
CONNECTICUT DEPARTMENT OF TRANSPORTATION

# DIGITAL DESIGN ENVIRONMENT GUIDE

*CONNECT EDITION*

# Volume 7 – OpenRoads Designer Roadway Illumination Base Modeling

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# Course Overview

In these exercises you will learn how to place roadway illumination features in a base model design file.

## Skills Taught

- Select the proper seed file to create a Base Model
- Align a file so it's in the proper geospatial location
- Place Lines, Shapes and Cells
- Attach Item Types
- Edit Item Type Information

## Introduction

***Item Types Overview***

An Item Type is a user defined set of properties used to describe graphical and non-graphical information of an object or element. Item Types are set up and managed by the CTDOT CAD administrators as part of the delivered workspace. Item Types will be attached after placement for elements such as lines and shapes. The workspace has been set up for certain Cells to have Item Types attached upon placement.The properties of an Item Type can be edited by the user in the Properties dialog box along with the other properties of an element. These properties can be used to label and report elements or objects.

CTDOT Item Types are connected to the Department's Master Bid List that contains pay item numbers, descriptions and units. Users will enter the required pay item description and the item number and pay unit fields will auto-populate. The most up to date Master Bid Item Lists can be found on the Department's Contract Development Website.

In the image below notice the look up information is grayed out and the user input is not. The greyed-out properties are getting auto-populated by other Item Type property fields or other attributes on the file itself. Some user input fields are actually pick lists and others are strictly manual input.

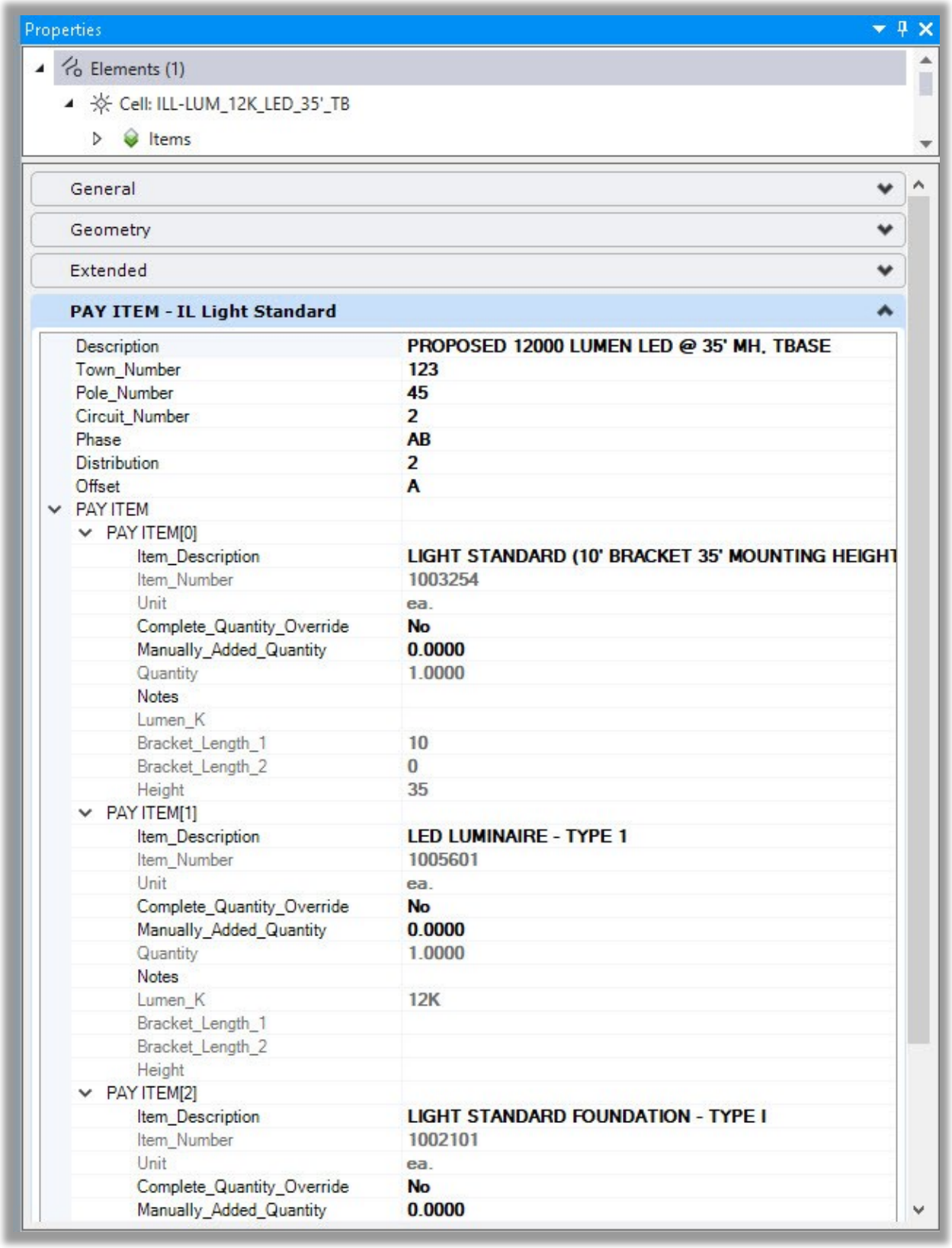



*Figure 1 Light Standard Item Type*

***Placement Tools and Item Types***

The Illumination tab on the CTDOT workflow will be used to place graphics. These tools place 2D lines, shapes and cells.

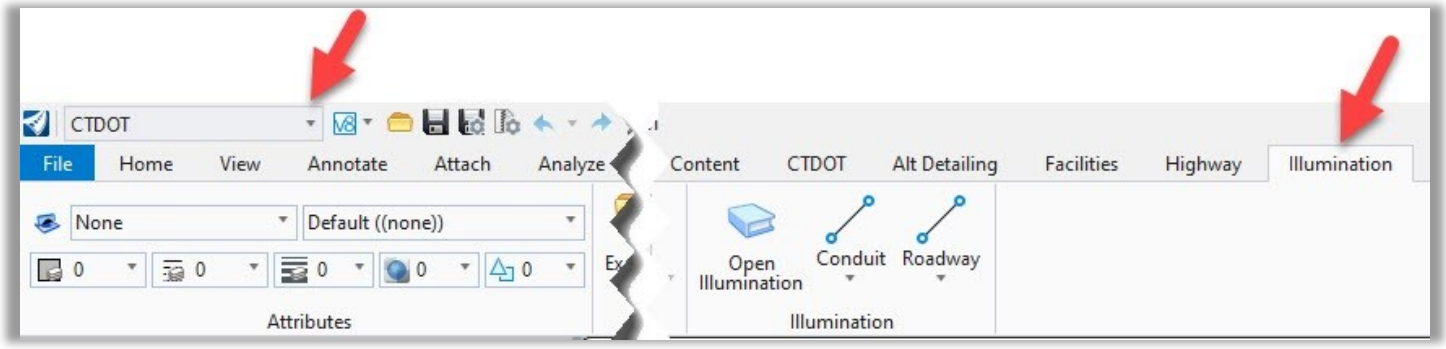



*Figure 2 CTDOT Custom Workflow Illumination Tools*

The **Cells** tool will open the Illumination Cell Library. Most Cells in the Illumination Cell Library come prepopulated with an Item Type.

