



# Vertical CADD Standards Manual

**Public Works**

**CADD Transmittal Requirements**

**Version 2.0**

**Updated: July 2025**

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## Document Revision History

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Referenced Industry Standards:

*BIPM-SI – Metric System © International Bureau of Weights and Measures*  
*ISO 8601 – Date and Time © International Organization for Standardization*  
*NIBS NCS v6 UDS – © National Institute of Building Sciences*  
*AIA Layering and Lineweights – American Institute of Architects*  
*ASME Y14 Series – © American Society of Mechanical Engineers*  
*ANSI/ISA-S5.1 2022 © International Society of Automation*  
*CSI/CSC Guides and Standards © Construction Specifications Institute*  
*BIMForum LoD Specification © BIMForum*

*Copyright Notice – The above listed standards are the respective property of their individual organisations. Peel Region makes no claim of ownership or control over any of these publications. Consultants are encouraged to procure their own copies of the relevant standards in order to comply with Peel Region requirements.*

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# 1. Introduction

## 1.1 History and Applicability

Welcome to the Peel Region Vertical CADD Standards v2.0 2025 Edition. Version 2.0 is a complete update of the CADD Standards. Note that it is not entirely compatible with v1.3.

This manual has been developed to outline the requirements for the preparation of design and construction drawings on capital projects impacting Peel Region Vertical Infrastructure – that is to say, for buildings projects. The manual is intended to provide minimum CADD standards for proposed works. Peel Region requires that this standard be used by its internal staff as well as by outside consultants that have been awarded projects to be delivered to Peel Region.

### Comparison Sidebars:

These yellow-coloured sidebars throughout the document will help to outline some of the major differences between version 1.3 and version 2.0.

This document has been prepared in order to assist consultants in three main areas:

- Explaining project requirements and the standards to which deliverables must be prepared in order to maintain quality and consistency in those deliverables;
- Detailing the templates and support files that have been prepared by Peel Region to facilitate consultants' compliance with the referenced standards;
- Outlining the specific requirements for electronic transmittals (or submissions) to Peel.

Any discrepancies with the information outlined in this document or potential conflicts between the referenced standards should be addressed to the current Peel Region CADD Supervisor and/or Vertical Infrastructure Specialist. Exemptions and/or exceptions to any of the clauses within this CADD Standard, directly stated or by reference to other standards, may only be permitted with the prior written approval of the Peel Region CADD Supervisor and/or Vertical Infrastructure Specialist.

## 1.2 Platform (Autodesk/AutoCAD and Bentley/MicroStation)

Peel Region is heavily reliant on MicroStation, but there is an understanding that many outside consulting firms squarely lie in the Autodesk realm. Consultants may work in the native environment they prefer. MicroStation DGN formats are no longer required by default (as was the case with v1.3) but must now be specified by Peel Region in the RFP. If Peel does not specify DGN deliverables, then the native file formats will be deemed to be equivalent and sufficient.

When Bentley format is expressly stated, these files must be MicroStation DGN V8i or newer. Conversion to MicroStation must be made smoothly; all deliverables must conform to the standards outlined in this document. The exploding (or “dropping”) all objects and moving geometry to Layer 0 is not acceptable. Consultants should expect that legacy CADD data supplied by Peel Region be in MicroStation DGN format.

### 1.3 Reliance on Industry Standards (NCS and more)

Peel Region does not intend to repeat the entire contents of the multiple industry standards on which it relies. Rather, consultant firms are required to procure access to their own copies of these various industry standards. Peel reserves the right to enforce these standards by reference, whether in part or in whole. It is the responsibility of the consultant to be familiar with the referenced standards, and to deliver conforming CADD data.

### 1.4 Peel Standards

In addition to the referenced industry best practices, several Peel Region guidelines and standards may be relevant and applicable to individual projects. These include but are not limited to the following:

- Peel Region Project Design and Technical Specifications Manual
- Public Works Wastewater Pumping Station Design Standards
- South Peel Reservoirs and Pumping Station Upgrades, Reservoir Design Guidelines
- Peel Region Standard Drawings

For these and additional Peel Region documents go to:

[www.peelregion.ca/public-works/design-standards/#criteria](http://www.peelregion.ca/public-works/design-standards/#criteria).

### 1.5 Data Hosting and Security

Peel Region acknowledges that cloud hosting of data is becoming the dominant method to co-operatively work on large scale projects in the construction industry.

Consultant firms may request to host Peel Region's data on Autodesk BIM 360, Autodesk Construction Cloud (ACC), or Bentley ProjectWise. Peel Region may grant consultant firms permission to cloud host data on these platforms, provided they demonstrate that appropriate levels of security will be taken to protect Peel Region's data, and that such hosting complies with Peel Region IT security standard requirements. The consultant firm accepts full responsibility for the protection of Peel Region's data and for any breach or any unauthorized access or disclosure.

Requests for access to Peel Region CADD data required for a project can be submitted through the CADD Data Release Form

## 2 Applicable Standards

### 2.1 BIPM-SI (The Metric System)

All Peel CADD files are to be delivered in metric units. For Vertical projects, the native linear unit shall be millimetres (mm). More generally speaking, the entire metric system as outlined by the *Bureau International des Poids et Mesures* (BIPM) International System of Units (SI) shall apply. It is not necessary to list metric units in the list of project acronyms in order to use metric units.

Imperial measurements shall be acceptable only if they follow the metric measurements, and if contained within square brackets. For example, 457 [1'-6"].

## 2.2 ISO 8601 – Date Format

To ensure consistency in the recording of dates and times, the ISO 8601 standard shall be followed in all instances when recording time-related data. No other sequencing of time data shall be acceptable. The ISO 8601 format is namely: YYYY-MM-DD hh:mm:ss.

## 2.3 ASME Y14 Standards

### 2.3.1 ASME Y14.1 Page Sizes

Peel Region has standardised on the ASME Y14.1 series of page sizes. For clarity, these are commonly referred to as ANSI sizes, and consist of 8.5x11, 11x17, 17x22, 22x34, 34x44. Arch and ISO sized title blocks will not be accepted in any instances. For the majority of Peel Region projects, ANSI D shall be the page size and is considered the Peel Region default. However, please contact the Vertical Infrastructure Specialist and/or the Peel Project Manager for a determination of the page size to use on a specific project if consultant wishes to deviate from ANSI D.

### 2.3.2 Other ASME Y14 Standards

The other ASME Y14 Standards may apply to parts and assemblies, but do not generally apply to vertical infrastructure projects. Consult the Vertical Infrastructure Specialist to determine if certain assemblies should be represented in ASME format. Most commonly, on vertical projects, ASME-style drawings are generally known as “shop drawings.”

## 2.4 AIA Layering and Lineweights

### 2.4.1 Layering

Peel Region has wholly adopted AIA Layering Standard, and it shall be applied at all times. There shall be no deviations from AIA Layering. The only two exceptions to this clause are layers “0” and “defpoints,” which are native to AutoCAD and cannot be removed. Defpoints is not to be used for any purposes other than the hosting of dimension line definition points. That is to say, defpoints is not to be used for the hosting of other non-plotting geometry.

It is nearly impossible to provide an exhaustive list of all combinations of layers within this document, but the general format of the AIA Layering schema is as follows:

Discipline(optional Modifier)-Major-Minor(s)-Status

**A I - W A L L - F U L L - D I M S - N**

- The first character is the Level 1 Discipline Designator.
  - For example, A=Architecture, C=Civil, E=Electrical, M=Mechanical ...
- The second character is optional and defines the Level 2 Discipline Modifier.
  - For example, AD=Architectural Demolition, DI= Process Instrumentation
- Four (4) character Major Group
  - For example, Wall, Door, Glaz, Cols, Anno ...
- Optional four (4) character Minor group (this can be repeated for further refinement)
  - For example, G-Anno-Ttlb, A-Door-Iden, E-Devic-Swch, G-Detl-Bold ...

- Optional single (1) character Status or Phase
  - For example, A=Abandoned, N=New Work, X=Not in Contract ...

The Discipline and Major are both required, but all other portions of the layer name are optional. Note also that, unlike the rules of UDS Module 1 Sheet Numbers, the hyphen always appears between the discipline (and optional modifier) and the Major Group.

A brief description of this system is available by visiting [NationalCADStandard.org](http://NationalCADStandard.org) and then selecting Content. The complete standard is available through a purchase of the National CADD Standard. See also within the AIA CAD Layer Guidelines:

- 4.0 Appendix A – List of Discipline Designators, Major and Minor Groups and Status Fields
- 5.0 Appendix B – Common Layer Lists by Discipline.

The MicroStation seed file (DGN) and AutoCAD Template file (DWT) provide a good starting point. More than 300 layers have been included in the Peel Standard file (.DWS); these are AIA Level 1 and 2 combinations only. Note also that the “AEC Title Case – Based on NCS 5.0” standard is available within the AutoCAD environment. Addition of new layers must be compliant with AIA layering, and any non-standard Minor groups must be approved by Peel Region.

#### 2.4.2 Lineweights

All lineweights must follow the AIA Lineweight standard. The five lineweights permissible are: 0.25 / 0.35 / 0.50 / 0.70 / 1.40 mm. These are called Thin, Narrow (aka Medium), Graphics, Wide and Extra Wide, respectively. The use of excessive lineweights, and particularly of non-AIA lineweights, will not be acceptable to Peel Region.

Peel Region has provided three Style Tables for use with ANSI C, D, and E-sized sheets. The D-sized Style Table is the same as the AutoCAD Out-of-the-Box STB file which is provided by Autodesk. The C and E Style tables should be applied to their respective pages, but D is still acceptable.

#### Colour Tables and Style Tables:

Previous editions of this CADD Standard were based on Colour Tables (CTBs). This methodology has been abandoned by both the AIA and CADD software providers for decades. This v2.0 edition of the CADD Standard is not CTB based. Rather, it is expected that consultants convert to Style Table workflows without delay.

The legacy Peel Colour Tables may only be used with legacy Peel drawings and even in such instances Peel may elect to allow their use only on specific drawings within a project set. Where colour tables are permitted, only the AIA colour table or the Peel defined colours are permissible. In no case shall a consultant apply their own company's colour table to a Peel Region project drawing; this shall constitute a non-conformance to the Peel Standards.

### 2.5 NIBS NCS v6 UDS

The National Institute of Building Sciences (NIBS) National CADD Standard (NCS) version 6 Unified Drawing System (v6 UDS) is applicable in its entirety, with the exception to sheet numbering as outlined in 2.5.1 below, and can be enforced by Peel Region at its sole discretion. Consultants



are expected to be familiar with UDS and able to apply it in part or in whole, as directed by Peel Region. Explanations of the various UDS modules are available at [NationalCADStandard.org](http://NationalCADStandard.org).

### 2.5.1 Drawing Set Organisation (DSO – aka Sheet Numbering)

Sheet numbers very closely based on NCS - UDS Module 1 conventions. However, in order to fully comply with Peel Region internal document control, some exceptions to Module 1 rules must be applied.

Peel sheet numbers are to begin with the three-digit facility process area and a dash. This is followed by the discipline letter, as identified in Module 1. While Mod 1 specifies that the second character is a discipline modifier or a dash, the Peel numbering of sheets always includes the dash even when a discipline modifier is used. Only the Module 1 modifiers may be used, and the application of J and K as user-defined is only permitted with the prior written approval of the Peel Region CADD Supervisor and/or Vertical Infrastructure Specialist. Module 1 uses a three-digit coding following the discipline and optional modifier, but the Peel numbering is always a four-digit coding. The first digit represents sheet type per Module 1. The second digit is always a zero (0) for all vertical infrastructure projects. The last two digits are any two digits with the exception of “00”.

*For example, sheet **253-DI-6002** would mean Area 253 (from Peel list), Process Instrumentation (DI), Schematics (‘6’), floor 0 (or not applicable), second page (‘02’).*

#### 2.5.1.1 Content Set and Order

The project cover page may be numbered G-0000, provided that no project required information is found solely on said cover page. This is the sole exception to the “00” rule above. Discipline sub-sets must be presented in UDS order, this being as follows: G-H-V-B-C-L-S-A-I-Q-F-P-D-M-E-W-T-R-X-Z-O. See Module 1 for an itemised listing of all disciplines and discipline modifiers.

#### 2.5.1.2 Sheet Numbering and File Naming

Regarding the Peel Region File Name, this is: the Peel project number, Peel contract number (not separated by a dash), a dash, the facility code, a dash, and the sheet number as described above. In all cases, Peel Region controls the value of the Peel Region Sheet Number and Peel Region Document Number.

It is understood that CADD/BIM methodologies may allow for more than one page to be contained within a single file. In such cases, the file name should be driven by the discipline and sub-discipline and/or should refer to the first sheet found within the file.

#### Non-Allowable Disciplines:

Note that “R” is not to be used for Removals, but for Resource drawings. “I” is not permissible for Instrumentation; rather, I is for Interior Design. Use DI for Process Instrumentation and SD for Structural Demolition. No exceptions from UDS Disciplines will be granted.

#### Peel Region D-Sheet Numbers:

Note that the Peel Region D-Sheet numbers as described in v1.3 are no longer supported.

### 2.5.1.3 File Management (current file identification)

The complete name of individual CADD files to be stored by Peel Region is to be as follows:

ProjectNumberContractNumber-FacilityCode-SheetNumber

### 2.5.2 Sheet Organisation (Title Blocks)

Peel Region is adopting title blocks which conform to UDS Module 2 with this release of the Peel Vertical CADD Standards. These title blocks are provided with the CADD Standards Package accompanying this release in three ANSI sizes – C (17" x 22"), D (22" x 34"), and E (34" x 44"). Use the ANSI D version unless directed otherwise by the CADD Supervisor or Vertical Infrastructure Specialist on your project.

#### Previous Peel Title Blocks:

Note that the title blocks provided with v1.3 of this standard are not UDS compliant and will not be accepted going forwards. Only the title block provided with v2.0 of the standard may be used as of July 2025.

The prime consultant logo and contact information is to be placed in the upper right corner of the title block. If there are sub-consultants involved, they are to be listed in discipline order below the prime. Professional stamp(s) go below the stamping firm's logo and information. Stamps may not be scaled. Stamp signature and date are to be on the same layer as the stamp. As per section 53(5) of PEO Regulation 941 practitioners must clearly note the intended purpose of the sealed document's engineering content; this should be done immediately below the stamp. The width of this area on the title block is 70 mm, regardless of page size. The height of the consultant(s) logo and contact information should be respectful of the other firms on the project, and of the size and weight of the Peel Region logo.

#### Raster Company Logos:

The use of raster logos is highly discouraged and may only be used with the prior permission of the CADD Supervisor and/or Vertical Infrastructure Specialist. Rather, vector company artwork is preferred.

#### 2.5.2.1 Title Block Layers

The AIA compliant layers for title block purposes are as follows:

- G-Anno-Ttlb                      General Title Block layer (lines and text)
- G-Anno-Ttlb-Zone              Title block Zone identification (must be on if one or more views)
- G-Anno-Ttlb-Pros              Processing stamp (date/time/file, up left edge of page)
- G-Anno-Ttlb-Logo              Layer for consultant firm logos and contact information
- G-Anno-Ttlb-Stmp              Professional stamps, signatures, intended purpose notes
- G-Anno-Ttlb-Data              Name and Date attributes within title block
- G-Anno-Ttlb-Rcrd              Record Drawing disclaimer
- G-Anno-Nplt                      Non-plotting annotations, including title block zone edges

See AIA CAD Layer Guidelines Module 3 for additional information.

### 2.5.2.2 Title Block Information (Attributes)

Title block information to fill filled out as follows:

- Sheet Number – Following 2.5.1, above.
- Revision must match current edition of the sheet.
- Sheet Number of Sheets – Either by discipline or project-wide, at the discretion of the Peel PM.
- Scale – The use of NTS is discouraged. For sheets containing no views, N/A should be indicated.
- Title - May consist of up to five lines of text. On multi-building projects, identify the asset area or building on the first line. Discipline and sub-discipline are permitted but not required.
- Filename and Version – Intended for CADD (AutoCAD DWG or MicroStation DGN) filename and platform release. This is more critical in BIM applications but included for consistency.
- Names, Dates – Intended for tracking progress of sheets through design, drafting, and review.
- Owner’s Project Number and Contract Number – Intended for cross-referencing within Peel.
- Peel Region File Name – Indicate the file name per Peel Region sheet identification standard per 2.5.1.2. Peel Region representative will determine the File Name for each sheet.

Enhanced Attribute Editor

Block: Peel ANSI C  
Tag: SHEET

Select block

Attribute Text Options Properties

Tag	Prompt	Value
SHEET	Sheet	050-DD-6003
REV	Revision	E
SNO	Sheet Number	01
OF	Of Sheets	07
SCALE	Scale	1 : 100
TITLE	Drawing Title	Peel Region CADD Standards ...
FNAME	File Name	Peel Template
VER	Platform Version	2024
PROJ	Project Number	UDS Module 5
PMGR	Project Manager	Eric Leitner
DRAWN	Drawn By	Eric Leitner
DRWDATE	Date Drawn	2025-04-24
CHECKED	Checked By	Stefan Ullman
CHKDATE	Date Checked	2025-05-27
APRVD	Approved By	D. Adams
APRVDATE	Date Approved	2025-05-28
OPN	Owner's Project Number	12345-6789
OCN	Owner's Contract Number	2022-222vPC10-1-004
FN	Peel Region File Name	18-2108-002-050-G-0001

### 2.5.3 Schedules

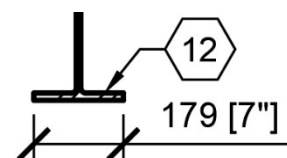
Schedules are to follow the format of UDS Module 3 Schedules. Recommended AIA layer for schedules is: G-Anno-Schd.

### 2.5.4 Drafting Conventions & Drawing Standards

All of UDS Module 4.0 may be enforced at Peel Region’s discretion. The clauses below are intended as no more than some general guidelines and answers to the most frequently asked questions about drafting conventions and should not in any way be taken as all inclusive.

#### 2.5.4.1 Working Units

For all models and drawings Working Units shall be millimetres (mm). Precision is assumed to be  $\pm 5$  mm UNO. All “real world geometry” must be drawn in the Model Space at 1:1 scale. Alternate units are permitted within [square brackets] following metric units.



#### 2.5.4.2 Scales

Appropriate metric scales shall be applied to any views of real-world objects. For clarity, metric scales are 1:1, 1:2, 1:5, 1:10, 1:20, 1:50, 1:100, 1:200, 1:500, 1:1000 and 1:2000.

### 2.5.4.3 Text Styles

For ease and clarity, Peel Region permits only the use of **Arial** and **Arial Narrow** fonts. Text height should be 2.5, 3, 4, or 5 mm in most cases. Bold and Italic are permitted, but underlined text should never be used. Text widths must always be set to 1.0. Several text styles have been provided in the AutoCAD Template and MicroStation Seed files.

This is an example of Arial font.      **This is an example of Arial Bold font.**

This is an example of Arial Narrow font.      **This is an example of Arial Narrow Bold font.**

Note that both metric units and chemical compositions are case sensitive. As such, lower case letters are permitted. Where general annotations are concerned, the use of all caps versus normal capitalisation should be consistent through an entire project.

The TextStyles are named Arial and ArialNarrow; both have a height of zero (0) within the AutoCAD environment. This allows for variable text heights, but in no instance should text of less than 2.5 be used. Text heights should be consistent, and set to whole or half mm increments.

