

# AutoCAD Setup Instructions Manual

January 22, 2019

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## 2 General Application

The purpose of this document is to provide installation instructions of our CenturyLink AutoCAD Blocks, Lisp, .Net application, Plot Style, and Line Styles to help Vendors comply with CenturyLink drafting and drawing standards.

CenturyLink requires all Outside Plant designs to be created in an **AutoCAD 2014 or Newer** format using **UTM83** coordinate systems. Use the UTM Map (below) to get the correct UTM Zone of the project location. The first two numbers of the Longitude will define Zone (e.g. -95.635 falls between 90 and 96 so the correct zone will be 15) make sure the units are set to US Survey Foot. CenturyLink has created design standards including blocks, line types, and plot styles that are to be used in every project. The standards will not only ensure consistency in our projects but are also time savers that will help with accuracy and legibility. All CenturyLink outside plant designs must utilize these standards.

This guide walks through the steps on how to download and install the custom addons as well as how to use the CenturyLink menu items that are in it. For questions on using the custom addons, please send an email to [OSPCAD-HelpDesk@centurylink.com](mailto:OSPCAD-HelpDesk@centurylink.com). There is also a link to this email in the CenturyLink Custom Menu under the “Help” part of the Custom Menu.

### 2.1 System Requirements

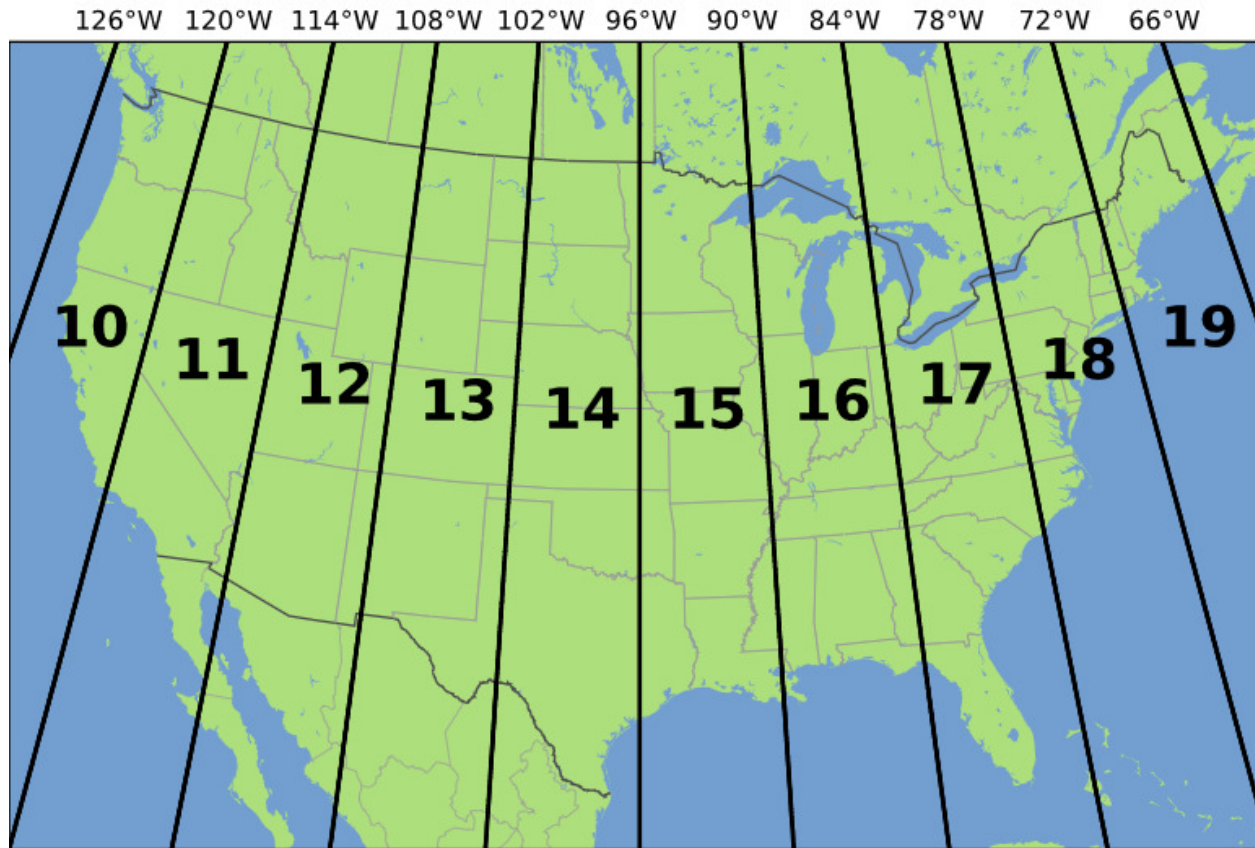
It is required to have drawing objects created and located geospatially. If you have a source of road/building vector data that is geospatially located (with UTM projection) in the AutoCAD DWG format, you can use these files. However, if you don't have this source and want to use live Bing aerial imagery, you will need AutoCAD Map 3D 2014 or Newer. The Bing live data map doesn't travel with the drawing file (DWG), but the drawing objects and projection, are considered geospatially located, and do travel with the drawing. See AutoCAD setup document for the installation instructions.

The AutoCAD Blocks, Lisp, .Net application, Plot Style, and Line Styles along with the Engineering, CAD standards and this guide can be found at the following Share site for downloading:  
<https://centurylink.sharefile.com/d-sa4783f226034e25a>

### 2.2 Recommendations

Create an AutoCAD profile for CenturyLink (in Options) that way this configuration doesn't affect any current AutoCAD settings.

## UTM Map



## 3 Menus and Preferences

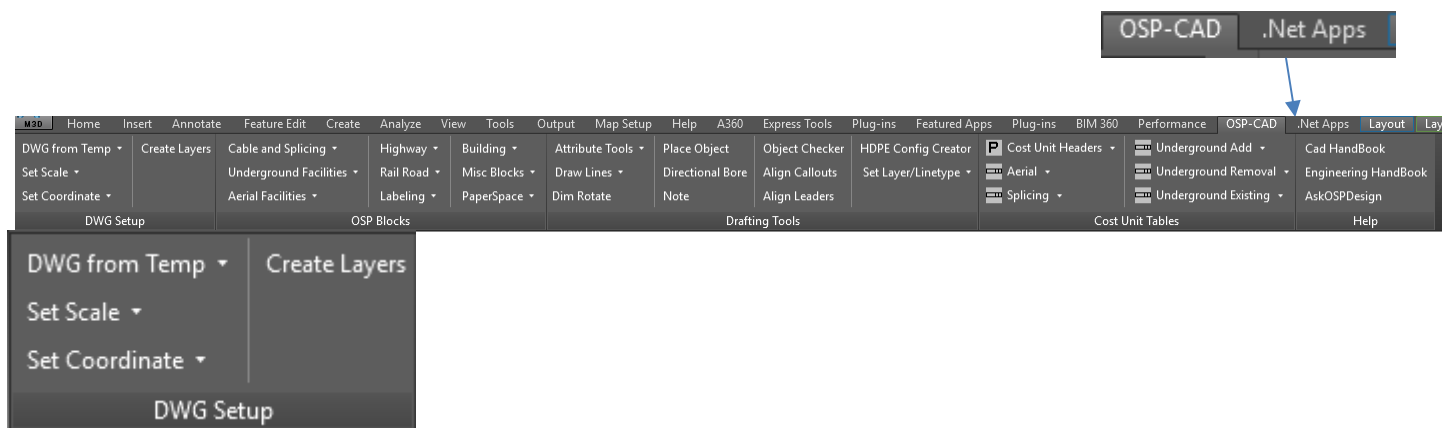
The CenturyLink OSP Engineer will be able to provide you with the CenturyLink AutoCAD standards as well as specific blocks and line type menus that you will need to use with the creation of all CAD files. Once you receive them, save them to a specific location on your hard drive (designated below) that you will be able to reference