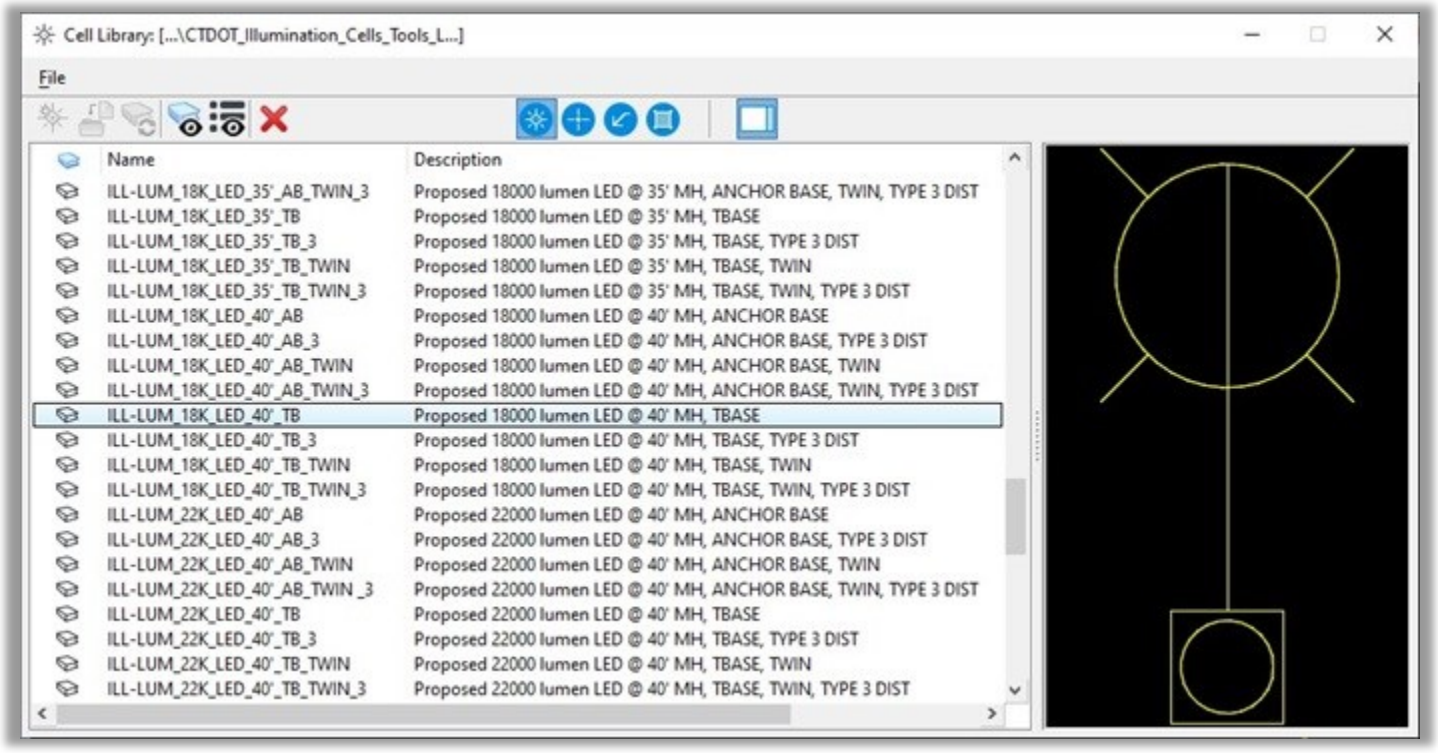



*Figure 3 Illumination Cell Library*

The **Conduit** placement tools do not come with Item Types Attached, this will be done after placement.

The **Roadway** tools are used to place existing roadway features if there is no formal Survey. These tools do not have Item Types associated with them.

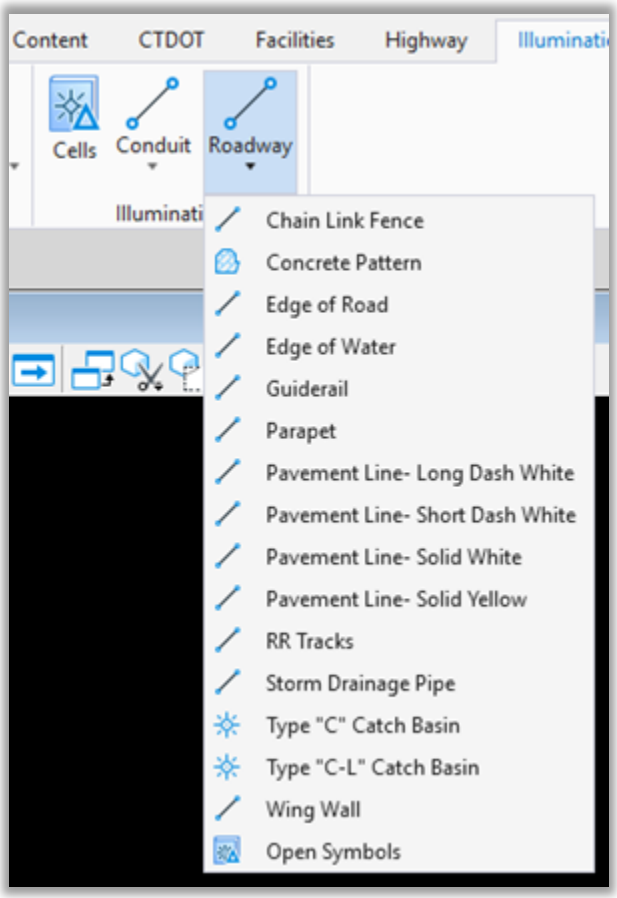



*Figure 4 Place Conduit Tools*

# Exercise 1 - Base Model Creation

## 1.1 Startup

Before attempting to open or create DGN files users should make sure the following is in place:

1. CTDOT users should have the CTDOT CONNECT DDE synced through SharePoint with the COMPASS Project Synced along with the CAD Configuration.
2. Consultants should have CTDOT DDE properly installed or be syncing to the CTDOT DDE SharePoint/COMPASS system.
3. Make note of the **Coordinate System** you will be working in. If you have existing survey data, you will need to find out what system is being used **(NAD 83/NAVD 88 or NAD 27/NAVD 29).**
4. Log on to the CONNECTION Client. Bentley Connect licensing requires users to log into their Bentley account to secure a software license. CTDOT users should log in using your CTDOT email address and Bentley password.If you do not see the dialog box, select the ∧ icon on the bottom Windows Screen. Click on the Connection Client Icon and select **Open.**

