Intelligent

MUTCD

Management

Manual

CESS LLC

01/01/2017

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1. INTRODUCTION

1.1 What is Intelligent MUTCD Management?

Intelligent MUTCD Management (IMM) is a smart and user-friendly engineering software that was exclusively developed for civil engineers by the civil engineers at CESS LLC. IMM Software presents a groundbreaking approach in providing a reliable yet easy-to-use solution that integrates the cutting-edge computer engineering technologies with our extensive experience in the planning, design and construction of numerous civil engineering projects. The powerful features of IMM software have enabled us as well as our clients to maximize the efficiency and productivity in a timely and cost effective manner.

IMM can not only manage all signs in MUTCD, but also generate Traffic Control Plans in MicroStation according to different typical applications listed in MUTCD, as well quantity takeoff and cost estimation are generated automatically.

IMM can also adjust location and angle of signs automatically, and check locations of signs whether they meet the criteria or standards.

Additionally, IMM can synchronize signs in database with design file. All signs in design file are tracked and connect to the database, and all signs are updated automatically if any single sign is changed, which saves a significant amount of time and budget.

IMM Software is an effective and sophisticated tool for temporary traffic control plan, and traffic signs plan for new roads. No matter how large the project, all tasks can be completed in a few minutes, which can significantly improve the efficiency.

1.2 Features of Intelligent MUTCD Management (IMM)

Plug and Play - When users install the software, they can use it immediately. CESS LLC provides almost all information including signs, cell libraries, templates, etc.

Once-For-All - Signs, cell libraries, templates, and reference books, etc. are registered one time, and they will be used for all projects in the future.

Easy Use and Full Automatic - User just needs to select templates, and set alignments and reference points, and all tasks will be done automatically.

Efficient and Time Saving - No matter how large the project, all tasks can be finished in minutes.

Synchronized - All signs information is synchronized to the database, which can be tracked and managed in database.

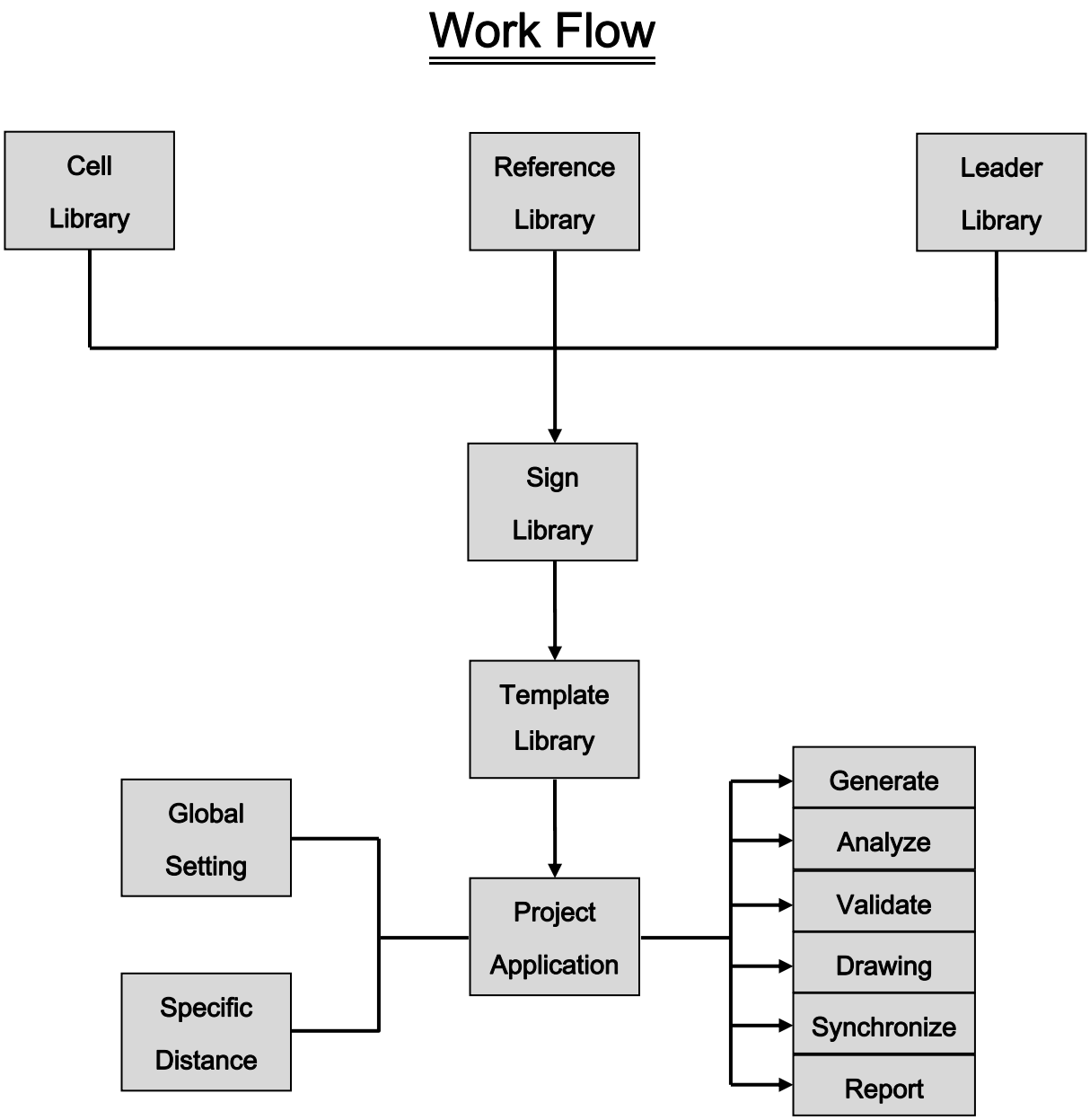
Flexible and Accurate - All signs are placed in the exact location, and exactly angled along the sign path.

