

CONNECT **DDE GUIDE**



CONNECTICUT DEPARTMENT OF TRANSPORTATION

DIGITAL DESIGN ENVIRONMENT GUIDE

CONNECT EDITION

Volume 7 – OpenRoads Designer Roadway Illumination Base Modeling

Published Date: May 28, 2025

Table of Contents

Table of Contents 1

Course Overview 2

Exercise 1 - Base Model Creation 6

 1.1 Startup 6

 1.2 Creating a New File 9

 1.3 Referencing 11

Exercise 2 - Base Modeling..... 13

 1.4 System Information..... 13

 1.5 Place Light Standards, Luminaires and Equipment 15

 1.6 Place Conduits 17

Course Overview

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

Skills Taught

- Selecting the proper seed file to create a Base Model
- Aligning a file so it's in the proper geospatial location
- Placing Lines, Shapes and Cells
- Using Item Types for Pay Items and Asset 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. The workspace has been set up for certain Cells to have Item Types attached upon placement. Item Types will be attached after placement for elements such as lines and shapes. 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.

CTDOT Item Types are connected to the Department's Master Bid List that contains pay item numbers, descriptions and units. Users can search for bid items by entering pay item numbers or descriptions and the search results will filter enabling the user to select the proper bid item. After selection the pay unit field will auto-populate with data pulled from the look up table.

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 pick lists and others are strictly manual input.

Properties

Elements (1)

- Cell: ILL-LUM_18K_LED_35'_TB
 - Items
 - Illumination Light Standards
 - PAY ITEM - Light Standard
 - PAY ITEM - Light Standard Foundation
 - PAY ITEM - Light Standard Luminaire

General

Element Description	Cell: ILL-LUM_18K_LED_35'_TB
Cell Name	ILL-LUM_18K_LED_35'_TB
Cell Type	Graphic
Class	Primary
Number of elements	11
Template	(None)
Annotation Purpose	False
Is Annotation	False

Geometry

Extended

Illumination Light Standards

Pole Type	Transformer base
Status	NEW
Town	MANCHESTER
Town Number	076
Pole Number	2
Pole Label	076-2
Asset ID	076-2(0000-0001)
Circuit Number	1
Bridge ID	
Offset	A
Distribution	II
Phase	BC
Luminaire Output	18K
Bracket Length 1	6
Bracket Length 2	0
Pole Height In Feet	35
Luminaire Quantity	1
System Information ID	0
Cabinet ID	PVD_01
Service Location	Pleasant Valley Road
System Phase	Three Phase
System Voltage	277/480
Project Installed Under	0000-0001
Date Installed	
Comments	

PAY ITEM - Light Standard

SEARCH	1003252 LIGHT STANDARD (6' BRACKET 35' MOUNTING HEIGHT) ALU
Item_Description	LIGHT STANDARD (6' BRACKET 35' MOUNTING HEIGHT) ALUMINUM
Item_Number	1003252
Unit	ea.
Quantity	1.0000
Bracket_Length_1	6
Bracket_Length_2	0
Height	35
Notes	

PAY ITEM - Light Standard Foundation

SEARCH	1002101 LIGHT STANDARD FOUNDATION - TYPE I
Item_Description	LIGHT STANDARD FOUNDATION - TYPE I
Item_Number	1002101
Unit	ea.
Quantity	1.0000
Notes	

PAY ITEM - Light Standard Luminaire

SEARCH	1005602 LED LUMINAIRE - TYPE 2
Item_Description	LED LUMINAIRE - TYPE 2
Item_Number	1005602
Unit	ea.
Quantity	1.0000
Lumen_K	18K
Notes	

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.