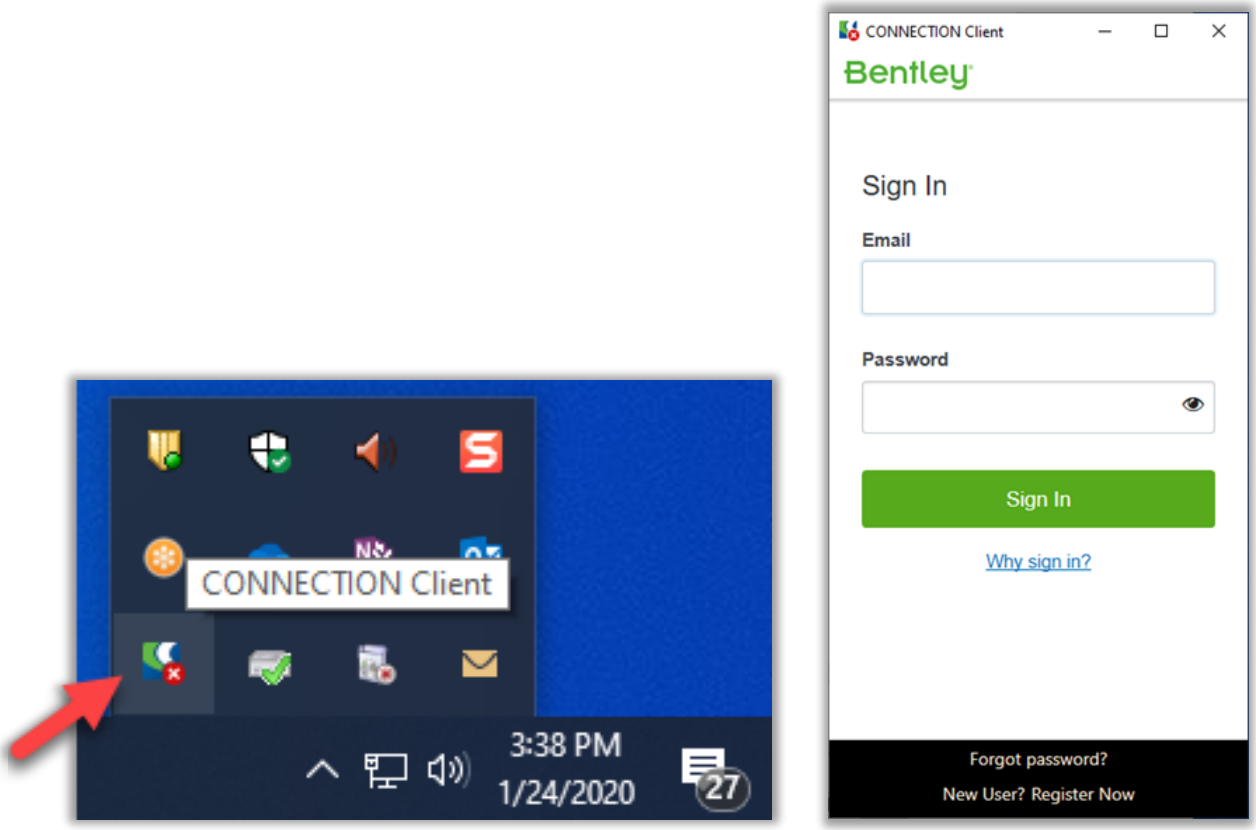



*Figure 5 CONNECTION Client System tray*

5. Launch the Application.
   - **Consultants**
     Start the software via an appropriate **CTDOT DDE** icon
   - **CTDOT employees**
     On your desktop double click on the **CAD Accounting** icon.
6. On the CT DOT Accounting Menu there will be select ***Compass OpenRoads CE***
   In the ***Run Program*** field select the needed program, the ***Available Account*** (funding source) and ***Resource Type***. Click on the **Start** button to load the program.

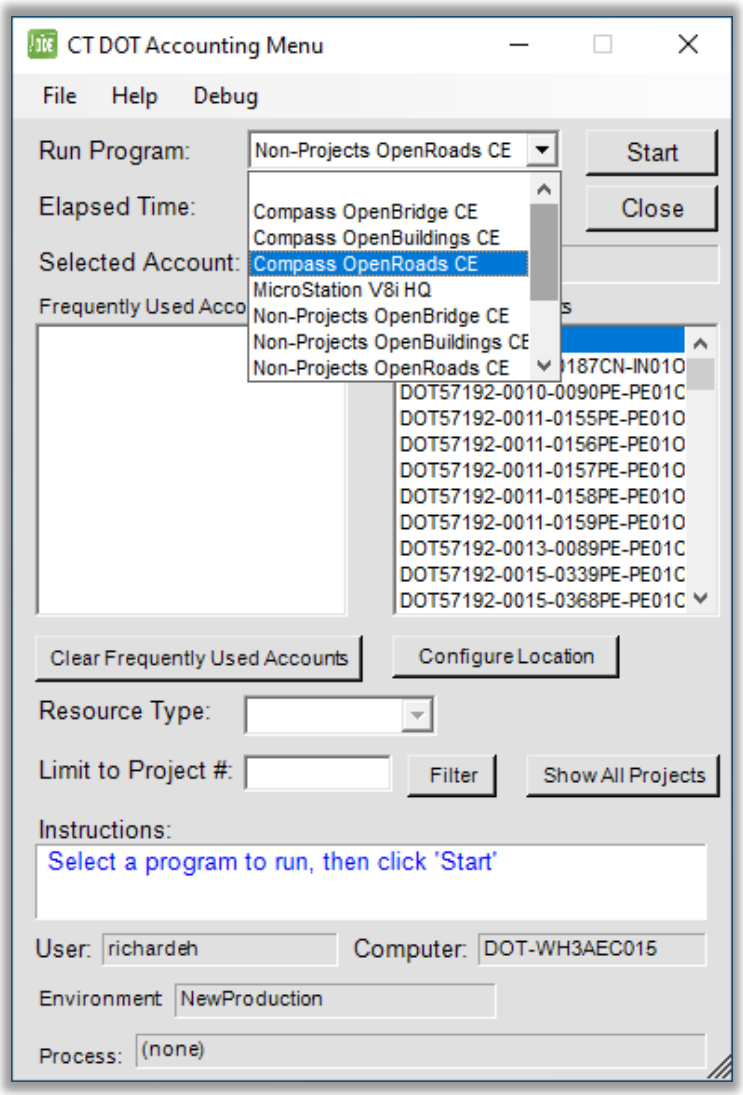



*Figure 6 CAD Accounting dialog box*

7. After launching the program, a Welcome Screen for ***OpenRoads Designer*** will appear.
8. Select **Custom Configuration**, using the small drop-down arrows select the Workspace **CT_Workspace**, the needed **WorkSet** and **Role**.