User Log - All operations in the software are recorded and log into the system

Fully Integrated with CAD Platforms - All operations are in MicroStation.

C/S Architecture - Client and Server architecture is applied: IMM is installed on client computer, but database is stored in the CESS Server and maintained by CESS LLC.

1.3 Work Flow of IMM



2. Account Management

2.1 Register Account

When Application starts, login interface displays as shown below.

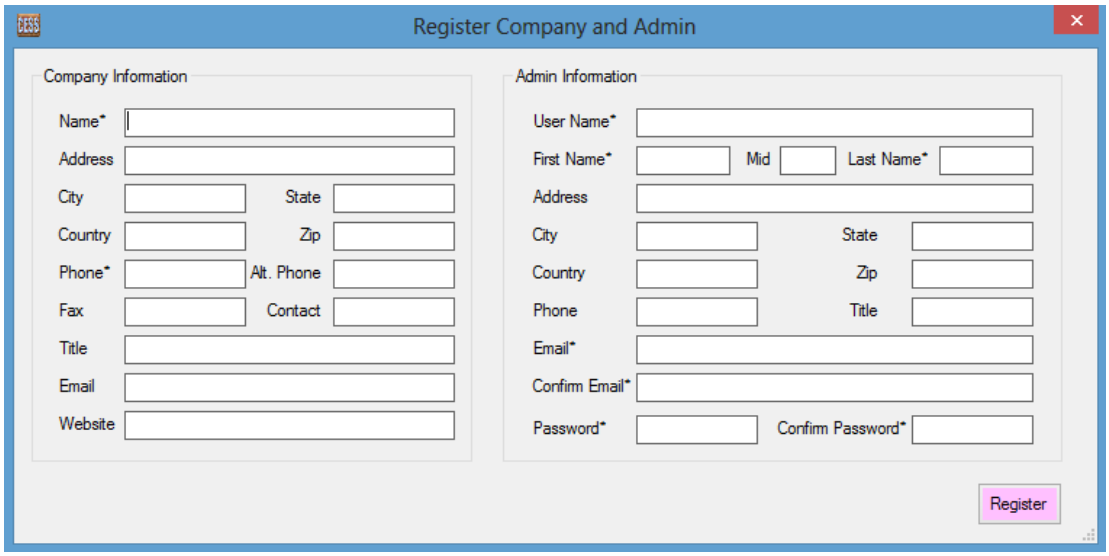
As a regular user, input your user name and password to login the application; Otherwise you need contact your administrator to register an account for you.

As an administrator, if you are using the software at first time, you need to register your account and your company by clicking ***Register*** button.