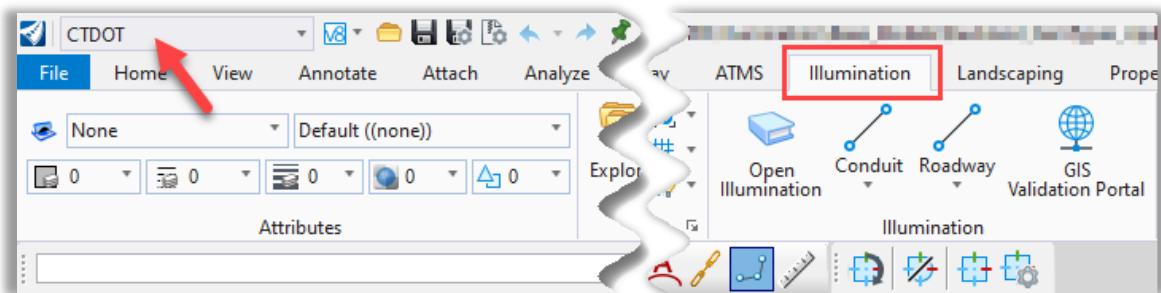


Figure 2 - CTDOT Custom Workflow Illumination Tools

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

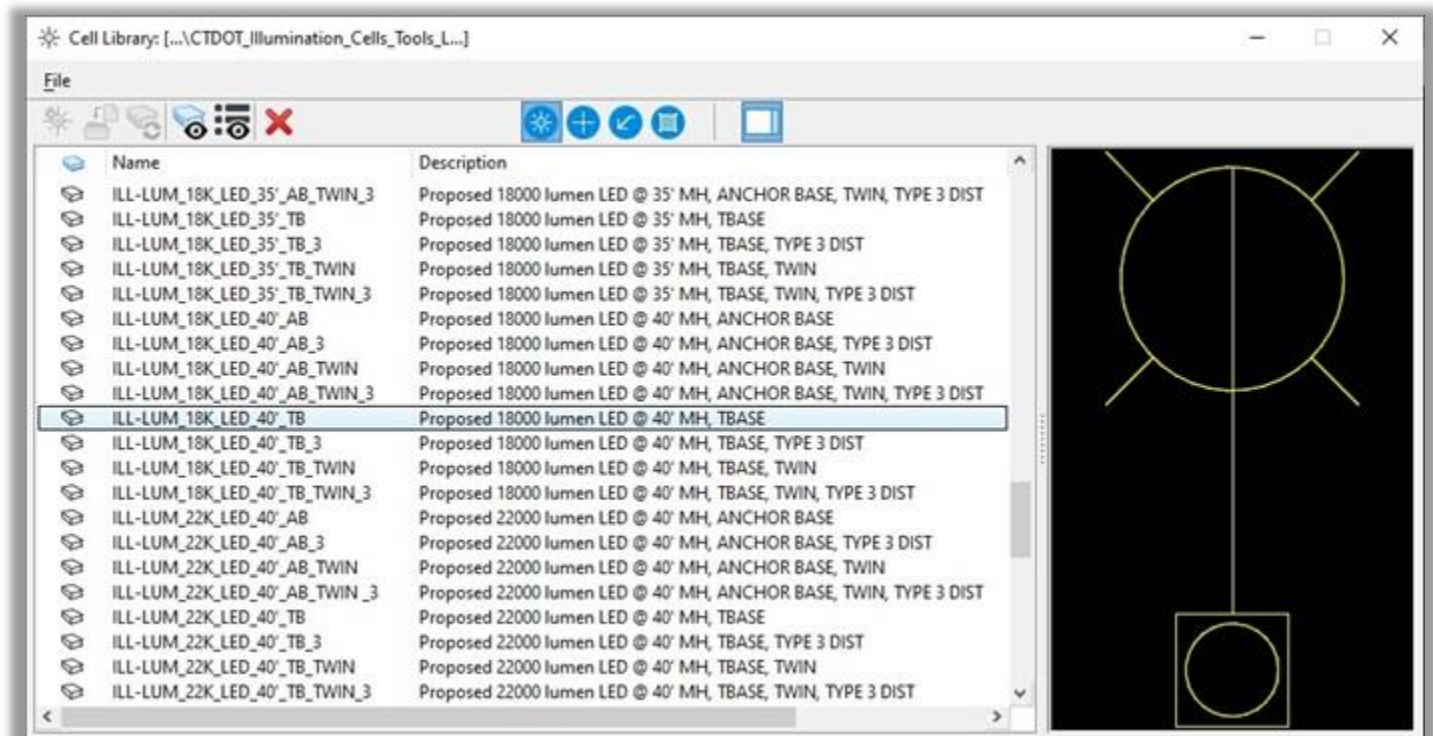


Figure 3 - Illumination Cell Library

Volume 7 – OpenRoads Designer Roadway Illumination Base Modeling

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.

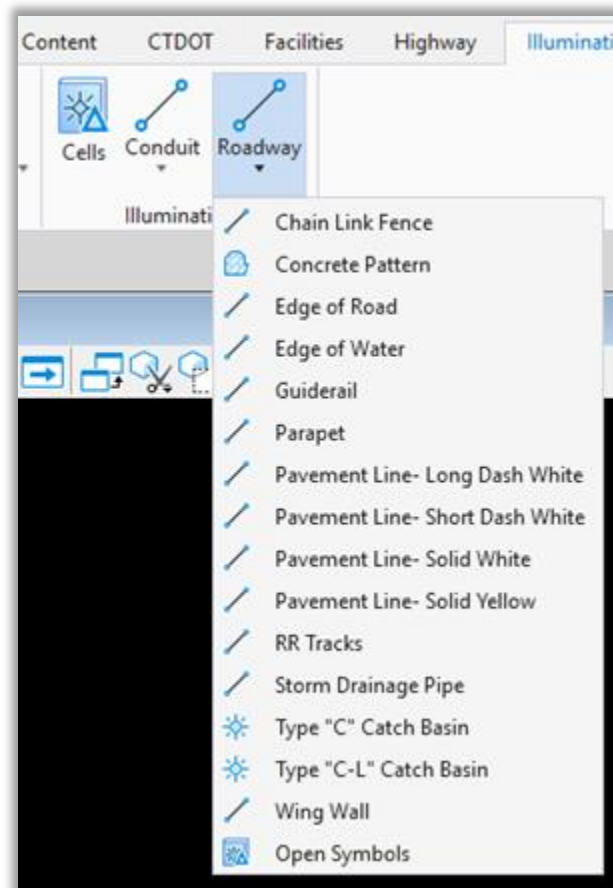


Figure 4 – Place Roadway Tools

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**.

