

**City of Kitchener  
Infrastructure Services Department  
Engineering Services Division**

**CAD Standards for Engineering**



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## Revision History

| Revision Description                                                                         | Date               |
|----------------------------------------------------------------------------------------------|--------------------|
| Layer revisions.                                                                             | June 29, 2010      |
| Final draft revisions.                                                                       | September 10, 2010 |
| As Recorded section moved to As Recorded Data Tracking Form<br>User Manual for Engineering.  | October 29, 2012   |
| Layer revisions, migrating templates to be compatible with CTB plot<br>styles (formerly STB) | December 2023      |

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## **1. Introduction**

This manual has been developed to assist consultants in the preparation of contract drawings for the City of Kitchener's Engineering Services Division using Autodesk's AutoCAD Civil 3D software platform.

## **2. Standards**

### **2.1. General**

The City of Kitchener has developed over the years a number of sheets, blocks, linetypes and procedures to ensure that our engineering contract drawings are comprehensive and consistent.

The standard has also been developed to achieve the following goals:

- Provide a look and feel to the drawings that is easy to read,
- Provide all of the necessary information on the drawings so that asset information can be visually extracted from the drawings at a later date,
- Make the integration of engineering drawings into the GIS database as seamless as possible,
- Ensure that the data provided to be contained within our database is as accurate as possible.

All drawings shall be created using the City of Kitchener's template package available for download on the City's website at <http://www.kitchener.ca/>. Files contained in this package are updated regularly so it is important that the consultant frequently visit the website to make sure they are using the up-to-date version of the template package. Revisions are also tracked at the beginning of this document. The package contains the following files;

- COK-Engineering.ctb (plot style table)
- COK-C3D Template\_2025.dwt
- COK-TTL\_Blocks\_2025.dwt
- COK-Cover and Legend\_2025.dwt
- COK-Engineering CAD Standards\_2025.pdf

### **2.2. Conformance Requirements**

The standards as outlined in this document shall apply to the consultant working on a project where the City of Kitchener is designated as the 'Owner' of the works being constructed. This case applies mostly to Capital and Development Charge projects such as a road reconstruction or the construction of a new trunk sewer.

Where the City of Kitchener is a member of the project team or where the City of Kitchener is the approval agency then only the As Recorded Drawing Submission section of this document shall apply regardless of constructed works ownership. This case applies mostly to projects such as a subdivision or site plan development. While it is not mandatory for private sector developments to follow standards such as layer names until the 'As Recorded' stage it is highly recommended to reduce the amount of work required later to change layers. Alternative methods of layer conversion are available with AutoCAD such as the Layer Translator' however the method of arrival is left at the discretion of the consultant preparing the drawings.

If further clarification is required, please consult with your project manager / City of Kitchener contact prior to project commencement.

### **3. Legal Survey**

Legal data should be a composite plan prepared by an Ontario Land Surveyor showing front and side property lines, including all intersecting streets, private and municipal property, easements, rights-of-way, and control points used.

The coordinate system of the plan is scaled to ground UTM NAD 83 Zone 17 coordinates. Translate plan coordinates onto a defined base point which is at its true UTM coordinate value and provide the average combined scale factor used. Supply the true UTM Zone 17 NAD 83 coordinates and the combined scale factor for a minimum of three points within the drawing.

### **4. Topographic Survey**

All topographical surveys shall be conducted in accordance with the City of Kitchener's Guidelines for total station engineering/topographical surveys.

### **5. Existing Conditions Plan and Profile**

The existing conditions plan should include all existing topographical, above ground and underground information and assets with accurate location. Profiles detailing the underground features may also be included where required.

Underground details should include but are not limited to, sewers, water mains, gas mains, and other utilities should be shown in their actual vertical location in the profile view of the drawing. Above ground detail should include but are not limited to, sewers, water mains, gas mains, underground telecommunications lines, underground electrical lines.

### **6. Proposed Conditions Plan and Profile**

The proposed conditions plan should include all proposed topographical, above ground and underground information and assets with accurate location. Profiles detailing the underground features may also be included where required. Existing detail and assets which are to be removed during construction shall not be shown.

Underground details should include but are not limited to, sewers, water mains, gas mains, and other utilities should be shown in their actual vertical location in the profile view of the drawing. Above ground detail should include but are not limited to, sewers, water mains, gas mains, underground telecommunications lines, underground electrical lines.