Following is the interface for registering the company and administrator information.

All items with star (*) symbol are required, and others are optional. Make sure that email is correct because all update information and announcements will be sent to the email.

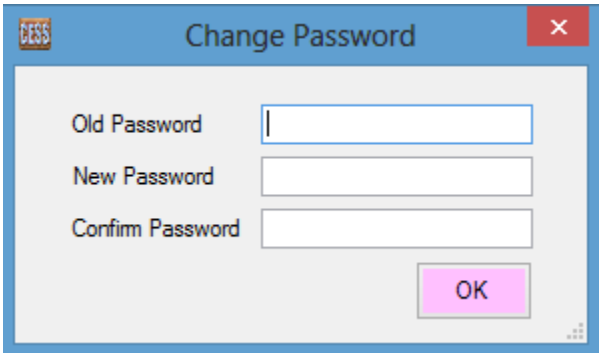
Once you register successfully as admin, you can create accounts for your staffs.



2.2 Manage Account

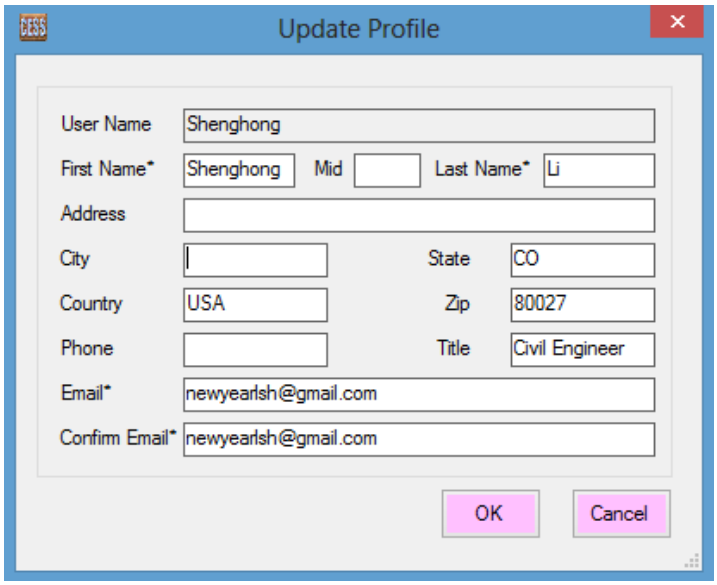
2.2.1 Change Password

Click ***Account*** --> ***Change Password***, and users can change their password.



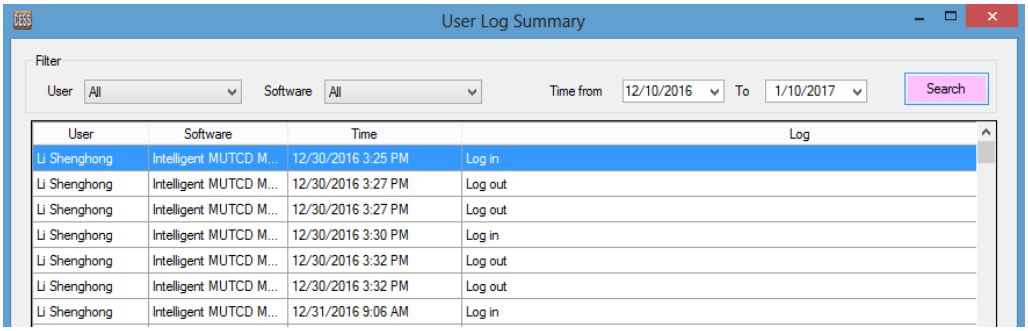
2.2.2 Update Profile

Click ***Account*** --> ***Update Profile***, and users can update their profile.