   **Note:** If you do not see the Project Number listed, please request a Compass/CAD Setup using this link [New CAD Project Request]

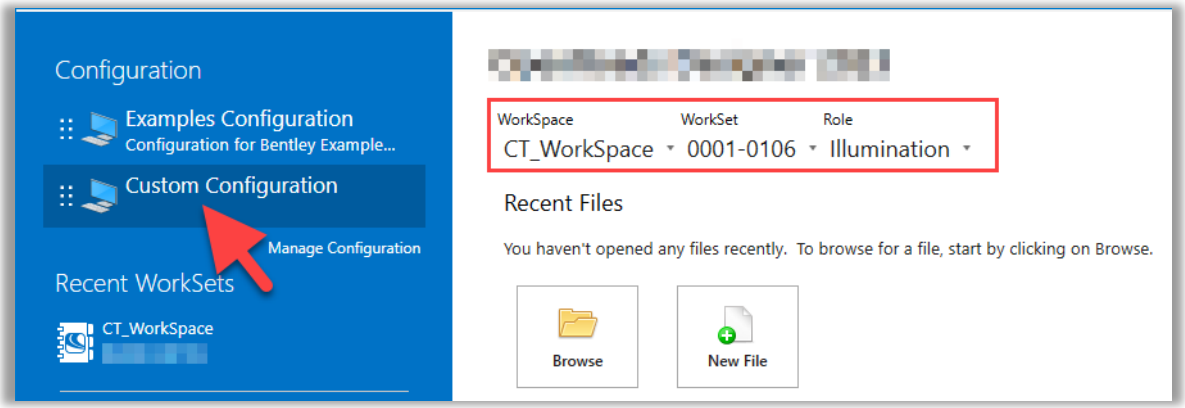



*Figure 7 OpenRoads Splash Screen*

## 1.2 Creating a New File

1. Select the **New File** icon.

   **Warning:** Do not copy DGN files created with V8i SELECTseries or InRoads SS2, SS3, SS4, or SS10 to the new CTDOT CONNECT Project/WorkSet folders.

   From the New dialog box, browse to the proper discipline folder and enter the proper file name in the ***File name:*** field using

   Example: ***IL_1234_1234_BaseModel.dgn***

2. On the New dialog box click the **Browse** button to select the proper seed file.
   ***…CT_Configuration\|Organization\|Seed\|Road\|Seed2D - CT IlluminationDesign.dgn***

   If the survey was done in an old Datum, use the 2D Seed Files in this folder
   ***…CT_Configuration\|Organization\|Seed\|GCS\|***