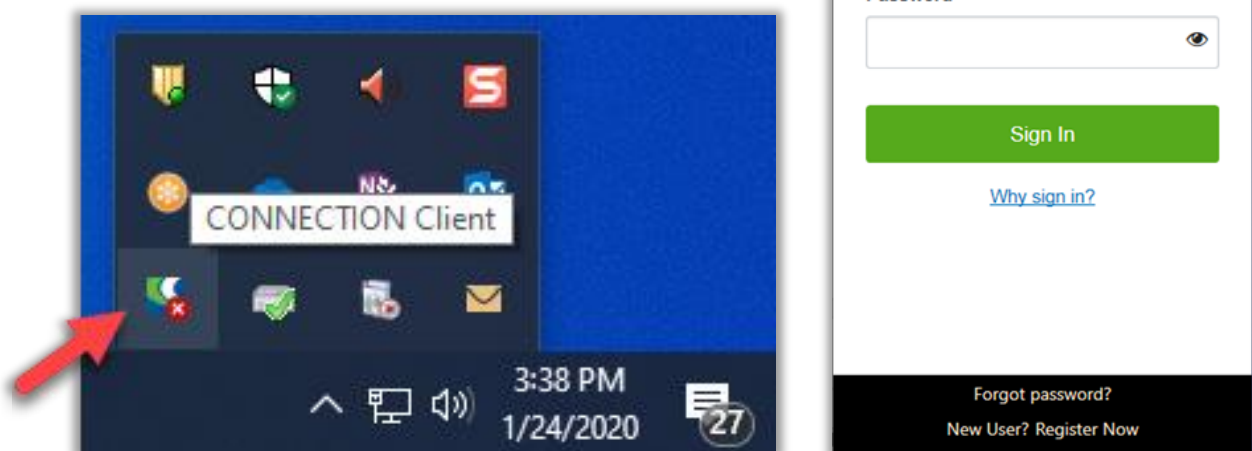


Figure 5 – CONNECTION Client System tray

Volume 7 – OpenRoads Designer Roadway Illumination Base Modeling

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.

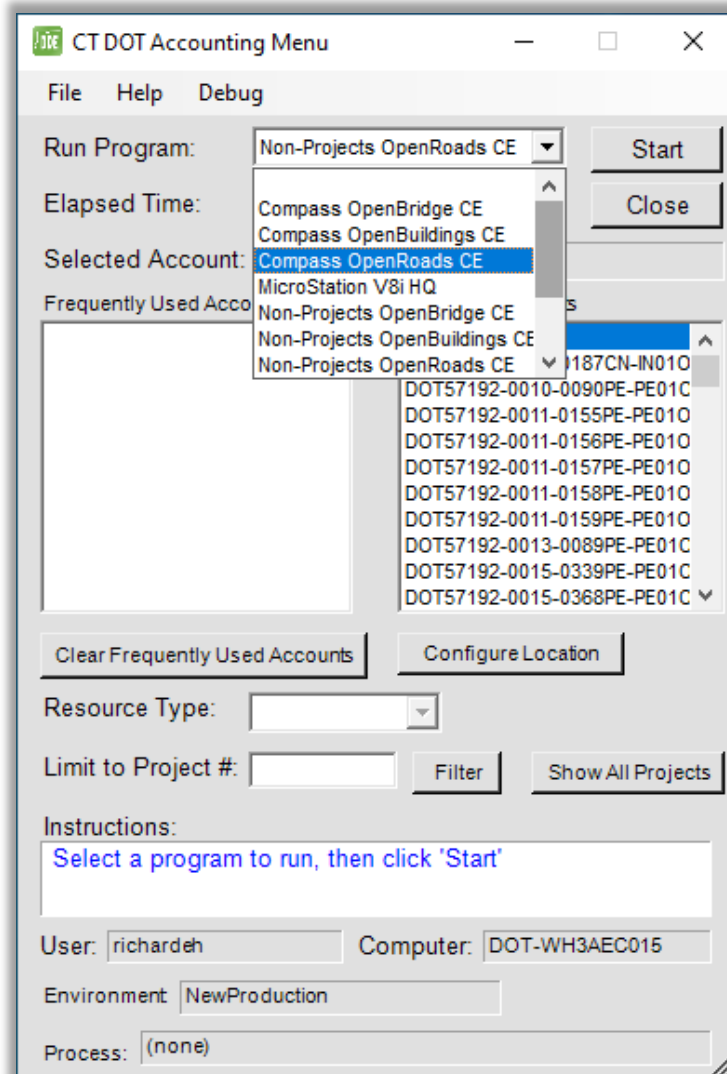


Figure 6 – CAD Accounting dialog box

Volume 7 – OpenRoads Designer Roadway Illumination Base Modeling

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](#)

