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Drawing Standards

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# Support Materials for Drawings Package Contents

Note: Changes from previous version are in bold and italic print.

* Blocks (folder)
  + All insertable symbols, stamps, or blocks including drawing borders.
* Drawing Examples (folder)
  + Examples of CoS drawing types.
* Layers (folder)
  + Layer Legends (folder)
    - AutoCAD drawing files providing the standard layers for Water & Sewer (As-built or Construction) and Roadway drawing types.
  + Layer States(folder)
    - Loadable layer state files to efficiently adjust the layer settings and control how objects and text print based on drawing type.
      * Apply the “WSCONSTRUCTION.las” layer state to water & sewer construction drawings.
      * Apply the “WSASBUILT.las” layer state to water & sewer as-built drawings.
      * Apply the “RoadConstruction(External).las” layer state to roadway construction or as-built drawings.
  + Layer Index and Entity Definition Library.docx (file)
    - Explains the components of a layer name.
* CoS\_Drawing\_Legend.pdf (file)
  + Defines standard symbology for CoS drawing objects and text.
* CoS\_Drawing\_Standards.docx (file)
  + Documents the contents of and instructions for using the Support Materials for Drawings downloadable package.
* CoS\_Monochrome.ctb (file)
  + Sets all colours to print in black because layer settings manage all print settings. Layer settings are managed by applying layer states based on the drawing type for Water & Sewer or Roadways drawings.
* CoS\_Linetypes.lin (file)
  + CoS standard line types and AutoCAD line types from acadiso.lin.

# General Standards

The following are the general standards for all drawings submitted to the COS.

1. The standard software used by CoS is Autodesk Civil 3D with the DWG 2018 file version.
2. All standards are based on an 11”x17” drawing size and must be adjusted for any other drawing size.
3. CoS Drawing numbers may be requested and are assigned by a CoS representative during the review process.
4. Converting City Imperial Datum to Geodetic Datum  
   (City Imperial Datum + 16.171) \* 0.3048 = Geodetic Datum

# Water & Sewer Standards

* Assumed water main depth of cover.
  + Prior to 1976 – 2.75 metres
  + After 1976 – 2.90 metres
* Show and label all abandoned lines, manholes, and valves in the plan view.
* Show and label abandoned manholes in both the plan and profile views.
* Dimension to property lines.
* All curved pipes require a completed curve data box in the plan view.
* All structures that do not conform to CoS Standard Specification drawings require a structural detail drawing. Non-standard structures are shown in true shape and size in the plan view and have a reference to the associated detail drawing.
* Label individual horizontal pipe deflections at joints with the angle of deflection.
* Label vertical deflections of Primary Water Mains with the invert elevation and the angle of deflection.

## Pipe Labels

* The material text must match the Pipe Material Designations list.
* Pipe labels follow the curvature of the pipe.

### Construction

* Plan View
  + Water main pipe labels consist of “PROP.”, size, specification/class, material, and system text. In the case of a primary water main, use “P.W.M.” for the system. Where applicable, extra text such as “Fill Main”, “Warm Main”, etc. is placed after the system text.
    - Example: PROP. 200mm C900 CL150 PVC W.M.
  + Sanitary and storm sewer main pipe labels consist of “PROP.”, size, specification/class, material, system, and length (in brackets) text. Where applicable, extra text such as “F.M.”, “Low Line”, or “High Line”, etc. is placed after the system text and before the length.
    - Example: PROP. 300mm SDR35 PVC S.S. (98.75)
  + Indicate pipes to be abandoned, removed, replaced, or lined at the end of the text for construction.
    - Examples:  
      1924 150mm C.I. W.M. – TO BE ABANDONED  
      1920 250mm TILE S.S. (65.25) - TO BE REMOVED
* Profile View
  + Water main pipe labels consist of “PROP.”, size, system, and “INV.”
    - Example: PROP. 200mm W.M. INV.
  + Primary water main pipe labels consist of “PROP.”, size, and system.
    - Example: PROP. 1050mm P.W.M.
  + Sanitary and storm sewer main pipe labels consist of “PROP.”, size, system, grade/slope.
    - Example: PROP. 375mm S.S. @ 0.50%
  + Indicate pipes to be abandoned, removed, replaced, or lined at the end of the text for construction.
    - Examples:  
      150mm W.M. INV. – TO BE ABANDONED  
      250mm S.S. @ 1.00% - TO BE REMOVED