### **7. Surface Elevation Plan**

This plan should represent the proposed conditions to be constructed as well as showing existing conditions to remain. Proposed elevations at key locations (every 10m stations, PVI, BVC, EVC, BHC, EVC, etc.) should be shown on the centerline of the roadway, edge of pavement, front face of sidewalk, and back of sidewalk. Existing elevations shall be shown at every 10m stations at the centerline of the roadway and the back of sidewalk.

### **8. Pavement Marking Plan**

The pavement marking plan should be at a scale of 1:250 and must use the Region of Waterloo's line painting legend. For line types not included in the legend consult the City of Kitchener's project manager. All line markings and symbols should be drawn to scale.

## 9. Layers

### 9.1. General

Where the user deems it necessary additional layers may be added so long as the format set out below is followed.

### 9.2. Existing Condition Layer State

Layers for the Existing Conditions Drawings shall be shown in the state as outlined below;

| Name             | Color   | Linetype   | Lineweight | Description                                |
|------------------|---------|------------|------------|--------------------------------------------|
| ALIGN_EX_CL      | 221     | DASHED     | Default    | Existing roadway centerline alignment      |
| ALIGN_EX_CL_TEXT | 221     | Continuous | Default    | Existing roadway centerline alignment text |
| ALIGN_EX_STA     | 30      | Continuous | Default    | Existing alignment station text/label      |
| ALIGN_ROAD_LBL   | 212     | Continuous | Default    | Existing road name label                   |
| EX_BDG           | 32      | Continuous | Default    | Existing face of building/structure        |
| EX_BDG_HATCH     | 32      | Continuous | Default    | Existing face of building hatch            |
| EX_BDG_TEXT      | 32      | Continuous | Default    | Existing building text/label               |
| EX_BUS_PAD       | 8       | Continuous | Default    | Existing bus pad                           |
| EX_CONTROL       | magenta | Continuous | Default    | Existing survey control point              |
| EX_CURB          | 8       | Continuous | Default    | Existing back of curb                      |
| EX_DETAIL        | 8       | Continuous | Default    | Existing miscellaneous detail              |
| EX_DETAIL_TEXT   | 8       | Continuous | Default    | Existing miscellaneous detail text/label   |
| EX_DIMS          | 8       | Continuous | Default    | Existing dimension                         |
| EX_DITCH         | 8       | CENTER     | Default    | Existing ditch                             |
| EX_DW            | 8       | Continuous | Default    | Existing driveway                          |
| EX_ELEC_AG       | 56      | Continuous | Default    | Existing at-grade electrical utility       |
| EX_ELEC_TEXT     | 56      | Continuous | Default    | Existing electrical utility text/label     |
| EX_ELEC_UG       | 56      | DIVIDE2    | Default    | Existing underground electrical utility    |
| EX_EMBANKMENT    | 8       | Continuous | Default    | Existing embankment                        |
| EX_EP            | 8       | Continuous | Default    | Existing edge of pavement                  |
| EX_FB            | 104     | Continuous | Default    | Existing flowerbed                         |
| EX_FENCE         | 8       | FENCELINE3 | Default    | Existing fence                             |
| EX_GABION        | 8       | Continuous | Default    | Existing gabion                            |
| EX_GAS_MAIN      | 56      | DASHED     | Default    | Existing gas main                          |
| EX_GAS_SERV      | 56      | Continuous | Default    | Existing gas service                       |
| EX_GAS_TEXT      | 56      | Continuous | Default    | Existing gas text/label                    |
| EX_GAS_VALVE     | 56      | Continuous | Default    | Existing gas valve                         |
| EX_GRADE_ELEV    | 32      | Continuous | Default    | Existing spot elevation                    |
| EX_GRAVEL        | 8       | Continuous | Default    | Existing gravel material                   |
| EX_GUIDERAIL     | 8       | Continuous | Default    | Existing guiderail                         |
| EX_HANDRAIL      | 8       | Continuous | Default    | Existing handrail                          |
| EX_HYDRO         | 222     | DASHDOTX2  | Default    | Existing underground hydro utility         |
| EX_LEGAL_BARS    | 250     | Continuous | Default    | Existing legal bar                         |