### 2.5.4.4 Linetypes and their Lineweights

#### 2.5.4.4.1 Lineweights

Main process lines shall be Extra Wide, or 0.70 mm. Secondary process lines shall be Medium, or 0.35 mm. Instrumentation lines shall be Thin lines of 0.25 mm. Use the appropriate Style on the layers intended for these purposes. These lineweights should ideally be modified by  $\sqrt{2}$  for C and E-sized sheets, but this is not mandatory unless so specified by Peel Region. Two style tables have been provided for use with C-sized and E-sized sheets in the Peel CADD Standard Package.

#### 2.5.4.4.2 Line Styles/Linetypes

Several linetypes/linetype groups are provided with the template and seed files. Among these are SLD lines which are ISA compliant for the various types of signal lines. (See 2.6 below.) These include instrument-to-instrument connections, chemical process lines and heat tracing lines.

Chemical process lines are indicated by a continuous line broken by the chemical composition or acronym indicating the contents of the line. The provided linetypes should be used where appropriate, but consultants may be required to create or define other linetypes as the need arises. Peel Region cannot provide pre-defined linetypes for all possible future applications and scenarios. The development of new linetypes can be done in one of two ways:

- Use existing linetypes that come with AutoCAD/MicroStation and define what these linetypes represent. For example, dash-dot-dot to signify a specific process chemical line.
- Define a linetype specifically for the new chemical process, and load it into the drawing.

In either case, the prior approval of the Peel CADD Supervisor or Vertical Infrastructure Specialist is required before using the new linetype within Peel projects. All linetypes must be defined in metric units. In the AutoCAD environment, this means using ACADISO.lin rather than ACAD.lin linetypes. There will be no exceptions to the metric base units portion of this section.

#### 2.5.4.5 Dimension Styles

All dimensions should be placed using “Peel DimStyle” available in the DGNLIB and Seed file and/or DWT/DWS files. This DimStyle may not be modified. Alternate units are permissible (imperial units) with prior Peel approval. Recommended layer for dimensions is: G-Anno-Dims. In all cases, dimension layer must be AIA compliant.

#### 2.5.5 Leaders

Leaders should be applied using “Peel Leader” style available in the DGNLIB and Seed file and/or DWT/DWS files. The pointer at the head of the leader should indicate to what edge or surface the annotation is referring. See ASME Y14.5 for the appropriate use of leader heads and their meanings.

Reference keynotes should follow MasterFormat. Sheet keynotes should be numbered within a hexagon, and identified on a schedule on the same sheet.

#### 2.5.6 Orientation, Grids, Layout, and Cross Referencing

Drawing orientation should be either a) North to top of page or, b) set so as the front door is at the bottom of the page. Grids must follow UDS 4.2.2 and 4.2.3. Drawing Layout to follow UDS 4.2.4. Dimension drawings following UDS 4.2.8. Cross-referencing of sheets must follow UDS 4.2.11.

#### 2.5.7 Terms and Abbreviations

Terms and Abbreviations shall be based on UDS Module 5.0 Terms and Abbreviations. Some General, Process and Electrical terms have been included in the Peel template and seed files.

#### 2.5.8 Symbols

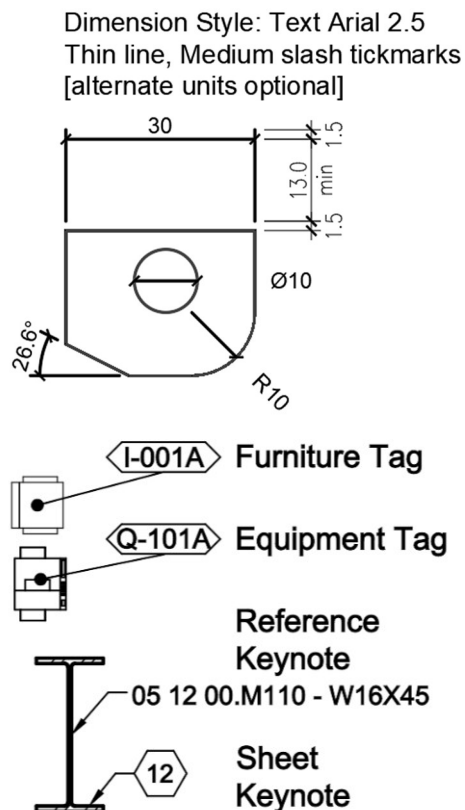
##### 2.5.8.1 General Usage, New Symbols, Use of Colour

All symbols shall be drawn in black. Symbol fills (hatches) may be coloured, provided that their outlines and texts be black. Printing symbols using screened styles is permitted to indicate previously existing or outside of discipline symbols.

Where an ANSI/ISA-S5.1 symbol exists, ISA symbol shall take precedence. See Section 2.6, below. In the absence of an ISA symbol, the UDS symbol shall be applied. Any symbols not covered by ISA or UDS must be approved by Peel Region before inclusion in any Peel Region project, and such symbols must be indicated in the appropriate discipline’s legends.

##### 2.5.8.1.1 PFD, P&ID, and SLD Libraries

Refer to Section 2.6 ISA-5.1 below for all symbology relating to PFD, P&ID and SLD symbology.



## 2.6 ANSI/ISA-5.1-2024

The International Society of Automation (ISA) has, in co-operation with the American National Standards Institute (ANSI) developed a comprehensive catalogue of SLD, PFD and P&ID symbology. These symbols have been provided in the Peel CADD Standards Package as AutoCAD blocks and MicroStation cells. Usage of these blocks/cells in Peel Region schematic drawings is mandatory.

These blocks are both dynamic and annotative. They are intended for use in PaperSpace but are equally suited to ModelSpace provided that appropriate annotative scales are set. Many of the blocks contain attributes which can be set by the user. Wipeouts allow the blocks to “break” the lines on which they reside. Consultants are expected to be familiar with the use of all of these more “advanced” CADD functionalities.

More detailed notes concerning each of the library sets can be found below, in 2.6.1 PFD and P&ID Symbology and 2.6.2 SLD Symbology. Linetypes are discussed in section 2.6.3. Additional information on how to use and apply these symbols can be found in the ISA Annexes:

- *ISA-TR5.1.02, Instrumentation and Control – Identification System Guidelines*
- *ISA-TR5.1.03, Instrumentation and Control – Graphic Symbol Guidelines*

Furthermore, ISA also provides a training course: “FG15 Developing and Applying Standard Instrumentation and Control Documentation”

### 2.6.1 PFD and P&ID Symbology

- Peel Instrument – Contains attributes for Function and Loop. Wipeouts are provided behind the attributes. Hidden instruments are depicted by assigning Hidden linetype.
- Peel Function – 23 different functions. N-values, ratios, and from/to selectable through attributes. Available dynamic grips for top left or aligned right positioning.
- Peel Inst Misc – Patchboard symbol includes Column and Row attributes.
- Peel Connection – Signal source/receiver and Input/Output are attribute driven. Drawing-to-drawing both attribute driven and dynamically stretchable.
- Peel Process Connection – Intended for the connection of Instruments to Process lines. Non-plotting cross mark to indicate instrument positioning.
- Peel Heat Traced Instrument – Fixed linetype. Includes connection to heat trace.
- Peel Valve – Dynamic selection of type. Includes background wipeout.
- Peel Element Actuator – Dynamic selection of type.
- Peel Pressure – Pressure regulation annotation. Dynamic visibility state.
- De-energising – Visibility state for FO, FC, FL/DO, FL/DC setting on a valve.
- Measurement Symbols – Dynamically selectable. Embedded linetypes.

#### “Advanced” Functionalities:

AutoCAD first introduced parametric constraints in ver. 2010, annotative in 2008, dynamic functionality in 2006 and tables in 2005. While still not widely utilised, modern day CADD operators cannot legitimately claim these functions to be too recent for them to be expected to be familiar with their appropriate use.



## 2.6.2 SLD Symbolology

- Peel Switch – Eleven (11) variations to choose from, most including wipeouts.
- Peel Actuator – Eight (8) variations to choose from to attach to Peel Switch.
- Peel Fuse-Breaker – Includes thermal overload, solenoid, circuit breakers and more. Attribute included for device rating value.
- Peel Contact – Available in NO, NC and NO/NC variants. Includes wipeout.
- Peel Alarm – Selectable from Bell, Horn/Siren, and Buzzer.
- Miscellaneous – Blocks available for Transformer, Pilot Light, Battery, and Ground.

## 2.6.3 ISA Linetypes

ANSI/ISA-5.1 compliant linetypes have been provided within the Peel Region template/seed file. These are compatible with ACADISO.lin linetypes and are suitable for metric scaled drawings. A legend of these linetypes may be found on within the Peel CADD Standard Package. The linetypes are shown below for convenience.

Line Symbols: Instrument-to-Process Connections  
ANSI/ISA-5.1-2024 Table 9, Symbol 2

=====-(ST)------(ST)=====	Primary Process Line (Steam Heat Trace)
=====-(ET)------(ET)=====	Secondary Process Line (Electrical Heat Trace)
=====-(CW)------(CW)=====	Instrumentation Line (Chilled Water Cooled)

Note that heat tracing lines should be placed 3 mm offset from the process or instrumentation main lines. This may cause the heat tracing text to touch the main lines where heavy lineweights are used; however, the offset should be maintained, nonetheless.

Line Symbols: Instrument-to-Instrument Connections  
ANSI/ISA-5.1-2024 Table 10

—————IA—————IA—————	Industrial Air (add notation)
—————ES—————ES—————	Electrical Supply (add optional notation)
—————HS—————HS—————	Hydraulic Supply (add optional notation)
—————/—————/—————/—————	Undefined Signal
—————//—————//—————//—————	Pneumatic Signal
—————-—————-—————-—————	Electronic Signal
—————L—————L—————L—————	Continuously Variable
—————x—————x—————x—————x—————x—————	Hydrolic
—————x—————x—————x—————x—————x—————	Capillary
—————△—————△—————△—————△—————△—————	Guided Electromagnetic
—————~—————~—————~—————~—————~—————	Unguided Electromagnetic
—————○—————○—————○—————○—————○—————	Communication Link
—————●—————●—————●—————●—————●—————	Communication Independent
—————◇—————◇—————◇—————◇—————◇—————	Intelligent Device Link
—————◊—————◊—————◊—————◊—————◊—————	Smart Device Link
—————⊙—————⊙—————⊙—————⊙—————⊙—————	Mechanical Link

See ANSI/ISA-5.1-2024 Table 10 for additional details and notes on linetypes.

For the IA, ES and HS lines, the default text may be replaced by more specific indication of type and strength/level. This can be done either in the linetype definition (with the approval of Peel Region) or by noting the Supply line on the drawing.

- IA : May be replaced by, for example, PA-70 kPa (Plant Air, 70 kilopascals)
- ES : May be augmented by, for example, ES-24 Vdc or ES-120 Vac.
- HS : May be augmented by, for example, HS-35 kPa.

## 3 Units, and Model Datum (Georeferencing)

### 3.1 Model Datum (Georeferencing)

CADD installation files must be spatially correct and geo-referenced to meet Peel Region Datum requirements. These are as follows:

Horizontal:	Universal Transverse Mercator (UTM), Zone 17N, North America Datum 1983 adjustment (NAD 83 ORG).
Vertical:	GSC Datum, 1978 Southern Ontario Adjustment.

Detail and schematic sheets do not need to be georeferenced.

## 4 Seed Files / Templates / Resource Files

### 4.1 Native CADD Environments

It is not the intent of Peel Region to restrict the consultants' choice of CADD platforms, however, should a consultant choose a platform other than Bentley MicroStation then the consultant should confirm with Peel Region whether the native non-Bentley files are acceptable as final deliverables. If so specified in the RFP, it may be the responsibility of the consultant to provide MicroStation DGN V8i files or newer consistent with all the clauses in this CADD Standard.

### 4.2 Peel CADD Standards Package

At the initial project kick-off meeting, the Peel Region Project Manager, CADD Supervisor or Vertical Infrastructure Specialist, will provide the prime consultant firm with the most current available standardised drawing templates and seed files to assist with the initial creation of design drawings and contract deliverables. These files are also available on the Peel Region website at the following address:

<https://www.peelregion.ca/public-works/design-standards/#criteria>

It is the consultant's responsibility to edit this file to include their logo, contact information and that of any sub-consultants in the manner already described in this manual. This initial Peel CADD Standards Package contains the following:

- AutoCAD Template File (DWT) and AutoCAD Standards File (DWS)
- MicroStation Seed File (DGN) - Peel\_PW\_Seed\_2D.DGN and Peel\_PW\_Seed\_3D.DGN
- AIA Style Tables for C, D, and E-sized sheets (*colour tables no longer supplied*)
- Block libraries of ISA compliant and other Peel standard cells/blocks

The DWT/DGN files contain all of the required title blocks and block/cell libraries described in in this Vertical CADD Standards manual. These files must be used as the starting files for any AutoCAD or MicroStation files.



### 4.3 Resource (Existing Geometry) Files

Peel Region may also, at the consultant's request, provide files representing existing site geometries, provided that the appropriate request forms are filled out and submitted to Peel Region. These files are supplied as a matter of courtesy and in no way constitute or replace Legal Surveys or Professional Engineers Stamped Drawings. This information is compiled from existing records, and it is the responsibility of the consultant to review and verify the supplied documentation which may include, but is not limited to, Cadastral or Topographic Survey works.

## RESOURCE DRAWING

This resource drawing is based on available records and data supplied by third parties, some of which may not have been verified. It is being provided as a courtesy, without any warranty, express or implied, as to its accuracy or completeness. It may not reflect current site conditions or post-construction changes. It does not include a professional engineer's seal and is not to be considered a certified record drawing. Peel Region makes no representation or guarantee regarding the accuracy of this resource drawing and disclaims any responsibility or liability for loss, damage, or injury resulting from its use. Users are solely responsible for verifying the accuracy and completeness of this resource drawing before relying upon it for any purpose.

### 4.4 AutoCAD to MicroStation Conversions

CADD files delivered to Peel Region, whether developed in MicroStation or another platform, and/or converted to MicroStation format from native AutoCAD files or 3D models, must remain whole and unbroken. More specifically, cells/blocks must not be exploded ("dropped"), geometry must not be flattened (moved to one or few layers), attribute data must remain connected to their respective geometries. Files must be sufficiently purged of non-relevant data.

All CADD files delivered to Peel Region will undergo a standards check, and it is the responsibility of the consultant(s) to gain an acceptable score with regards to the quality of the files being delivered to Peel Region. This acceptable benchmark is determined by the Peel Region CADD Supervisor and/or Vertical Infrastructure Specialist.

## 5 Deliverables

### 5.1 File Formats & Filenames

At all major deliverable milestones (IFT, IFC, "As-Built," Record), the consultant(s) shall deliver to Peel Region both the native file formats and, at the sole discretion of Peel Region, conversions of these files to MicroStation DGN format. These are in addition to the PDF versions of the print-to-file of each of the sheets in the drawing sets as well as combined PDF drawing sets.

Filenames must not include date, version or any time-specific characters. The 'live' file must maintain its name consistently from beginning to end of project.

#### File Naming Conventions:

The inclusion of revision or date in filenames precludes the use of external references, as the reference will continue to point to the outdated edition of the drawing. This problem is mitigated through the correct use of platforms such as ACC, ProjectWise, Vault and others, but does not address the problems of pointing to outdated editions when working in a native CADD environment.

## 5.2 Level of Development (LoD)

3D models and related deliverables must meet the Levels of Development (LoDs) as specified in the Model Progression Matrix (MPM) outlined in the BIM Execution Plan (BxP). Any exports to 2D CADD geometry including any PFD, P&ID and SLD are, by definition, at an LoD of 100 only, and are not subject to the same LoD specifications as their native models. Consult BIMForum for the definitions of various LoDs.

## 5.3 Quantity Take-Offs (QTO)

Any models being utilised for quantity take-offs must contain the appropriate level of information within the modelled elements. Otherwise, QTO requirements do not apply to 2D CADD linework exports from the native 3D models. Schematics are typically exempt from QTO requirements.

## 5.4 External References

External References (AutoCAD XREFs) may be permitted in deliverable packages provided that the following guidelines are strictly followed.

- “Absolute referencing” is not permitted under any circumstances. Only “relative pathing” or “no path” shall be permitted
- If “relative pathing” is used, then folder structure and naming must meet Peel Region standards
- Title blocks may not be referenced into model files
- Attributes may not be referenced into title blocks
- All files required for the correct production of the sheet must be included

Provided that these above guidelines are followed, linking/XREFing of drawings may be permitted. However, if it is demonstrated on a project that the guidelines are not being followed, then Peel shall not permit XREFing within deliverable packages. Peel may, at its sole discretion, choose to disallow XREFing and enforce previous (v1.3) methodologies.

Regardless of the rules above, consultants may use references/links in their own workflows, provided that files which are deliverable to Peel meet the above requirements.

## 5.5 Use of Rasters

Raster files are typically logos and photos that are linked to native CADD files. The rules for XREFing as outlined above shall apply to any linked rasters/photos.

### XREFs and Raster in Version 1.3:

External References were not permitted in any form in v1.3 of this standard. This is a major change between the previous edition of the Peel Region Vertical Standard and this v2 Edition.

Vertical CADD Standard v1.3 did not permit the use of linked rasters in any form. It demanded embedded rasters only, without exception. If rasters are poorly linked in any deliverable package, Peel Region reserves the right to revert to v1.3 methodologies.

The referencing of company logos into the title block is discouraged and may only be done with the prior written permission of the Peel Region CADD Supervisor and/or Vertical Infrastructure Specialist.

## 5.6 Affixing Professional Seals/Stamps

Professional Engineers Ontario (PEO) and the Ontario Association of Architects (OAA) guidelines and procedures govern the appropriate use of engineers' and architects' stamps. The following paragraphs are taken from PEO's *"Guideline for Use of the Professional Engineer's Seal."*

The use of the professional engineer's seal is governed by section 53 of Regulation 941/90, made under the Professional Engineers Act. This section states:

*(2) A practitioner shall, subject to subsections (7) and (8), sign, date and affix their seal to an engineering document if, (a) the document's engineering content is prepared by the practitioner; or (b) the practitioner otherwise assumes responsibility for any part of the document's engineering content.*

With limited exceptions, practitioners must seal all completed engineering documents for which they are assuming professional responsibility where the document is not considered "draft." Draft or incomplete documents are expressly forbidden from being sealed, as per section 53 (8) of Regulation 941: *"(8) A practitioner shall not affix their seal to an engineering document that is incomplete or in draft form."*

Concerning the affixing of an engineer's stamp, Section 53 (4) – *"The practitioner shall ensure that their signature and the date are applied, (a) at the same time or immediately after the seal is affixed; and (b) in a legible manner, either within or immediately adjacent to the seal or in the immediate vicinity of the seal, and not obscuring or otherwise altering the practitioner's name or the number of their licence, limited licence, provisional licence or temporary licence."*

When sealing documents using an electronic seal, the practitioner's licence number must be included regardless of whether their rubber stamp includes the licence number or not.

The purpose of the drawing being stamped must include its intended purpose; Section 53 (5): *"The practitioner shall ensure that the intended purpose of the engineering content of the engineering document is clearly stated on or in the document."*

Section 53 (6) *"If clause (2) (b) applies, the practitioner shall ensure that the engineering document clearly indicates the portion of the document's engineering content for which the practitioner assumes responsibility, including by way of suitable text located in the immediate vicinity of the practitioner's seal."*

The procedure suggested in this section are not intended to contradict or take precedence over:

- *Guideline for Use of the Professional Engineer's Seal, March 2022* – Published by PEO
- Project specific "Agreement" between Peel Region and the Engineer

## 5.7 Transmittal Method

Project transmittal packages should be delivered to Peel Region in a manner agreeable to the Peel Project Manager. This delivery method should be identified in writing in the BIM Execution Plan (BxP) prior to the start of any modelling or drafting. Methods may include via e-mail, file transfer sites, or even directly from the project cloud hosting platforms such as BIM 360, ACC or ProjectWise.