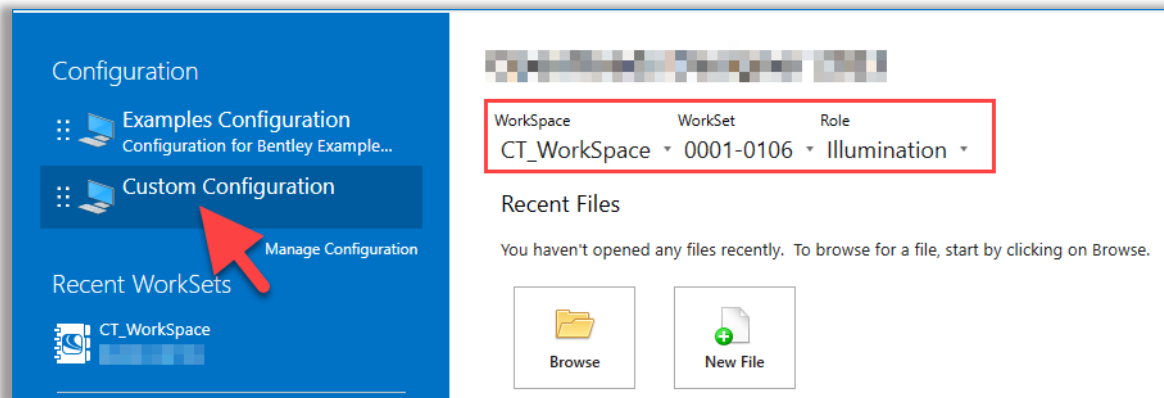


Figure 7 – OpenRoads Splash Screen

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|

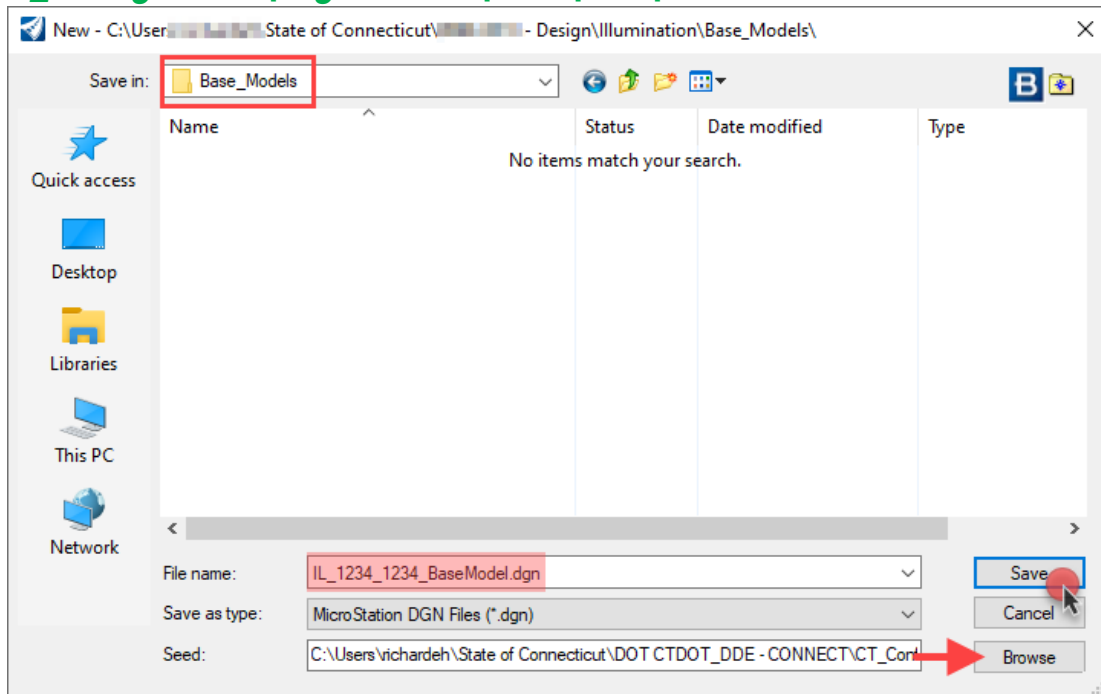


Figure 8 – New File

Volume 7 – OpenRoads Designer Roadway Illumination Base Modeling

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

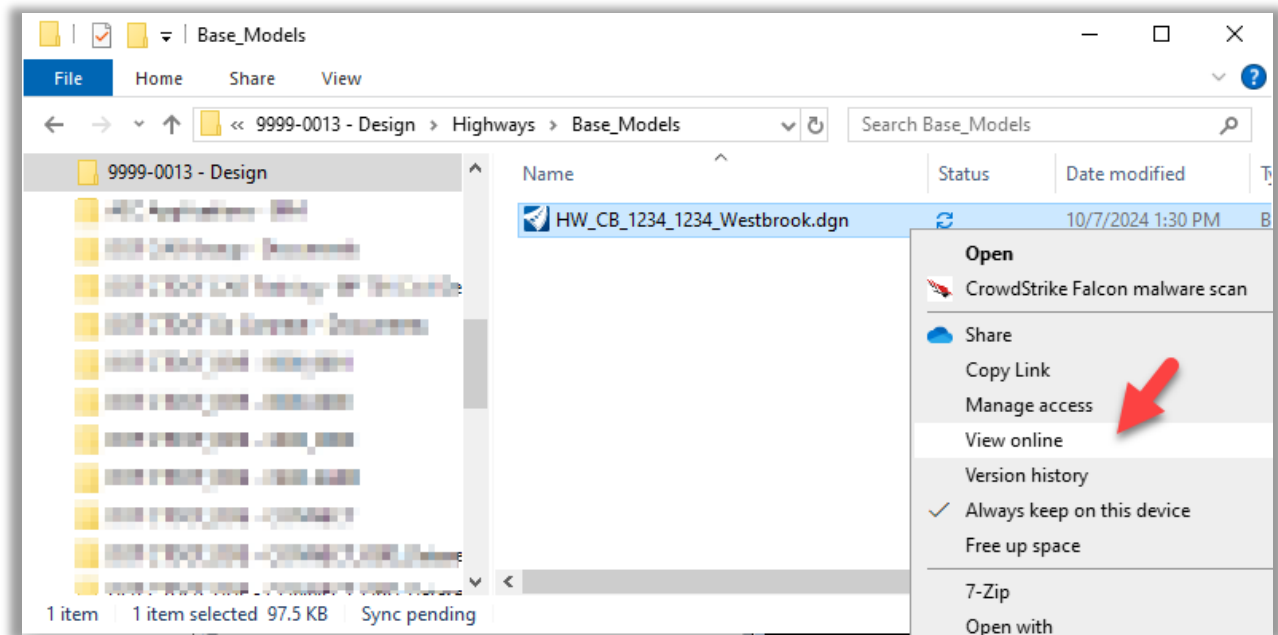


Figure 9 – File Explorer View online tool

- 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.