1. Download the following files from the shared site above:
  - a. **CTL-OSP.ZIP**
2. Open the **CTL-OSP.ZIP** and extract it to your C: drive. Once extracted, you should have a **C:\CAD** folder. Note that your CAD program will need to be able to access these folders (e.g. read-write permission). This (CAD) folder will have 5 sub-directories (**Blocks, Docs, Lisp, Plot\_Info and Typical**s). Inside the Cad folder you will also have the following files:
  - a. ACAD.LIN
  - b. OSP-CAD-MENU.CUIX
3. Open your version of AutoCAD and type "Options" in the command line. This will open the Options dialog box.
4. In the **Support File Search Path** (Options > Files > Support File Search Path), add the following paths, which correlate to the file folders you created in step 2 above. Note **DO NOT OVERWRITE AN EXISTING PATH**, but rather ADD the new paths. You can either type these out or use the Browse button.
  - a. C:\CAD\BLOCKS

- b. C:\CAD\LISP
  - c. C:\CAD\TYPICALS
5. In the **Trusted Locations** (Options > Files > Support File Search Path), add the following paths, which correlate to the file folders you created in step 2 above. Note **DO NOT OVERWRITE AN EXISTING PATH**, but rather ADD the new paths. You can either type these out or use the Browse button.
  - a. C:\CAD\BLOCKS
  - b. C:\CAD\LISP
  - c. C:\CAD\TYPICALS
6. At the command line, enter **MENULOAD** (or CUILOAD), then browse to the **OSP-CAD-MENU.CUIX** file (in the C:\CAD folder), and load the file. The menu will show up on the menu bar as OSP-CAD. This also includes a ribbon with all of the same menu items.
7. Add the c:\cad\lisp\QwestCAD.lsp file to Startup Suite.
8. Copy the **Qwest.PC3** and the **Qwest.CTB** from the C:\CAD\Plot\_info to the AutoCAD Plotters and Plot Styles folders e.g. "C:\Autodesk\Autodesk AutoCAD Map 3D 2017\R21.0\enu\Plotters"
9. The linetypes within the **ACAD.LIN** in the C:\CAD directory needs to be added to existing ACAD.LIN file

**Important!** - Once you have completed these steps, open the "**CTL Map Template.dwg**" drawing (from the C:\CAD folder) and then save it as with the name "**CTL Map Template.DWT**" as a Template (DWT) file (to wherever your default AutoCAD template folder is – for example: C:\Documents and Settings\username\Local Settings\Application Data\Autodesk\AutoCAD xxxx 2015\R21.0\enu\Template). This will create a template that is in your local AutoCAD template format, for your use. This step needs to be completed for some menu items to work correctly (e.g. like creating a new drawing or adding layout tabs).

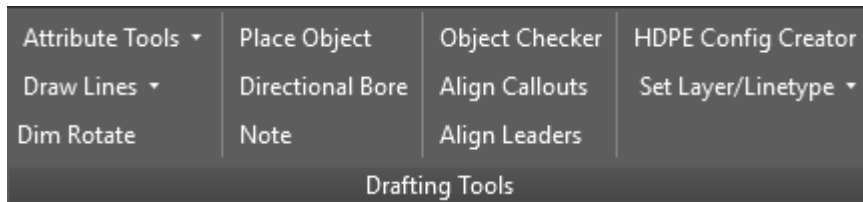
## 3.1 Menu Overview



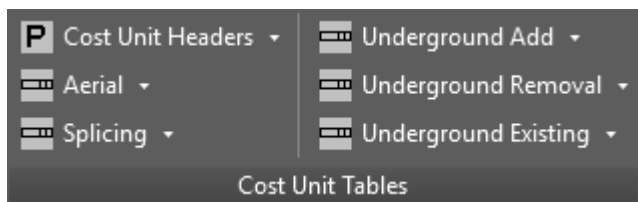
The DWG Setup section of the OSP-CAD menu is used for creating New Drawings, Setting Scale, Setting Coordinate and Creating Layers.



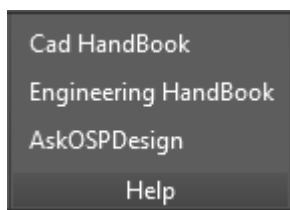
The OSP Block section of the OSP-CAD menu is used for inserting the standard blocks



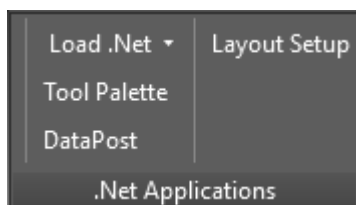
The Drafting Tool Section of the OSP-CAD menu is used for most of the user drafting needs



The Cost Unit Table section of the OSP-CAD menu is used for all the Cost Unit blocks that will be used for the cost summary sheet



The Help section of the OSP-CAD menu is where the users can access the Engineer/As-Built Handbook and e-mail the OSPCAD-HelpDesk [OSPCAD-HelpDesk@centurylink.com](mailto:OSPCAD-HelpDesk@centurylink.com) group to request Help **Note: This e-mail address is only to be used for software/drafting questions any project questions should be directed to the OSPE**



The .Net Application section of the .Net menu is where the Beta application will be stored. These applications are in Beta Testing at the current time.

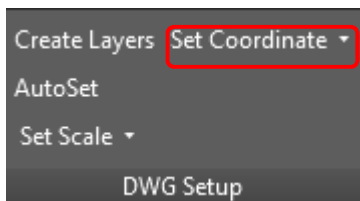
## 3.2 Drawing Setup

### 3.2.1 Paper Space and Model Space

When you open the CTL Map AutoCAD template, notice the tabs at the bottom. The model space tab is where the majority of the drafting will be done. The paper space tabs contain the typical project sheets and where each sheet with a title block and viewport into the model space for the specific drawing section will be created. In paper space the viewport areas are identified by a polygon, on the VIEWPORT layer, which is set to not print so it should not be erased.

### 3.2.2 Defining Coordinate System Setup

This section describes how to create a new project drawing and define the appropriate projection based on the job location. **Prepare your drawing objects to be Geospatially located** – Your final drawing will need the streets, cable and plant, etc. located geospatially correctly. This can be done a couple ways. You can start a new drawing (see **Start a new drawing** below) and set the coordinate from the Set Coordinate dropdown in the DWG Setup section of the OSP-CAD menu, or if an existing spatial drawing in the correct UTM83 Projection is available to be used.



In either case, you will need to trace street edges and any buildings, etc. that you want to include in your project. Use the correct layers (from the template) to trace these. Any geospatial drawing or connection data should be 2D (zero Z values), UTM83 projection with US Survey Feet units

If using Bing Maps or On Terra aerial imagery, the default projection is WGS84.PseudoMercator (Server CS Code EPSG:3857), with meter units. After connecting and adding the map, you will need to assign a projection and coordinate system that uses US Survey Feet (e.g. UTM83-15F). Note that units in Model Space, in the template, are feet.

If you are preparing a separate geospatial base map to be inserted into a new project drawing at a later time, and it wasn't created with CTL Map Template, then you will need to change its insert units. Open the drawing and at the command line type in **INSUNITS**. Set the value to "2". This sets the insert units to 2 (or Feet). Save drawing.

- A. **AutoCAD Map 3D 2014-2018** – The latest versions of AutoCAD Map 3D now include the ability to connect to the Bing Live (online) map without a WMS connection.
- B. **Geospatial Sources** – In addition to whatever data you may be currently using, another affordable source is **OnTerra Systems** (Map Savvy) which is a WMS connection (<http://www.onterrasystems.com/web-mapping-mapsavvy/>) **Note that Autodesk Lab's Base Jump is no longer available.**

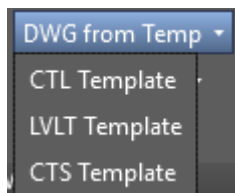
### 3.2.3 Setup New Drawing/Project



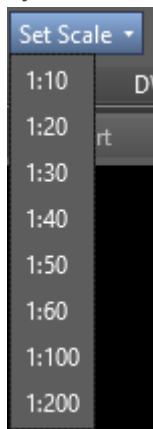
### 3.2.3.1 Start a new drawing

1. Use the **DWG FROM TEMP** from the OSP-CAD (DWG SETUP) menu choose the appropriate template to start a new drawing (based on the template dwt file) from. Save the file with the following naming standards (drawings must have a name in order for some of the programs to work)
  - a. Long Haul project “**State abbreviation\_Milepost - Milepost**” if mile post are not available use the main road name. Each drawing must not have no more than 5 miles due to the number of tabs. (e.g. CO\_380-385.dwg or CO\_COUNTYLINE RD). If a project does not start or end at a mile post you will need to add the sheet to the name (e.g. CO\_380-385-2.dwg)
  - b. Metro projects “**Ring Number\_3 Letter City Abbreviation-Drawing Number-Drawing Number**”

(e.g. R1-SDO-001-020) See Appendix 1 for City Abbreviation list.