All major Transmittal packages (IFT, IFC, and As-Recorded Drawing Sets) must include a full set of individual Adobe PDFs, a combined PDF set, native CADD files (DWG or DGN), and CADD QA Checklist (if available). If platform(s) other than MicroStation are used in the production of the sheets, the native files from each of these platforms (Revit and/or others) must also be made available to Peel Region. All documents within the Transmittal must be recorded through ACC or listed in an accompanying Excel sheet.

If transmittals are made via e-mail, then the following information must be included in the body of the e-mail:

Project Name:  
Peel Region Project Number and Contract Number:  
Peel Region Project Manager:  
File Name(s):  
Document List:  
Issuance:

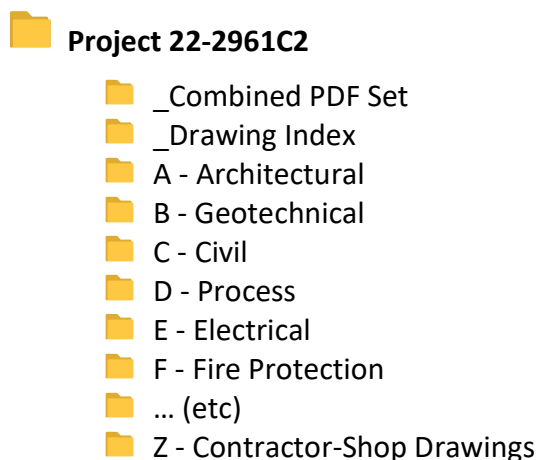
## 5.8 Quality Control

Consultants are responsible to ensure that all transmittals are CADD compliant according to Peel Region standards. They are to perform a documented internal Quality Control review of their deliverables prior to Transmittal. A signed copy of the CADD Quality Assurance Checklist must accompany the Transmittal at each of the Project Phases (IFT, IFC, As-Built or Record, Resource). When the standards checker Checklist has been signed and submitted, the consultant deems that all drawings in the transmittal conform to the required standards and guidelines as set forth in this document. This may be verified by the CADD Supervisor and/or Vertical Infrastructure Specialist. It will be the responsibility of the consultant to address any detected deficiencies.

## 5.9 Folder Structure

Folder hierarchy must follow Peel Region standard. The parent (root) folder must be named as the Peel Region project number. Sub-folders are created for each of the disciplines present on the project. Use the UDS standard discipline letters. PDF print files by discipline belong in the discipline's folder. Any referenced files must be in the same folder or a sub-folder of the parent file. This allows for both "no pathing" or "relative pathing" options. \_Combined PDF Set and \_Drawing Index folders are self-explanatory.

Sample Project Pathing:



## 6 Plotting

### 6.1 Printer Drivers & Resolution

Default printers must be observed in all instances. Failure to do so will result in a non-conformance to these standards. MicroStation files must be set to *printer.pltcfg* as the default printer. AutoCAD default printer must remain DWFX, and should not be changed under any circumstances. Do not scale PDFs. Plotting resolution should in no case be less than 600 dpi.

### 6.2 Colour Tables and Style Tables

AutoCAD Style Tables (STBs) have been provided with the CADD Standards Package for each of ANSI C, D and E sized sheets. This Style table includes both black and screened lines. The use of colour is generally discouraged and should be used sparingly; this is available through the “Standard” style. Screening is intended to display existing or NIC geometry, or to de-emphasise the geometry of other disciplines.

#### No Colour Tables Going Forwards:

Colour Tables (CTBs) in an Autodesk environment is an outdated workflow. Screened styles have replaced this process more than two decades ago.

### 6.3 Use of B&W, Greyscale and Colour Printing

Peel Region does permit the use of colour in both CADD and PDF environments. However, the consultants must ensure that any coloured geometry remains clear and legible in all instances.

## 7 Design Reviews

### 7.1 Revision Numbering

During both Schematic Design and Design Development, revisions to drawings shall be lettered A, B, C, D, and so on. At Issued for Tender (IFT), the drawing revision shall be set to Revision 0.0. From this point forwards, major revisions will receive a whole number upgrade, while minor revisions of the drawing receive decimal increments. Issued for Construction (IFC) typically

becomes Revision 1.0 of the drawing set. Major revisions are when the previous sheet is no longer applicable without a new review by the practitioner; minor revisions can be captured with revision clouds and notes on an existing drawing. See PEO Section 53 Reg 941 for more information on this subject.

## 7.2 Method of Reviewing

Multiple platforms are available for the review of models and sheets. These include, for example, Bluebeam, DesignReview, as well as ACC/BIM 360 or ProjectWise Markups. The preference of Peel Region is that cloud hosted markups be used in order that both Peel Region and the consultant(s) have simultaneous access to markups as they are being applied.

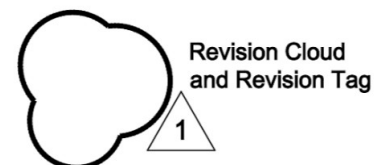
Minimally, review cycles shall occur at IFT, IFC, and As-built or Record stages of the project. Compliance with Peel Region standards is mandatory at each of these stages. It is recommended that ongoing reviews be conducted through cloud hosting methodologies (eg ProjectWise or ACC). This may be required in the project RFP and/or specified in the consultant bid response.

CADD format files included in the transmittal will be checked against the MicroStation Standards Checker at a minimum identifying colour, layer name, text style, line style and dimension style issues. Peel Region reserves the right to check any criteria outlined in this document or the referenced industry best practice standards.

Failure to meet CADD standards and transmittal requirements will result in a non-conformance of the transmittal. The shortcomings of the transmittal will be communicated in a report generated by Peel Region. These issues must be addressed in order to gain eventual approval.

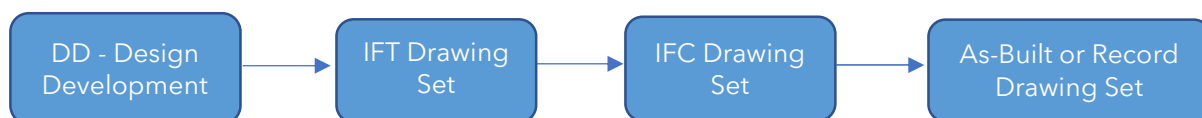
## 7.3 Use of Revision History and Revision Clouds

For minor revisions to drawing sheets, consultants are expected to use revision marks and revision clouds. Clouds and marks may be removed upon major updated to drawing sheets.



# 8 Design Project Workflow and Drawing Sets

This is a typical Peel Region design project workflow and shall serve as a basis for all projects designed internally or by external consultants and sub-consultants:



All design projects submitted to Peel Region must follow the drawing issuance requirements outlined below. Consultants are responsible for the completion of a Quality Check prior to the creation of a Transmittal, and the inclusion of the Quality Check form with each Transmittal. For



a list of additional drawing submission requirements and timelines, refer to the Peel Region Project Implementation Procedures Manual (PIPM).

## 8.1 Issued for Tender (IFT) Drawing Set

Prior to final Issued for Tender transmittal, a complete sheet list per the Peel-WW Vertical Facility Drawing List Template must be submitted to the Peel Region Project Manager and Vertical Infrastructure Specialist for initial review and for the assigning of Peel Region Document Numbers to each of the sheets in the set.

Once the drawing list template has been approved, a complete set of stamped and signed PDFs along with CADD files must be delivered to Peel Region. All files must be named in accordance with the Peel Region naming conventions. CADD drawings at this stage must be reviewed for CADD compliance to this Standard, design constructability and approved by the Project Engineer/Project Manager and bear the applicable engineers' seals.

## 8.2 Issued for Construction (IFC) Drawing Set

Consultant(s) shall supply native CADD files as well as stamped and signed PDFs. IFC version of CADD and PDF files must be named according to Peel Region file naming standards and must comply with all CADD Standards requirements as confirmed by the consultant CADD Manager through the Quality Checklist and verified by the Peel CADD Supervisor and/or Vertical Infrastructure Specialist. The Peel Region Project Implementation Procedures Manual (PIPM) also applies. The approved IFC drawing set serves as the construction set of drawings that will be provided to the contractor. CADD compliance comments from IFT and IFC sets must be corrected before IFC drawings can be officially issued.

## 8.3 Redline, "As-Built" and/or Record Drawing Sets

Upon project completion, Peel Region will require either "As-Built" and/or Record Drawings. Before describing the requirements of these, a brief discussion regarding the distinction in the terms is required.

While CSI, CSC and UDS do not use the term "As-Built" (in fact, it is specifically identified as a "non-preferred term"), the PEO not only uses the term but has also published a paper titled "*Preparing As-Built and Record Drawings.*" The appendix to this document contains the following definitions:

- **Red-line Drawings:** *Refers to Issued for Construction (IFC) documents that have been marked up during the course of construction (usually by the contractor) to reflect changes made during construction.*
- **As-built Drawings:** *A document created by or based solely on information provided by a third party that reflects the installed, constructed, or commissioned conditions of a device, machine, equipment, apparatus, structure, system, or other outcome of an engineering project.*
- **Record Drawings:** *Documents created to accurately reflect as-constructed, as-built or as-fabricated conditions and that have been sealed by a professional engineer after verifying that the documents are accurate.*

Post-construction survey information can be used to facilitate modifications to the IFC drawings for the creation of red-line, “as-built,” and/or record drawings. Files must adhere to Peel Region file naming conventions and must conform to the CADD standards as outlined. Any additional newly created files within any of these set must be assigned Peel Region Document Numbers in order to be correctly filed by Peel Region.

Using the PEO drawing set definitions (notwithstanding that “as-built” is a non-preferred term), the following guidelines should be used in the preparation of drawing sets.

### 8.3.1 Red-line Drawings

Red-line drawings are prepared for the client (Peel Region) by the constructor/contractor(s). These drawings are not to be sealed by the practitioner(s). Red-line drawings may be created electronically (digital redlines) or scans of the site IFC markup set. Either way, the consultants may assist in the collection of this drawing set on behalf of Peel Region, but the completeness and accuracy of the red-line set rests with the constructor/contractor.

### 8.3.2 “As-built” Drawings

Since the engineer has not reviewed and verified that the information illustrated on an “as-built” is complete or accurate, as-built drawings must not be sealed. This drawing set is simply a reflection of the IFC drawing set updated to reflect in-the-field modifications that have occurred as recorded by the contractor. If “as-builts” are specified in the contract, the red-line markup set will act as the interim “as-built” until such time as the “as-built” set is delivered to Peel Region. While the practitioner’s stamp is not to appear, the stamp area should contain the following text: “Drawing originally sealed by [Name], P.Eng. on [Date].”

### 8.3.3 Record Drawings

With regards to Record Drawings, *“a practitioner who is not engaged to provide general review services should advise their client that they are not in a position to prepare record drawings since they will not be aware of all changes during construction.”* Therefore, if Record Drawings are not specified at the start of a project, the consultant is unlikely to be in a position to deliver Record Drawings if they are added as a deliverable at a later stage of the project.

### 8.3.4 Resource Drawings

Whether “As-built” or Record Drawings are required, as second set of these drawings are to be prepared by the consultant as a “Resource Drawings” set. Resource drawings are to have the consultant and sub-consultant logos, professional stamps and names/dates turned off (frozen), and the “Record Drawing” disclaimer (which is embedded in the title block) turned on. The originating practitioner should be typed in, including the date of the original stamping. The purpose of this second set is to record the state of inputs (Resource Drawings) to potential future works. Peel Region requires that the “Resource Drawings” not contain any external references. All linked files are to be bound (“merged to master”) in this final deliverable drawing set.



## 9 Conclusion

This update to the Peel Region Vertical CADD Standard has been a major update. The previous version (v1.3) is no longer compatible with all of the clauses within this new edition. Peel Region does expect that it will take some time for consulting firms to fully adapt to this new edition. It is hoped that the highlighted divergences from the previous standard assist those who have previously delivered work to Peel Region to more quickly adapt to version 2.0.

Peel will work with consultants to aid them in this transition. However, it is the responsibility of the consultants to read, understand and apply the guidance provided in this document and the referenced standards. Any questions regarding how to best apply the intent of this document should be addressed to the Peel CADD Supervisor and/or Vertical Infrastructure Specialist.

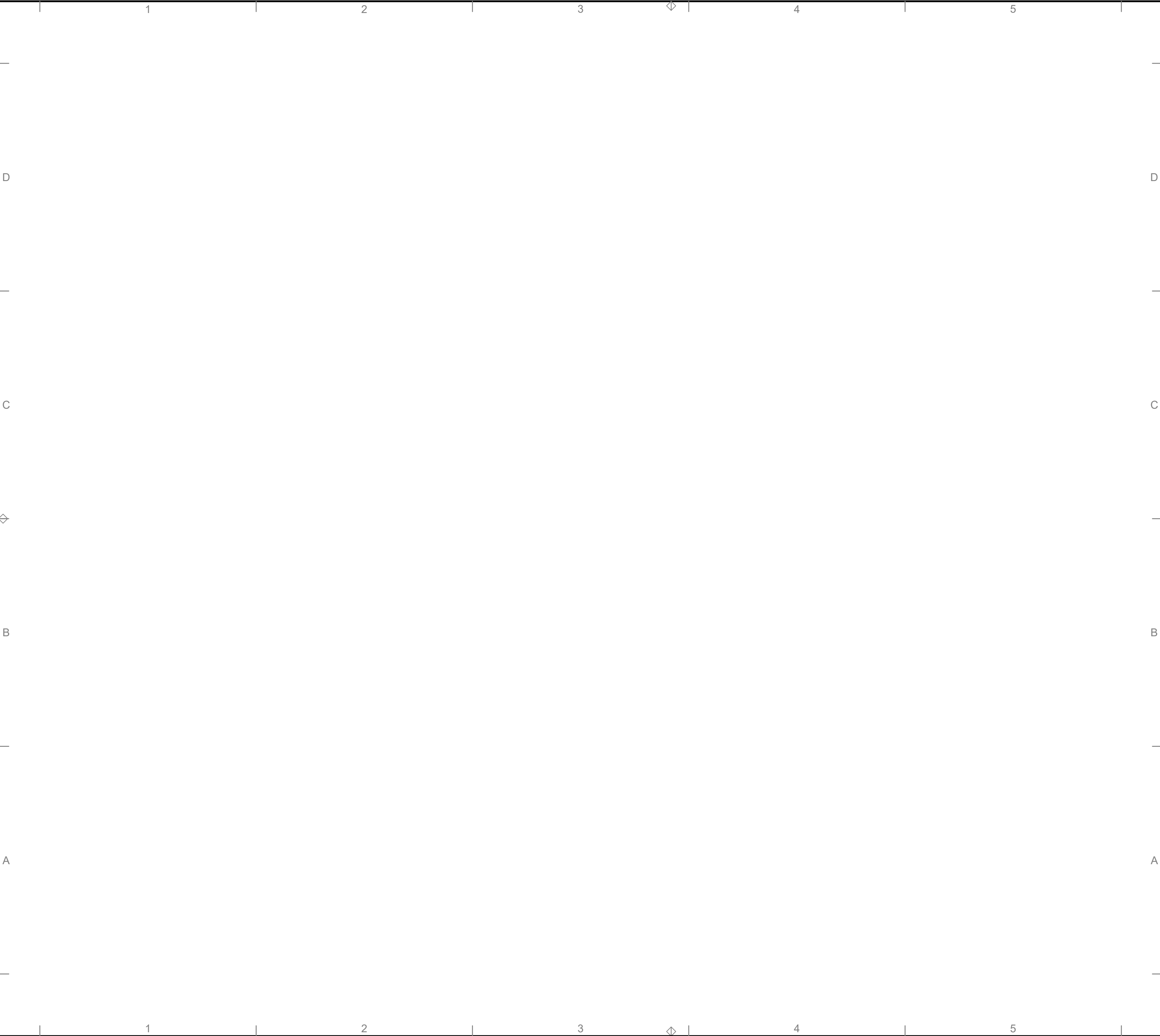
## 10 Appendices:

### 10.1 Peel Region Title Block – ANSI C, ANSI D, ANSI E

000-G-0003    Peel Region – ANSI C Title Block

000-G-0004    Peel Region – ANSI D Title Block

000-G-0005    Peel Region – ANSI E Title Block



RESOURCE DRAWING

This resource drawing is based on available records and data supplied by third parties, some of which may not have been verified. It is being provided as a courtesy, without any warranty, express or implied, as to its accuracy or completeness. It may not reflect current site conditions or post-construction changes. It does not include a professional engineer's seal and is not to be considered a certified record drawing. Peel Region makes no representation or guarantee regarding the accuracy of this resource drawing and disclaims any responsibility or liability for loss, damage, or injury resulting from its use. Users are solely responsible for verifying the accuracy and completeness of this resource drawing before relying upon it for any purpose.