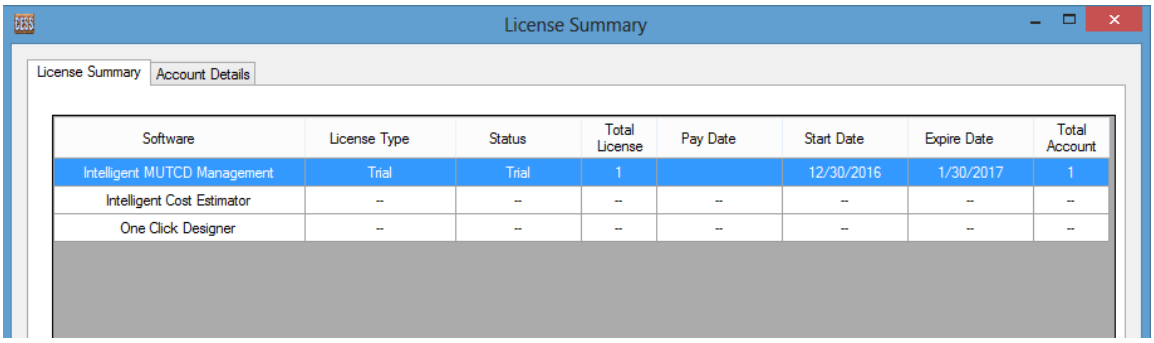
2.2.3 User Log Summary

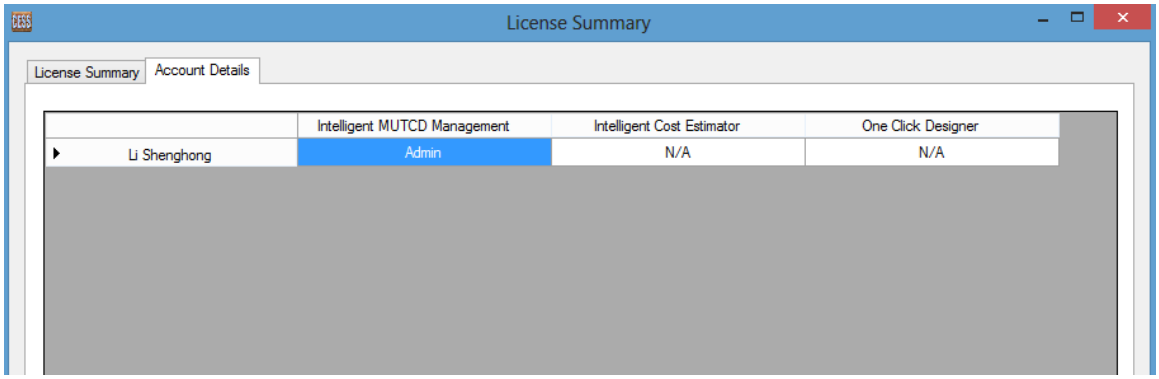
Click ***Account -->Log Summary***, admin can search user log by software and time period.



2.2.4 License Summary

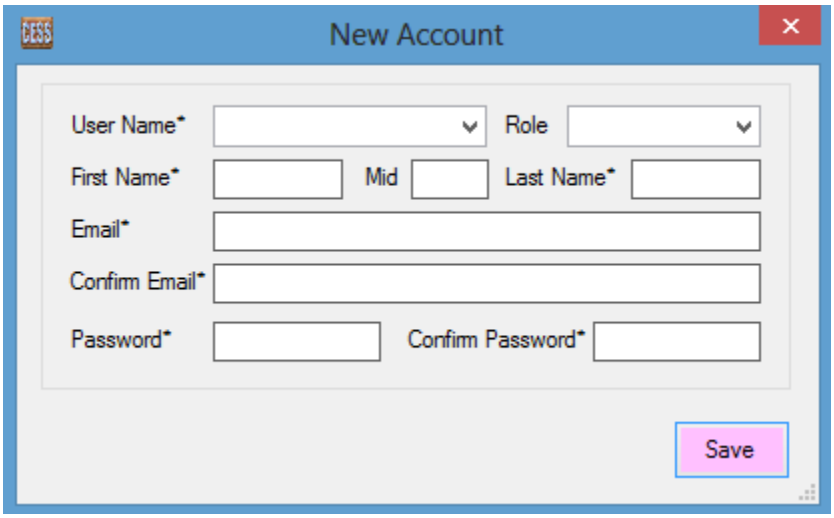
Click ***Account -->License Summary***, admin can review license status and accounts.