2. **Set the Scale** – Use the OSP-CAD menu (SET SCALE) to set the scale. This sets the Block Insertion Scales, Line-Type Scales & Text Heights for the proceeding drafting into the AutoCAD Template. Note that blocks will be scaled from this selection. If the scale you need is not on the list, you should add it at this time (see Custom Scales below).

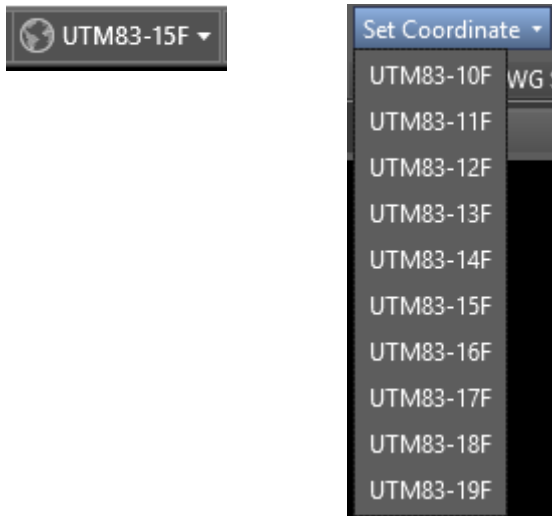


- a. **Setting Multiple Drawing Scales** – There may be times that you will want to use two (or more) separate scales (e.g. some markets use one scale for aerial and another for underground). In these scenarios, one Layout Tab sheet will be at one scale and the adjoining Layout Tab will be at another scale. Use the OSP-CAD menu (SET SCALE) and select the desired drawing scale.
  - i. For example, you have drawn your Long-haul routes and cable at 1:100 scale and your connecting Metro routes and cable at 1:50. Where these two meets will show up on two different Project Sheet layout tabs. One layout tab will be set to 1:100 scale and will show mostly Long-haul routes and cables. The other layout tab will be set to 1:50 scale and will show the Metro routes and cables. For each of these layouts, you



want to show any Man Hole, Hand Hole or Pole at the correct scale for each layout tab.

3. **Set the projection**– Use the OSP-CAD menu (Set Coordinate) to set the projection. The first two numbers of the Longitude will define Zone for the project location (e.g. -95.635 falls between 90 and 96 so the correct zone will be utm83-15F). To verify that the drawing project is set look in the bottom tool bar in the lower right corner of the AutoCAD application.



4. **Zooming to project Location**– The **GEOMARKLATLONG** command will create a marker at a specific location (Lat/Long). The command asks the user to enter the Latitude and longitude it will place a marker at the specified Lat/Long and allow the user to enter text for the marker. (e.g. Project location). The Zoom Extents command will zoom to the location of the project

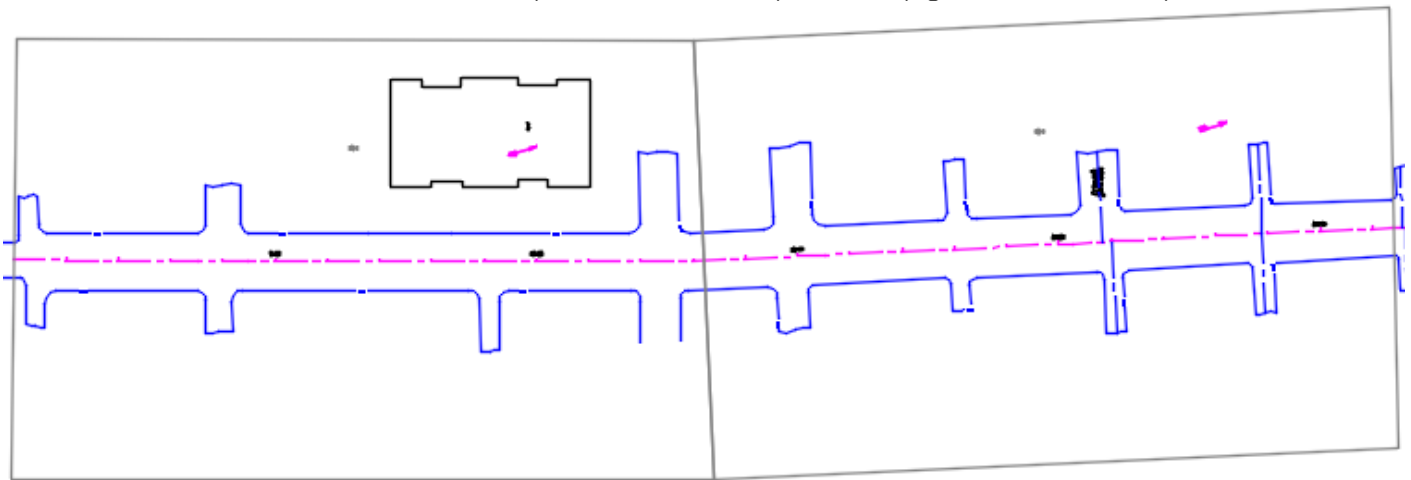


### 3.3 Drafting the Project

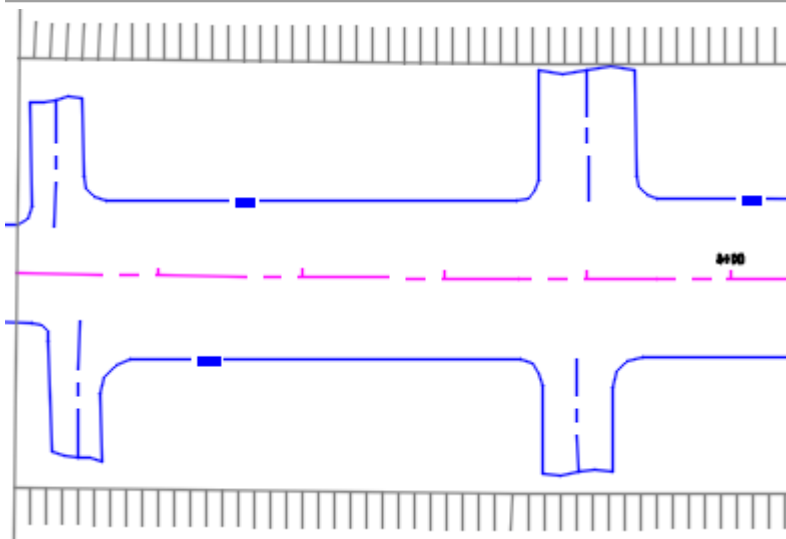
**Start Drafting Project** – Type **GEOMAP** at the command line, and type in either A or R or H (for Aerial, Road, Hybrid) to turn on the Bing map layer. This is the layer that will be used to trace street edges and any buildings, etc. that you want to include in your project.

1. Draw a polyline down the center line of the road(s) that your project will follow to create a baseline which all dimensions and objects will be measured from the polyline must be drawn as a single polyline from the start of the project to start.
  - a. Note: **The baseline can be a centerline or edge of pavement**
  - b. Note: **Do Not Create a drawing File that has more than 5 miles**
  - c. Note: **Used the UCS to see the drawing horizontally (DO NOT ROTATE) this will take the drawing out of the correct alignment of the GEOMAP**
2. Use the .Net Apps menu (**Layout Setup**) to create the Layouts with the appropriate company logo.