10 Peel Centre Drive  
Suites A and B  
Brampton, ON L6T 4B9

Client Project Description  
Project Address Line  
City, Province C3C 4D4

Peel Region Project No. :	18-2108	Peel Region Contract Number :	2022-222vPC10-1-004
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Peel Region File Name :	18-2108-002-000-G-0003
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2.0	2025-07-31	Peel Region - Approved for Use
2.F	2025-05-21	Title Block Modifications
2.E	2025-04-24	End of April Edition
2.D	2025-04-10	Updated Edition
2.C	2025-03-10	Initial Release
Mark	Date	Description

Revision History

Filename Peel Region - ANSI C		Version : 2025
Consultant Project Number : UDS Module 2	Consultant Project Manager : Eric Leitner, PMP	
Drawn : Eric Leitner, CDT	Date (yyyy-mm-dd) : 2025-07-31	
Checked : Stefan Ulman	Date (yyyy-mm-dd) : 2025-07-31	
Approved : James Lavhey	Date (yyyy-mm-dd) : 2025-07-31	

Title :  
  
Peel Region  
Vertical CADD Standard v2  
Based on NCSv6 - UDS Module 2  
ANSI C Title Block

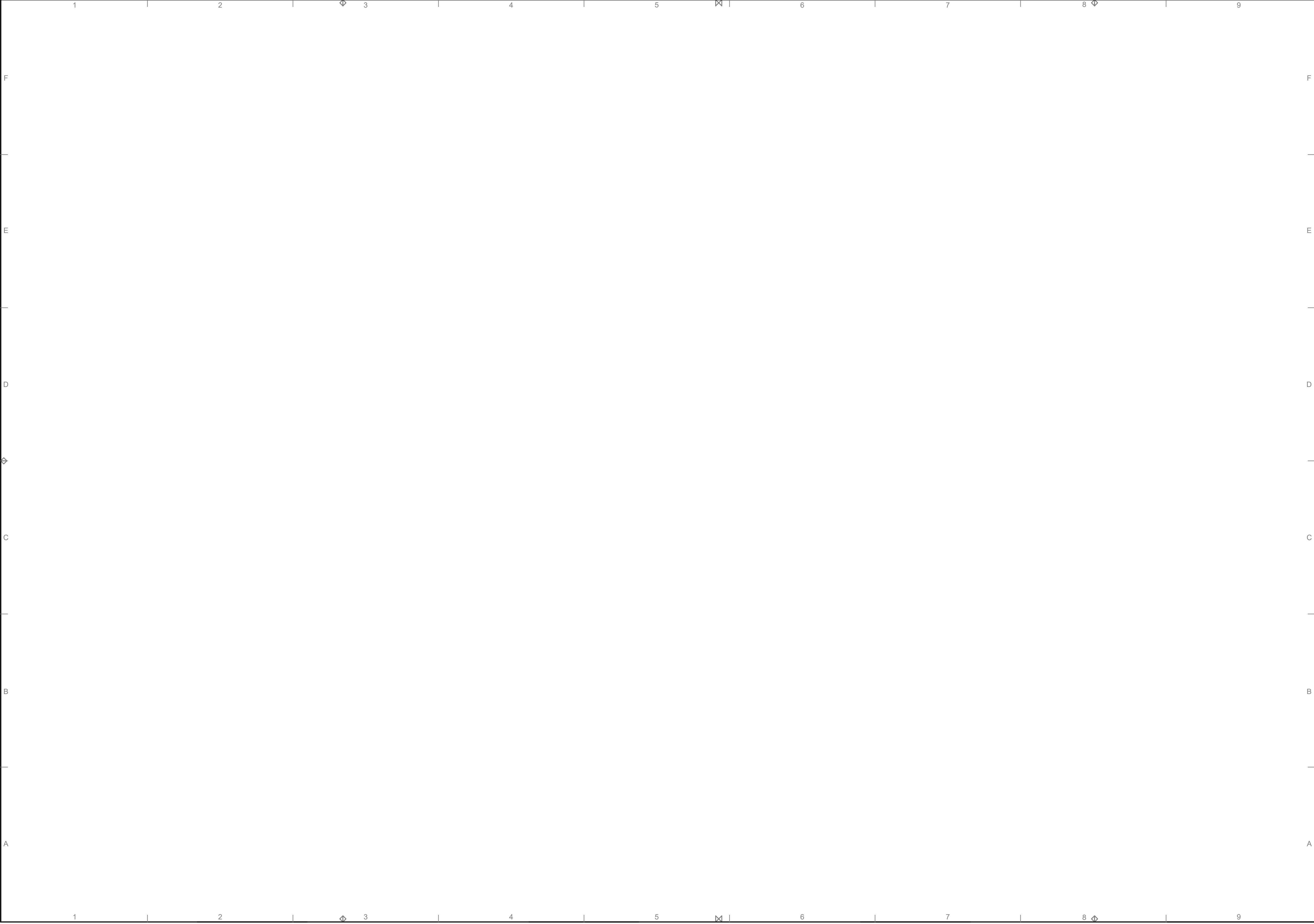
Page Size : ANSI C	Peel Region Sheet Number: 000-G-0003	Rev : 2.0
Scale : 1 : 100	Sheet : 03	of : 05

C:\Users\eric.leitner\OneDrive - CIMA\Documents\CIMA - Projects\Peel Standards\Peel Region - ANSI D

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Suites A and B  
Brampton, ON L6T 4B9

**Client Project Description**  
Project Address Line  
City, Province C3C 4D4

Peel Region Project No.:	Peel Region Contract Number:
18-2108	2022-222vPC10-1-004

Peel Region File Name:  
**18-2108-002-000-G-0004**

**RESOURCE DRAWING**

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2.0	2025-07-31	Peel Region - Approved for Use
2.E	2025-04-24	For Final Review
2.A	2025-03-03	v2 Peel Title Block - Draft A
1.3	2020-11-01	v1.3 Peel Region Title Block

Mark	Date	Description
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Revision History

Filename:	Peel Region - ANSI D	Version:	2025
Consultant Project Number:	UDS Module 2	Consultant Project Manager:	Eric Leitner, PMP
Drawn:	Eric Leitner, CDT	Date (yyyy-mm-dd):	2025-07-31
Checked:	Stefan Ulman	Date (yyyy-mm-dd):	2025-07-31
Approved:	James Lavhey	Date (yyyy-mm-dd):	2025-07-31

Title:  
  
Peel Region  
Vertical CADD Standard v2  
Based on NCSv6 - UDS Module 2  
ANSI D Title Block

Page Size:	ANSI D	Peel Region Sheet Number:	000-G-0004	Rev:	2.0
Scale:	1 : 100			Sheet:	04 of 05



## 10.2 Peel Region Block Libraries – ISA, ISO and Other

000-G-0001	General Notes and Legends
000-D-0001	Process General Notes and Acronyms
000-DI-0001	Process Legends 1 of 3, ISA 5.1 Compliant Symbols
000-DI-0002	Process Legends 2 of 3, ISO 10628 or UDS Compliant
000-DI-0003	Process Legends 3 of 3, Other Symbols
000-E-0001	Electrical SLD Notes, Acronyms, Wiring Designations
000-E-6001	Electrical SLD Legends, ISA 5.1, Table 18
000-E-6002	Electrical Legends, Other Symbols

Page Size : <b>ANSI C</b>	Peel Region Sheet Number: <b>000-G-0001</b>	Rev : <b>2.0</b>
Scale : <b>1 : 100</b>		Sheet : <b>01</b> of : <b>08</b>

Process Abbreviations:

1/A/2	Duty P-1-Auto-Duty P2
A	Auto
AA	Alarm Acknowledge
ACK	Acknowledge
ACS	Area Control Switch
AR	Alarm Reset
AT	Alarm Test
C	Close
CB	Circuit Breaker
CCP	Communication Control Panel
CP	Control Panel
CR	Control Relay
D	Disable
DAS	Data Aquisition System
DCS	Distribution Control Switch
DISC	Disconnect
DO	Dissolved Oxygen
E	Enable
ES	Emergency Stop
ESD	Emergency Shutdown
ET	Elapsed Time
FOR	Forward-Off-Reverse
FOS	Fast-Off-Slow
FPP	Fibre Patch Panel
FR	Forward-Reverse
FS	Fast-Slow
FWD	Forward
FZ	Fuse
G	Ground
HL	High-Low
H	Hand/hold
HEL	Higher Explosive Limit
HMI	Human Machine Interface
HMS	Hand Momentary Switch (Pushbutton)
HMSH	Pushbutton Start Open
HMSL	Pushbutton Start/Close
HS	Hand Switch or Pushbutton or Selector Switch
HOA	Hand-Off-Auto
ICP	Instrument Control Panel
IO	Local Input/Output PLC/RTU Modules
ISO	Isolator (Loop)
J	Jog
K	Key
KES	Key Switch
L	Local/Lock
LEL	Lower Explosive Limit
LOR	Local-Off-Remote
LOS	Lockout Stop
LP	Lighting Control Panel
LR	Local Remote
M	Motor
MCC	Motor Control Centre
ME	Motion Element
MLSS	Mixed Liquor Suspended Solids
O	Open/Off
OC	Open-Close
OCR	Open-Close-Remote
OL	Overload
OO	On-Off
OOA	On-Off-Auto
OOR	On-Off-Remote
ORP	Oxygen Reduction Potential
OSC	Open-Stop-Close
PF	Power Fail Relay
PLC	Programmable Logic Controller
POT	Potentiometer
PSU	Power Supply Unit
PU	Power Monitor

R	Remote
RC	Recorder
REV	Reverse
RIO	Remote I/O PLC/RTU Modules
RPU	Remote Processing Unit
RST	Reset
RTU	Remote Telemetry/Terminal Unit
ΣA, ΣB	Sigma A, Sigma B
SCADA	Supervisory Control & Data Acquisition
SL	Signal
SOB	Soft Start-Off Bypass
SP	Stop
SPD	Speed Potentiometer
SS	Start-Stop
ST	Start
SV	Servo
TA	Test Alarm
TD	Time Delay/Relay
TEMP	Temperature Control
TURB	Turbidity
TSFS	Transfer Switch
XFMR	Transformer

Common Process Chemicals:

C <sub>2</sub> H <sub>2</sub>	Acetylene
Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>	Aluminum Sulphate (Alum)
Al <sub>2</sub> Cl(OH) <sub>5</sub>	Aluminum Chlorohydrate (ACH)
NH <sub>3</sub>	Anhydrous Ammonia
NH <sub>3</sub> (aq)	Aqua Ammonia
CO <sub>2</sub>	Carbon Dioxide
Cl <sub>2</sub>	Chlorine
ClO <sub>2</sub>	Chlorine Dioxide
C <sub>6</sub> H <sub>8</sub> O <sub>7</sub>	Citric Acid
CuSO <sub>4</sub>	Copper Sulphate
He	Helium
HCl	Hydrochloric Acid
H <sub>2</sub> SiF <sub>6</sub>	Hydrofluosilicic Acid (FSA)
H	Hydrogen
H <sub>2</sub> O <sub>2</sub>	Hydrogen Peroxide
H <sub>2</sub> S	Hydrogen Sulphide
Ca(OH) <sub>2</sub>	Lime - Hydrated
CaO	Lime - Quicklime
CH <sub>4</sub>	Methane (Natural) Gas
CH <sub>3</sub> OH	Methanol
NO <sub>2</sub>	Nitrogen Dioxide
NO	Nitric Oxide
N <sub>2</sub>	Nitrogen Gas
N <sub>2</sub> O	Nitrous Oxide
O <sub>3</sub>	Ozone
H <sub>3</sub> PO <sub>4</sub>	Phosphoric Acid
KMnO <sub>4</sub>	Potassium Permanganate
Na <sub>2</sub> CO <sub>3</sub>	Soda Ash
NaAl	Sodium Aluminate
NaHSO <sub>3</sub>	Sodium Bisulphite (E222)
NaCl	Sodium Chloride
NaOH	Sodium Hydroxide
NaOCl	Sodium Hypochlorite
SO <sub>2</sub>	Sulphur Dioxide
H <sub>2</sub> SO <sub>4</sub>	Suphuric Acid

Chemical Process Linetypes:

———— C <sub>2</sub> H <sub>2</sub> ————	C <sub>2</sub> H <sub>2</sub> ————	Acetylene (C <sub>2</sub> H <sub>2</sub> )
———— ACH ————	ACH ————	Aluminum Chlorohydrate (ACH)
———— Alum ————	Alum ————	Aluminum Sulphate Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>
———— NH <sub>3</sub> ————	NH <sub>3</sub> ————	Aqueous Ammonia (NH <sub>3</sub> )
———— Cl <sub>2</sub> ————	Cl <sub>2</sub> ————	Chlorine Gas (Cl <sub>2</sub> )
———— Citric ————	Citric ————	Citric Acid (C <sub>6</sub> H <sub>8</sub> O <sub>7</sub> )
———— FeCl <sub>2</sub> ————	FeCl <sub>2</sub> ————	Ferrous Chloride (FeCl <sub>2</sub> )
———— FSA ————	FSA ————	Hydrofluosilicic Acid (H <sub>2</sub> SiF <sub>6</sub> )
———— H <sub>2</sub> O <sub>2</sub> ————	H <sub>2</sub> O <sub>2</sub> ————	Hydrogen Peroxide (H <sub>2</sub> O <sub>2</sub> )
———— LOX ————	LOX ————	Liquid Oxygen (O <sub>2</sub> )
———— Poly ————	Poly ————	Polymer
———— SBS ————	SBS ————	Sodium Bisulphite (NaHSO <sub>3</sub> )
———— NaOH ————	NaOH ————	Sodium Hydroxide (NaOH)
———— Hypo ————	Hypo ————	Sodium Hypochlorite (NaOCl)
———— H <sub>2</sub> SO <sub>4</sub> ————	H <sub>2</sub> SO <sub>4</sub> ————	Sulphuric Acid (H <sub>2</sub> SO <sub>4</sub> )

Grouping Frame (ISO 15519-1:2010(E) Section 7.3)

----- Grouping Frame

Supply Abbreviations

AS	Air Supply
ES	Electric Supply
GS	Gas Supply
HS	Hydraulic Supply
NS	Nitrogen Supply
SS	Steam Supply
WS	Water Supply
AS	Power Supply Source Label
Used only where necessary to help clarify an instrument or system function.	

Transducer & Converter Designations

E	Voltage
FSK	Frequency Shift Keying
H	Hydraulic
I	Current
P	Pneumatic
PD	Puldse Duration
PF	Pulse Frequency
R	Resistance (electrical)

Ex: I/P = Current-to-Pneumatic Transducer

PROCESS SHEET LIST:

000-D-0001	Process Acronyms and Notes
000-DI-0001	ANSI/ISA-S5.1 Compliant Symbols
000-DI-0002	ISO 10628 and NCS v6 Mod 6
000-DI-0003	Non-Compliant P&ID Legends

GENERAL PROCESS INSTRUMENTATION NOTES:

- All General Notes from the 000-G-0000 Series pages apply to Process sheets.
- RESERVED - Include notes that apply only to Process discipline in this reserved area.

GENERAL PROCESS ACRONYM NOTES:

- GENERAL ACRONYM NOTES - See Sht 000-G-0001 for general notes concerning the use of acronyms. These general notes cover acronym precedence, sheet acronyms, ambiguity, units, chemicals, case and credit.
- GENERAL ACRONYMS - All acronyms listed on pages 000-G-0001 shall apply to the Process drawing sub-set.
- PROCESS ACRONYMS - Acronyms listed on this page shall only apply to the Process discipline drawings, UNO.

Equipment Identification:

AAANNXX	
AAA	Device Code - See Peel Process Equipment Abbreviation Table
NNN	Process Code - see Peel Process Area Code Table
XX	Device/Loop Number

Example: HV17201

Pipeline Identification:

ZZZZØ-SSSS-MMMM

ZZZZØ	Pipe size in mm UNO
SSSS	Process Code (Refer to PAIDS Appendix 1.7B)
MMMM	Material Code (see below)

Piping Material Code Abbreviations

ALUM	Aluminum
CONC	Concrete
DI	Ductile Iron, concrete or glass lined
Cu	Copper
HDPE	High Definition Polyethylene
PE	Polyethylene
POP	Polypropylene
PVC	Polyvinyl Chloride
RC	Re-inforced Concrete
RCC	Re-inforced Concrete Cylinder Pipe
SS	Stainless Steel
VC	Vitrified Clay
VCT	Vinyl Composite Tile

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Peel Vertical CADD Standard  
Version 2.0 2025-08-31  
Standard Symbol Library

Peel Region Project No. : 18-2108	Peel Region Contract Number : 2022-222vPC10-1-004
--------------------------------------	--

Peel Region File Name :  
18-2108-002-000-D-0001

2.0	2025-08-31	Peel Region Approved Edition
G	2025-07-31	Final Review Edition
F	2025-06-27	Final Adjustments to Elements
E	2025-04-24	End of April Edition
D	2025-04-10	Updated Edition
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Consultant Project Number : Z0024323	Consultant Project Manager : Eric Leitner, PMP
Drawn : Eric Leitner, C.Tech.	Date (yyyy-mm-dd) : 2025-07-31
Checked : Catherine Ledo	Date (yyyy-mm-dd) : 2025-08-31
Approved : James Lavhey	Date (yyyy-mm-dd) : 2025-08-31
Title :	

Peel Region CADD Standard  
Process Acronyms and Notes

Page Size : ANSI C	Peel Region Sheet Number:	Rev : 2.0
Scale : N / A	000-D-0001	Sheet : 02 of : 08



ANSI/ISA-5.1-2024 Table 1 Identification Letters					
	Column 1	Column 2	Column 3	Column 4	Column 5
	Measured/ Initiating Variable	Variable Modifier	Readout/ Passive Function	Output/ Active Function	Function Modifier
A	Analysis		Alarm		
B	Burner, Combustion		User	User	User
C	<b>CONDUCTIVITY (Electrical)</b>			Control	Close
D	<b>DENSITY (Mass), SPECIFIC GRAVITY</b>	Difference, Differential			Deviation
E	Voltage		Sensor, Primary Element		
F	Flow, Flow Rate	Ratio			
G	<b>STATUS</b>		Glass, Gauge, Viewing Device		
H	Hand				High
I	Current		Indicate		
J	Power		Scan		
K	Time, Schedule	Time Rate of Change		Control Station	
L	Level		Light		Low
M	User				Middle, Intermediate
N	User		<b>RUN</b>	User	User
O	User		Orifice, Restriction Point (Test Connection)		Open
P	Pressure				
Q	Quantity	Integrate, Totalise	Integrate, Totalise		
R	Radiation		Record		Run
S	Speed, Frequency	Safety		Switch	Stop
T	Temperature			Transmit	
U	Multivariable		Multifunction	Multifunction	
V	Vibration, Mechanical Analysis			Valve, Damper, Louvre	
W	Weight, Force		Well, Probe		
X	Unclassified	X-axis	Accessory Devices, Unclassified	Unclassified	Unclassified
Y	Event, State, Presence	Y-axis		Auxiliary Devices Driver, Actuator, Unclassified final control element	
Z	Position, Dimension	Z-axis, Safety, Instrumented System			

Cells in **ALL CAPS** and **BOLD** are to identify Peel User preferences.

Line Symbols: Instrument-to-Process Connections  
ANSI/ISA-5.1-2024 Table 9, Symbol 2

====-(ST)====-(ST)====	Primary Process Line (Mbld 0.70 mm)
====-(ET)====-(ET)====	Secondary Process Line (Wide 0.35 mm)
====-(CW)====-(CW)====	Instrumentation Line (Thin 0.25 mm)

Line Symbols: Instrument-to-Instrument Connections  
ANSI/ISA-5.1-2024 Table 10

— IA — IA —	Industrial Air (add notation)
— ES — ES —	Electrical Supply (add optional notation)
— HS — HS —	Hydraulic Supply (add optional notation)
— / — / —	Undefined Signal
— # — # —	Pneumatic Signal
— - - - -	Electronic Signal
— L — L — L —	Continuously Variable
— x — x — x — x —	Hydrolic
— ~ — ~ — ~ — ~ —	Capillary
— ~ — ~ — ~ — ~ —	Guided Electromagnetic
— ~ — ~ — ~ — ~ —	Unguided Electromagnetic
— o — o — o — o —	Communication Link
— • — • — • — • —	Communication Independent
— ◊ — ◊ — ◊ — ◊ —	Intelligent Device Link
— ◉ — ◉ — ◉ — ◉ —	Smart Device Link
— ● — ● — ● — ● —	Mechanical Link

See ANSI/ISA-5.1-2024 Table 10 for additional details and notes on linetypes.

Instrumentation Device and Function Symbols

Primary or Basic Process Control System	Alternate or Safety Instrumented System (ie PLC)	Computer Systems and Software	Discrete	SP	FNCT LOOP	BH DL	Momentary
FNCT LOOP	FNCT LOOP	FNCT LOOP	FNCT LOOP	LOCATED:			
FNCT LOOP	FNCT LOOP	FNCT LOOP	FNCT LOOP	Located in Field			
FNCT LOOP	FNCT LOOP	FNCT LOOP	FNCT LOOP	Front of Central or Main Panel			
FNCT LOOP	FNCT LOOP	FNCT LOOP	FNCT LOOP	Rear of Central or Main Panel			
FNCT LOOP	FNCT LOOP	FNCT LOOP	FNCT LOOP	Front of Local or Secondary Panel			
FNCT LOOP	FNCT LOOP	FNCT LOOP	FNCT LOOP	Rear of Local or Secondary Panel			

See ANSI/ISA-5.1-2024 Table 2 for additional details.  
FNCT: Function LOOP: Loop Number

Miscellaneous Function Symbols (Table 3)

Interlock logic Undefined	Patchboard Plugin Point
Interlock logic AND Function	Pilot Light
Interlock logic OR Function	

See ANSI/ISA-5.1-2024 Table 3 for additional details.

Primary elements and transmitters  
Table 4 – Measurement symbols  
(\*)

Line Symbols: Instrument-to-Process  
& to-Equipment Connections

Generic	Socket Welded
Threaded	
Flanged	Welded
Heat [cool] Traced Instruments (ST) steam (ET) electrical (CW) chilled water	Heat [Cool] Traced Lines

See ANSI/ISA-5.1-2024 Table 9 for additional  
notes on the use of Instrument connections.

