDE DIVERSION WARNING (RIGHT)
WB1A	YEILD AHEAD