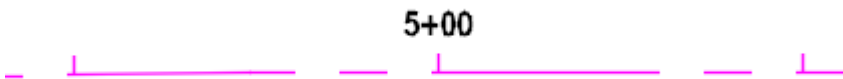
- a. This application will prompt the user for the beginning station of the project (e.g. 0+00), then the user is prompted to select the baseline for the project. Next the milepost or Main road name must be entered this is how the Layouts are named for example if they enter "15" for the mile post the first layout name will be 15-1
- b. This command will create a sheet reference (**everything to be displayed in Paper Space must fit inside**) with name and a north arrow of each sheet in model space and in paper space a layout, insert the title block, create view port and zoom center of the sheet in model space. The only thing that the user will have to do is change the **Standard Scale** of the View port (e.g. 1:100 or 1:50 for metro) and the lock the view port.
- c. The view ports are WPolygons to allow the match lines to match the next sheet exactly. Once the user has been aligned to the cut sheet in model space they will then insert the match blocks and the M1 (left match line text) and M2 (right match line text).



3. **Capturing Project Location Map-** Once the project extents have been determined Then use the **GEOMAPIIMAGE(Command)** to capture the background image for the project location sheet.
  - a. Set current layer to "Location\_Image" and linetype to Bylayer. This layer is set to be Frozen in all new view ports so that the image will not be visible to allow quicker printing.
  - b. Turned on GEOMAP and set it to Hybrid.
  - c. Zoom to project location extents
  - d. Typed GEOMAPIIMAGE in the command line
  - e. Selected the two opposing corners of project location I wanted to capture. Make sure the area captured is big enough to fill in the view port on the Project Location Tab.
  - f. Turned off GEOMAP to make sure the images were captured.
  - g. Went to Project Location tab and zoomed to the layout block with the bitmap background.
4. Offset the centerline of the road to about 150' to 200' on each side to create the snapping positions for the callouts
  - h. Use the ATS command and follow the prompt



5. Change the baseline to the baseline layer and then break the baseline at each mile or 5280 feet.
6. Put the road tics on the baseline by using the RTIC command(Lisp). This command will place a TIC every 100' and label the every 500'.

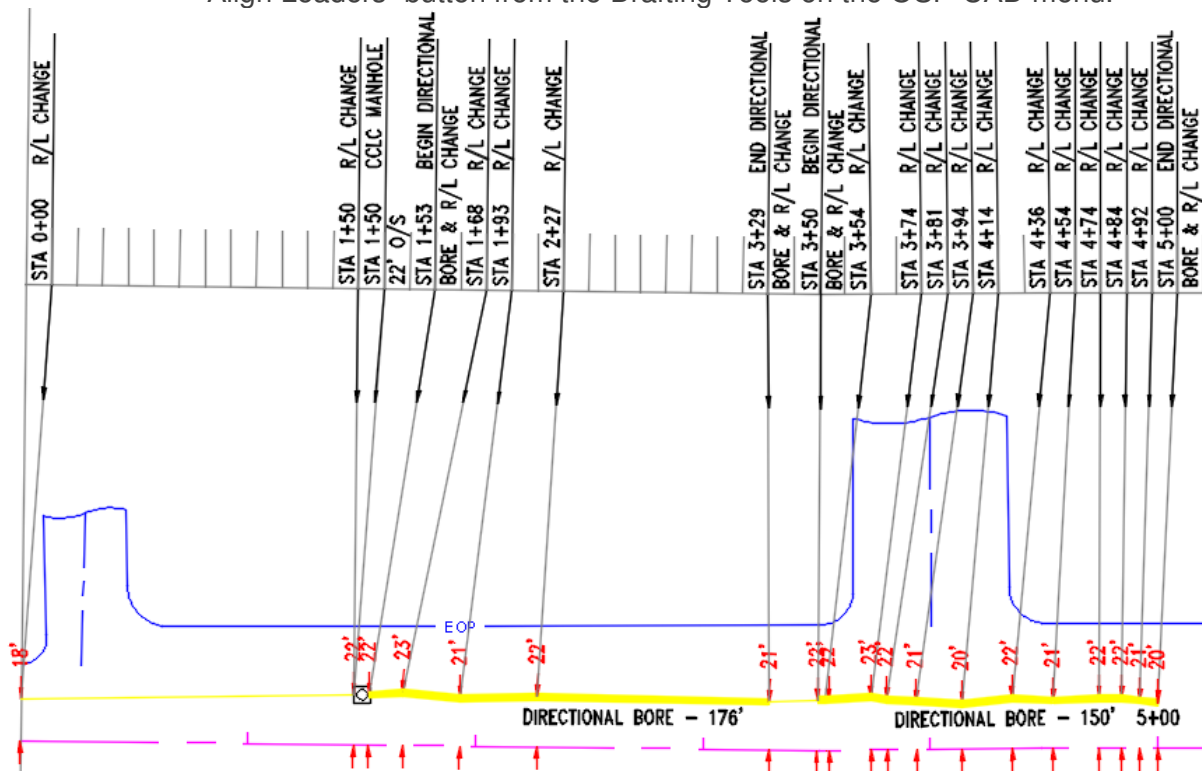


### 3.3.1 Drafting Cable line and other objects

1. Set the layer to 0 and the Linetype to ByLayer before running any programs. This will prevent unnecessary work later.
2. The majority of the drafting can be done by the **Place Object** from the Drafting Tools menu group on the OSP-CAD Tab or the **DataPost** (Beta application) from the .Net Tab I recommend to use the **DataPost** because the **Place Object** has issues with some files that are geo-spatial.
  - a. This application prompts the user for the station and the offset for the object to be placed.
  - b. Then the user chooses the object that need to be placed. If the item needing to be place is not in the list the user can manually enter the item type.
  - c. After choosing the item to be place the user will be prompted whether the object is on the top or bottom of the baseline.
  - d. Then the user will be prompted to select the insertion point of the callout this should be the snapping line that was created by the **ATS** command.

```
(Q)uit,(Q)ave,(E)rase,(H)ote,(AE) or Enter Station: 201
Enter object offset ? : 19
Object at Station 2+01: <R/L>,(DIR),(UT),(BSP),(ROA),(MH),(HAI),(POL),(PP),(MAR),(VAL)MH
What Type of Manhole (E)lectrial, (S)ewer, (Q)west, Etc? CCLC
Command: (T)op or (B)ottom?(T, B): t
Command: Select a point for callout
```

- e. The default is <R/L> which will create the dimension and callout and the preceding line between the R/L dimensions.
- f. When using the “Place Object” program sometime the dimensions come in rotated like example below. If this happens use the “Dim Rotate” button from the Drafting Tools on the OSP-CAD menu.
- g. Also, if you need to move any callouts after placing them the leader will need to be realigned to the guide lines like example below. This can be done on the entire drawing by using the “Align Leaders” button from the Drafting Tools on the OSP-CAD menu.



- h. Everything you see above was created by the “Place Object” program. After the user has finished drafting the cable line the polylines will need to be joins (excluding the Directional Bores) in order to display the line type correctly.

### 3.3.2 Cable and Splicing

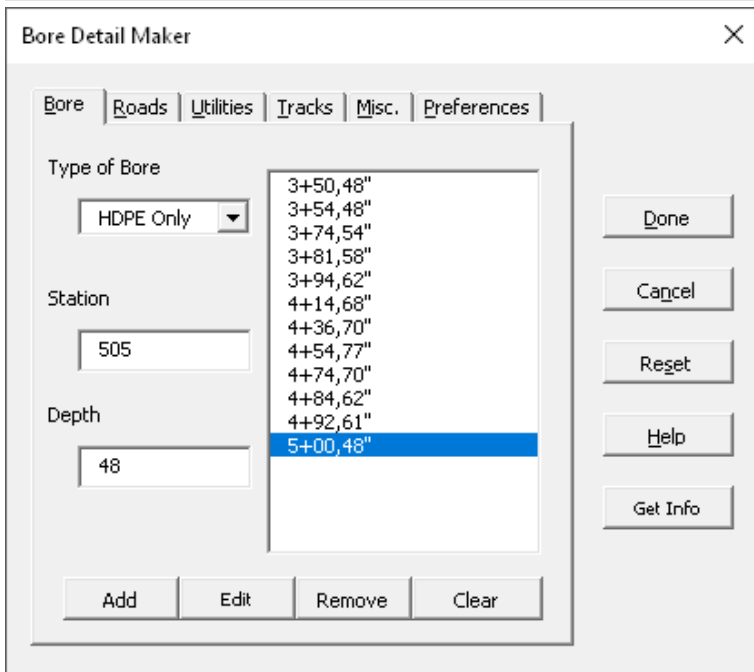
There are various blocks used for labeling the cable information of the drawings. Only the Major ones are listed below if the users need ones that are not listed below please look in the C:\CAD\BLOCKS directory all the blocks which names start with 2-D\*, 3-D\*, 4-D\*, 5-D\* AND 6-D\*. if not in the directory please contact [OSPCAD-HelpDesk@centurylink.com](mailto:OSPCAD-HelpDesk@centurylink.com)