## Existing Condition Layer State - continued

| Name                  | Color | Linetype   | Lineweight | Description                                  |
|-----------------------|-------|------------|------------|----------------------------------------------|
| EX_LEGAL_BARS         | 250   | Continuous | Default    | Existing legal bar                           |
| EX_LEGAL_LOT          | 215   | PHANTOM2   | Default    | Existing legal lot line                      |
| EX_LEGAL_ROW          | 220   | PHANTOM2   | 0.60       | Existing right-of-way line                   |
| EX_LEGAL_TEXT         | 250   | Continuous | Default    | Existing legal text/label                    |
| EX_MISC_TEXT          | 8     | Continuous | Default    | Existing miscellaneous text                  |
| EX_PMARKING_CENTRE    | 8     | Continuous | Default    | Existing centerline pavement marking         |
| EX_PMARKING_CROSSWALK | 8     | Continuous | Default    | Existing crosswalk pavement marking          |
| EX_PMARKING_LANES     | 8     | Continuous | Default    | Existing lane pavement marking               |
| EX_PMARKING_SBAR      | 8     | Continuous | Default    | Existing stop bar pavement marking           |
| EX_PMARKING_SYMBOLS   | 8     | Continuous | Default    | Existing pavement marking symbols            |
| EX_RETWALL            | 8     | Continuous | Default    | Existing retaining wall                      |
| EX_RETWALL_TEXT       | 8     | Continuous | Default    | Existing retaining wall text/label           |
| EX_RIVER              | 142   | Continuous | Default    | Existing river/creek/watercourse             |
| EX_RR                 | 8     | TRACKS     | Default    | Existing railroad track                      |
| EX_SAN_HATCH          | 13    | Continuous | Default    | Existing sanitary sewer hatch                |
| EX_SAN_MAIN           | 244   | Continuous | Default    | Existing sanitary sewer main                 |
| EX_SAN_MH             | 244   | Continuous | Default    | Existing sanitary sewer maintenance hole     |
| EX_SAN_SERV           | 244   | Continuous | Default    | Existing sanitary sewer service lateral      |
| EX_SAN_TEXT           | 244   | Continuous | Default    | Existing sanitary sewer text/label           |
| EX_SIGNS              | 8     | Continuous | Default    | Existing sign                                |
| EX_SIGNS_TEXT         | 8     | Continuous | Default    | Existing sign text/labels                    |
| EX_STM_CB             | 108   | Continuous | Default    | Existing storm catchbasin                    |
| EX_STM_HATCH          | 113   | Continuous | Default    | Existing storm sewer hatch                   |
| EX_STM_MAIN           | 108   | DASHED2    | Default    | Existing storm sewer main                    |
| EX_STM_MH             | 108   | Continuous | Default    | Existing storm sewer maintenance hole        |
| EX_STM_SERV           | 108   | DASHED2    | Default    | Existing storm sewer service lateral         |
| EX_STM_TEXT           | 108   | Continuous | Default    | Existing storm sewer text/label              |
| EX_SW                 | 8     | Continuous | Default    | Existing sidewalk                            |
| EX_SW_STEPS           | 8     | Continuous | Default    | Existing sidewalk/pathway steps              |
| EX_TB                 | 8     | Continuous | Default    | Existing top of bank                         |
| EX_TELE_COND          | 56    | DASHDOT2   | Default    | Existing telecommunications conduit          |
| EX_TELE_MH            | 56    | Continuous | Default    | Existing telecommunications maintenance hole |
| EX_TELE_TEXT          | 56    | Continuous | Default    | Existing telecommunications text/labels      |
| EX_TEXT               | 8     | Continuous | Default    | Existing text/labels                         |
| EX_TRAF_SIGN          | 8     | Continuous | Default    | Existing traffic signs                       |
| EX_TRAF_TEXT          | 8     | Continuous | Default    | Existing traffic text/label                  |
| EX_UTIL_POLES         | 56    | Continuous | Default    | Existing traffic pole                        |
| EX_UTIL_POLES_TEXT    | 56    | Continuous | Default    | Existing utility pole text/label             |
| EX_VEG                | 104   | Continuous | Default    | Existing vegetation                          |
| EX_VEG_TEXT           | 104   | Continuous | Default    | Existing vegetation text/label               |
| EX_VEG_TREE           | 104   | Continuous | Default    | Existing tree                                |