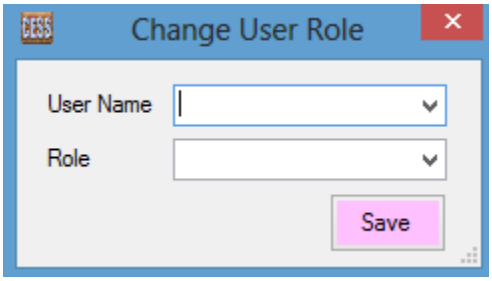
2.2.5 Create New Account

Click ***Account -->Add New Account***, admin can create new accounts, and set initial passwords for them. Users can change their passwords and update profiles as introduced in 2.2--Manage Your Account.



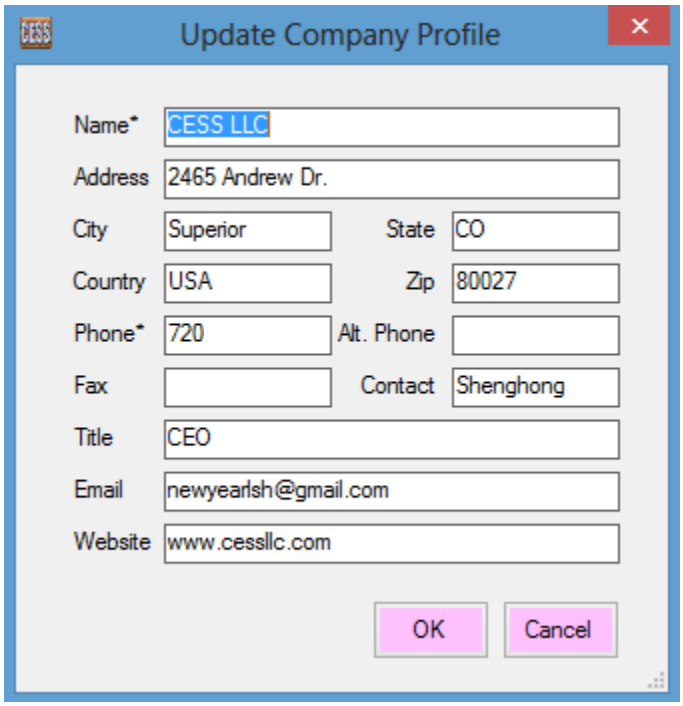
2.2.6 Change User Role

Click ***Account -->Change User Role***, admin can change the role of user.



2.2.7 Update Company Profile

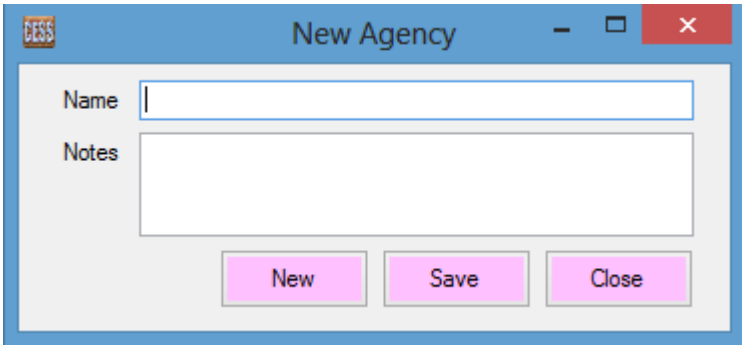
Click ***Account -->Update Company Profile***, admin can update company profile.


Update Company Profile
Name*
CESS LLC
Address
2465 Andrew Dr.
City
Superior
State
CO
Country
USA
Zip
80027
Phone*
720
Alt. Phone
Fax
Contact
Shenghong
Title
CEO
Email
newyearlsh@gmail.com
Website
www.cessllc.com
OK
Cancel

3. Agency

3.1 New / Edit Agency

In this interface below, users can easily add, or modify agency.