1. The Cable blocks can be inserted using the “**Cable and Splicing**” drop down from the Blocks on the OSP-CAD menu.
  - a. **ARP** – The ARP block is used to identify the Manufacturer and Fiber count of the cable. The block should be placed near the running line in the center of the drawing. If a cable splice is present an ARP block should be placed on each side of the Handhole/Manhole half way between the splice and the match line.
  - b. **OSEQ** – The OSEQ block is used to identify the enter, exit sequential number and the amount of slack that at each Handhole/Manhole where slack cable is present.

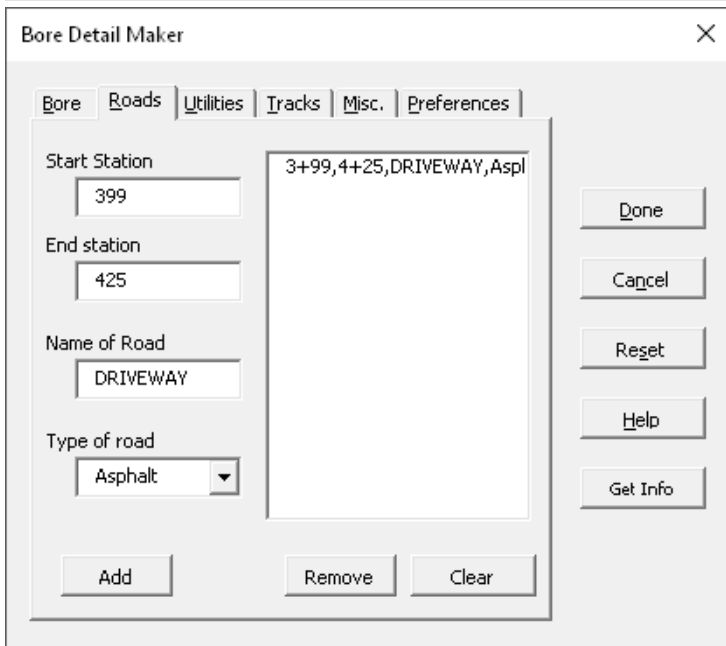
- c. **CHEV** – The CHEV block is placed at each splice location where the cable being spliced is the same count on both side. The information to be populated is the reel #'s, cable sequential number, slack, span letter, splice # and the fiber count of the cable.
- d. **DCHEV** - The DCHEV block is placed at each splice location where the cable being spliced has a different fiber count on each side. The information to be populated is the reel #'s, cable sequential number, slack, span letter, splice # and the fiber count of the cable.
- e. **3-DCHEVLTB** – The 3-DCHEVLTB block is placed at all splice locations where 3 cables splice together. Like a Last Mile, City build, Extra Work Directive and Lateral. The block shows the reel #'s, cable sequential, slack and the fiber count of each cable
- f. **3-DCHEVLRB** - The 3-DCHEVLRB block is placed at all splice locations where 3 cables splice together. Like a Last Mile, City build, Extra Work Directive and Lateral. The block shows the reel #'s, cable sequential, slack and the fiber count of each cable
- g. **3-DCHEVLTR** - The 3-DCHEVLTR block is placed at all splice locations where 3 cables splice together. Like a Last Mile, City build, Extra Work Directive and Lateral. The block shows the reel #'s, cable sequential, slack and the fiber count of each cable
- h. **3-DCHEVTRB** - The 3-DCHEVLRB block is placed at all splice locations where 3 cables splice together. Like a Last Mile, City build, Extra Work Directive and Lateral. The block shows the reel #'s, cable sequential, slack and the fiber count of each cable
- i. **R1** – The R1 block is used to identify the cable type, reel numbers and span information. The blocks insertion point is the midpoint of the county block in the title block
- j. **R2** - The R2 block is used to identify the cable type, reel numbers and span information. The blocks insertion point is the midpoint of the county block in the title block

### 3.3.3 Creating Directional Bore Detail

1. To create a directional bore detail the user will use the Directional Bore from the Drafting Tools section of the OSP-CAD menu see (Menu Overview). To create the profile of the bore the user must enter the station and depth for each depth collected. If the depths are the same for a few stations straight the user must only enter the first and the last station to remove unnecessary work.
  - a. In the **"Type of Bore"** field choose the type of bore being placed
  - b. In the **Station** field enter the station number minus the "+" sign (e.g. below) the fields are set to except the enter key to go to the next field
  - c. In the **Depth** field enter the depth minus the "mark then press the enter key to add the value to the collection and set the station field active again.
  - d. Repeat for each station and depth collected



2. The “Road” tab of the program is used to create the road crossings of the directional bore.
  - a. In the “**Start Station**” field enter the station number minus the “+” sign (e.g. below) the fields are set to except the enter key to go to the next field
  - b. In the “**End Station**” field enter the station number minus the “+” sign (e.g. below) the fields are set to except the enter key to go to the next field
  - c. In the “**Name of Road**” field enter the name of the road (e.g. below) the fields are set to except the enter key to go to the next field
  - d. In the “**Type of Road**” field enter the type of the road (e.g. below) the fields are set to except the enter key to go to the next field
  - e. The user can use the enter to click the **Add** button.
  - f. Repeat for each road crossing.



**Bore Detail Maker**

**Roads** | Utilities | Tracks | Misc. | Preferences

Start Station: 399

End station: 425

Name of Road: DRIVEWAY

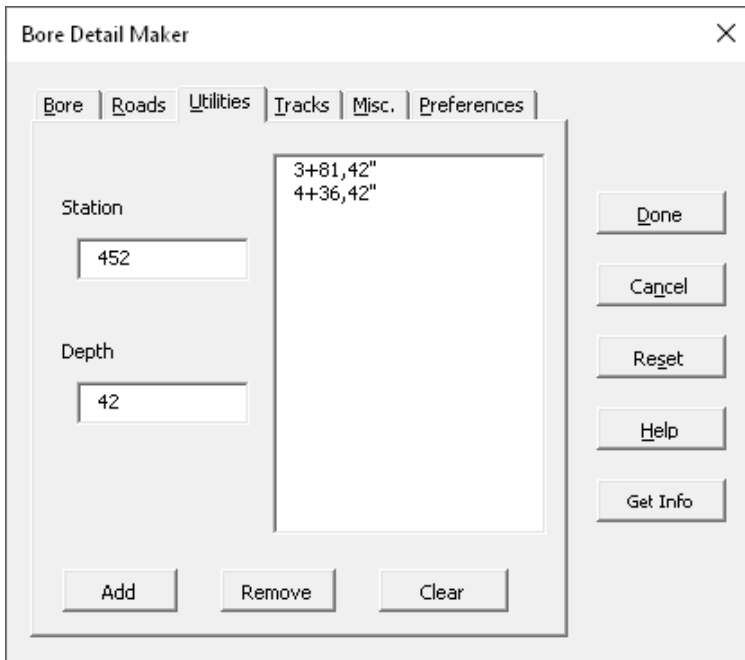
Type of road: Asphalt

3+99, 4+25, DRIVEWAY, Aspl

Add Remove Clear

Done Cancel Reset Help Get Info

3. The **“Utilities”** tab of the program is used to create the utility crossings of the directional bore.
  - a. In the **Station** field enter the station number minus the “+” sign (e.g. below) the fields are set to except the enter key to go to the next field
  - b. In the **Depth** field enter the depth minus the “mark then press the enter key to add the value to the collection and set the station field active again.