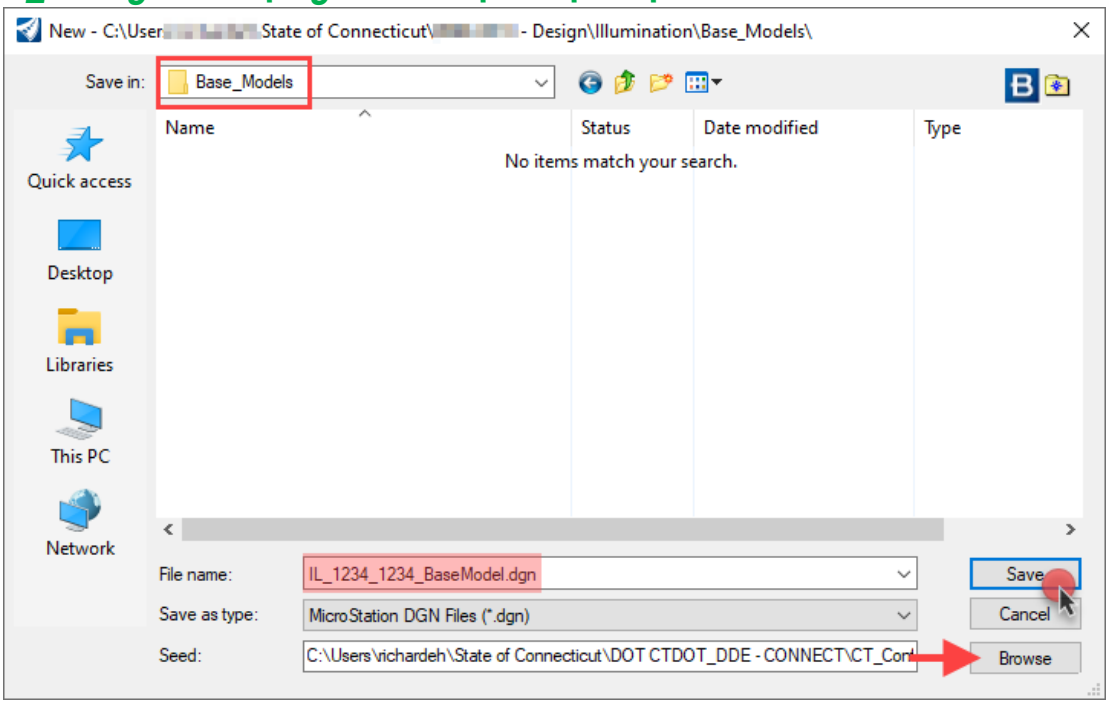



*Figure 8 New File*

3. After the DGN file is created open File Explorer and browse to the file, **right click** and select **View online**.

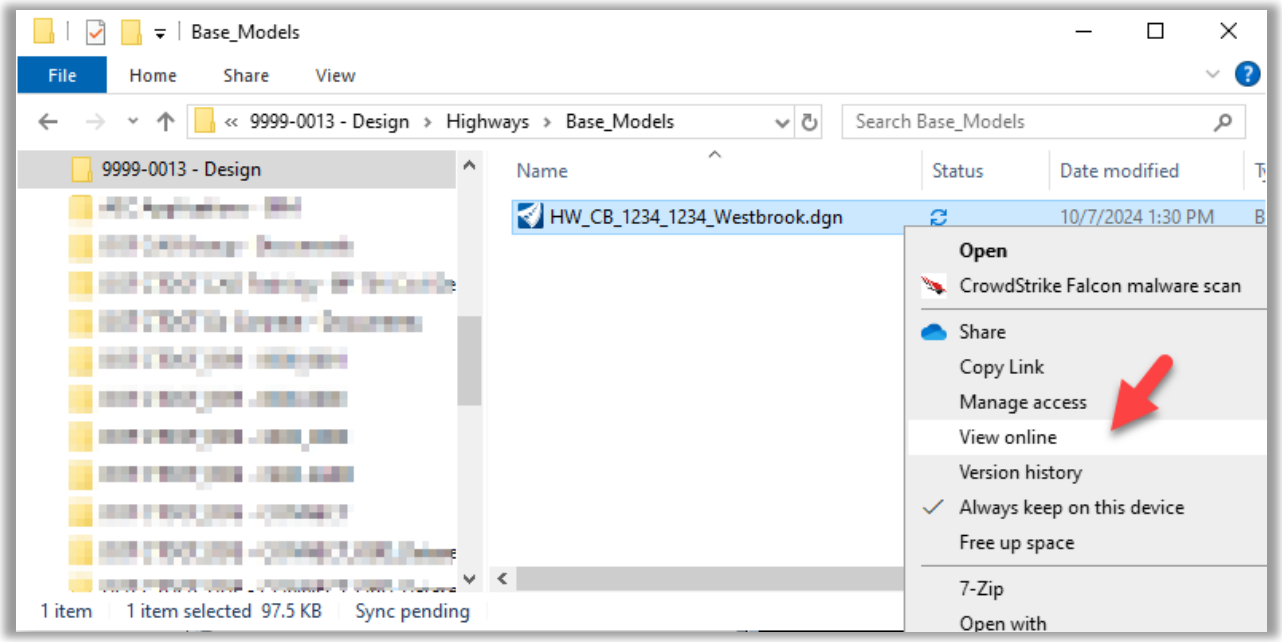



*Figure 9 File Explorer View online tool*

4. The Projects SharePoint site will open, sort by **Date**, click on the **three dots**, select ***More › Check Out***

   ***Note:*** *When you are done working on the DGN file, exit the program and go back to the SharePoint Site and* ***Check In*** *the file.*

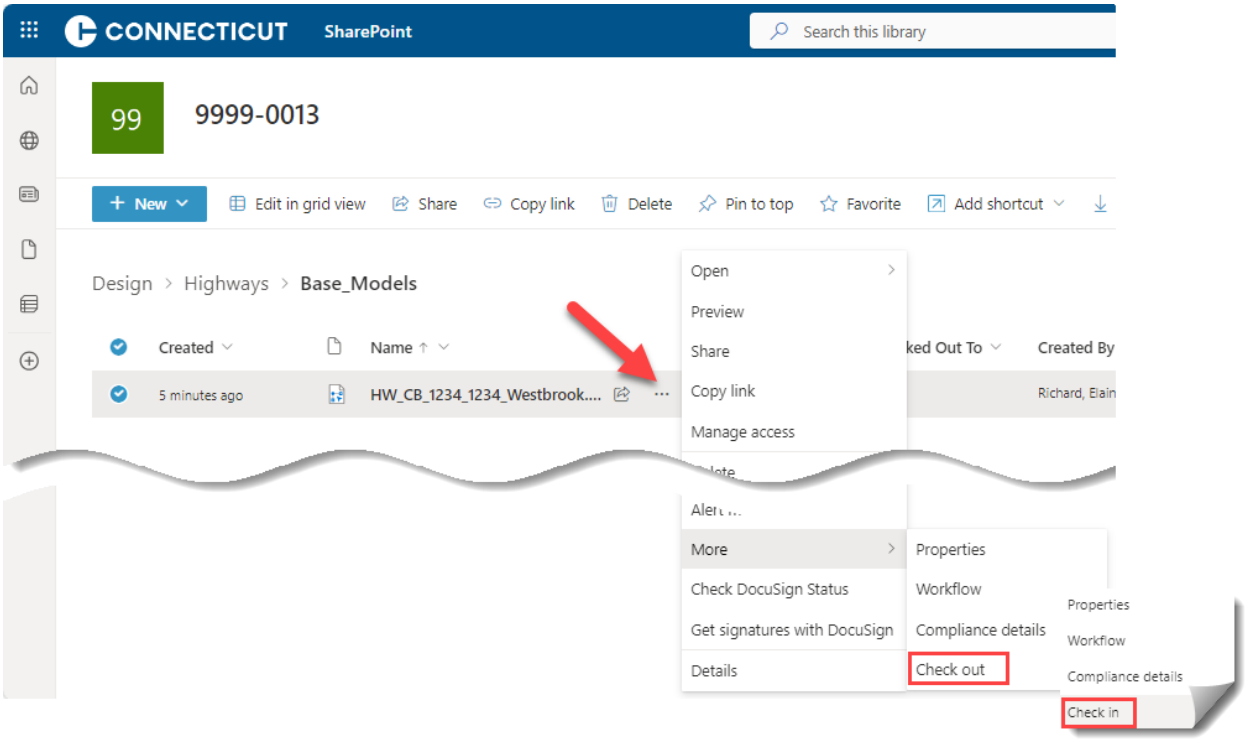



*Figure 10 SharePoint Check out*

## 1.3 Referencing

Reference in other Design Unit's DGN files. This could include but not limited to Highway, Illumination, Signal, Signing, Pavement Markings and Existing Survey.

1. Select the **CTDOT** workflow and click on the **Attach** Tab, in the **References** section click on **Attach Reference**.
2. Navigate to the ***Highways\Base_Models*** folder and reference the Highway Design Base Model files. Choose the needed Models (most likely its "Default") and use **No Nesting**.

   ***Note:*** *Highway Design may elect to have several DGN files which could include Alignment dgns, Modeling dgns, and Drainage dgns. Highway Design.*
3. Navigate to the ***Active_Survey*** folder and reference the Survey *.dgn file. This may include 2 files a Terrain DGN and a Ground Topo (grn) DGN

   ***Note:*** *Older DGN Files will need to be referenced in with certain settings to get them to line up in the correct Geospatial location.*
4. For older reference files turn **True Scale** off and set the Scale to ***1:1***.

   ***Note:*** *Always do a check by clicking on the Survey's Northing and Easting Grid Marks to compare the files read out. If they do not match you did not properly align the file Geospatially.*

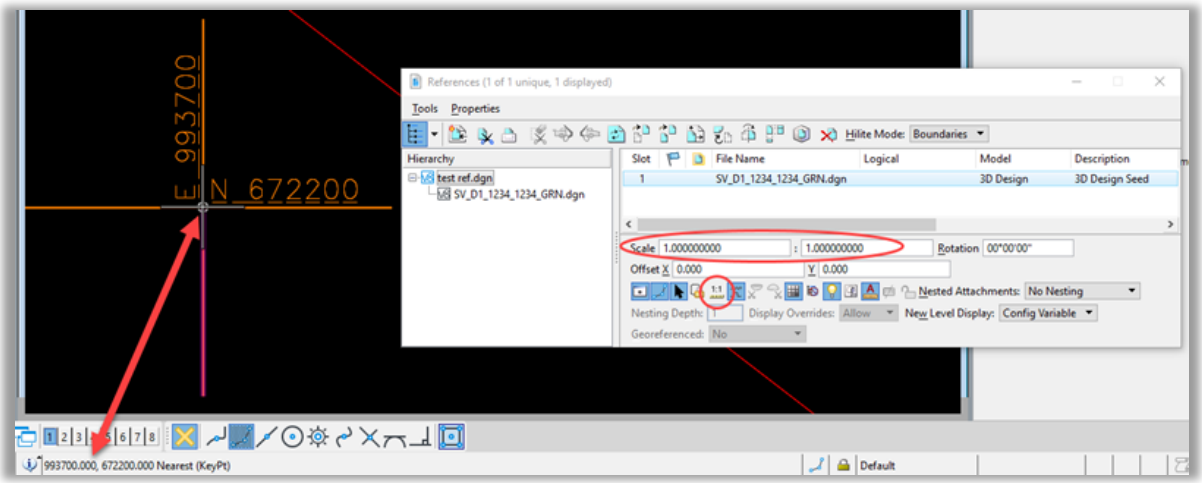



*Figure 11 Reference Coordinates*

5. Select **Level Display** and turn off the desired levels in the reference files.
6. Activate the terrain by clicking on the terrain boundary, hover over the boundary and from the pop-up menu select the ***Set Terrain Active*** tool.
7. Click again on the terrain boundary and set the override symbology to ***Yes***. Then to help with the horizontal alignment creation, you can turn on the contours.