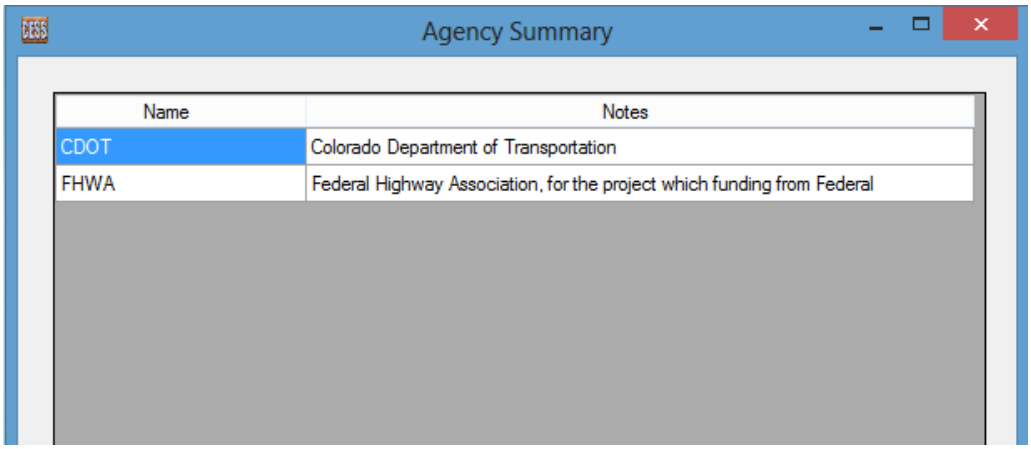


3.2. Agency List

In this interface, all registered agencies are listed. Right click on the data grid, a menu with two sub-menu displays: Edit and Remove.

Using ***Edit*** function, user can edit the agency selected.

Using ***Remove*** function, user can remove the selected agency.

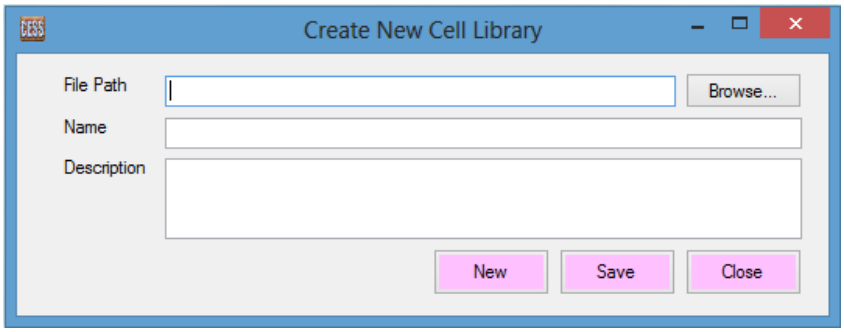


In this module, all signs of selected agency are listed. Double click a sign name, and sign photo displays.

4. Cell Library

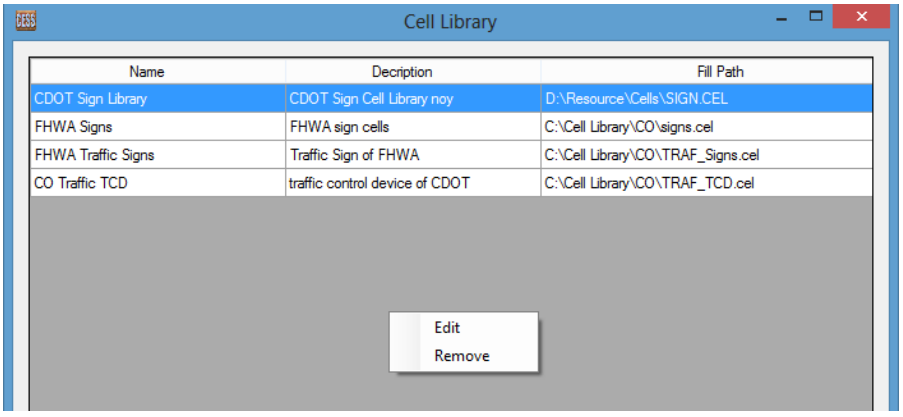
4.1 New / Edit Cell Library

In this interface, users can easily add or modify cell library. To create a new cell library, click ***Browse...*** button and select a cell file, then input the name and description of the cell library, finally click ***Save*** button.