## Removals Layer State – continued

| Name                   | Color  | Linetype   | Lineweight | Description                                         |
|------------------------|--------|------------|------------|-----------------------------------------------------|
| REM_ASP_ROAD           | 253    | Continuous | Default    | Existing asphalt road for removal                   |
| REM_CONC_ROAD          | 253    | Continuous | Default    | Existing concrete road for removal                  |
| REM_CURB               | 253    | Continuous | Default    | Existing curb for removal                           |
| REM_DETAIL             | 250    | Continuous | Default    | Existing removal detail                             |
| REM_DETAIL_TEXT        | 250    | Continuous | Default    | Existing removal detail text/label                  |
| REM_DW                 | 253    | Continuous | Default    | Existing driveway for removal                       |
| REM_EP                 | 253    | Continuous | Default    | Existing edge of pavement for removal               |
| REM_FENCE              | 253    | FENCELINE3 | Default    | Existing fence for removal                          |
| REM_GAS_MAIN           | 253    | DASHED     | Default    | Existing gas main for removal                       |
| REM_GAS_TEXT           | 253    | Continuous | Default    | Existing gas main text/label for removal            |
| REM_GRADE_ELEV         | 32     | Continuous | Default    | Existing spot elevation for removal                 |
| REM_LEGAL_FAB          | 253    | PHANTOM2   | Default    | Existing legal fabric for removal                   |
| REM_LEGAL_TEXT         | 253    | Continuous | Default    | Existing legal fabric text/label for removal        |
| REM_PIPE               | white  | REMOVALS   | Default    | Existing pipe/sewer for removal                     |
| REM_PMARKING_CENTRE    | white  | Continuous | Default    | Existing centerline pavement marking for removal    |
| REM_PMARKING_CROSSWALK | white  | Continuous | Default    | Existing crosswalk pavement marking for removal     |
| REM_PMARKING_LANES     | white  | Continuous | Default    | Existing lane pavement marking for removal          |
| REM_PMARKING_SBAR      | white  | Continuous | Default    | Existing stop bar pavement marking for removal      |
| REM_PMARKING_SYMBOLS   | white  | Continuous | Default    | Existing pavement marking symbols for removal       |
| REM_RETWALL            | 253    | Continuous | Default    | Existing retaining wall for removal                 |
| REM_RETWALL_TEXT       | 253    | Continuous | Default    | Existing retaining wall text/label for removal      |
| REM_SAN_HATCH          | 13     | Continuous | Default    | Existing sanitary hatch for removal                 |
| REM_SAN_MAIN           | 244    | Continuous | Default    | Existing sanitary sewer main for removal            |
| REM_SAN_MH             | 244    | Continuous | Default    | Existing sanitary maintenance hole for removal      |
| REM_SAN_SERV           | 244    | Continuous | Default    | Existing sanitary sewer service lateral for removal |
| REM_SAN_TEXT           | 244    | Continuous | Default    | Existing sanitary sewer text/label for removal      |
| REM_SAN_TEXT-2         | 244    | Continuous | Default    | Existing sanitary sewer text/label alt. for removal |
| REM_SOILS              | 8      | Continuous | Default    | Existing soils for removal                          |
| REM_STM_CB             | 108    | Continuous | Default    | Existing storm catchbasin for removal               |
| REM_STM_HATCH          | 113    | Continuous | Default    | Existing storm sewer hatch for removal              |
| REM_STM_MAIN           | 108    | DASHED2    | Default    | Existing storm sewer main for removal               |
| REM_STM_MH             | 108    | Continuous | Default    | Existing storm sewer maintenance hole for removal   |
| REM_STM_SERV           | 108    | DASHED2    | Default    | Existing storm sewer service lateral for removal    |
| REM_STM_TEXT           | 108    | Continuous | Default    | Existing storm sewer text/label for removal         |
| REM_STM_TEXT-2         | 108    | Continuous | Default    | Existing storm sewer text/label alt.2 for removal   |
| REM_STM_TEXT-3         | 108    | Continuous | Default    | Existing storm sewer text/label alt.3 for removal   |
| REM_STRUCTURE          | white  | Continuous | Default    | Existing miscellaneous structure for removal        |
| REM_SW                 | 253    | Continuous | Default    | Existing sidewalk for removal                       |
| REM_SYMBOL             | white  | Continuous | Default    | Existing removal symbology                          |
| REM_TEXT               | yellow | Continuous | Default    | Existing removals text                              |
| REM_TRAF_SIGN          | 253    | Continuous | Default    | Existing traffic sign for removal                   |
| REM_TRAF_TEXT          | 253    | Continuous | Default    | Existing traffic sign text/label for removal        |
| REM_TREE               | 253    | Continuous | Default    | Existing tree for removal                           |