*Figure 12 Override Terrain Symbology*

8. Select **Save Settings**.

# Exercise 2 – Base Modeling

## 1.4 System Information

1. In the ***IL_CB_1234_1234_ BaseModel.dgn*** open the **Models** dialog box, click on the **Default** model, and in the **Properties** dialog box enter the **ILLUMINATION SYSYEM INFORMATION**.

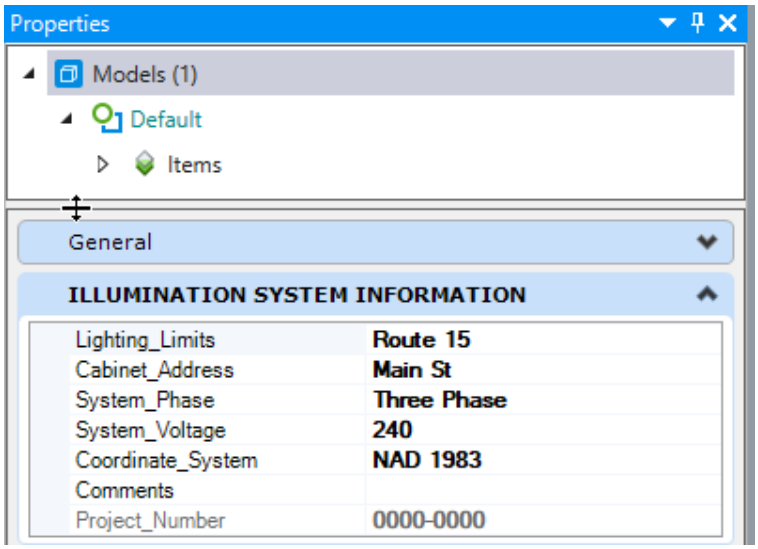



*Figure 13*

2. If the **ILLUMINATION SYSYEM INFORMATION** is missing add it to the model in Explorer by right clicking over the Model and selecting ***Attach Item.***

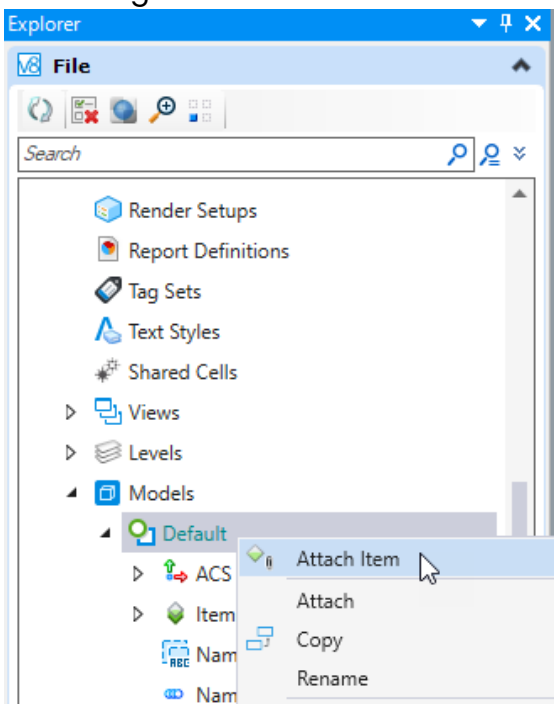



*Figure 14*

3. On the Attach Item dialog box select
   Item Type: ***Illumination\|ILLUMINATION SYSYEM INFORMATION***
   New properties will appear, fill each as required

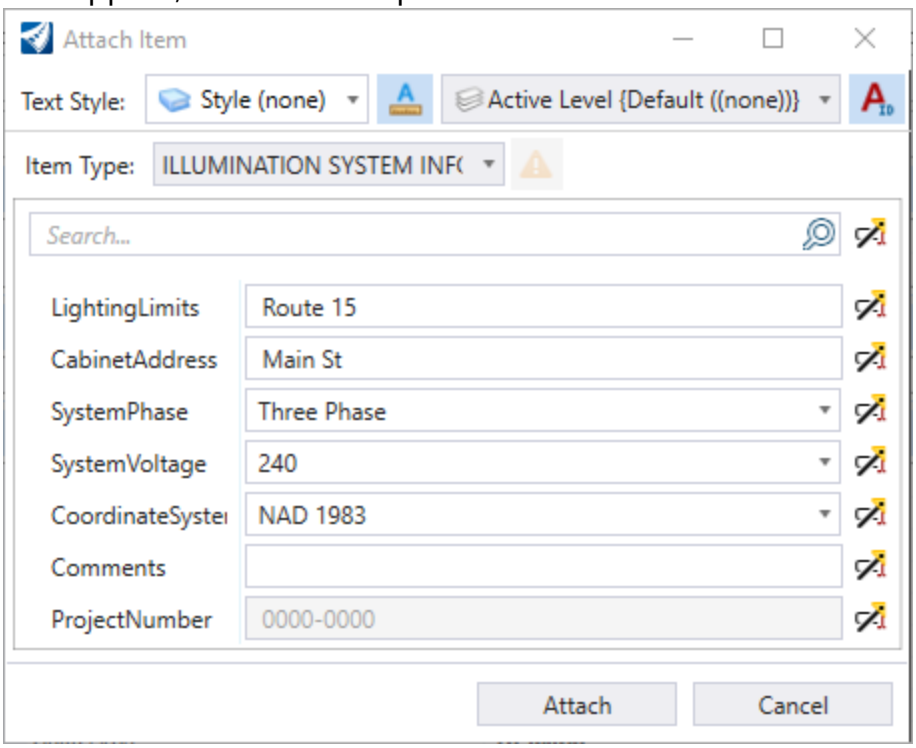
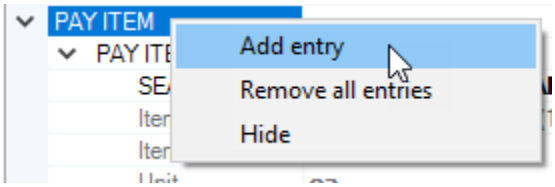



*Figure 15*

## 1.5 Place Light Standards, Luminaires and Equipment

1. Select the **CTDOT** workflow and click on the **Illumination** tab to access the integrated CTDOT standard tools on the Ribbon.
2. In the **Illumination** section select the **Open Illumination** tool, in the Cell Library dialog box double click to select the desired cell for placement.
3. Follow the prompts to place. After placement select the cell and in the **Properties** dialog box update the required information.
4. Each Luminaire will be preset with several Pay Items. Pay items can be added and deleted by right clicking over the word PAY ITEM and selecting as needed.