### As-Built

* Plan View
  + Water main pipe labels consist of year (or “EX.” if unknown), size, specification/class, material, and system text. In the case of a primary water main, use “P.W.M.” for the system. Where applicable, extra text such as “Fill Main”, “Warm Main”, etc. is placed after the system text.
    - Example: 1924 150mm C.I. W.M.
  + Sanitary and storm sewer main pipe labels consist of year (or “EX.” if unknown), size, specification/class, material, system, and length (in brackets). Where applicable, extra text such as “F.M.”, “Low Line”, or “High Line”, etc. is placed after the system text and before the length.
    - Example: 1920 250mm TILE S.S. (65.25)
  + Indicate abandoned, bonded, or lined pipes at the beginning of the text.
    - Examples:  
      ABANDONED – 1924 150mm C.I. W.M.  
      2018 CIPP LINED - 1920 250mm TILE S.S. (65.25)
* Profile View
  + Water main pipe labels consist of size, system, and “INV.” Information.
    - Example: 200mm W.M. INV.
  + Primary water main pipe labels consist of size, and system information.
    - Example: 1050mm P.W.M.
  + Sanitary and storm sewer main pipe labels consist of “PROP.”, size, system, grade/slope.
    - Example: 375mm S.S. @ 0.50%
  + Indicate pipes to be abandoned, bonded, or lined at the beginning of the text.
    - Examples:  
      ABANDONED - 150mm W.M. INV.   
      CIPP LINED - 250mm S.S. @ 1.00%

# Appendix A - Pipe Material Designations

Notes:

* The materials listed include pipe materials for existing infrastructure. To access the current specifications, see [***Specifications | Saskatoon.ca***](https://www.saskatoon.ca/business-development/development-regulation/specifications-standards/specifications).
* Specifications and class ratings are listed before the material in all pipe labels.

| Description | Drawing Text |
| --- | --- |
| Asbestos Cement | A.C. |
| Cast Iron | C.I. |
| Clay Tile - Vitrified or VCT | TILE |
| Concrete | CONC. |
| Concrete - Cast in Place | CONC. |
| Concrete - Cast in Place Reinforced | CONC. |
| Concrete - Extra-Strength ASTM C14 | C14 CONC. |
| Concrete - Precast | CONC. PRECAST |
| Concrete - Reinforced ASTM C76 Class III | C76 CL.III R.C. |
| Concrete - Reinforced ASTM C76 Class IV | C76 CL.IV R.C. |
| Concrete - Steel Reinforced | R.C. |
| Concrete - Steel Reinforced Pressure Pipe | HYPRESCON |
| Copper | COPPER |
| Corrugated Metal Pipe | CORRUGATED METAL PIPE |
| Corrugated Steel | CORRUGATED STEEL |
| Corrugated Steel - Helical | HELICAL CORRUGATED STEEL |
| Ductile Iron | D.I. |
| Fiberglass Reinforced Plastic | FIBERGLASS REINFORCED PLASTIC |
| Galvanized Steel | GALVANIZED STEEL |
| Glass-Fiber-Reinforced Polymer Mortar | GLASS-FIBER-REINFORCED POLYMER MORTAR |
| High Density Polyethylene | HDPE |
| High Density Polyethylene - ADS N12 | ADS N12 HDPE |
| High Density Polyethylene - Boss 2000 | BOSS 2000 HDPE |
| High Density Polyethylene - Weholite | WEHOLITE HDPE |
| High Density Polystyrene | HDPS |
| Lining - Cured in Place Pipe | CIPP LINED |
| Perforated Pipe | PERFORATED PIPE |
| Perforated Pipe - Concrete Precast | PERFORATED CONC. PRECAST |
| Perforated Pipe - Corrugated Steel | PERFORATED CORRUGATED STEEL |
| Perforated Pipe - Galvanized Steel | PERFORATED GALVANIZED STEEL |
| Perforated Pipe - Helical Corrugated Steel | PERFORATED HELICAL CORRUGATED STEEL |
| Perforated Pipe - Polyethylene | PERFORATED PE |
| Perforated Pipe - Polyvinyl Chloride | PERFORATED PVC |
| Polyethylene | PE |
| Polyethylene - Corrugated | CORRUGATED PE |
| Polypropylene | PP |
| Polypropylene - Sanitite | SANITITE PP |
| Polyvinyl Chloride | PVC |
| Polyvinyl Chloride - C900 CL150 | C900 CL150 PVC |
| Polyvinyl Chloride - C900 DR18 | C900 DR18 PVC |
| Polyvinyl Chloride - C905 DR51 PR80 | C905 DR51 PR80 PVC |
| Polyvinyl Chloride - Korflo | KORFLO PVC |
| Polyvinyl Chloride - SDR26 PVC | SDR26 PVC |
| Polyvinyl Chloride - SDR28 PVC | SDR28 PVC |
| Polyvinyl Chloride - SDR35 PVC | SDR35 PVC |
| Polyvinyl Chloride - Terrabrute | TERRABRUTE PVC |
| Polyvinyl Chloride - Ultra-Rib | ULTRARIB PVC |
| Polyvinyl Chloride - UltraRib X2 | ULTRARIB X2 PVC |
| Steel | STEEL |
| Tunnel Liner | TUNNEL LINER |
| Unknown | UNKNOWN |
| Wood | WOOD |