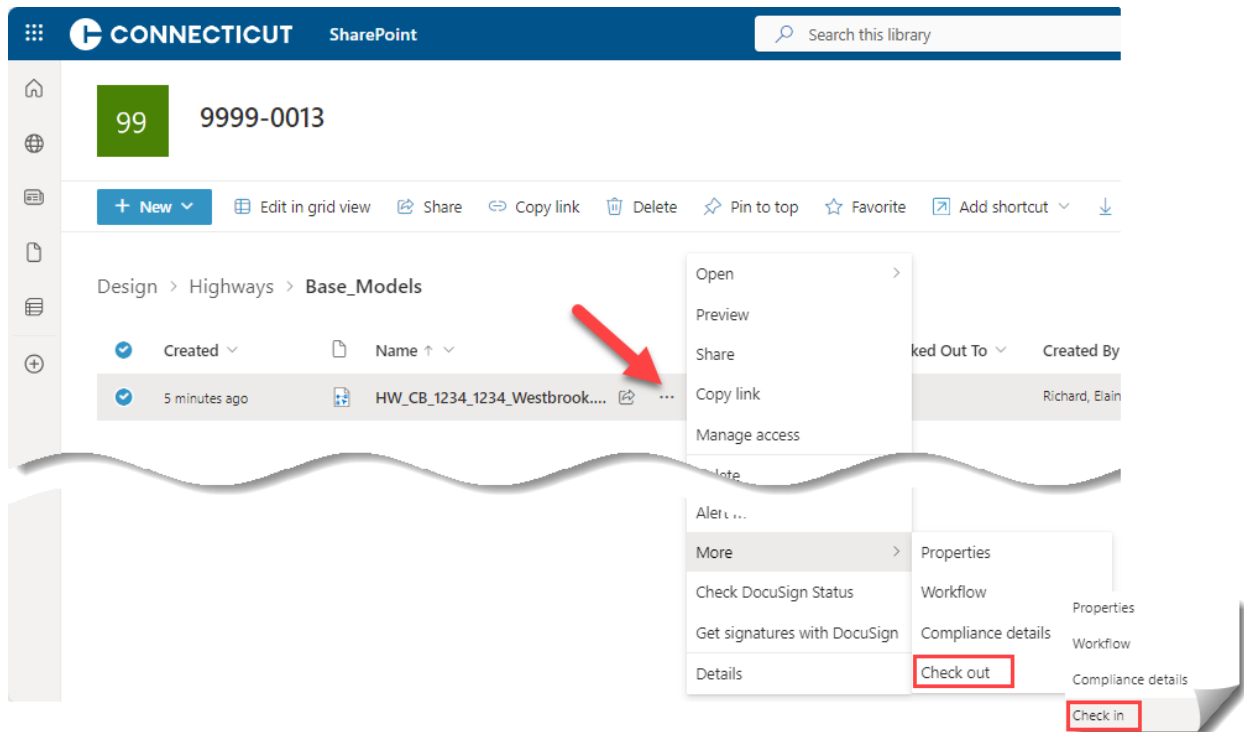


Figure 10 – SharePoint Check out

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.

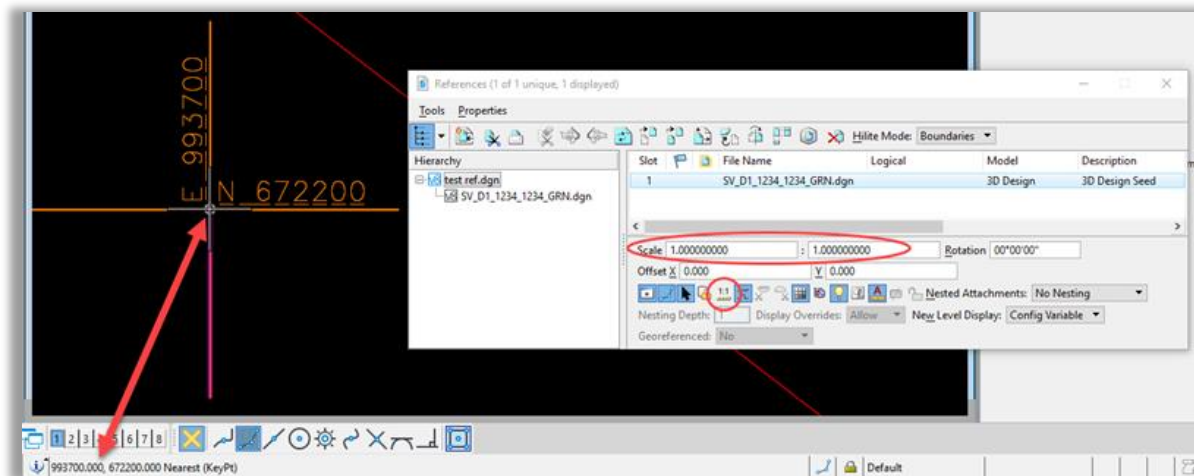


Figure 11 – Reference Coordinates

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 SYSTEM INFORMATION**.