Instrument-to-Instrument Connections

Signal Source	Drawing-to-Drawing Signal Connections
Signal Receiver	INSTR DI604
Signal Input	INSTR SHT
Signal Output	INSTR SHT

See ANSI/ISA-5.1-2024 Table 10 for additional  
notes on the use of from/to signal connections.

Signal Processing Function Symbols

$\Sigma$	$\Sigma_n$	$\Delta$	K	1:4	J	$d/d_t$
X	$\div$	$\sqrt{\quad}$	$X^n$	f(x)	f(t)	
>	<	↗	↖	-K	∇	
+	-	±	$\frac{r}{r_0}$			

See ANSI/ISA-5.1-2024 Table 16 for additional details.

Measurement Symbols:  
Primary Elements (Table 6)

Backpressure Internal	Dual Element	UV Sensing Probe FO, UV, TV, IR	Flame Rod	Generic Orifice	Quick Change	Concentric	Eccentric	Circle Quadrant	Multi-Hole	Generic Tube	Venturi	Flow Nozzle	Flow Tube	Integral Orifice	Standard Pitot	Averaging Pitot	Turbine or Propeller	Vortex Shedding	Target	Magnetic	Thermal Mass	Positive Displacement	Annular	Wedge	Coriolis	Sonic	Variable Area	Open Channel Weir	Open Channel Flume	Displacer
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Ball Float	Radiation, Multi-Point	Dip Tube	Float w/ Guide Wires	Insert Probe	Radar (Free and Guided) Flow Conditioner and Purge Symbol
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See ANSI/ISA-5.1-2024 Table 6  
for additional details and notes.

Valves (Table 11)

Gate	Globe	Two-Way Angle	Three-Way	Four-Way	Butterfly	Ball Plug	Rotary Disc	Diaphragm	Pinch	Bellows	Damper	Parallel Blade	Opposed Blade	Solenoid	Solenoid Angled	Solenoid 3-Way	Solenoid 4-Way	Solenoid 5-Way
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Actuators (Table 12)

Spring Diaphragm	Spring Diaphragm w/ Positioner	Pressure Balance	Linear Piston	Linear Piston w/ Positioner	Rotary Piston	Rotary Piston w/ Positioner	Bellows Spring	Motor Operated	Modulated Solenoid	Side-Mounted Handwheel	Top-Mounted Handwheel	Manual / Hand Operated	Electrohydraulic	w/ Manual Partial Stroke Test	w/ Remote Partial Stroke Test	Generic On/Off	Auto-Reset Solenoid	Manual or Remote Reset	Manual and Remote Reset	Spring or Weight Relief or Safety	Pilot Actuated Relief or Safety	Permanent Magnet	Variable/ Adjustable Speed Drive
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Pressure Regulation  
(Table 13)

Backpressure Internal	Backpressure External	Pressure-Reducing Internal	Pressure-Reducing External	Differential External	Differential Internal	Temperature Regulator
--------------------------	--------------------------	-------------------------------	-------------------------------	--------------------------	--------------------------	--------------------------

De-energising (Table 14)

Fail to Open	Fail to Closed	Fail to Locked in Last	Fail Last / Drift Open	Fail Last / Drift Closed
-----------------	-------------------	---------------------------	---------------------------	-----------------------------

Functional Diagramming

Measuring, Input, or Readout	Automatic Single-mode	Automatic Two-mode	Automatic Three-mode	Automatic Signal Processor	Manual Signal Processor	Final Control Element	Final Control Element w/ Positioner
---------------------------------	--------------------------	-----------------------	-------------------------	-------------------------------	----------------------------	--------------------------	--

See ANSI/ISA-5.1-2024 Table 15  
for additional notes regarding  
Functional Diagramming Symbols.

Flow Direction


Fine Lineweight	Medium Bold Lineweight
-----------------	---------------------------

Connection Points

Do not use loops or gaps  
to indicate cross-overs.  
Rather Ø0.75 circles or the  
provided symbol for connections.

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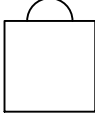

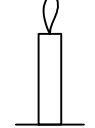
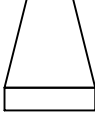











 <b>Peel Region</b> working with you		
10 Peel Centre Drive Suites A and B Brampton, ON L6T 4B9		
<b>Peel Vertical CADD Standard</b> Version 2.0 2025-08-31 Standard Symbol Library		
Peel Region Project No. : <b>18-2108</b>		Peel Region Contract Number : <b>2022-222vPC10-1-004</b>
Peel Region File Name : <b>18-2108-002-050-DI-0001</b>		
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G	2025-07-31	ANSI/ISA 5.1 - 2024 Edition
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Mark	Date	Description
<b>Revision History</b>		
Filename : <b>18-2108-002-000-DI-0001</b>		Version : <b>2025</b>
Consultant Project Number : <b>Z0024323</b>		Consultant Project Manager : <b>Eric Leitner ,PMP</b>
Drawn : <b>Eric Leitner, C.Tech.</b>		Date (yyyy-mm-dd) : <b>2025-07-31</b>
Checked : <b>Catherine Ledo</b>		Date (yyyy-mm-dd) : <b>2025-08-31</b>
Approved : <b>James Lavhey</b>		Date (yyyy-mm-dd) : <b>2025-08-31</b>
Title : <b>Peel Region CADD Standard ANSI/ISA-5.1 Compliant Symbols and Defined Line Types ( 2024 Edition )</b>		
Page Size : <b>ANSI C</b>	Peel Region Sheet Number : <b>000-DI-0001</b>	Rev : <b>2.0</b>
Scale : <b>N / A</b>		Sheet : <b>03</b> of : <b>08</b>

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Print Date: 2025-10-16 3:56:28 PM

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








Miscellaneous ISO Symbols

	01.01 Tank, General
	03.01 Heat Exchanger
	04.01 Boiler with Dome
	04.07 Stack, Chimney
	04.08 Gas flare
	05.01 Cooling Tower, General
	6.8 Filter Press
	08.01 Separator, Sifter
	08.10 Separator, Cyclone
	09.01 Centrifuge, High Speed
	10.01 Drier, General
	11.01 Crusher/ Grinder
	11.02 Crusher, General
	12.02 Inline Mixer
	23.04 Flame Arrestor
	24.3 Silencer
	24.4 Injector

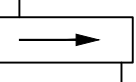
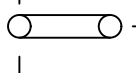
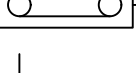
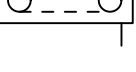
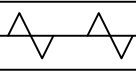
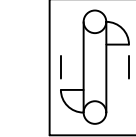

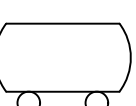
15 Liquid Pumps

	General
	Centrifugal
	Gear
	Screw
	Progressive Cavity
	Reciprocating Piston
	Diaphragm
	Jet or Ejector








16 Compressors

	General
	Centrifugal
	Reciprocating Piston
	Diaphragm
	Turbo
	Roller Vane
	Rotary Piston
	Screw
	Liquid Ring
	Jet or Ejector








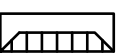
18 Conveyors

	General
	Belt
	Belt in Box
	Chain, Closed
	Screw, Closed
	Elevator, Bucket
	Forklift Truck
	Tank Car



20 Engines

	Generator, General
	Generator, AC
	Generator, DC
	Motor, General
	Motor, AC
	Motor, DC
	28.08 Agitator, Propeller Type













2214 Drains

	FD	Foor Round
	RD	Roof Round
	RD	Roof Square
	FD	Floor Square
	HD	Hub
	FFD	Floor Funnel
		Funnel Elevation
		Scupper




















2309 Controls

	Normally Open Flow Switch
	Normally Closed Flow Switch












2320 Specialities

	EJ	Expansion Joint
	EJ	Expansion Loop
	EJ	Expansion Bellows
		Thermostatic / Steam
		Thermostatic Blast
		Scale
		P-Trap
		Main
		Intermediate
	G	Spring
		Guide
		Gauge-pressure

2320 Fittings

	Screwed Tee Down
	Screwed Tee Up
	Connection Top
	Connection Bottom
	Screwed Straight Tee
	Screwed Straight Cross
	Screwed Lateral
	Reducer Concentric
	Reducer Eccentric
	Bushing
	Cleanout
	HB Hose Bib
	90° Elbow
	45° Elbow
	90° Elbow Away
	90° Elbow Towards
	Union
	Cap, screwed
	Cap, welded

2320 Valves

	Lock Shield
	Multi-Port
	Needle
	Pressure Reducing
	Gas Cock
	Balancing
	Check
	Alarm Check
	Butterfly Check
	Square Head Cock
	Flanged Safety

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10 Peel Centre Drive  
Suites A and B  
Brampton, ON L6T 4B9

Client Project Description  
Project Address Line  
City, Province C3C 4D4

Peel Region Project No. : 18-2108	Peel Region Contract Number : 2022-222vPC10-1-004
--------------------------------------	--

Peel Region File Name : 18-2108-002-000-DI-0002
--

2.0	2025-08-31	Peel Region Approved Edition
G	2025-07-11	Conversion to ISO 10628
F	2025-06-27	Final Adjustments to Elements
E	2025-04-24	End of April Edition
D	2025-04-10	Updated Edition
C	2025-03-10	Updated Edition
Mark	Date	Description

Revision History

Filename : 18-2108-002-000-DI-0002	Version : 2025
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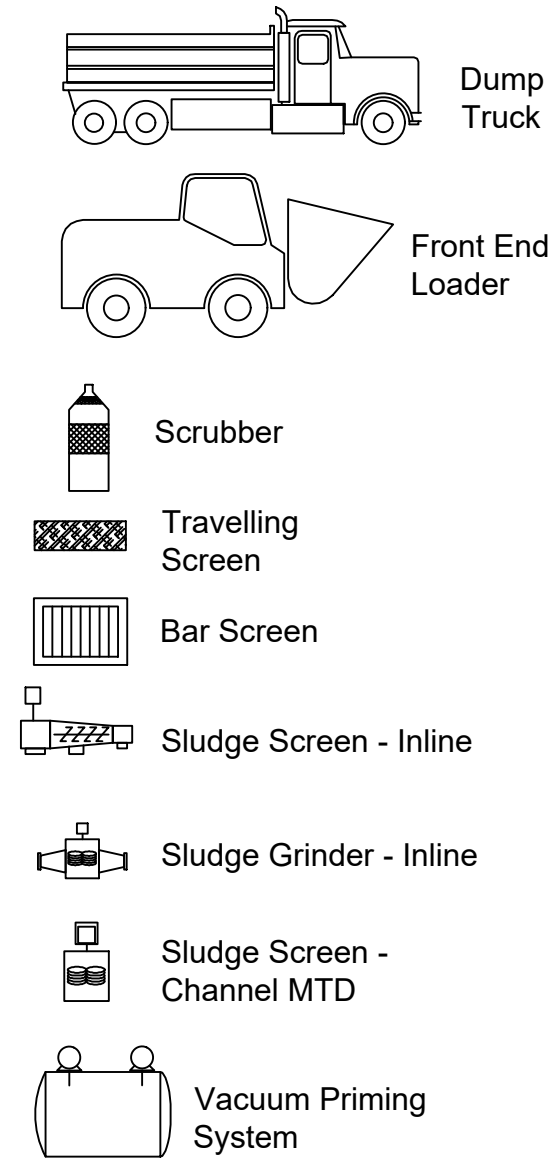
Consultant Project Number : Z0024323	Consultant Project Manager : Eric Leitner, PMP
Drawn : Eric Leitner, C.Tech.	Date (yyyy-mm-dd) : 2025-07-31
Checked : Catherine Ledo	Date (yyyy-mm-dd) : 2025-08-31
Approved : James Lavhey	Date (yyyy-mm-dd) : 2025-08-31
Title :	

Peel Region CADD Standard

ISO 10628 or UDS v6 Module 6  
Compliant Symbols

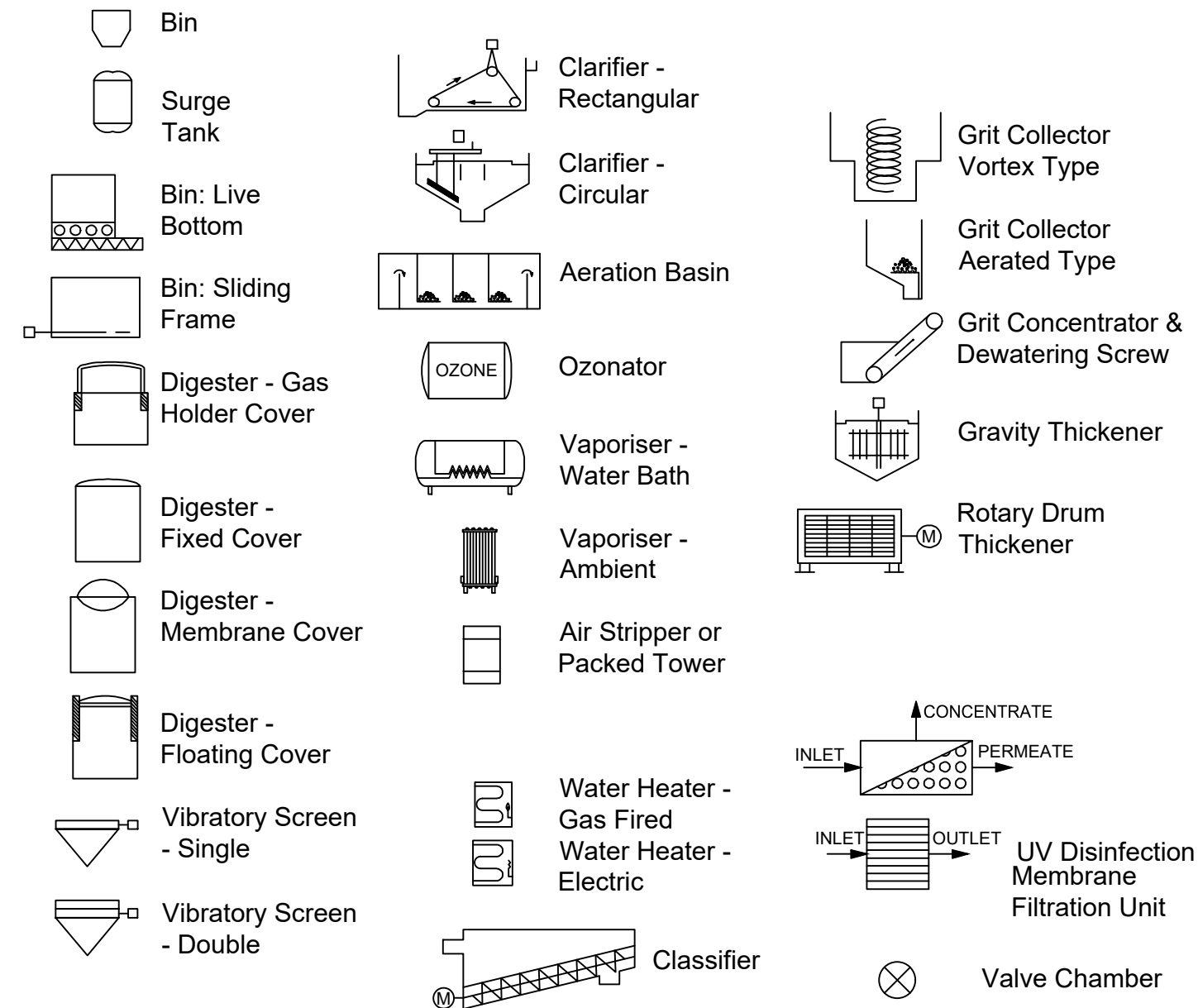
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Scale : N / A	Sheet : 04	of : 08