5. Layout Light Standards, Luminaires, Handholes and Cabinets from the Illumination cell library.

6. Select each and fill in the Properties. Pay Items have been preset, users can update these as needed, filter by entering either the a portion of the ***Pay Item Description*** or ***Pay Item Number*** in the **SEARCH** field. Notice the Pay Item Number and Description update.

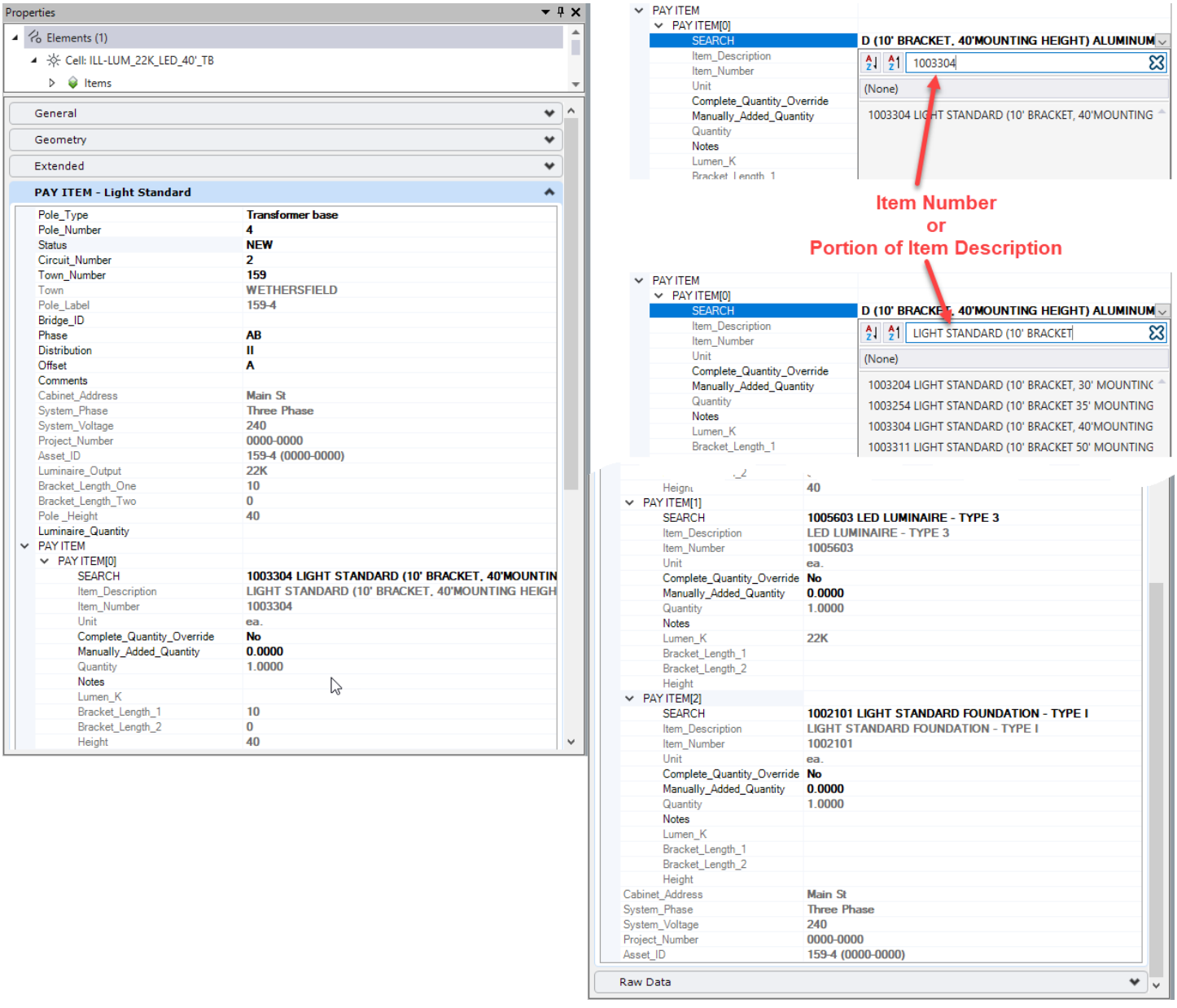



*Figure 16 Light Standard Item Type*

## 1.6 Place Conduit

1. In the **Illumination** section click on the **Conduit** pull down menu and select one of the **Conduit** tools. Place a line to represent the conduit.
2. Select the **Attach tab** and in the Item Types section select **Attach Item**.
3. On the Attach Item dialog box, toggle ***Illumination*** and select ***PAY item - Illumination Conduit***. Select the newly placed line and follow the prompts to attach the Item Type.

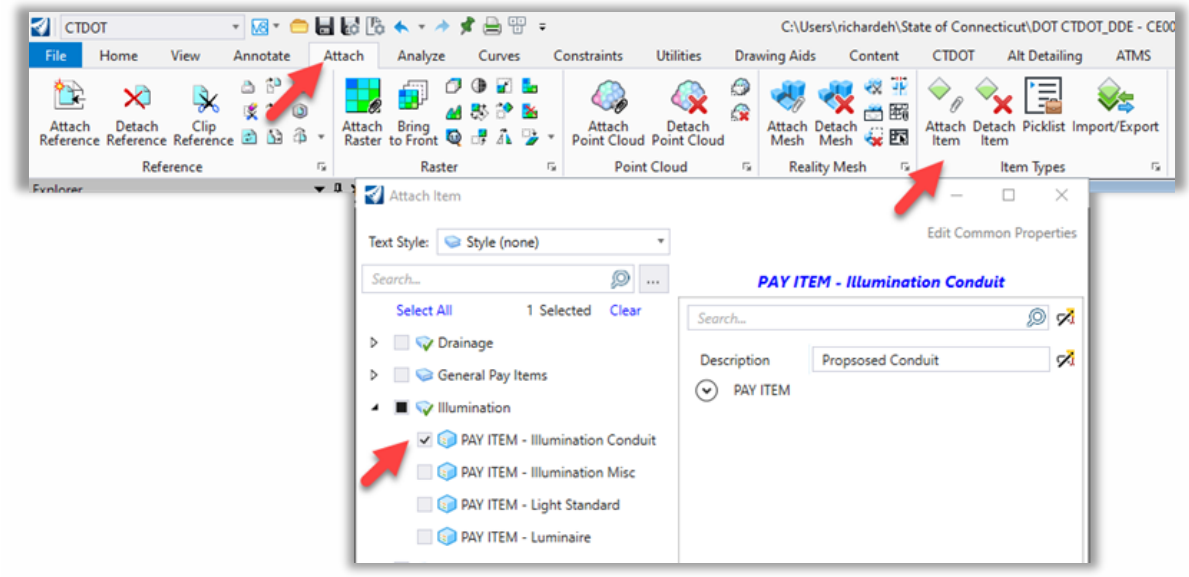



*Figure 17 Attach Item Type*

4. Scroll down to the bottom of the **Properties** dialog box and update the pay item as needed. Right click on **PAY ITEM** and select **Add Entry**.