**Bore Detail Maker**

**Utilities** | Roads | Tracks | Misc. | Preferences

Station: 452

Depth: 42

3+81, 42"  
4+36, 42"

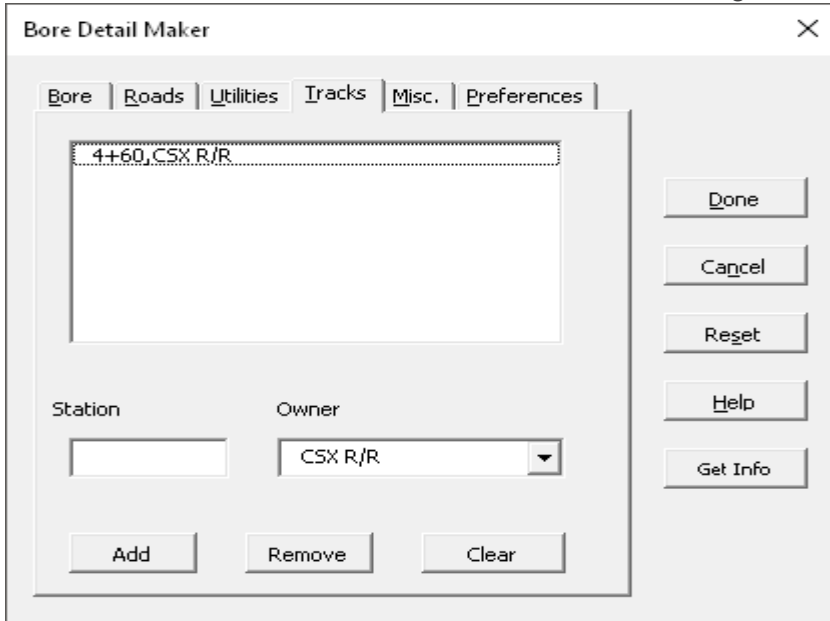
Add Remove Clear

Done Cancel Reset Help Get Info

4. The **“Track”** tab of the program is used to create the track crossings of the directional bore.
  - a. In the **Station** field enter the station number minus the “+” sign (e.g. below) the fields are set to except the enter key to go to the next field



- b. In the **Owner** field enter the name of the rail road and the enter key to add the value to the collection and set the station field active again.



**Bore Detail Maker**

**Bore** | Roads | Utilities | Tracks | Misc. | Preferences

4+60, CSX R/R

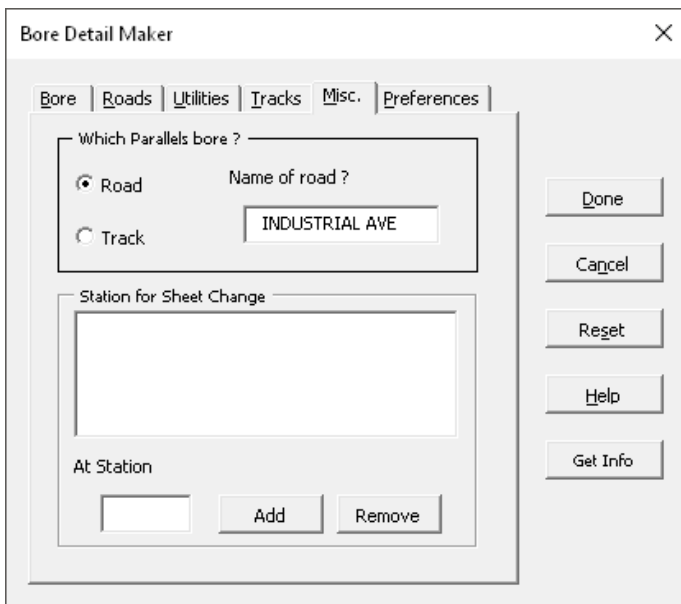
Station:

Owner: CSX R/R

Add Remove Clear

Done Cancel Reset Help Get Info

5. The **"Misc"** tab of the program is used to define and name of the Paralleling track or road.
- Choose whether the bore is paralleling a **Road** or **Track**.
  - Then enter the name of the Road or Track in the **"Name of Road:"** text box
  - If the directional bore crosses the match line of a drawing enter the station in the **"At Station"** text box and click the **Add** button



**Bore Detail Maker**

Bore | Roads | Utilities | Tracks | **Misc.** | Preferences

Which Parallels bore ?

☒ Road Name of road ? INDUSTRIAL AVE

☐ Track

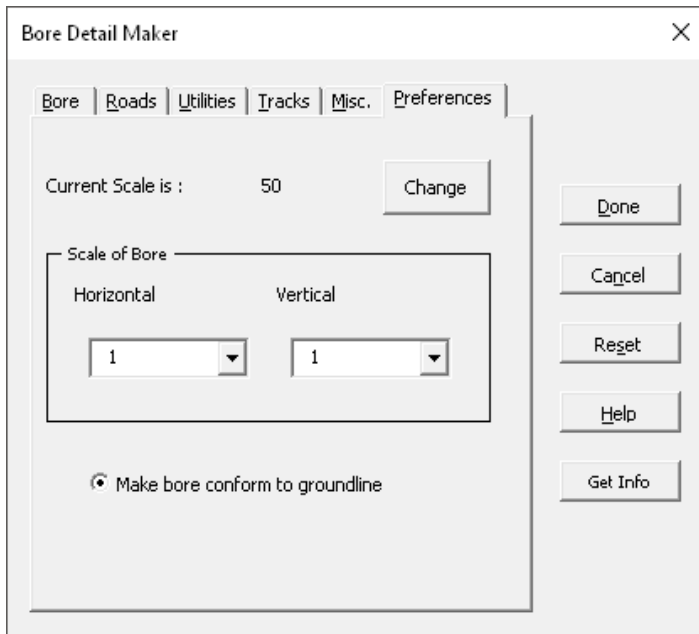
Station for Sheet Change

At Station:

Add Remove

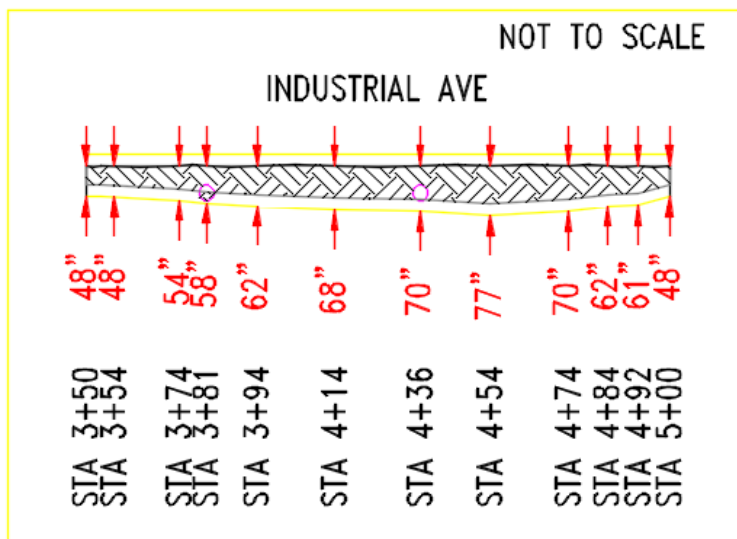
Done Cancel Reset Help Get Info

6. The **“Preference”** tab of the program is used to set the horizontal and vertical scale factors of the directional bore. It also has a section that will add the sheet information for when the directional bore crosses a sheet match line.
  - i. Normally the horizontal scale is set to **“1”** and the vertical scale works best if the scale is set to **“2”** in order to allow for enough spacing to display the utilities correctly.