### Transportation Vehicles

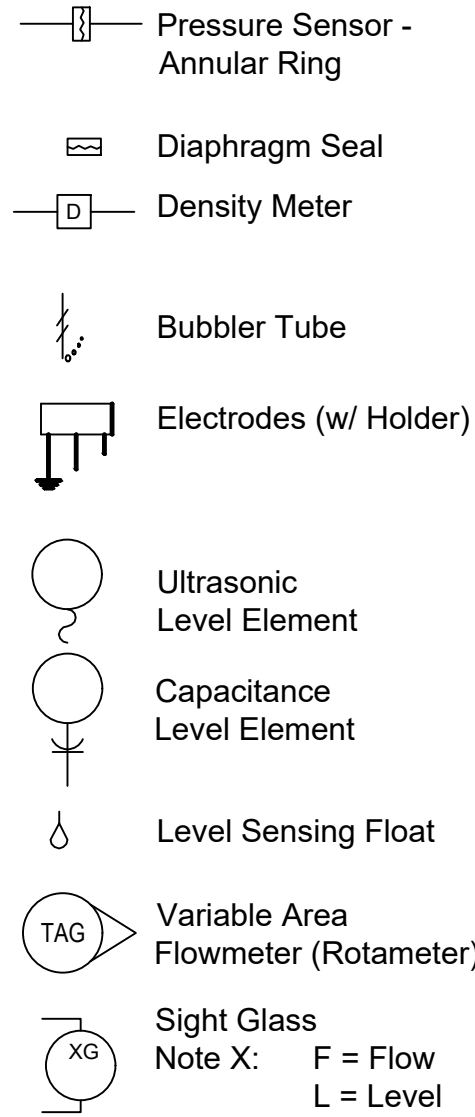


Note XX: CS = Constant Speed  
2S = Two Speed  
VS = Variable Speed

### Water and Wastewater Process Equipment Symbols

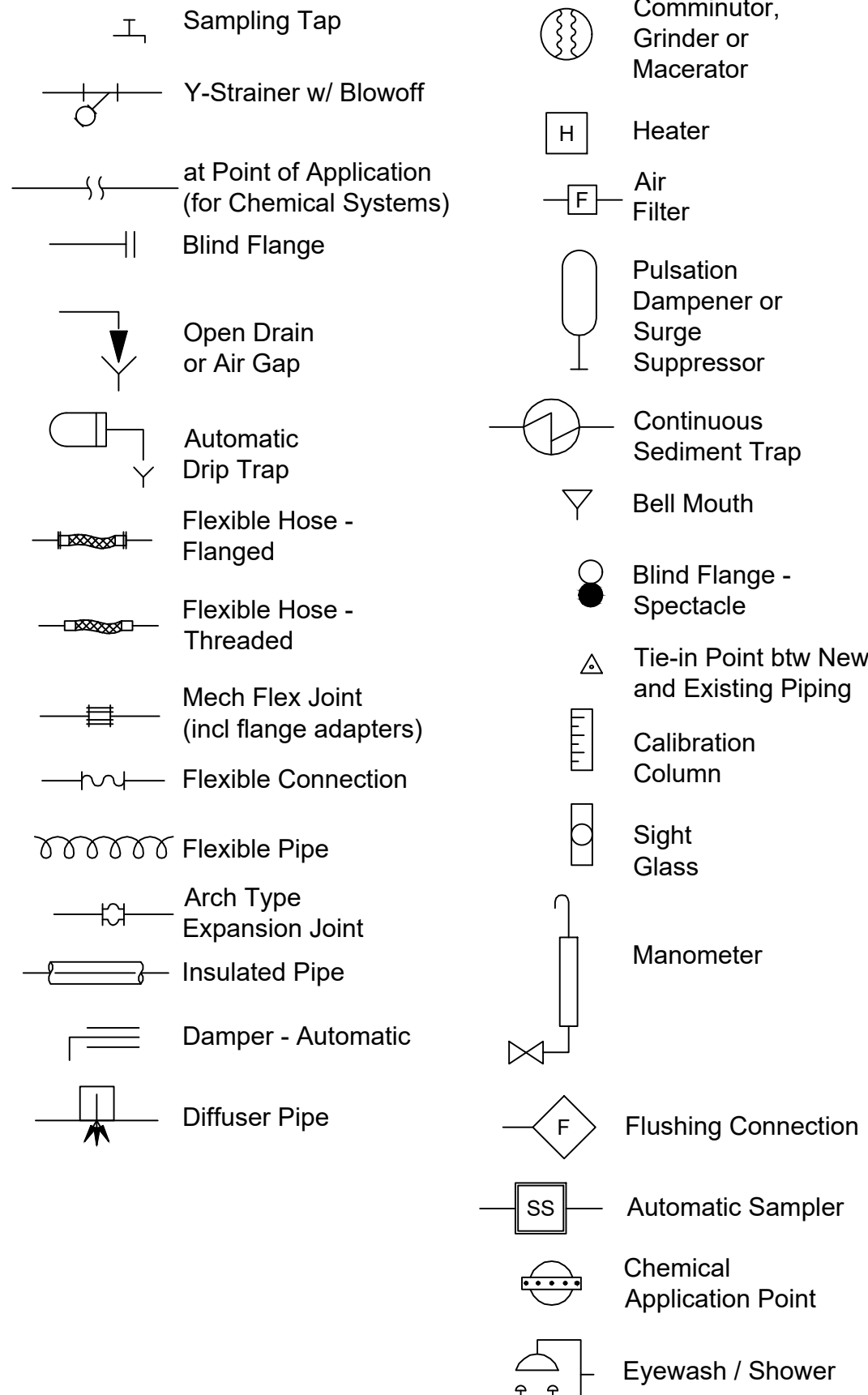


### Primary Element & Fitting Symbols

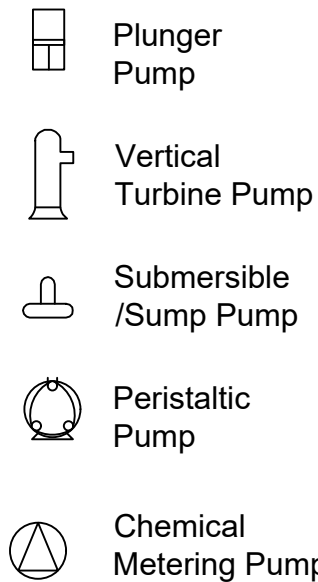


Note X: F = Flow  
L = Level

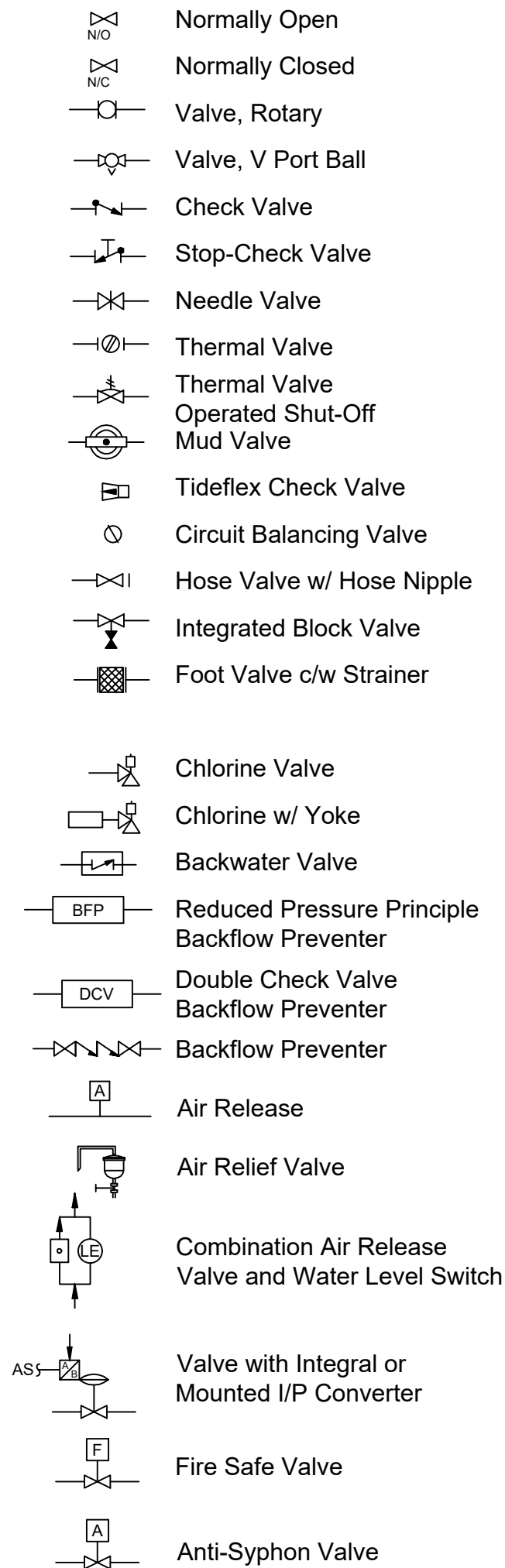
### Miscellaneous Mechanical & Piping Symbols



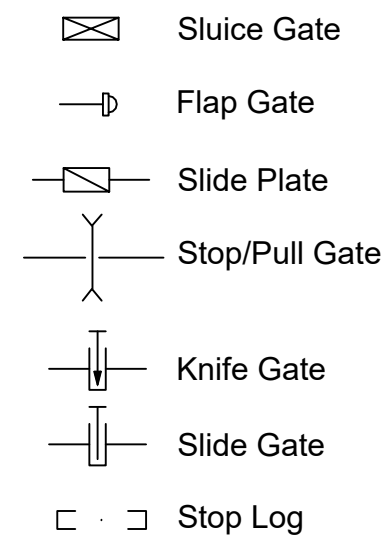
### Pump and Blower Symbols



### Valve and General Piping Symbols



### Non-ISA Gate Symbols



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### Peel Vertical CADD Standard Version 2.0 2025-08-31 Standard Symbol Library

Peel Region Project No. :	18-2108	Peel Region Contract Number :	2022-222vPC10-1-004
Peel Region File Name :	18-2108-002-050-DI-0003		
2.0	2025-08-31	Peel Region Approved Edition	
G	2025-07-31	Pre-Final Review Edition	
F	2025-06-27	Additional Adjustments to Elements	
E	2025-04-24	End of April Edition	
D	2025-04-10	Updated Edition	
C	2025-03-10	Updated Edition	
Mark	Date	Description	

#### Revision History

Filename :	Peel Legend - P&ID - Other	Version :	2025
Consultant Project Number :	Z0024323	Consultant Project Manager :	Eric Leitner, PMP
Drawn :	Eric Leitner, C.Tech.	Date (yyyy-mm-dd) :	2025-06-27
Checked :	Catherine Ledo	Date (yyyy-mm-dd) :	2025-08-31
Approved :	James Lavhey	Date (yyyy-mm-dd) :	2025-08-31
Title :			

Peel Region CADD Standard  
Process Legends

Non-Standard Symbolology

Page Size :	ANSI C	Peel Region Sheet Number :	000-DI-0003	Rev :	2.0
Scale :	N/A	Sheet :	05	of :	08



ELECTRICAL ABBREVIATIONS

1/C	Single Conductor
1P	Single Pole
1Ø	Single Phase (or 1Ph)
2/C	Two Conductor
2P	Two Pole
2S1W	Two Speed - One Winding
2S2W	Two Speed - Two Winding
3/C	Three Conductor
3P	Three Pole
3Ø	Three Phase (or 3Ph)
4/C	Four Conductor
4PDT	Four Pole Double Throw
4PST	Four Pole Single Throw
4W	Four Wire
AA/FA	Dry Type Self-Cooled/Forced Air Cooled
AC	Alternating Current
AF	Ampere Frame
AHF	Active Harmonic Filter
ANF	Dry Type Transformer - Fan Cooled
ANN	Dry Type Transformer - Naturally Cooled, or annunciator
AT	Ampere Trip
ATS	Automatic Transfer Switch
AWG	American Wire Gauge
BKR	Breaker
C	Conductor
CCT	Circuit
CCTV	Closed Circuit Television (security system)
CP	Control Panel
CPT	Control Power Transformer
CR	Control Relay or Corrosion Resistant
CS	Control Switch
CT	Current Transformer
CTD	Current Test Device
CTL	Control
DB	Distribution Board
D.O.	Draw Out
DO	Disolved Oxygen
DC	Direct Current
DISC	Disconnect
DP	Distribution Panel
DPM	Digital Power Meter
DPDT	Double Pole Double Throw
DPST	Double Pole Single Throw
EEMAC	Electrical and Electronic Manufacturers Association of Canada
EF	Exhaust Fan
ELEC	Electric or Electrical
ELU	Emergency Lighting Unit (or EL)
ENCL	Enclosure
EM	Early Make (Contacts)
EO	Electrically Operated
EOL	End of Line (Resistor)
EP (?)	Explosion Proof
ESTOP	Emergency Stop
ETM	Elapsed Time Meter
EWB	Electric Water Heater
EXP	Explosion Proof
FCU	Fan Coil Unit
FVNR	Full Voltage, Non-Reversing
FVR	Full Voltage, Reversing
GF	Ground Fault
GFCI	Ground Fault Circuit Interrupter
GND	Ground
H/O/A	Hand-Off-Automatic
HTR	Heater
HV-SG	High Voltage Switchgear
I/O	Input/Output
IEEE	Institute of Electrical & Electronic Engineers
IND	Indication
INST	Instantaneous

ISR	Intrinsically Safe Relay
JB	Junction Box
kAIC	Kilo-amp Interrupting Capacity
L/R	Local-Remote
LA	Lightning Arrestor
LB	Late Break (Contacts)
LOS	Lock Out Stop
LP	Lighting Panel
LS	Limit Switch or Level Switch
LTG	Lighting
LV	Low Voltage
M	Meter
MCC	Motor Control Centre
MCP	Motor Circuit Protector
MFR	Multi-Function Relay
MMR	Motor Management Relay
MOT	Motor
MTS	Manual Transfer Switch
N	Neutral
No.	Number
NP	Nameplate
NPT	National Pipe Thread
O/O/A	On/Off/Auto
OC	Overcurrent
OL	Overload
ONAF	Oil Immersed, Forced Air Cooled
ONAN	Oil Immersed, Self Cooled
P	Pole
P&ID	Process and Instrumentation Diagram
PH	Phase
PIR	Motion sensor
PB	Pushbutton
PC	Photocell Control
PCV	Pressure/Pump Control Valve
PF	Power Factor Meter
PFCC	Power Factor Correction Capacitor
PID	Proportional-Integral-(Reset) Derivative (Rate)
PLC	Programmable Logic Controller
PNL	Panel
PT	Power Transformer
PTT	Push to Test
REM	Remote
RES	Resistor
RGS	Rigid Galvanised Steel
RPU	Remote Processing Unit
RTD	Resistance Temperature Detector
RTU	Remote Terminal Unit (PLC)
RVAT	Reduced Voltage Autotransformer Starter
S/C	Short Circuit
SD	Smoke Detector
SDBC	Soft Drawn Bare Copper (Ground Conductor)
SEL	Selector
SHLD	Shielded
SLD	Single Line Diagram
SN	Solid Neutral
SPD	Surge Protection Device
SPDT	Single Pole Double Throw
SPST	Single Pole Single Throw
SS	Stainless Steel
SS	Selector Switch
SS	Soft Starer (Pick one of 3!)
SV	Solenoid Operated Valve (Direct Operated)
SW	Switch
SWA	Steel Wire Armoured
SYM	Symmetrical
T	Thermostat
TC	Shunt Trip Coil or Thermocouple
TDC	Time Delay on Closing

TDDO	Time Delay on Drop-Out
TDO	Time Delay on Opening
TDPV	Time Delay on Pick-Up
TERM	Terminal
TPN	Triple Pole and Neutral
TR	Time Relay
TVSS	Transient Voltage Surge Suppression
U/G	Underground
UH	Unit Heater
UHF	Ultra-High Frequency
Vac	Volts Alternating Current
VAR	Varmeter
VAS	Visual Alarm Signal
Vdc	Volts Direct Current
VHF	Very High Frequency
VTD	Voltage Test Device
XFMR	Transformer

ELECTRICAL SHEET LIST:

- 000-E-0001 Electrical Acronyms and Notes
- 000-E-6001 Electrical SLD Symbols, ISA 5.1
- 000-E-6002 Electrical SLD Symbols, Other

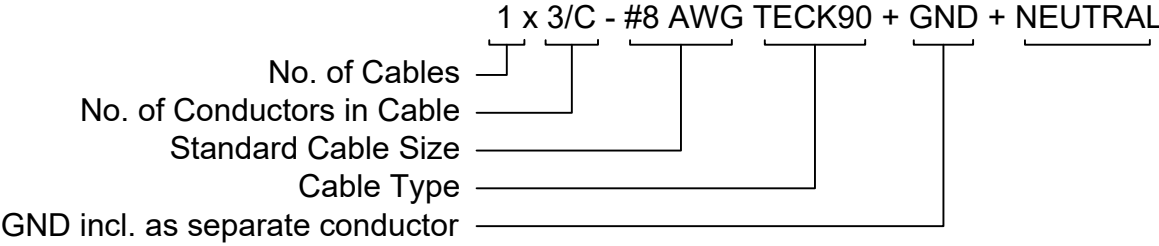
GENERAL ELECTRICAL NOTES:

- General Electrical Notes belong here. This space reserved.

GENERAL ELECTRICAL ACRONYM NOTES:

- GENERAL ACRONYM NOTES - See Sht 000-G-0001 for general notes concerning the use of acronyms. These general notes cover acronym precedence, sheet acronyms, units, ambiguity, chemicals, case and credit.
- GENERAL ACRONYMS - All acronyms listed on pages 000-G-0001 shall apply to the Electrclal drawing sub-set.
- ELECTRICAL ACRONYMS - Acronyms listed on this page shall only apply to the Electrical discipline drawings, UNO.

WIRING DESIGNATIONS:



PSPC/PWGSC Libraries listed below. Not necessarily ISA compliant.

2600 Transformer

	Iron Core
	Air Core
	Current
	Fused Potential

26xx Ground

	Ground
	Lightning Arrester

2609 Meter

	Voltmeter
	Ammeter
	Wattmeter
	kWh Meter
	Ohmmeter

2600 Motor

	Motor Single Phase
	Motor Three Phase
	Motor DC
	Generator

26xx Breaker Switch

	Isolation Switch
	Circuit Breaker
	Breaker Drawout
	Voltmeter Switch
	Ammeter Switch
	Capacitor Non-Polarized
	Capacitor Polarized
	Transfer Switch

2624 Electrical Panel

	Distribution
	Power
	Lighting

262x Switch Starter

	Disconnect Normal
	Disconnect 120/206V
	Disconnect 206-600V
	Starter
	Combination Starter
	Unfused Disconnect
	Excess Pressure Operation Switch

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10 Peel Centre Drive  
Suites A and B  
Brampton, ON L6T 4B9

Peel Vertical CADD Standard  
Version 2.0 2025-08-31  
Standard Symbol Library

Peel Region Project No. : 18-2108	Peel Region Contract Number : 2022-222vPC10-1-004
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Peel Region File Name :  
18-2108-002-000-E-0001

2.0	2025-08-31	Peel Region Approved Edition
G	2025-07-31	Final Review Edition
F	2025-06-27	Final Adjustments to Elements
E	2025-04-24	End of April Edition
D	2025-04-01	Address Client Feedback
B	2025-02-26	Move to ANSI C Title Blocks
Mark	Date	Description

Revision History

Filename : 18-2108-002-000-E-0001	Version : 2025
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Consultant Project Number : UDS Module 6	Consultant Project Manager : Eric Leitner, PMP
Drawn : Eric Leitner, C.Tech.	Date (yyyy-mm-dd) : 2025-07-31
Checked : Cartherine Ledo	Date (yyyy-mm-dd) : 2025-08-31
Approved : James Lavhey	Date (yyyy-mm-dd) : 2025-08-31

Peel Region CADD Standard  
Electrical Notes, Acronyms  
and Wiring Designations

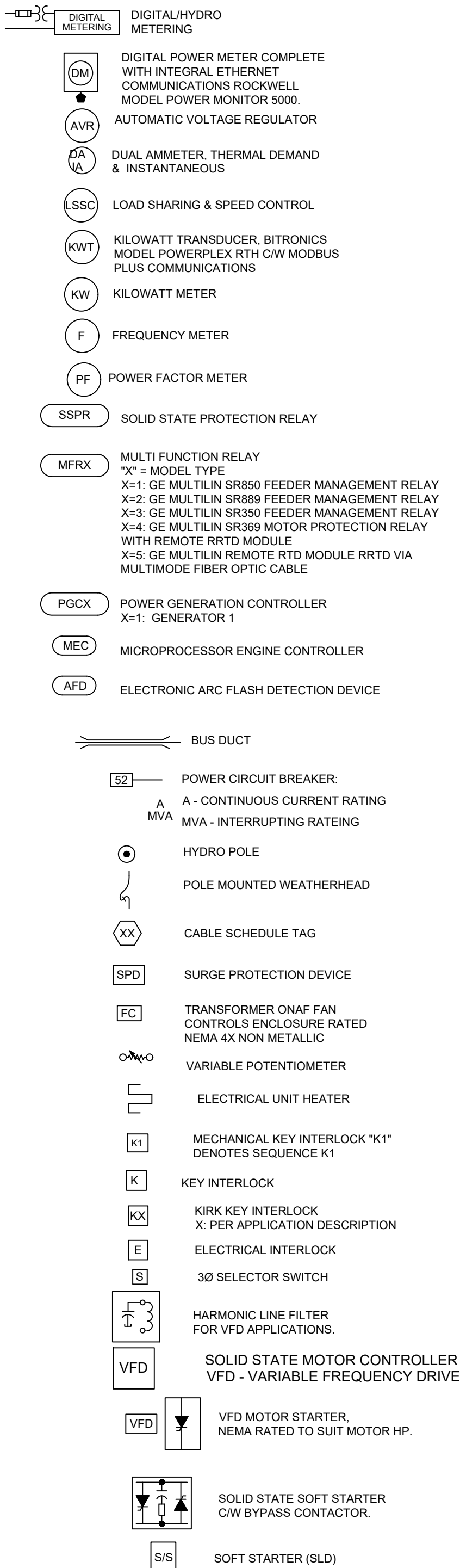
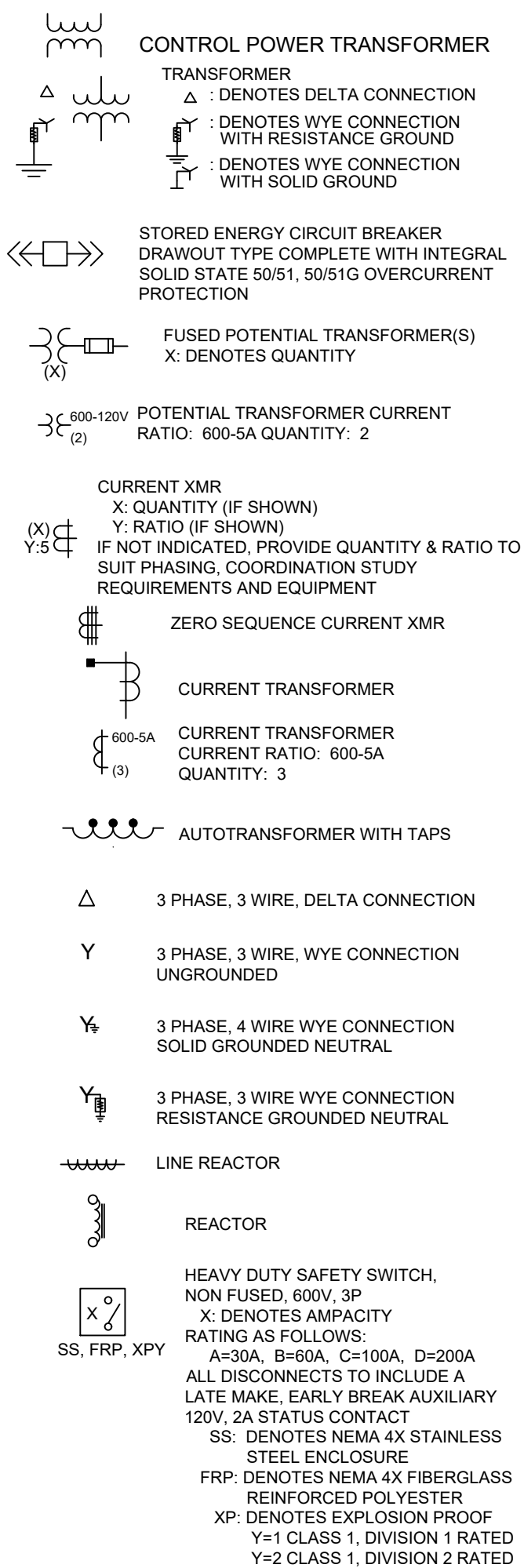
Page Size : ANSI C	Peel Region Sheet Number : 000-E-0001	Rev : 2.0
Scale : N/A	Sheet : 06	of : 07