## Existing Condition Layer State – continued

| Name                | Color | Linetype   | Lineweight | Description                                        |
|---------------------|-------|------------|------------|----------------------------------------------------|
| REM_UTIL_POLES      | 253   | Continuous | Default    | Existing utility pole for removal                  |
| REM_UTIL_POLES_TEXT | 253   | Continuous | Default    | Existing utility pole text/label for removal       |
| REM_VEG             | 253   | Continuous | Default    | Existing vegetation for removal                    |
| REM_VEG_TEXT        | 253   | Continuous | Default    | Existing vegetation text/label for removal         |
| REM_WAT_HATCH       | 151   | Continuous | Default    | Existing watermain hatch for removal               |
| REM_WAT_HYD         | 151   | Continuous | Default    | Existing watermain hydrant for removal             |
| REM_WAT_MAIN        | 151   | WATERMAIN  | Default    | Existing watermain for removal                     |
| REM_WAT_MH          | 151   | Continuous | Default    | Existing watermain chamber for removal             |
| REM_WAT_OTHER       | 151   | Continuous | Default    | Existing other miscellaneous watermain for removal |
| REM_WAT_SERV        | 151   | WATERMAIN  | Default    | Existing watermain service for removal             |
| REM_WAT_TEXT        | 151   | Continuous | Default    | Existing watermain text/label for removal          |
| REM_WAT_VALVE       | 151   | Continuous | Default    | Existing watermain valve for removal               |

### 9.3. Proposed Condition Layer State

Layers for the Proposed Conditions Drawings shall be shown in the state as outlined below;

| Name                        | Color   | Linetype   | Lineweight | Description                                         |
|-----------------------------|---------|------------|------------|-----------------------------------------------------|
| ALIGN_PR_CL                 | 210     | CENTER     | Default    | Proposed centerline alignment                       |
| ALIGN_PR_CL_No Plot         | 210     | CENTER     | Default    | Proposed centerline alignment -no plot              |
| ALIGN_PR_CL_TEXT            | 210     | Continuous | Default    | Proposed centerline alignment text/label            |
| ALIGN_PR_CL_TRANSITION      | 210     | Continuous | Default    | Proposed centerline alignment transition            |
| ALIGN_PR_CL_TRANSITION_TEXT | 210     | Continuous | Default    | Proposed centerline alignment transition text/label |
| ALIGN_PR_CL_VERT            | 210     | Continuous | Default    | Proposed centerline alignment vertical              |
| ALIGN_PR_STA                | 30      | Continuous | Default    | Proposed centerline alignment station label         |
| CONST_STAGE                 | white   | DASHED     | 2.0        | Proposed construction staging limits                |
| CONST_STAGE_TEXT            | white   | Continuous | Default    | Proposed construction staging limits text/label     |
| DRAIN_AREA_SAN              | 242     | DASHED2    | 2.0        | Sanitary drainage area                              |
| DRAIN_AREA_SAN_TEXT         | 12      | Continuous | Default    | Sanitary drainage area text/label                   |
| DRAIN_AREA_STM              | 90      | DASHED2    | 2.0        | Storm catchment area                                |
| DRAIN_AREA_STM_TEXT         | 106     | Continuous | Default    | Storm catchment area text/label                     |
| GEOTECH                     | white   | Continuous | Default    | Geotechnical data                                   |
| GRCA_LIMIT                  | cyan    | GRCA       | 2.0        | GRCA Regulation Limits                              |
| GRD_MJR                     | 8       | Continuous | Default    | Major profile grid lines                            |
| GRD_MNR                     | 8       | Continuous | Default    | Minor profile grid lines                            |
| LIMIT_OF_CONST              | cyan    | Continuous | 2.0        | Limits of construction                              |
| LINE                        | magenta | Continuous | Default    | Miscellaneous linework                              |
| PR_BUS_PAD                  | Yellow  | Continuous | Default    | Proposed bus pad                                    |
| PR_CURB                     | cyan    | Continuous | Default    | Proposed back of curb                               |
| PR_CURB_CUT                 | cyan    | Continuous | Default    | Proposed curb cut                                   |
| PR_CURB_NOTE                | cyan    | Continuous | Default    | Proposed curb notes                                 |
| PR_DIM                      | red     | Continuous | Default    | Proposed dimension                                  |
| PR_DITCH                    | green   | CENTER     | 0.30       | Proposed centerline/bottom of ditch                 |
| PR_DW                       | yellow  | Continuous | Default    | Proposed driveway                                   |
| PR_DW_HATCH                 | 54      | Continuous | Default    | Proposed driveway hatch                             |
| PR_DW_HATCH_BOUNDARY        | 54      | Continuous | Default    | Proposed driveway hatch boundary                    |
| PR_EMBANKMENT               | green   | Continuous | 0.30       | Proposed top/bottom of bank                         |
| PR_EP                       | yellow  | Continuous | Default    | Proposed edge of pavement                           |
| PR_EP_SAWCUT                | yellow  | Continuous | Default    | Proposed pavement saw-cut                           |
| PR_FENCE                    | yellow  | FENCELINE3 | Default    | Proposed fence                                      |
| PR_GAS_MAIN                 | 226     | DASHED     | Default    | Proposed gas main                                   |
| PR_GAS_TEXT                 | 226     | Continuous | Default    | Proposed gas main text/label                        |
| PR_GAS_VALVE                | 226     | Continuous | Default    | Proposed gas valve                                  |
| PR_GRADE_ELEV               | yellow  | Continuous | Default    | Proposed spot elevation                             |
| PR_GRADES                   | yellow  | Continuous | Default    | Proposed grades                                     |
| PR_PMARKING                 | white   | Continuous | Default    | Proposed pavement marking                           |
| PR_PMARKING_CENTRE          | white   | Continuous | Default    | Proposed centerline pavement marking                |
| PR_PMARKING_CROSSWALK       | white   | Continuous | Default    | Proposed crosswalk pavement marking                 |