# Appendix B - Abbreviations

| Abbreviation | Definition |
| --- | --- |
| ABAND | Abandoned |
| ac. | Acre |
| A.C. | Asbestos Cement |
| ASP | Asphalt |
| @ | At |
| BOW | Back of Walk |
| BM | Benchmark |
| BTM | Bottom |
| C.N.R. | Canadian National Railway |
| C.P.R. | Canadian Pacific Railway |
| C.I. | Cast Iron |
| CB | Catch Basin |
| **℄** | Center Line |
| cm | Centimetre |
| CL | Class |
| C/W | Complete With |
| CONC. | Concrete |
| CMP | Corrugated Metal Pipe |
| CSP | Corrugated Steel Pipe |
| X-SECT | Cross Section |
| m³ | Cubic Metres |
| C&G | Curb and Gutter |
| CIPP | Curried in Place Pipe |
| CC | Curve to Curve |
| CT | Curve to Tangent |
| ° | Degree |
| ∆ | Delta |
| DWG | Drawing |
| D.I. | Ductile Iron |
| E | East |
| EASE | Easement |
| EB | Eastbound |
| EOP | Edge of Pavement |
| ELEV | Elevation |
| EX. | Existing |
| FOC | Face of Curb |
| ft | Feet or Foot |
| F.M. | Force Main |
| FIP | Found Iron Pin |
| FOW | Front of Walk |
| GALV. | Galvanized |
| g | Gram |
| Ha | Hectares |
| HDPE | High Density Polyethylene |
| HDPS | High Density Polystyrene |
| HWL | High Water Level |
| HWY | Highway |
| HOR | Horizontal |
| HMA | Hot Mix Asphalt |
| HYD | Hydrant |
| in | Inch |
| ID | Inside Diameter |
| INV. | Invert or Inside Bottom of Pipe |
| IP | Iron Pin |
| JB | Junction Box |
| kg | Kilogram |
| km | Kilometre |
| km/h | Kilometres Per Hour |
| kPa | Kilopascal |
| kV | Kilovolt |
| LS | Lift Station |
| LED | Light Emitting Diode |
| L | Litres |
| LWL | Low Water Level |
| MH | Manhole |
| MAN | Manual |
| MAX | Maximum |
| m | Metres |
| m/s | Metres Per Second |
| mm | Millimetres |
| MIN | Minimum |
| " | Minutes |
| MB | Municipal Buffer Strip |
| MR | Municipal Reserve |
| NWL | Normal Water Level |
| N | North |
| NB | Northbound |
| NO. / # | Number |
| OD | Outside Diameter |
| OH | Overhead |
| % | Percent |
| PT | Point |
| PVI | Point of Vertical Intersection |
| PE | Polyethylene |
| PED | Pedestal |
| PP | Polypropylene |
| PVC | Polyvinyl Chloride |
| lbs | Pounds |
| psi | Pounds Per Square Inch |
| P.W.M. | Primary Water Main |
| **⅊** | Property Line |
| PROP. | Proposed |
| QTY | Quantity |
| RWY | Railway |
| RGE | Range |
| RED | Reducer |
| REG’D | Registered |
| R.C. | Reinforced Concrete |
| REV | Revision |
| ROW | Right of Way |
| RC | Rolled Curb |
| RC&G | Rolled Curb and Gutter |
| RC&RG | Rolled Curb and Reversed Gutter |
| RPC | Ramp Pedestrian Crossing |
| S.S. | Sanitary Sewer |
| ' | Seconds |
| S | South |
| SB | Southbound |
| m² | Square Metres |
| STA | Station |
| STD | Standard |
| ST.S. | Storm Sewer |
| TAN | Tangent |
| TC | Tangent to Curve |
| TEMP | Temporary |
| TOC | Top of Curb |
| TOP | Top of Pipe |
| TOR | Top of Rail |
| TWP | Township |
| TL | Tunnel Liner |
| U/G | Underground |
| UKN | Unknown |
| VERT | Vertical |
| VC | Vertical Curb |
| VC&G | Vertical Curb and Gutter |
| VC&RG | Vertical Curb and Reversed Gutter |
| TILE | Vitrified Clay Tile |
| VOL | Volume |
| W.M. | Water Main |
| WT | Weeping Tile |
| W | West |
| WB | Westbound |