4.2 Cell Library List

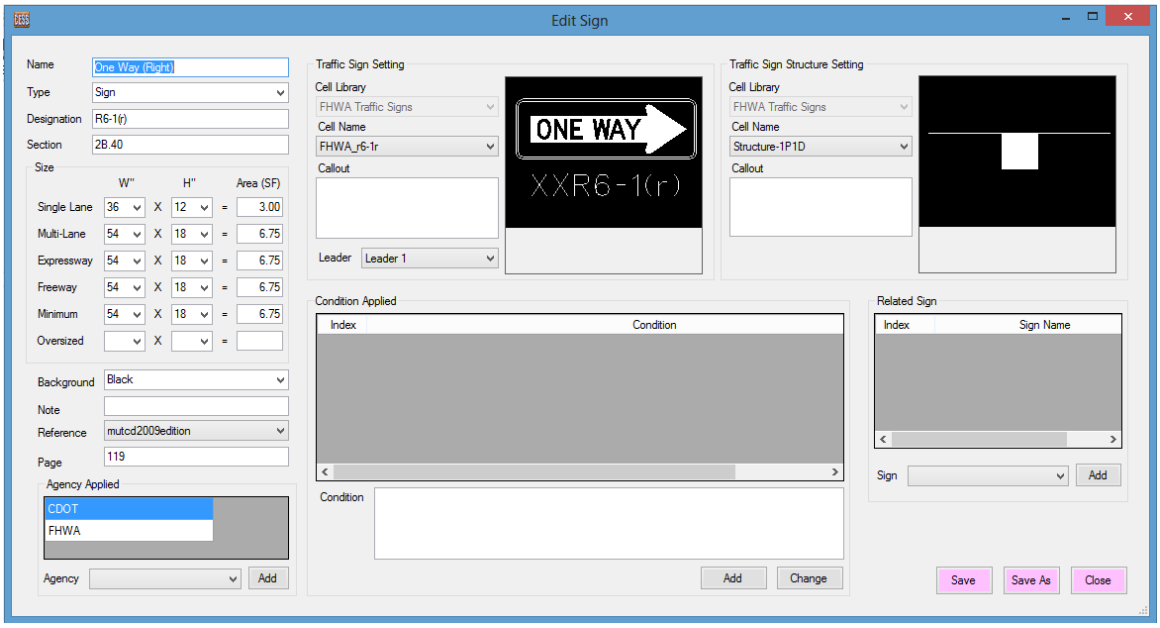
In this interface, all registered cell libraries are listed. Right click on the data grid, a menu with two sub-menu displays: ***Edit*** and ***Remove***. Using these functions, cell library can be edited or removed.



5. Sign Library

5.1 New / Edit Sign

In this interface below, user can either create a new sign or edit a sign.



Besides inputting basic informaton about a sign, the cell, and sign structure need to be assigned: select a registered cell library, and select a cell for sign, similar as sign structure. Once the cell is selected, the previous image displays in the photo box.

To specify the agency applied, an agency need to be selected from combo box and click ***Add*** button. To remove an agency, right click on data grid, a menu with ***Remove*** function displays, then click it, and the agency is removed. Similar as Condition and Related Sign.

Click ***Save*** button to save the sign to database

If another sign is similar, don't close the window, just change some items,then click ***Save As*** button, a new sign will be saved.

5.2 Sign Library

In this module, all registered signs are listed. Right click on the data grid, a menu with five sub-menus displays: ***Details***, ***Edit***, ***Remove, local reference, and web reference***.

Details: Sign details display.

Edit: Edit the selected sign.