## Proposed Condition Layer State – continued

| Name                       | Color  | Linetype    | Lineweight | Description                               |
|----------------------------|--------|-------------|------------|-------------------------------------------|
| PR_PMARKING_CROSSWALK_BIKE | 92     | Continuous  | Default    | Proposed crossride pavement marking       |
| PR_PMARKING_LANES          | white  | Continuous  | Default    | Proposed lane pavement marking            |
| PR_PMARKING_SBAR           | white  | Continuous  | Default    | Proposed stop bar pavement marking        |
| PR_PMARKING_SYMBOLS        | white  | Continuous  | Default    | Proposed pavement marking symbols         |
| PR_PMARKING_TEXT           | yellow | Continuous  | Default    | Proposed pavement marking text/labels     |
| PR_RESTORATION             | yellow | RESTORATION | Default    | Proposed restoration                      |
| PR_RETWALL                 | yellow | Continuous  | Default    | Proposed retaining wall                   |
| PR_RETWALL_TEXT            | yellow | Continuous  | Default    | Proposed retaining wall text/label        |
| PR_ROW_DIM                 | yellow | Continuous  | Default    | Proposed right-of-way dimension           |
| PR_SAN                     | 12     | Continuous  | Default    | Proposed sanitary                         |
| PR_SAN_CASING              | white  | Continuous  | Default    | Proposed sanitary casing                  |
| PR_SAN_HATCH               | 241    | Continuous  | Default    | Proposed sanitary sewer (pipe hatching)   |
| PR_SAN_MAIN                | 12     | Continuous  | Default    | Proposed sanitary sewer main              |
| PR_SAN_MH                  | 12     | Continuous  | Default    | Proposed sanitary maintenance hole        |
| PR_SAN_PLUG                | 12     | Continuous  | Default    | Proposed sanitary plug                    |
| PR_SAN_SERV                | 12     | Continuous  | Default    | Proposed sanitary sewer service lateral   |
| PR_SAN_SPS                 | 12     | Continuous  | Default    | Proposed sanitary pumping station         |
| PR_SAN_STUB                | 12     | Continuous  | Default    | Proposed sanitary sewer stub              |
| PR_SAN_TEXT                | 12     | Continuous  | Default    | Proposed sanitary sewer text/label        |
| PR_SED_FENCE               | yellow | DIVIDE      | 1.0        | Proposed sediment fence                   |
| PR_STM                     | 102    | DASHED      | Default    | Proposed storm sewer                      |
| PR_STM_CASING              | white  | Continuous  | Default    | Proposed storm sewer casing               |
| PR_STM_CB                  | 102    | Continuous  | Default    | Proposed storm sewer catchbasin           |
| PR_STM_CU                  | 102    | DASHED2     | Default    | Proposed storm sewer culvert              |
| PR_STM_FAC                 | 102    | Continuous  | Default    | Proposed storm sewer (FAC)                |
| PR_STM_HATCH               | 93     | Continuous  | Default    | Proposed storm sewer (pipe hatching)      |
| PR_STM_HW_IN               | 102    | Continuous  | Default    | Proposed storm sewer headwall (in)        |
| PR_STM_HW_OUT              | 102    | Continuous  | Default    | Proposed storm sewer headwall (out)       |
| PR_STM_IG                  | 102    | DASHED2     | Default    | Proposed storm sewer (IG)                 |
| PR_STM_LEAD                | 102    | DASHED2     | Default    | Proposed storm sewer lead                 |
| PR_STM_MAIN                | 102    | DASHED2     | Default    | Proposed storm sewer main                 |
| PR_STM_MH                  | 102    | Continuous  | Default    | Proposed storm sewer maintenance hole     |
| PR_STM_OGS                 | 102    | Continuous  | Default    | Proposed storm sewer oil & grit separator |
| PR_STM_PLUG                | 102    | Continuous  | Default    | Proposed storm sewer plug                 |
| PR_STM_SERV                | 102    | DASHED2     | Default    | Proposed storm sewer service lateral      |
| PR_STM_STUB                | 102    | DASHED2     | Default    | Proposed storm sewer stub                 |
| PR_STM_TEXT                | 102    | Continuous  | Default    | Proposed storm sewer text/label           |
| PR_SUBGRADE                | 8      | HIDDEN      | Default    | Proposed sub-grade                        |
| PR_SW                      | yellow | Continuous  | Default    | Proposed sidewalk                         |
| PR_SW_HATCH_200            | 253    | Continuous  | Default    | Proposed sidewalk hatch                   |
| PR_SW_STEPS                | Yellow | Continuous  | Default    | Proposed sidewalk steps                   |