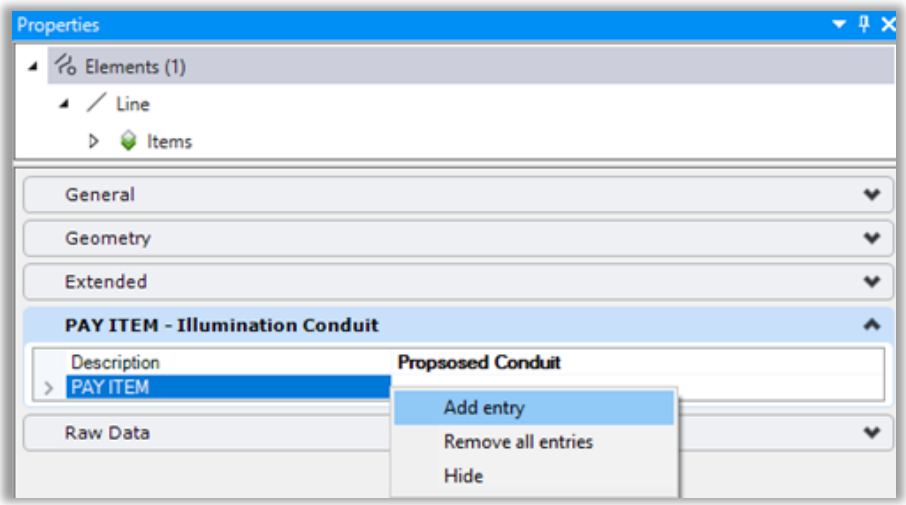



*Figure 18 Add Array entry to Item Type*

Proposed Conduits may need the following Pay Items:

- CONDUIT (Size & Type)
- CONDUCTORS
- CABLES
- TRENCHING AND BACKFILLING
- ROCK IN TRENCH EXCAVATION 0'-4' DEEP

Existing Items will need the following Pay Item:

- CLEAN EXISTING CONDUIT

Users can filter by entering either the Pay Item Description or Pay Item Number in the **SEARCH** field.

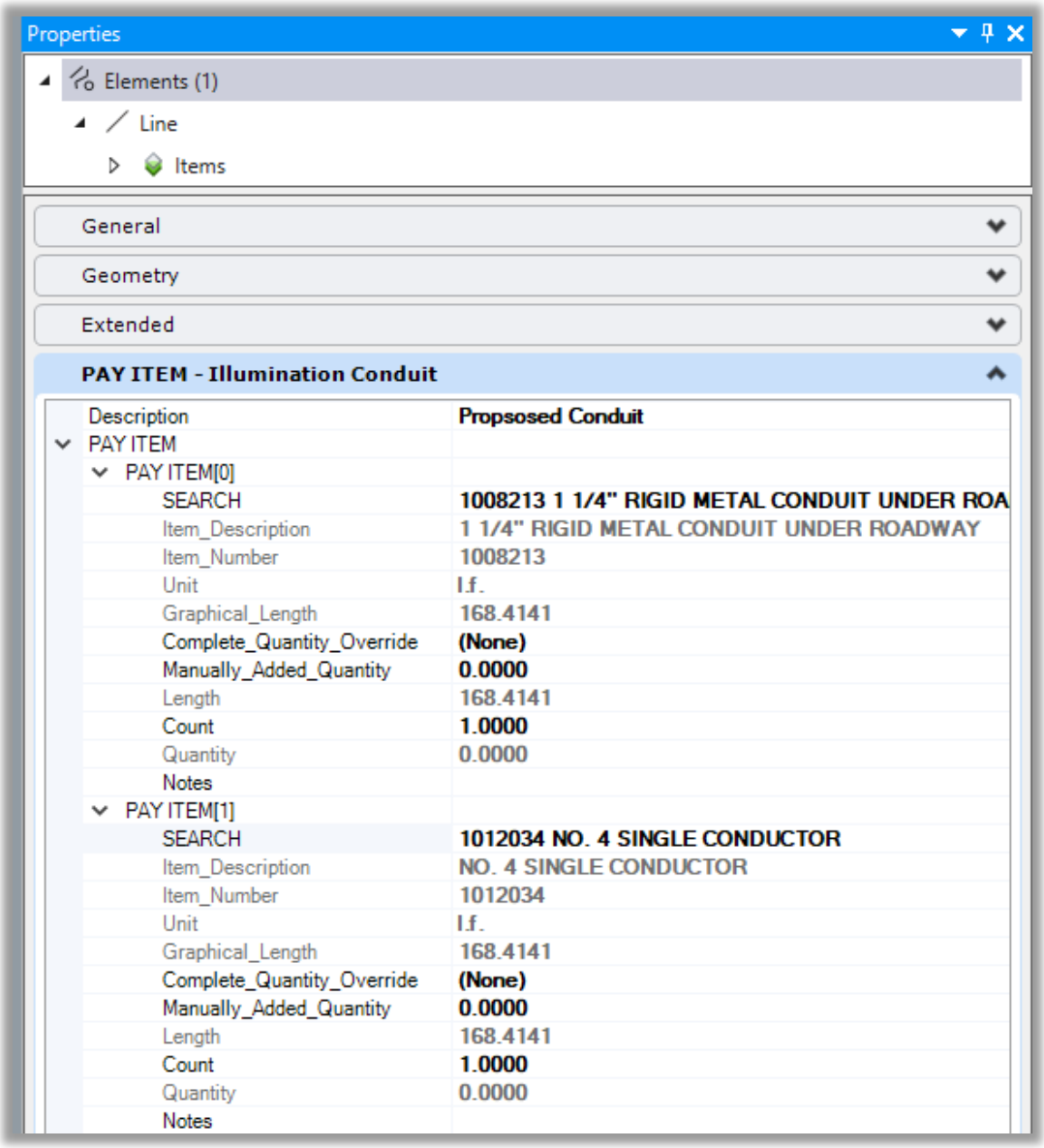



*Figure 19 Conduit Item Type*

# Revisions