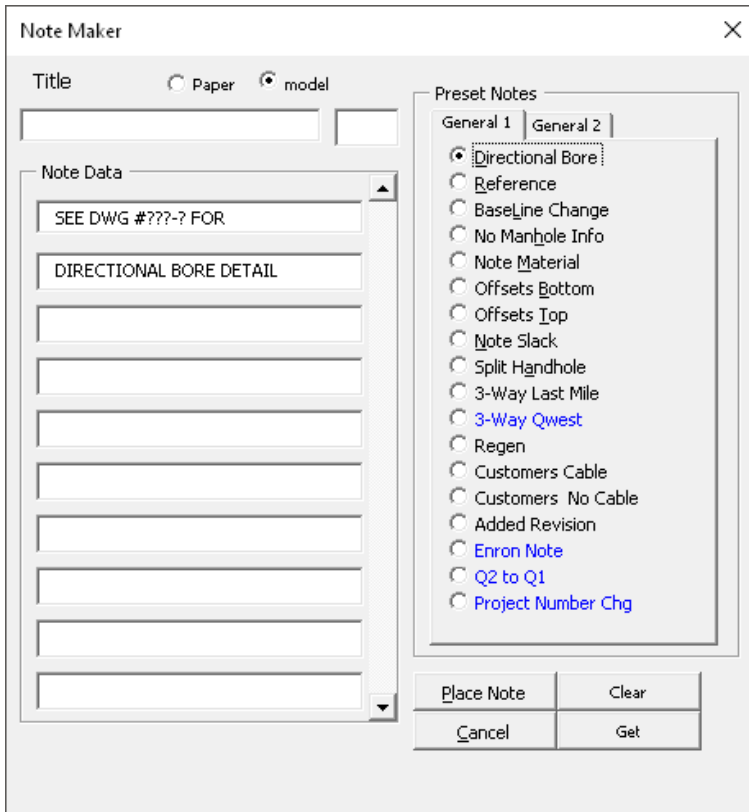
7. Once everything has been entered, click the **Done** button.
8. The user will be prompted to pick the insertion point of the directional bore

### DIRECTIONAL BORE DETAIL



### 3.3.4 Creating Standard Notes

1. To use the Standard Note program the user will use the “**Note**” from the Drafting Tools section of the OSP-CAD menu see (Menu Overview). If a standard note does not match the users need they can just type in what is needed in the fields of the application each line will only allow 31 characters, If the limit is reached the user will have to go to the next line of the form.
  - a. The standard notes have “?” where the user will need to enter the appropriate information.



2. Once the information has been entered in the Note Maker form the user must click the “Place Note” button to place the not in the drawing.

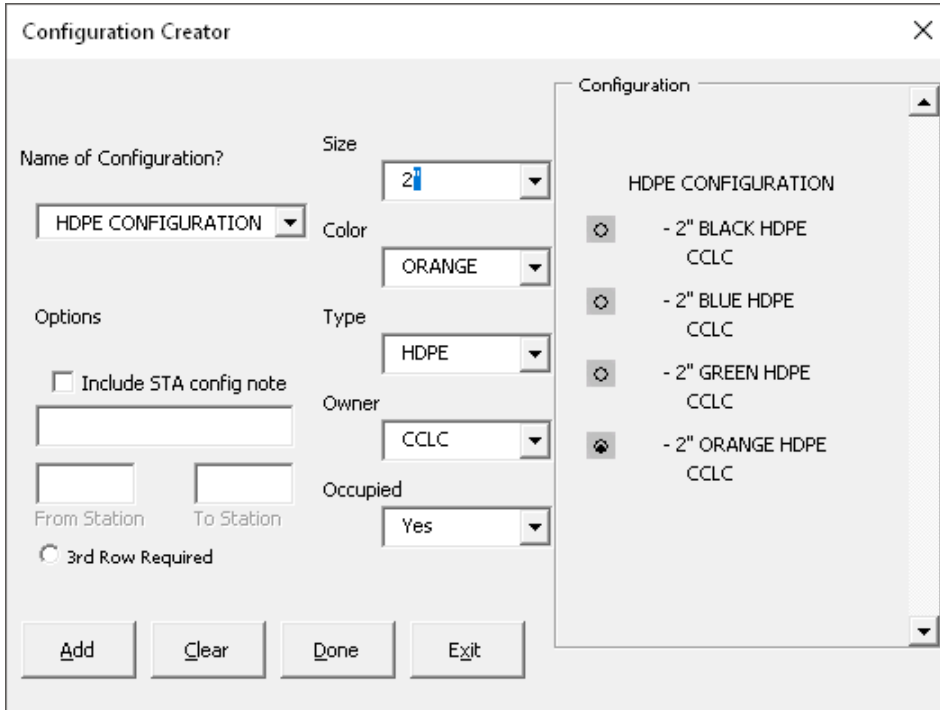
**NOTE:**

SEE DWG #???-? FOR  
DIRECTIONAL BORE

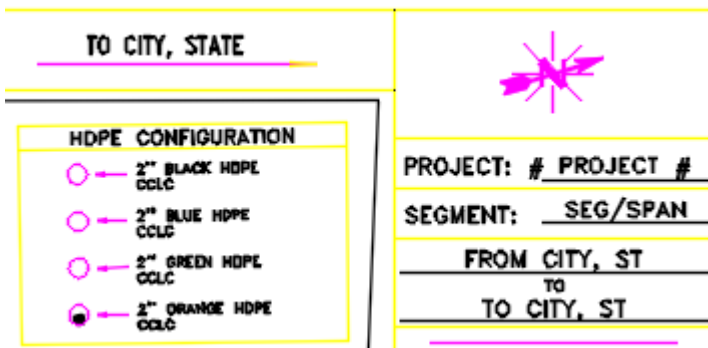
### 3.3.5 Creating HDPE Configurations

1. To use the Configuration Creator the user will use the HDPE Config Creator from the Drafting Tools section of the OSP-CAD menu see (Menu Overview). The HDPE configurations are to be placed in the upper right corner of Sheet Reference in Model Space for each sheet. Then use the change space command and move the HDPE configuration to the current PaperSpace and move to the upper corner of the title block in Paper Space.

- The user must choose the Configuration Type the most common one used is HDPE CONFIGURATION
- Once the Size, Color, Type, Owner and Occupied are chosen click the add button. Repeat until all duct have been added to the configuration on the right

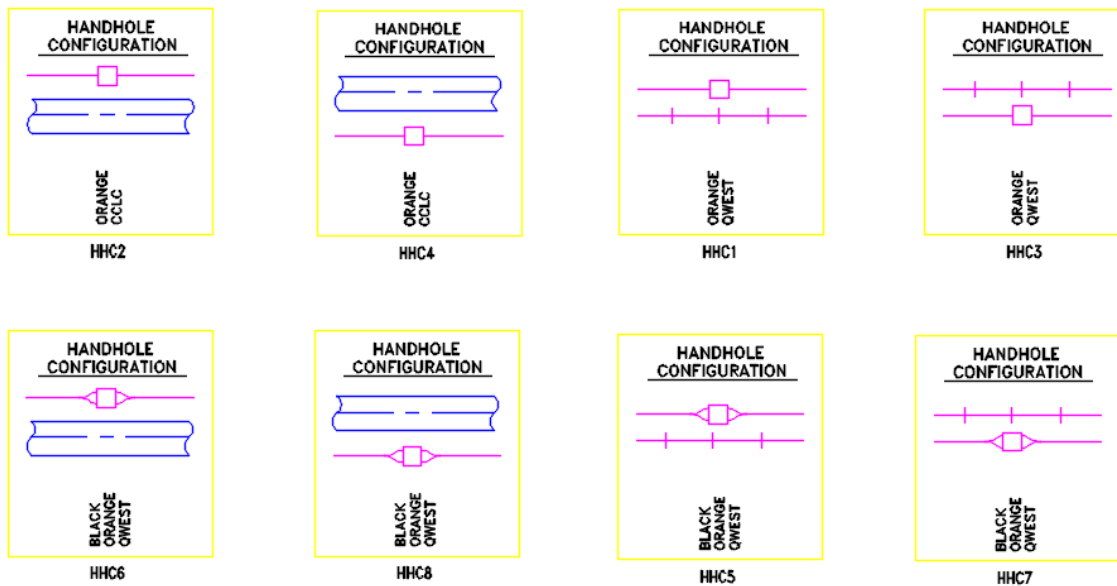


- Once Click the **“Done”** button to place the configuration



### 3.3.6 Handhole Configurations

There are various blocks used for detailing the Handhole placement configuration. Only the Major ones are listed below if the users need ones that are not listed below please look in the C:\CAD\BLOCKS directory all the blocks which names start with HHC\*. If not in the directory please contact [OSPCAD-HelpDesk@centurylink.com](mailto:OSPCAD-HelpDesk@centurylink.com)



### 3.3.7 Adjusting Viewports

A few of the layout tabs will need adjustments to their viewports, and their scale to ModelSpace: Project Sheet(s), Detail Sheet(s), Project Location. The Project Sheet(s) viewports scale must be changed to 1:100 using the properties window in the Standard Scale and match the sheet reference in ModelSpace. Any other viewport targets can be adjusted by double-clicking in the viewport and then using pan commands to get to where you want to go in ModelSpace and then zoom command 1/100xp for 100 scale drawings. Double-click outside the viewport to get back to PaperSpace and then lock the view port.