## Proposed Condition Layer State – continued

| Name                    | Color  | Linetype   | Lineweight | Description                                  |
|-------------------------|--------|------------|------------|----------------------------------------------|
| PR_TELECOM_COND         | 56     | DASHDOT2   | 0.30       | Proposed telecommunication conduit           |
| PR_TELECOM_TEXT         | 56     | Continuous | Default    | Proposed telecommunication text/label        |
| PR_TEXT                 | yellow | Continuous | Default    | Proposed text/labels                         |
| PR_TRAF_SIGN            | yellow | Continuous | Default    | Proposed traffic sign                        |
| PR_TRAF_TEXT            | yellow | Continuous | Default    | Proposed traffic text/label                  |
| PR_TRUNCATED_DOME       | white  | Continuous | Default    | Proposed truncated dome (TWSI)               |
| PR_VEG_PROTECTION_FENCE | 10     | HIDDEN2    | Default    | Proposed vegetation protection fence         |
| PR_VEG                  | 100    | Continuous | Default    | Proposed vegetation                          |
| PR_WAT_ANODE            | 172    | Continuous | Default    | Proposed watermain anode                     |
| PR_WAT_CASING           | white  | Continuous | Default    | Proposed watermain casing                    |
| PR_WAT_CL               | 150    | Continuous | Default    | Proposed watermain centerline                |
| PR_WAT_HATCH            | 171    | Continuous | Default    | Proposed watermain (pipe hatching)           |
| PR_WAT_HYD              | 172    | Continuous | Default    | Proposed watermain hydrant                   |
| PR_WAT_MAIN             | 172    | WATERMAIN  | Default    | Proposed watermain                           |
| PR_WAT_MH               | 172    | Continuous | Default    | Proposed watermain chamber                   |
| PR_WAT_OTHER            | 172    | Continuous | Default    | Proposed other watermain infrastructure      |
| PR_WAT_RAW_TEXT         | 172    | Continuous | Default    | Proposed raw watermain text/labels           |
| PR_WAT_SERV             | 172    | WATERMAIN  | Default    | Proposed watermain service laterals          |
| PR_WAT_TEXT             | 172    | Continuous | Default    | Proposed watermain text/labels               |
| PR_WAT_TIES             | white  | Continuous | Default    | Proposed watermain swing-ties                |
| PR_WAT_VALVE            | 172    | Continuous | Default    | Proposed watermain valve                     |
| PR_WAT_VALVE_MAIN       | 172    | Continuous | Default    | Proposed watermain mainline valves           |
| PR_WAT_VALVE_SERV       | 172    | Continuous | Default    | Proposed watermain curb-stops/service valves |
| PROFILE_VIEW            | white  | Continuous | Default    | Profile view                                 |
| PROFILE_VIEW_BAND       | white  | Continuous | Default    | Profile view band                            |
| PROFILE_VIEW_PR_TEXT    | white  | Continuous | Default    | Profile view proposed text/labels            |
| PROFILE_VIEW_TEXT       | white  | Continuous | Default    | Profile view text/labels                     |
| PROJECT LIMITS          | 114    | Continuous | Default    | Proposed project limits                      |