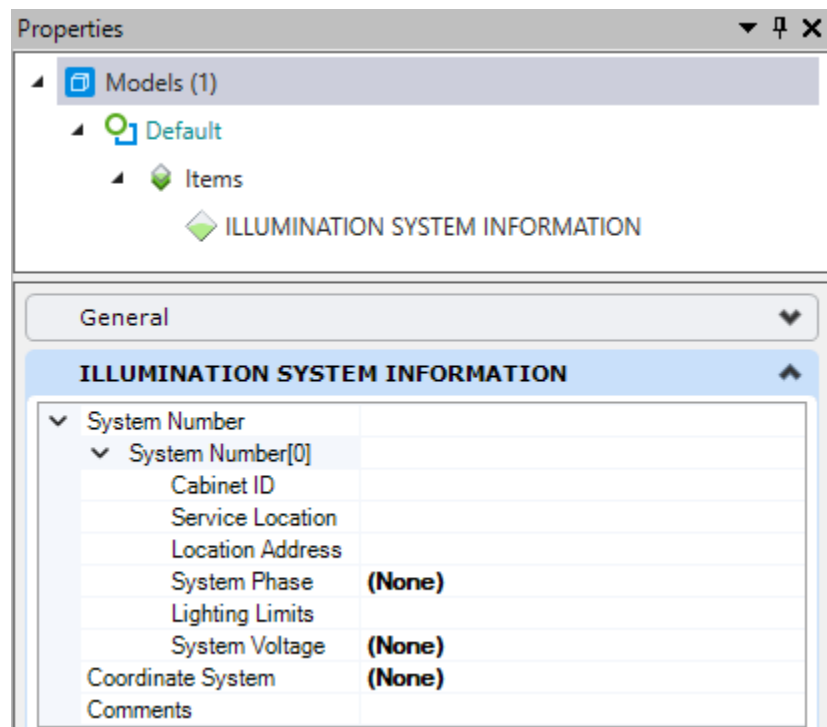


Figure 13 – System Information

2. If there are Multiple Systems to one file you can add entries. Right click over **System Number** and select **Add entry**.

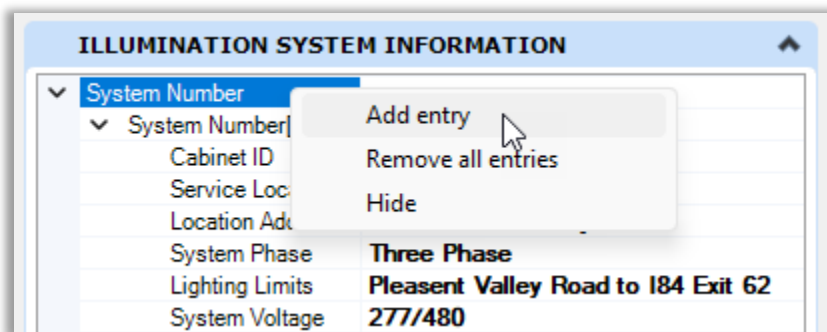


Figure 14 – Add Additional Systems

Volume 7 – OpenRoads Designer Roadway Illumination Base Modeling

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

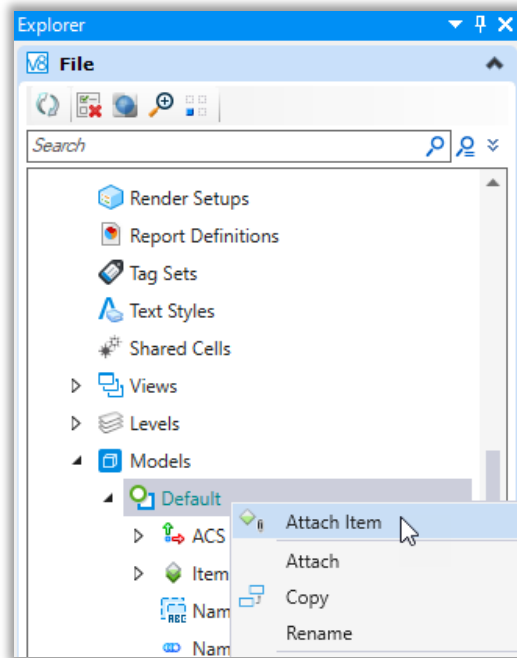


Figure 15 – Attach an Item Type

2. On the Attach Item dialog box select
Item Type: **illumination** | **ILLUMINATION SYSEM INFORMATION**
New properties will appear, fill each as required

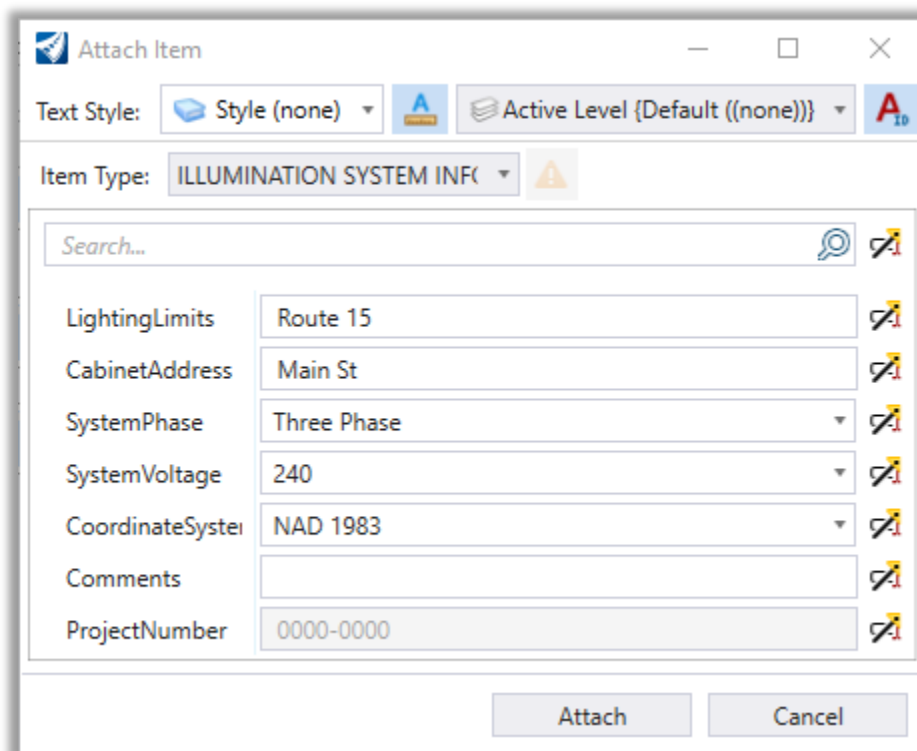


Figure 16 – Attache System Information

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.