### 3.3.8 Add Match Lines

If you have more than one Project Sheet, you will need a Match Line. In each layout tab that needs a match line use the OSP-CAD menu (under PaperSpace) to select a Match Line block. When inserting the block, it has a MID insertion point designed to be snapped to viewport WPolygon edge. The user will need to change rotation to match the rotation of the viewport on both sides of the drawing.

To get the match line text use the OSP-CAD menu (under PaperSpace) to select a M1 for the left-side and M2 for the right-side match Line block. Select the insertion point which is midpoint of the match line block and the rotation which is the top end point. It should open the Attribute Editor (ATTEDIT) where you edit the station and sheet number you want it to match to. When done editing, hit the OK button.

### 3.3.9 Building Total Cost Unit Summary

On the Cost Unit Summary tab, there are three different Total Rate Card table headers (Underground, Aerial and Material). These tables are built using the Cost Unit Table section of the OSP-CAD menu see (Menu Overview). these total quantities are for the entire project.

1. Select a block that represents a single row of the table in the category type being totaled. Place a block directly under the Cost Unit header (use Object Snap – snap to end, to snap to the corner of the header). Continue adding blocks as needed to create the rows of the table. You can also add another head block to the right of the existing one if you need to continue the table.

|                 |           |
|-----------------|-----------|
| AS-BUILT DATE   |           |
| ORIGINAL: TODAY |           |
| REVISED:        |           |
| SCALE           |           |
| B SIZE DWG:     | 1" = 100' |
| D SIZE DWG:     | 1" = 50'  |
| MP              | TO MP     |
| DWG. #          |           |
| DWGNUM          |           |

- Note that the row blocks are organized into categories. Select the one that has the range of codes that you need. Once you place a row block, it should open the Edit Attributes editor (ATTEDIT) to allow you to add an Estimated Quantity. Make sure the Units are correct. Don't use the Actual Quantity until this drawing becomes an as-built. Don't edit the Code and Description attribute. You will need to edit this outside of the Edit Attributes editor. Hit the OK button to close.
- You need to use the dynamic lookup function to select the correct Code and Description. Click on the block and notice a blue down facing arrow to the left of the block. Click on this to select the correct code and description. After selecting this, it won't appear to change in the block. However, it is saved in the block and the next time you REGEN the drawing, it will display correctly.

### 3.3.10 Rename Layout Tab Sheets

Before renaming the layout tabs (sheets) you will need to put them in order. To do so, right click on the layout tab that you want to move and select Move or Copy. This will open a dialog box that asks you what layout you want this layout to be moved before (e.g. to the left of). Hit OK to complete the move. The order should be: Cover Sheet, Project Location, General Notes, Contacts, Symbology, Cost Unit Summary, Project Sheet(s), Profile Sheet(s), Typical, Photos. There may be more than one of some these sheets. Please keep them together.

- The naming standards for the project sheets are **State abbreviation\_Milepost-Sheet number**. If mile post are not available use the main road name. (e.g. CO\_15-1 or CO\_COUNTYLINE RD-1).

|                 |           |
|-----------------|-----------|
| AS-BUILT DATE   |           |
| ORIGINAL: TODAY |           |
| REVISED:        |           |
| SCALE           |           |
| B SIZE DWG:     | 1" = 100' |
| D SIZE DWG:     | 1" = 50'  |
| MP              | TO MP     |
| DWG. #          |           |
| DWGNUM          |           |

### 3.3.11 Editing Sheet number in Title block

Once the user has all the sheets finished, then they will need to edit the drawing number in PaperSpace for each sheet. Use the ATTEDIT command and select the **TB-DWGNUM** block in the lower right corner of the title block. Edit the “**DWGNUM**” and the “**MPFR** and **MPTO**” values. **NOTE:** The user should also edit “**Original**” attribute in TB-ASBUILT block (with the current date)

### 3.3.12 Saving and Plotting

**Save Drawing and Plotting** – Drawings sent to CenturyLink should be in both DWG and PDF formats. The DWG files should be saved in AutoCAD version 2014 or newer

The user can either use the **PLOTTABS** which is a lisp that will plot each tab and set the Plotter and the plot style for each tab. The user is prompted whether to send to printer or PDF or the **Publish** command if they are familiar with that command.

## 4 Trouble Shooting

### 4.1 Incorrect/Wrong Line Types

Some of the lines created using the **Draw Lines** drop down has object specific line types and are set prior to executing the Polyline command. To change the default line type back to continuous, choose the **Set Linetype to Continuous** under the **Draw Line** menu.

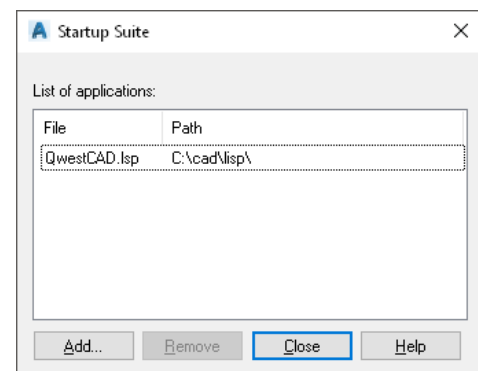
Set Linetype to Continuous

### 4.2 Set Scale not working

The Set Scale options will not work until the drawing has been save to a file. The file name can't be having the word “**Drawing**” in it.

### 4.3 Getting Unknown Command

Make sure the QwestCAD.lsp has been added to the **Startup Suite** inside the APPLOAD command of AutoCAD. Also ensure that all of the files are located in this exact directory **C:\cad\lisp** and that the directories were added to the **Support File Search Path** in the Files tab with in the options command.



### 4.4 Blocks inserting at wrong scale

The blocks are inserted based on the DIMSCALE of the drawing which is set by the Set Scale command in the menu. Make sure the correct Scale was chosen from the menu. Otherwise the block will insert at the wrong scale.

## 5 References

| Reference             | Link                                                                                                                                                                                                      | Description      |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| LISP References       | <a href="https://portals.level3.com/sites/GFS/DocumentStore/LISP%20Programs%20Reference%20Manual.docx">https://portals.level3.com/sites/GFS/DocumentStore/LISP%20Programs%20Reference%20Manual.docx</a>   | LISP References  |
| Detail Drawing Manual | <a href="https://portals.level3.com/sites/GFS/DocumentStore/Detail%20Drawing%20Standards%20Manual.docx">https://portals.level3.com/sites/GFS/DocumentStore/Detail%20Drawing%20Standards%20Manual.docx</a> | Design Standards |

## 6 Version History

The latest version of this document can be found at:

<https://portals.level3.com/sites/GFS/DocumentStore/AutoCAD%20Setup%20Instructions%20Manual.docx>

Electronic copies in any location other than the link accessed above and all printed copies are uncontrolled.

| Version | Date Published | Business Process Owner (Region) | Document Writer | Summary of Changes                                                           |
|---------|----------------|---------------------------------|-----------------|------------------------------------------------------------------------------|
| 1.0     | 8/30/2018      | Tim Fullenkamp                  | Bill Chandler   | First publication                                                            |
| 1.1     | 1/22/2019      | Tim Fullerkamp                  | Bill Chandler   | Added Recommendations, Trouble Shooting section and update new email address |