## **10. Named Plot Styles**

The City of Kitchener uses customizable colour tables (COK-Engineering.ctb) to control how objects are plotted. The colour scheme used has been selected to provide a clear and concise colour or monochrome drawing. When plotted in colour, identification of assets is easier for purposes of review by those not completely familiar with civil engineering drawings.

## **11. Sheets**

Standard sheet templates have been developed and are available for download from the City's website as a part of the CAD Standards package to be used for all projects.

## **12. Symbols**

The City of Kitchener standard block set shall be used for all projects as shown in the legends sheet. Unique blocks will be accepted to graphically represent an unorthodox structure (i.e. box manhole) which does not appear in the standard block set.

## **13. Model Space / Paper Space**

All linework and design work is to be produced in the model space environment. Sheets for engineering contract drawings are to be produced in the paper space environment. The viewport is to be scaled to represent the scale shown in the title block. The title block is to be plotted from the layout at a 1:1 scale.

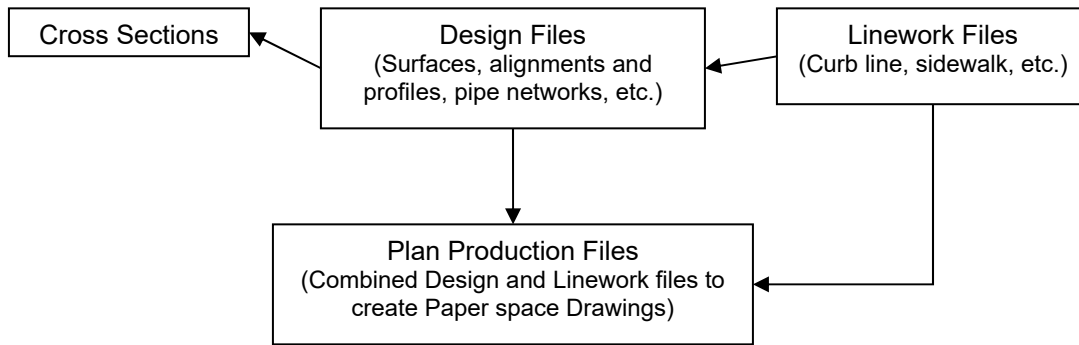
## **14. AutoCAD Workflow**

There are two recommended methods of workflow. Regardless of the workflow outlined below the title sheet and legend drawings are to be a separate file.

The first method is to produce all work in a singular model-space environment. This is the preferred method for those working in an AutoCAD environment. This method can be followed in an AutoCAD Civil 3D environment for smaller projects.

The second method is to break up the project into individual sub categories, where each component would be contained in their own drawing. This method is beneficial where multiple design / drafters are required on the same project and when the project is complex enough to warrant this method.

Figure 5 is an example of the second method and based on the size of the project and number of staff assigned to the project, the number of drawing files and references are subject to change and are at the discretion of each individual consultant to determine based on their own best practices procedures when working with AutoCAD Civil 3D.



**Figure 1: Suggested project workflow example**

## **15. Conclusion**

This manual has been created to assist Consultants in the preparation of contract drawings for the City of Kitchener.

Please direct your comments to the following email address [engineering@kitchener.ca](mailto:engineering@kitchener.ca) with the subject line 'Engineering CAD Standards'.