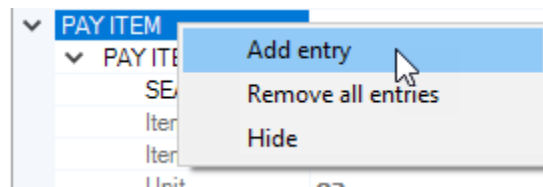


Figure 17 – Add Entry

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

Volume 7 – OpenRoads Designer Roadway Illumination Base Modeling

- 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.

Properties

Elements (1)

- Cell: ILL-LUM_18K_LED_35'_TB
 - Items
 - ILLUMINATION Light Standards
 - PAY ITEM - Light Standard
 - PAY ITEM - Light Standard Foundation
 - PAY ITEM - Light Standard Luminaire

General

Element Description	Cell: ILL-LUM_18K_LED_35'_TB
Cell Name	ILL-LUM_18K_LED_35'_TB
Cell Type	Graphic
Class	Primary
Number of elements	11
Template	(None)
Annotation Purpose	False
Is Annotation	False

Geometry

Extended

ILLUMINATION Light Standards

Pole Type	Transformer base
Status	NEW
Town	MANCHESTER
Town Number	076
Pole Number	2
Pole Label	076-2
Asset ID	076-2(0000-0001)
Circuit Number	1
Bridge ID	
Offset	A
Distribution	II
Phase	BC
Luminaire Output	18K
Bracket Length 1	6
Bracket Length 2	0
Pole Height In Feet	35
Luminaire Quantity	1
System Information ID	0
Cabinet ID	PVD_01
Service Location	Pleasant Valley Road
System Phase	Three Phase
System Voltage	277/480
Project Installed Under	0000-0001
Date Installed	
Comments	

PAY ITEM - Light Standard

SEARCH	
Item_Description	
Item_Number	
Unit	
Quantity	
Bracket_Length_1	
Bracket_Length_2	
Height	
Notes	

PAY ITEM - Light Standard

SEARCH	GHT STANDARD (10' BRACKET, 40' MOUNTING HEIGHT) ALUMINUM
Item_Description	
Item_Number	1003304
Unit	(None)
Quantity	
Bracket_Length_1	
Bracket_Length_2	
Height	
Notes	

PAY ITEM - Light Standard Foundation

SEARCH	
Item_Description	
Item_Number	
Unit	
Quantity	
Bracket_Length_1	
Bracket_Length_2	
Height	
Notes	

PAY ITEM - Light Standard

SEARCH	GHT STANDARD (10' BRACKET, 40' MOUNTING HEIGHT) ALUMINUM
Item_Description	
Item_Number	1003204
Unit	(None)
Quantity	
Bracket_Length_1	
Bracket_Length_2	
Height	
Notes	

PAY ITEM - Light Standard

SEARCH	Light Standard (10'
Item_Description	
Item_Number	1003254
Unit	(None)
Quantity	
Bracket_Length_1	
Bracket_Length_2	
Height	
Notes	

PAY ITEM - Light Standard

SEARCH	
Item_Description	
Item_Number	1005602
Unit	ea.
Quantity	1.0000
Lumen_K	18K
Notes	

Figure 18 – Light Standard Item Type

1.6 Place Conduits

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 select the **Attach Item** tool. Toggle on the needed Conduit Items.