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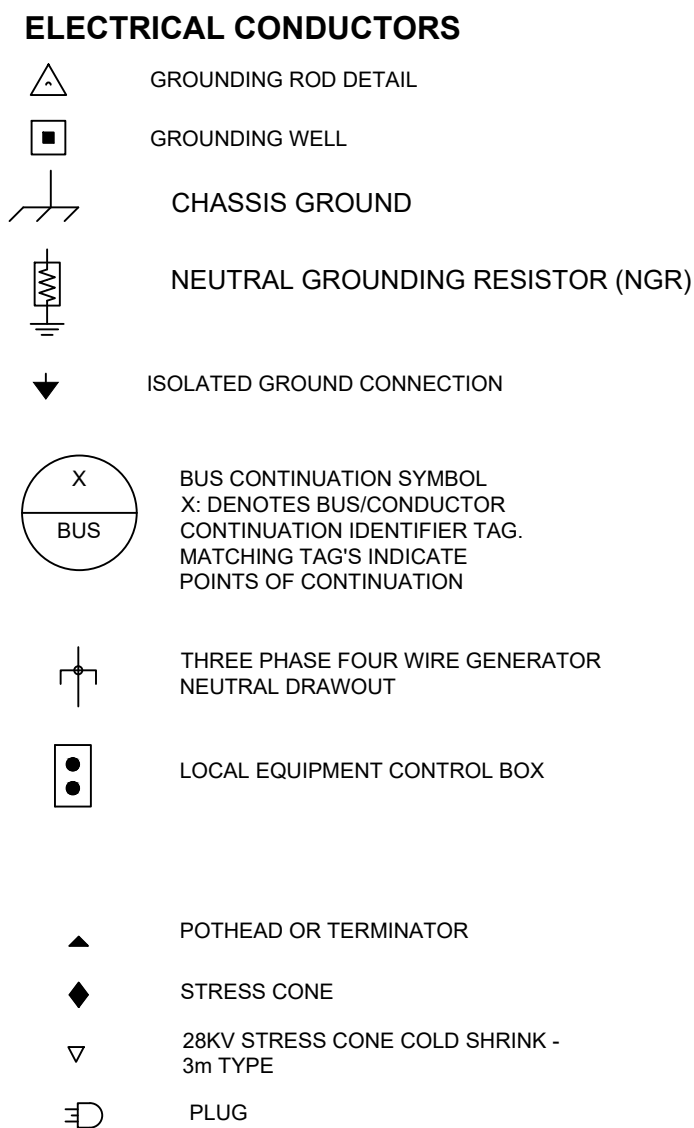
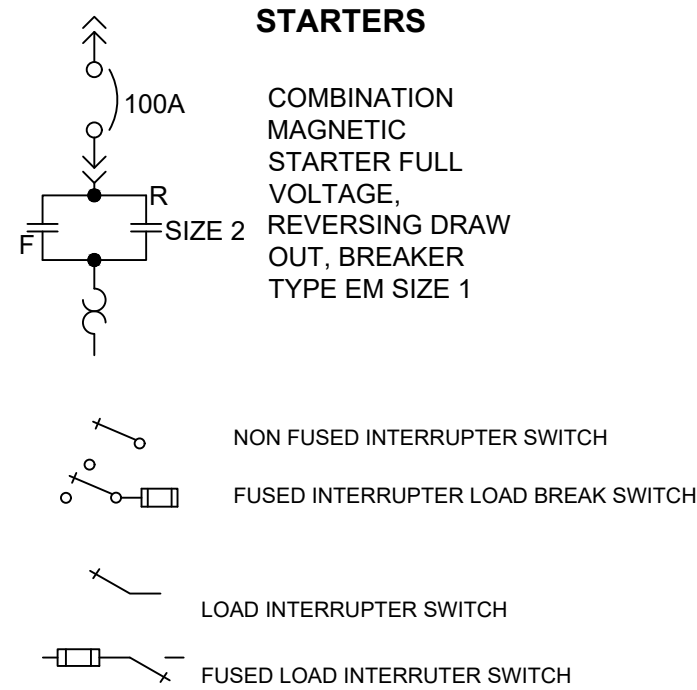


**Wiring Termination Designations**

⊗ in PLC Panel  
⊗ at Field Device  
⊗ in Control Panel/Local Control Station  
⊗ in VSD  
1 in MCC

**Single Line & Elementary Control Diagrams**

☒ Terminal Block to PLC  
☒ HVAC Terminal  
☒ Terminal Block to Field  
☐ Terminal Block inside MCC or Control Panel



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Suites A and B  
Brampton, ON L6T 4B9

## Peel Vertical CADD Standard Version 2.0 2025-08-31 Standard Symbol Library

Peel Region Project No.: 18-2108  
Peel Region Contract Number: 2022-222vPC10-1-004

Peel Region File Name: 18-2108-002-000-E-6001

2.0	2025-08-31	Peel Region Approved Edition
G	2025-07-17	ANSI/ISA 5.1 - 2024 Edition
F	2025-06-27	Final Adjustments to Elements
E	2025-02-24	End of April Edition
D	2025-04-10	Updated Edition
C	2025-03-10	Updated Edition
Mark	Date	Description

### Revision History

Filename:	Peel Legend-Electrical-Other	Version:	2025
Consultant Project Number:	20024323	Consultant Project Manager:	Eric Leitner, PMP
Drawn:	Eric Leitner, C.Tech.	Date (yyyy-mm-dd):	2025-08-13
Checked:	Catherine Ledo	Date (yyyy-mm-dd):	2025-08-31
Approved:	James Lavhey	Date (yyyy-mm-dd):	2025-08-31
Title:			

Peel Region CADD Standard  
Electrical SLD Symbol Legends

### Non-Standard Symbols

Page Size:	ANSI C	Peel Region Sheet Number:	000-E-6002	Rev:	2.0
Scale:	N/A	Sheet:	07	of:	07

## 10.3 Peel Region Record Drawing Request Form

## Public Works

10 Peel Centre Dr.  
Suite B  
Brampton, ON  
L6T 4B9  
tel: 905-791-7800

peelregion.ca

## **Region of Peel - CAD&GIS Data Release Form**

Requesters Name: [Click or tap here to enter text.](#)

Organization: [Click or tap here to enter text.](#)

Region of Peel Project Manager: [Click or tap here to enter text.](#)

Region of Peel Project Number: [Click or tap here to enter text.](#)

### **Data Requested**

**Region of Peel Data Set & Property Fabric:** ( Project Scope )

[Click or tap here to enter text.](#)

**Region of Peel DGN Release:** ( List drawing numbers )

[Click or tap here to enter text.](#)

### **Disclaimer:**

The User shall use the Data Set/Property Fabric/DGN files at its own risk and the Data is to be used solely for the Project specified. In no event shall the Region of Peel be liable for any costs, claims or damages resulting from the User's use of the Data.

Title to the Data and any copies thereof and all copyright and other intellectual property rights in such Data shall remain vested in the Region. Unless expressly authorized by the Region of Peel, the rights granted by the Region herein may not be assigned.

Be advised that the supplied data is based upon available information, some of which has not been verified. The records are to be relied upon at the user's own risk. The Region of Peel makes no representation as to the accuracy of any data supplied and further will not be held responsible for any losses incurred as a result of the inaccuracy of the information contained in the data.

I/we hereby confirm and acknowledge that I/we fully understand all terms of this Disclaimer and that I/we voluntarily accept its terms, obligations and benefits.  
I/We have authority to bind the Corporation.

Name: [Click or tap here to enter text.](#)

Signature: \_\_\_\_\_

Date: [Click or tap to enter a date.](#)



## 10.4 Peel Region Drawing Review Quality Checklist

Project Name: Click or tap here to enter text.  
 Project Number: Click or tap here to enter text.  
 Contract Number: Click or tap here to enter text.  
 Issuance / Milestone: Choose an item.  
 Peel PM: Click or tap here to enter text.  
 Consultant PM: Click or tap here to enter text.

The consultant's CADD or BIM Manager is to complete this form and submit it with each transmittal set of drawings, whether native files, CADD exports/conversions or PDF file drawings.

By completing this form, the CADD/BIM Manager certifies that a CADD Quality Check has been performed at that the following points have been confirmed to comply with Peel Region CADD Standards and project expectations.

### Project Setup Section

#### Section Confirming that:

- |         |   |                          |
|---------|---|--------------------------|
| 2.1     | All files are natively in metric units. Any imperial units in [square brackets].                | <input type="checkbox"/> |
| 2.3.1   | Peel approved page size has been utilised throughout (typically 22x34").                        | <input type="checkbox"/> |
| 2.5.2   | Peel v2 Title Blocks have been implemented on the project.                                      | <input type="checkbox"/> |
| 2.5.2   | Consultant (and subconsultants) correctly identified, including contact information.            | <input type="checkbox"/> |
| 2.5.2.1 | Title block geometries are on appropriate layers per AIA recommendations.                       | <input type="checkbox"/> |
| 2.5.4.1 | Working units are in millimetres (mm). ModelSpace objects at 1:1 scale.                         | <input type="checkbox"/> |
| 3.1     | Georeferencing - UTM Zone 17N 1983 (NAD 83 ORG) and GSC Datum 1978 Southern Ontario Adjustment. | <input type="checkbox"/> |

### Project Ongoing Section

#### Section Confirming that:

- |           |   |                          |
|-----------|---|--------------------------|
| 2.2       | ISO 8601 date format has been utilised consistently throughout. | <input type="checkbox"/> |
| 2.4.1     | All layers comply with AIA Layering.                            | <input type="checkbox"/> |
| 2.4.2     | All lineweights are AIA compliant.                              | <input type="checkbox"/> |
| 2.5.1     | Peel approved sheet numbers have been applied.                  | <input type="checkbox"/> |
| 2.5.1.1   | Sheets are in UDS discipline order in all combined PDF files.   | <input type="checkbox"/> |
| 2.5.1.2   | File Naming adheres to Peel Region specified methods.           | <input type="checkbox"/> |
| 2.5.2.2   | Title block attributes are correctly completed.                 | <input type="checkbox"/> |
| 2.5.2.2   | Revision History is completed and up to date.                   | <input type="checkbox"/> |
| 2.5.3     | Schedules are compliant to UDS Module 3.                        | <input type="checkbox"/> |
| 2.5.4     | Drafting conventions following UDS Module 4.                    | <input type="checkbox"/> |
| 2.5.4.2   | Metric view scales applied throughout.                          | <input type="checkbox"/> |
| 2.5.4.3   | Text styles conform to Peel requirements.                       | <input type="checkbox"/> |
| 2.5.4.4.1 | Systems use appropriate lineweights.                            | <input type="checkbox"/> |
| 2.5.4.4.2 | All linetypes conform to Peel requirements.                     | <input type="checkbox"/> |
| 2.5.4.5   | Dimension Styles conform to Peel requirements.                  | <input type="checkbox"/> |
| 2.5.5     | Leaders conform to Peel requirements.                           | <input type="checkbox"/> |

- 2.5.6 Drawing Orientation, grids, layout, cross-referencing conform to Peel requirements. ☐
- 2.5.7 Terms and Abbreviations are listed and conform to Peel requirements. ☐
- 2.5.8 Symbols conform to Peel requirements. ☐
  - 2.6 ANSI/ISA-S5.1 conformance. ☐
  - 2.6.1 PDF and P&ID conformance. ☐
  - 2.6.2 SLD conformance. ☐
  - 2.6.3 ISA linetypes. ☐
- 4.1 Native platform files are provided. ☐
- 4.1 Bentley .DGN format provided if required by Peel Region. ☐
- 4.4 Files are whole and unbroken (not flattened, not moved to Layer 0, etc.). ☐
- 5.3 Proper classification of modelled elements if required by the project. ☐
- 5.4, 5.5 External reference guidelines have been followed. ☐

NOTE - If above point is considered problematic by Peel, Peel may enforce binding of XREFs.
- 5.6 Professional stamps/seals correctly applied, signed and dated per PEO guidelines with identified scope of work identified adjacent to the practitioner's stamp. ☐
- 5.7 Transmittal record includes all required information. ☐
- 5.9 Folder Structure follows Peel Region guidelines. ☐
- 6.1 MicroStation files set to printer.pltcfg as the default printer. ☐
- 6.1 AutoCAD sheets set to DWFx as the default printer. ☐
- 6.2 Peel STB files are the StyleTable in use (ideally to match page size). ☐
- 6.3 Appropriate use of colour within plotted files. ☐
- 7.1 Revision letter or number appropriately set on all pages. ☐
- 7.2 Review has been appropriately carried out and copy of the Review markup is provided if requested by Peel Region. ☐
- 7.3 Appropriate use of Rev clouds and Rev notes, including in Revision History table. ☐

### Project Closeout Section

#### Section Confirming that:

- 8.3.4 Resource Drawing Set - All external references and links have been bound. ☐
- 8.3.4 All corporate logos and stamps are turned off, and originating engineer identified. ☐

By dating and signing this form, the CADD/BIM Manager certifies that the above criteria have been met and that the files conform to the Peel Region requirements as outlined in the Peel Region Vertical CADD Standard version 2.0 – July 2025 Edition (Section 7.2). Further, this completed form is included in the transmittal package to Peel Region (Section 5.8).

Form Completed By:

Click or tap here to enter text.

Name and Position (type):

Signature:

Click or tap to enter a date.

Dated (yyyy-mm-dd):

List of Documents & File Names: ("See attached", or type list here.)

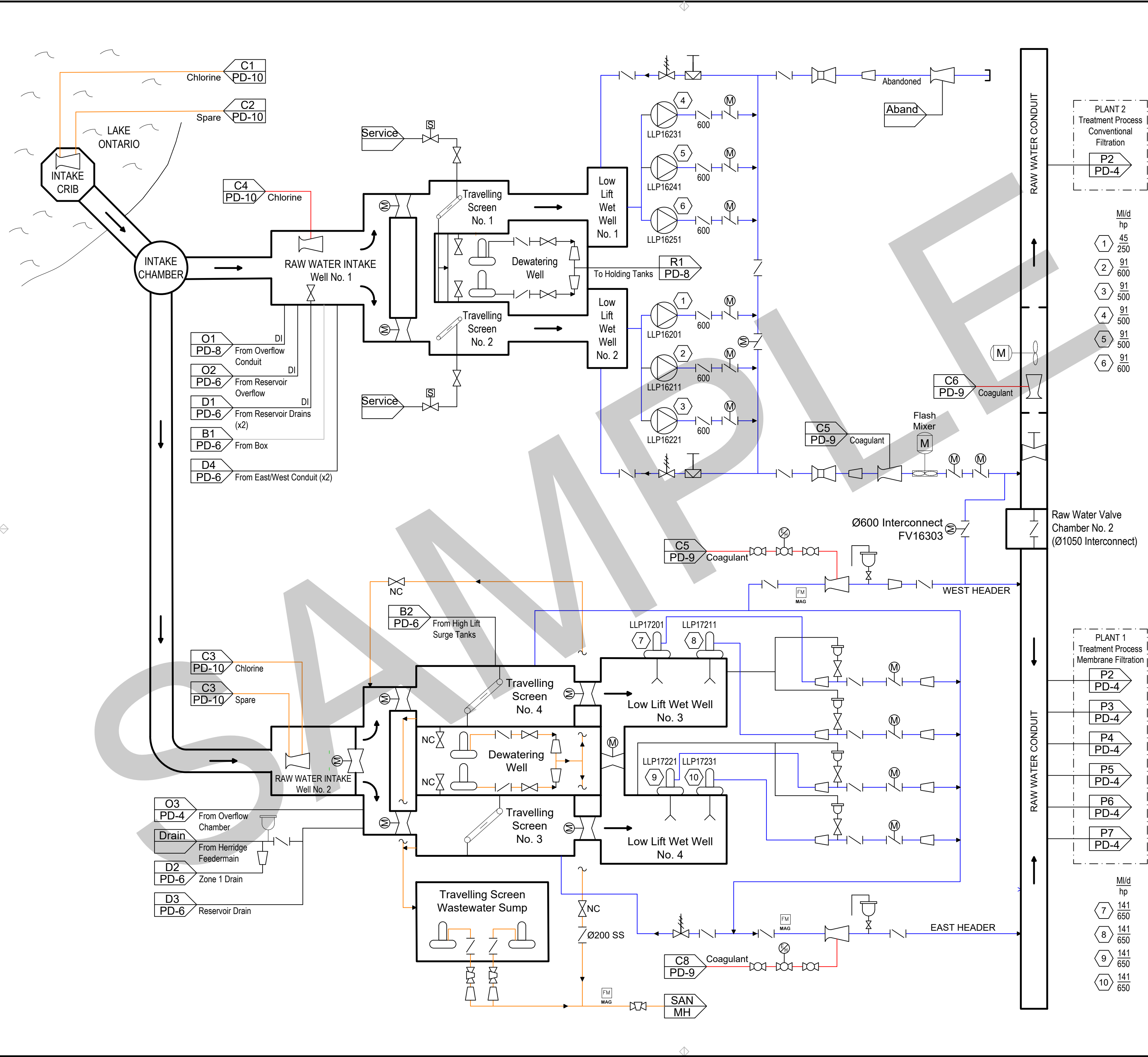
## 10.5 Sample Drawings using Peel Region Standard Version 2.0

DI602 Sample PFD Drawing, Low Lift Pumps and Pre-Treatment

DI603 Sample P&ID Drawing, Plant P&ID Sample

DI604 Sample P&ID Drawing, Reactor and Primary Heat Exchanger

E-603 Sample SLD Drawing, 600 V Switchgear Sample



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**Sullman WTP**  
1 Nearda Water Road West  
Mississauga, ON L1A 1A1

Peel Region Project No.: 2019-023P  
Peel Region Contract Number: 2022-222vPC10-1-004

Peel Region File Name: 18-2108-002-050-DI-6002

C	2025-05-22	Sample File on Peel Standard v2.0
B	2024-12-03	Added missing Ø600 interconnect valve connecting membrane discharge headers (C.L.)
A	2020-05-01	Issued for Review (S.D.)
Mark	Date	Description

Revision History

Filename: DI602 PFD Sample Version: 2025

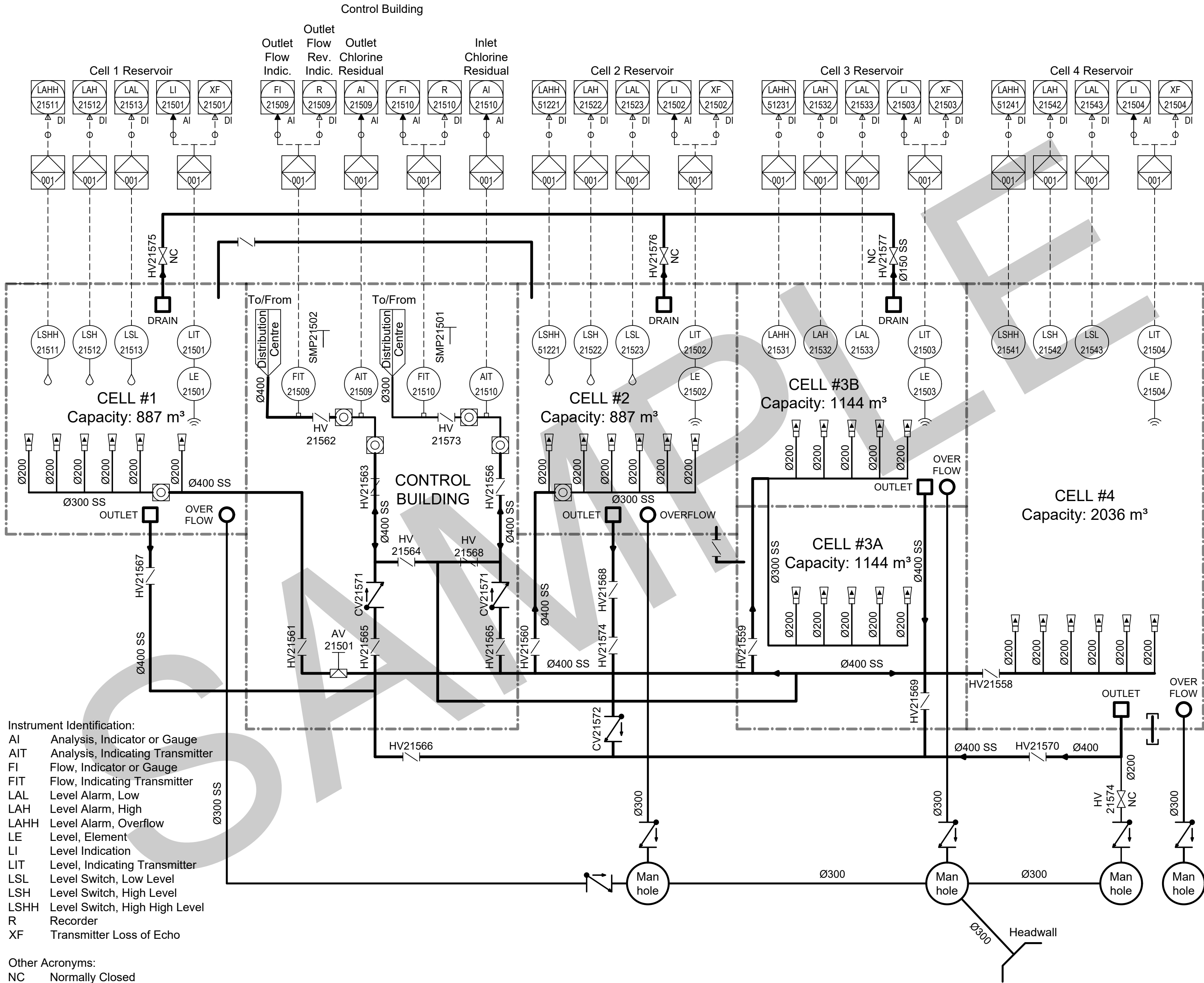
Consultant Project Number:	Consultant Project Manager:
UDS Module 5	Eric Leitner
Drawn:	Date (yyyy-mm-dd):
E. Leitner	2020-05-01
Checked:	Date (yyyy-mm-dd):
C. Ledo	2020-05-01
Approved:	Date (yyyy-mm-dd):
J. Lavhey	2025-05-22

Title: Process Flow Diagram (PFD)

Low Lift Pumps & Pre-Treatment

Page Size:	Peel Region Sheet Number:	Rev:
ANSI C	DI-6002	C
Scale:	Sheet:	1
N/A	of:	4





- Instrument Identification:
- AI Analysis, Indicator or Gauge
  - AIT Analysis, Indicating Transmitter
  - FI Flow, Indicator or Gauge
  - FIT Flow, Indicating Transmitter
  - LAL Level Alarm, Low
  - LAH Level Alarm, High
  - LAHH Level Alarm, Overflow
  - LE Level, Element
  - LI Level Indication
  - LIT Level, Indicating Transmitter
  - LSL Level Switch, Low Level
  - LSH Level Switch, High Level
  - LSHH Level Switch, High High Level
  - R Recorder
  - XF Transmitter Loss of Echo
- Other Acronyms:
- NC Normally Closed
  - NO Normally Open
  - SS Stainless Steel



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**Easton and Gravestone**  
Reservoir Condition Assessment  
Mississauga, ON L2A 1A1

Peel Region Project No.: 2019-023P  
Peel Region Contract Number: 2022-222vPC10-1-004

Peel Region File Name: 18-2108-002-050-DI-6003

C	2025-10-24	Sample File on Peel Standard v2.0
B	2025-05-22	Initial Conversion to Peel Standard
A	2024-09-01	Issued as Record Drawing
Mark	Date	Description

Revision History

Filename: DI603-P&ID Sample Version: 2025

Consultant Project Number: UDS Module 5  
Consultant Project Manager: Eric Leitner

Drawn: E. Leitner  
Date (yyyy-mm-dd): 2024-09-01

Checked: C. Ledo  
Date (yyyy-mm-dd): 2025-05-22

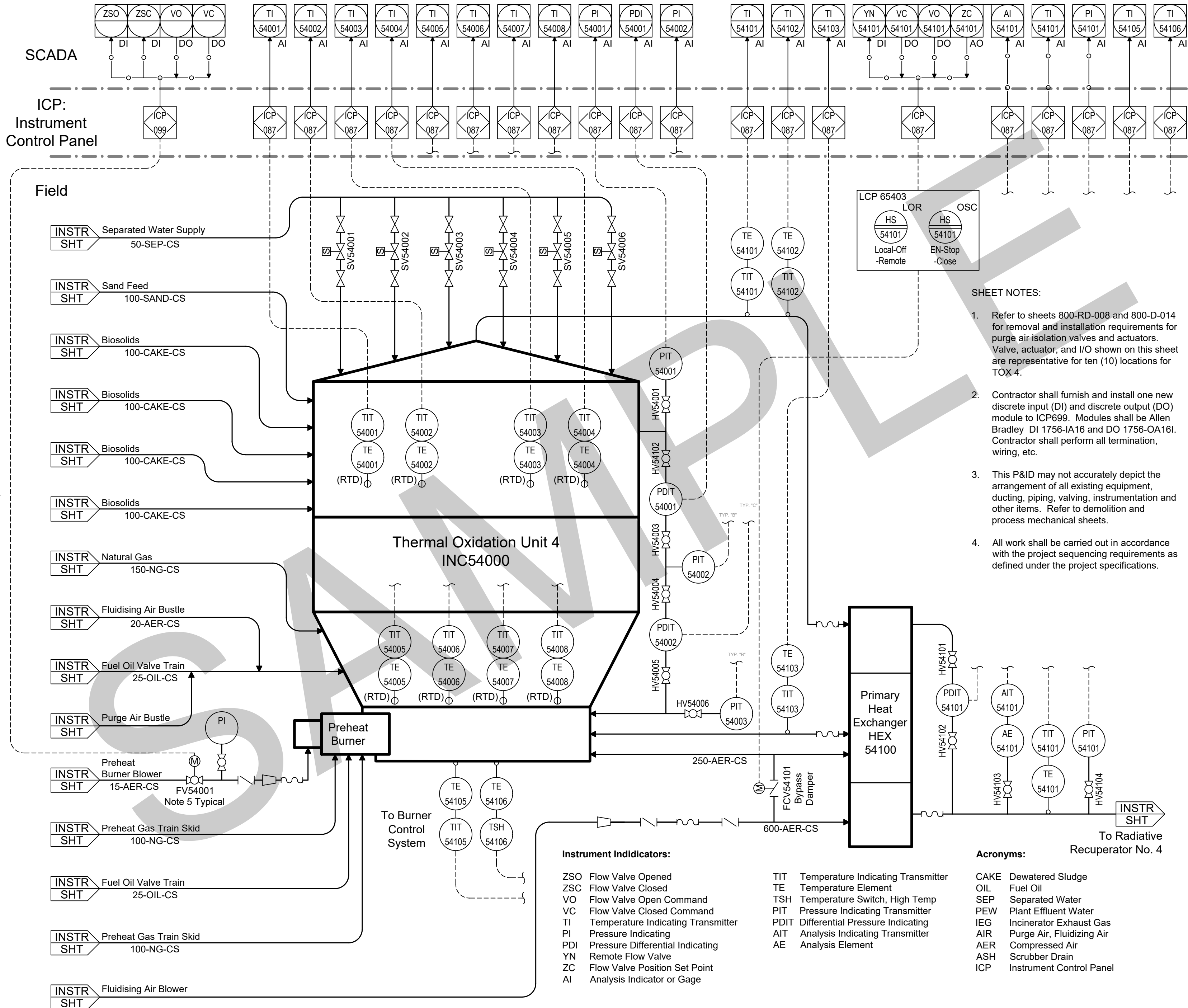
Approved: J. Lavhey  
Date (yyyy-mm-dd): 2025-10-24

Title: Easton Plant

Process & Instrumentation Diagram (P&ID)

Page Size: ANSI C	Peel Region Sheet Number: DI-6003	Rev: C
Scale: N/A	Sheet: 2	of: 4





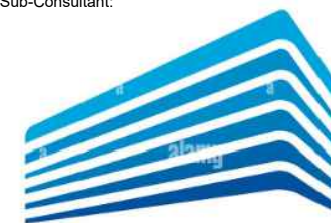
SHEET NOTES:

- Refer to sheets 800-RD-008 and 800-D-014 for removal and installation requirements for purge air isolation valves and actuators. Valve, actuator, and I/O shown on this sheet are representative for ten (10) locations for TOX 4.
- Contractor shall furnish and install one new discrete input (DI) and discrete output (DO) module to ICP699. Modules shall be Allen Bradley DI 1756-IA16 and DO 1756-OA16I. Contractor shall perform all termination, wiring, etc.
- This P&ID may not accurately depict the arrangement of all existing equipment, ducting, piping, valving, instrumentation and other items. Refer to demolition and process mechanical sheets.
- All work shall be carried out in accordance with the project sequencing requirements as defined under the project specifications.



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Sample Sub-Consultant:



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Brampton, ON L6T 4B9

**Daunbydelake WRRF**

8110 Shoreway Road West  
Mississauga, ON L2B 1A1

Peel Region Project No.: 2019-023P  
Peel Region Contract Number: 2022-222vPC10-1-004

Peel Region File Name: 18-2108-002-050-DI-6004

C	2025-05-24	Sample File on Peel Standard v2.0
B	2024-02-01	Issued for Construction
A	2023-10-01	Issued for Tender
Mark	Date	Description

Revision History

Filename:	Version:
DI604-P&ID Sample	2025
Consultant Project Number:	Consultant Project Manager:
21-2908	Eric Leitner
Drawn:	Date (yyyy-mm-dd):
E. Leitner	2023-10-01
Checked:	Date (yyyy-mm-dd):
C. Ledo	2023-10-01
Approved:	Date (yyyy-mm-dd):
J. Lavhey	2025-05-24
Title:	

**TOX 4 Reactor and  
Primary Heat Exchanger  
Process & Instrumentation Diagram  
(P&ID)**

Page Size:	Peel Region Sheet Number:	Rev:
ANSI C	DI6004	C
Scale:		Sheet:
N/A		3
		of: 4

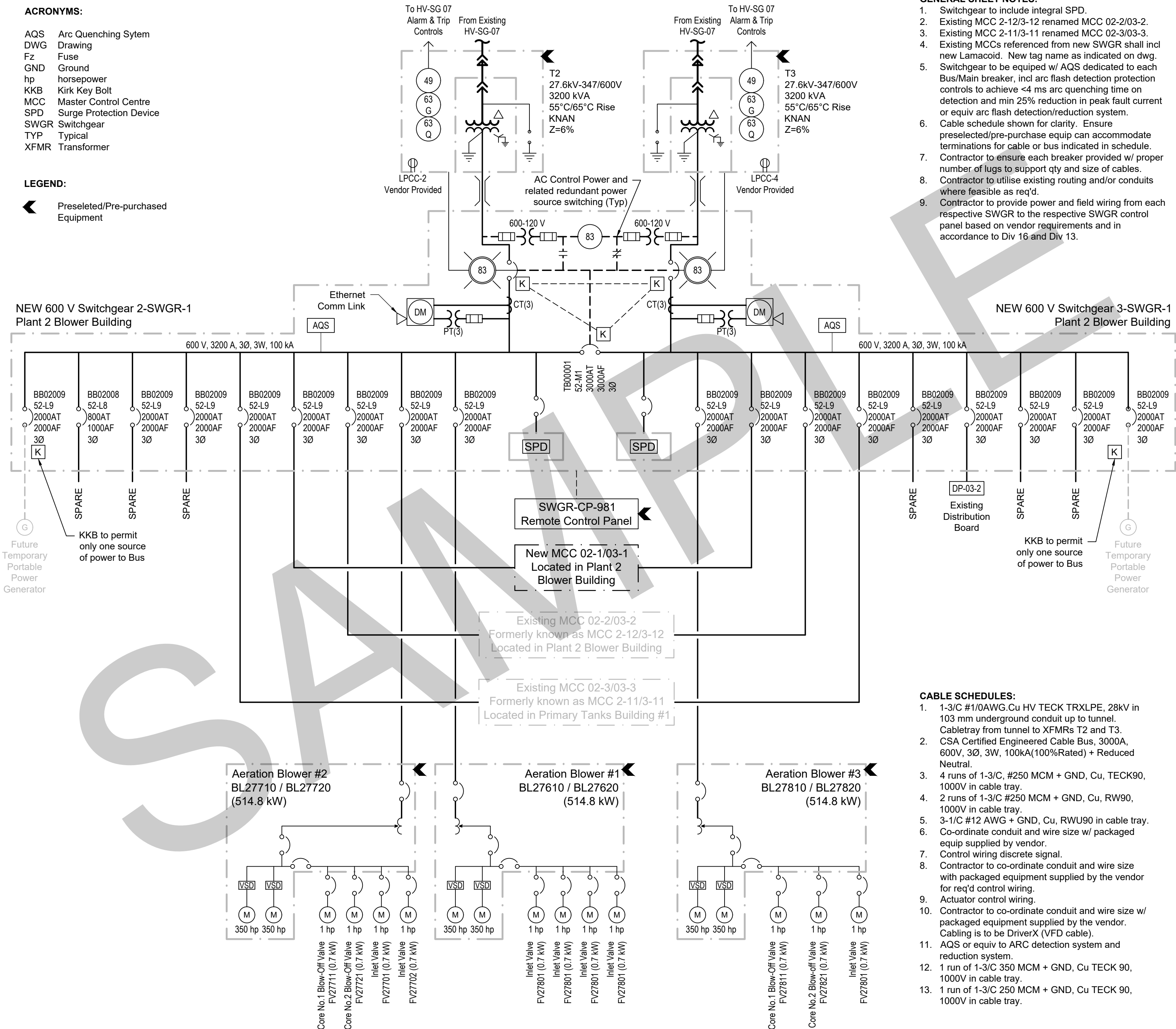


ACRONYMS:

AQS	Arc Quenching Sytem
DWG	Drawing
Fz	Fuse
GND	Ground
hp	horsepower
KKB	Kirk Key Bolt
MCC	Master Control Centre
SPD	Surge Protection Device
SWGR	Switchgear
TYP	Typical
XFMR	Transformer

LEGEND:

	Preseleted/Pre-purchased Equipment
--	------------------------------------



GENERAL SHEET NOTES:

- Switchgear to include integral SPD.
- Existing MCC 2-12/3-12 renamed MCC 02-2/03-2.
- Existing MCC 2-11/3-11 renamed MCC 02-3/03-3.
- Existing MCCs referenced from new SWGR shall incl new Lamacoid. New tag name as indicated on dwg.
- Switchgear to be equiped w/ AQS dedicated to each Bus/Main breaker, incl arc flash detection protection controls to achieve <4 ms arc quenching time on detection and min 25% reduction in peak fault current or equiv arc flash detection/reduction system.
- Cable schedule shown for clarity. Ensure preselected/pre-purchase equip can accommodate terminations for cable or bus indicated in schedule.
- Contractor to ensure each breaker provided w/ proper number of lugs to support qty and size of cables.
- Contractor to utilise existing routing and/or conduits where feasible as req'd.
- Contractor to provide power and field wiring from each respective SWGR to the respective SWGR control panel based on vendor requirements and in accordance to Div 16 and Div 13.

CABLE SCHEDULES:

- 1-3/C #1/0AWG.Cu HV TECK TRXLPE, 28kV in 103 mm underground conduit up to tunnel. Cabletray from tunnel to XFMRs T2 and T3.
- CSA Certified Engineered Cable Bus, 3000A, 600V, 3Ø, 3W, 100kA(100%Rated) + Reduced Neutral.
- 4 runs of 1-3/C, #250 MCM + GND, Cu, TECK90, 1000V in cable tray.
- 2 runs of 1-3/C #250 MCM + GND, Cu, RW90, 1000V in cable tray.
- 3-1/C #12 AWG + GND, Cu, RWU90 in cable tray.
- Co-ordinate conduit and wire size w/ packaged equip supplied by vendor.
- Control wiring discrete signal.
- Contractor to co-ordinate conduit and wire size with packaged equipment supplied by the vendor for req'd control wiring.
- Actuator control wiring.
- Contractor to co-ordinate conduit and wire size w/ packaged equipment supplied by the vendor. Cabling is to be DriverX (VFD cable).
- AQS or equiv to ARC detection system and reduction system.
- 1 run of 1-3/C 350 MCM + GND, Cu TECK 90, 1000V in cable tray.
- 1 run of 1-3/C 250 MCM + GND, Cu TECK 90, 1000V in cable tray.



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**Peel Region**  
working with you  
10 Peel Centre Drive  
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**Easton and Gravestone**  
Reservoir Condition Assessment  
Mississauga, ON L2A 1A1

Peel Region Project No. : 20-2961	Peel Region Contract Number : 2022-222vPC10-1-004
--------------------------------------	--

Peel Region File Name :  
**20-2961-002-262-E-6003**

C	2024-12-25	Sample File for Peel Standards
B	2024-12-01	IFC - Issued for Construction
A	2024-07-01	IFT - Issued for Tender
Mark	Date	Description

Revision History

Filename : <b>E-603-SLD Sample</b>	Version : <b>2022</b>
Consultant Project Number : T001535A	Consultant Project Manager : Eric Leitner
Drawn : E. Leitner	Date (yyyy-mm-dd) : 2024-12-01
Checked : C. Ledo	Date (yyyy-mm-dd) : 2024-12-02
Approved : J. Lavhey	Date (yyyy-mm-dd) : 2024-12-25
Title :	

Plant 22 Blower Building  
New 600 V Switchgear  
2-SWGR-1 / 3-SWGR-1

Page Size : ANSI C	Peel Region Sheet Number : <b>E-6003</b>	Rev : <b>C</b>
Scale : N/A		Sheet : <b>4</b> of : <b>4</b>