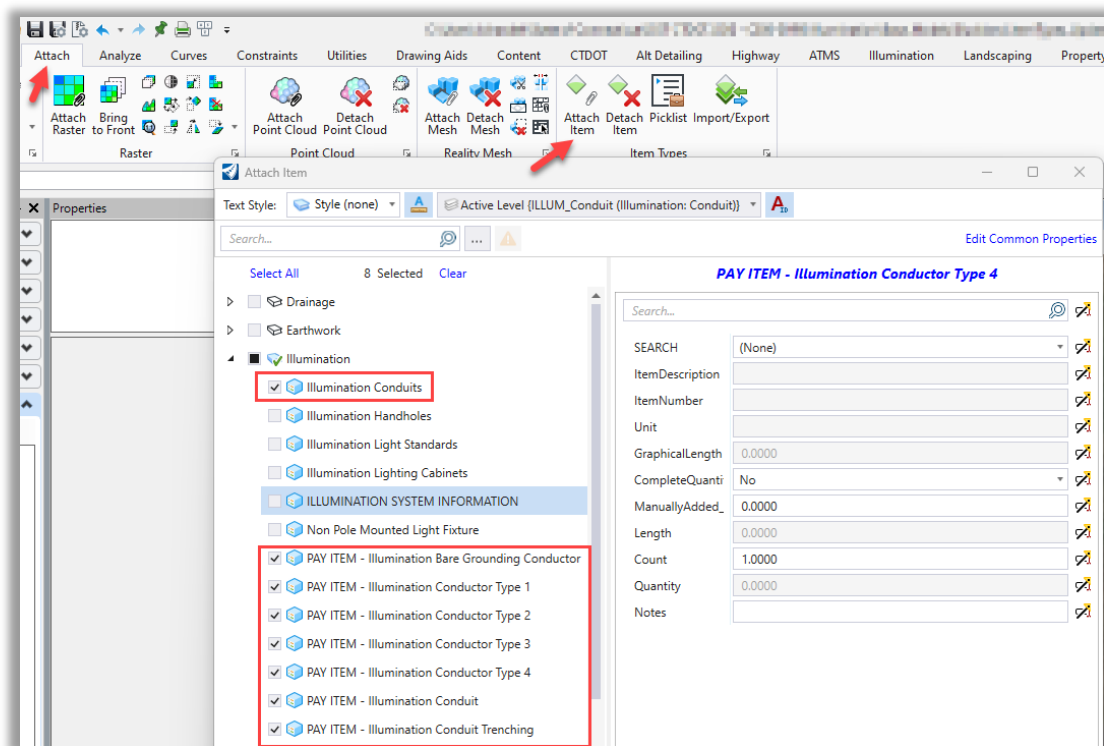
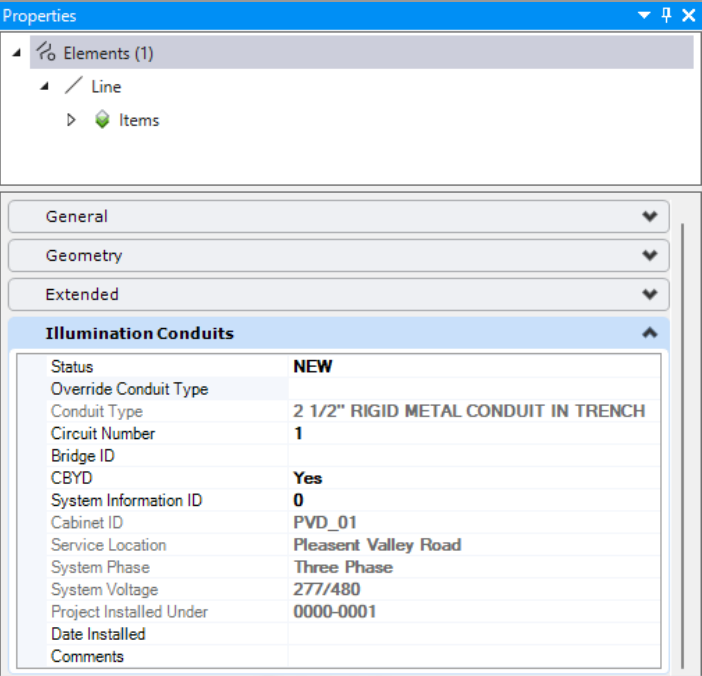


Figure 19 – Attach Item Type

3. Follow the Prompts and select a line representing a conduit. The Pay Item and Asset Tag is now assigned. .
4. Enter the Pay Items, filter by entering either the Pay Item Description or Pay Item Number in the **SEARCH** field.
5. Enter the Asset Information.



Asset Information

Pay Items

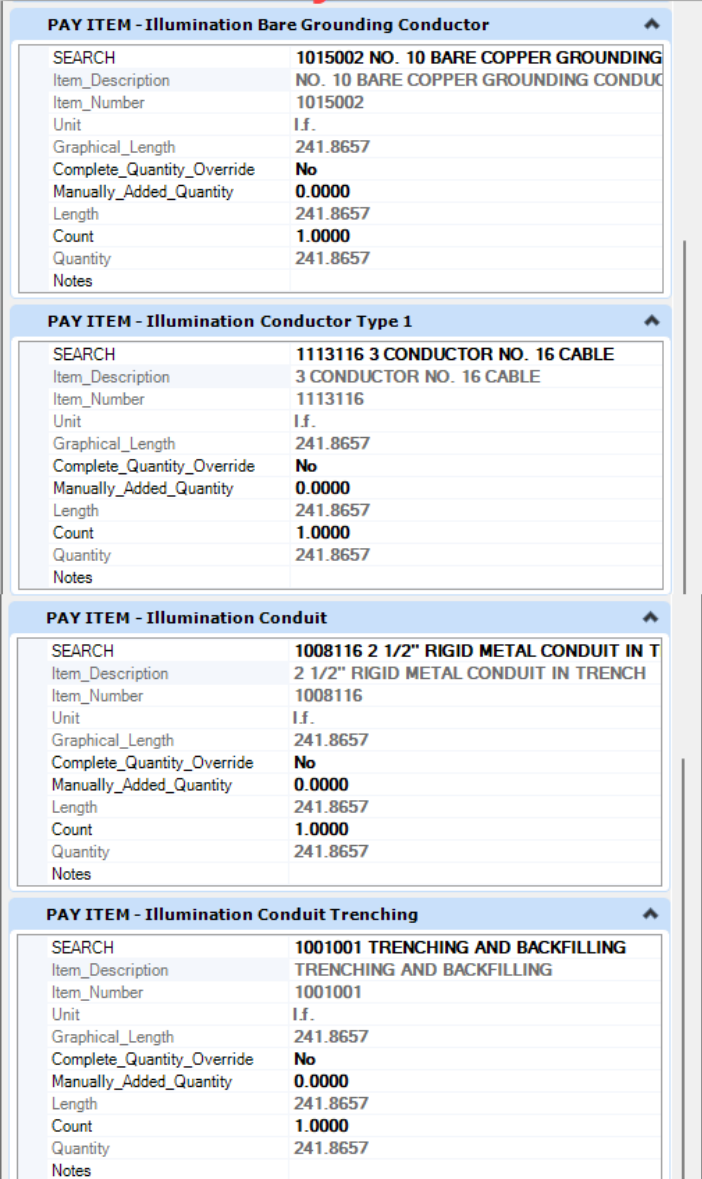


Figure 20 – Conduit Item Type