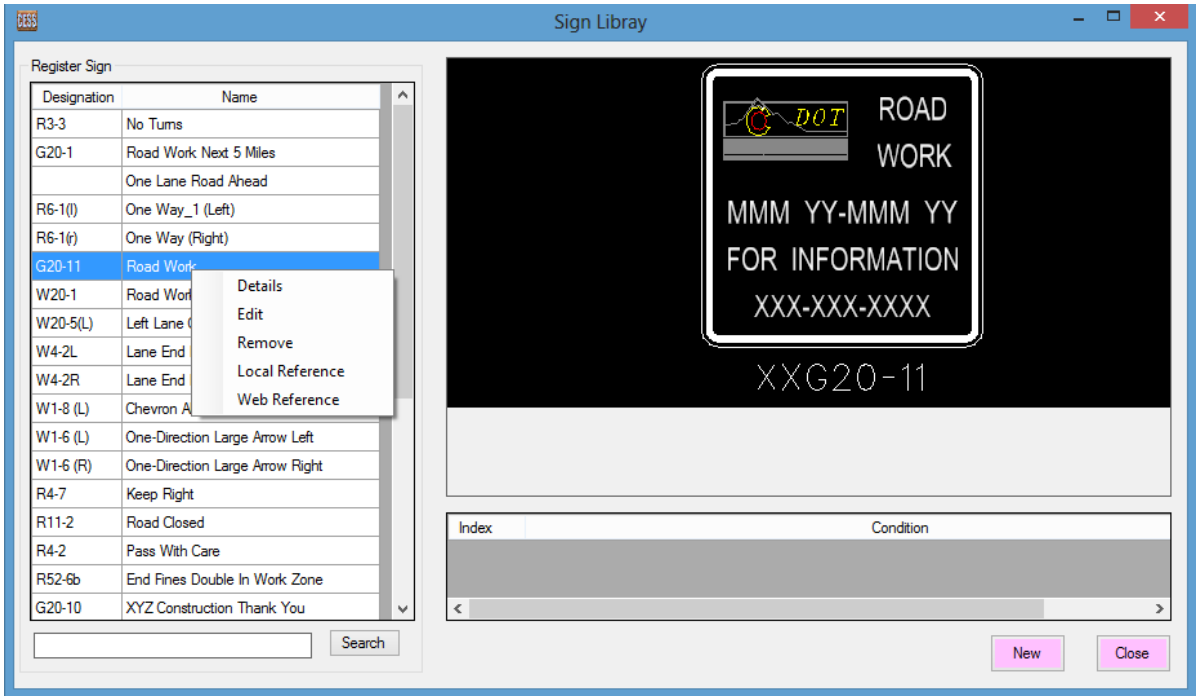
Remove: Remove selected sign (only sign that is never used in the application or template).

Local Reference: Open reference book saved in local disk of selected sign.

Web Reference: Open reference book from website.

Search A Sign: Inputting letters in search textbox, then click ***Search*** button, all signs containing the letters will be filtered and displayed in data grid.

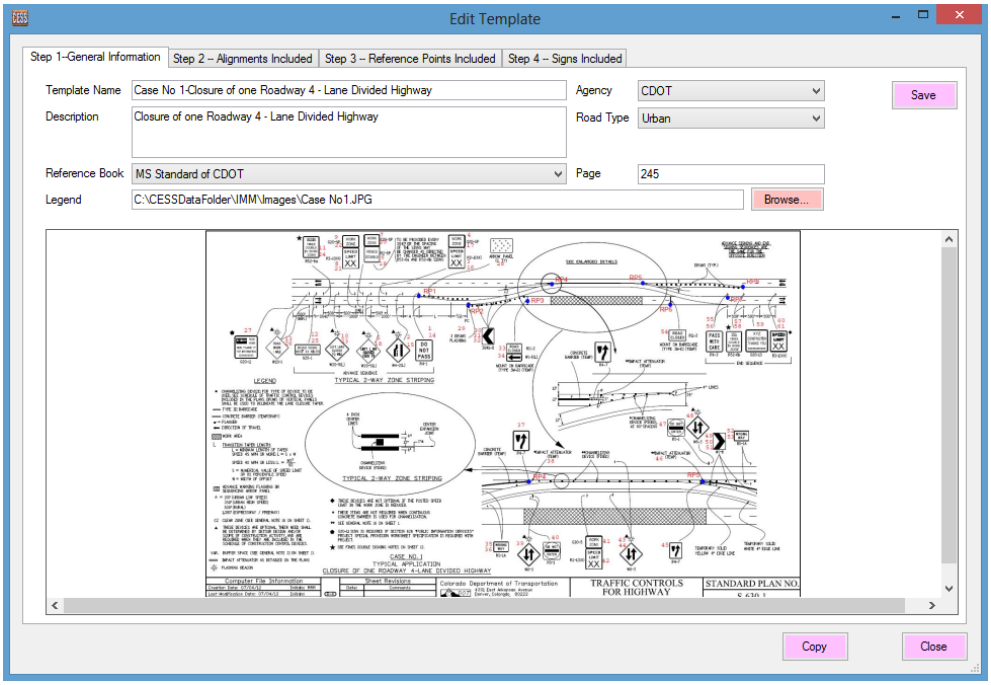
Click ***New*** button, user can create a new sign.



6. Template Library

6.1 New / Edit Template

In this module, user can create a new template or edit a template.



To create a new Template, four steps need to follow: 1. General information; 2. Alignments; 3. Reference Points; 4. Signs.

Step 1: General Information

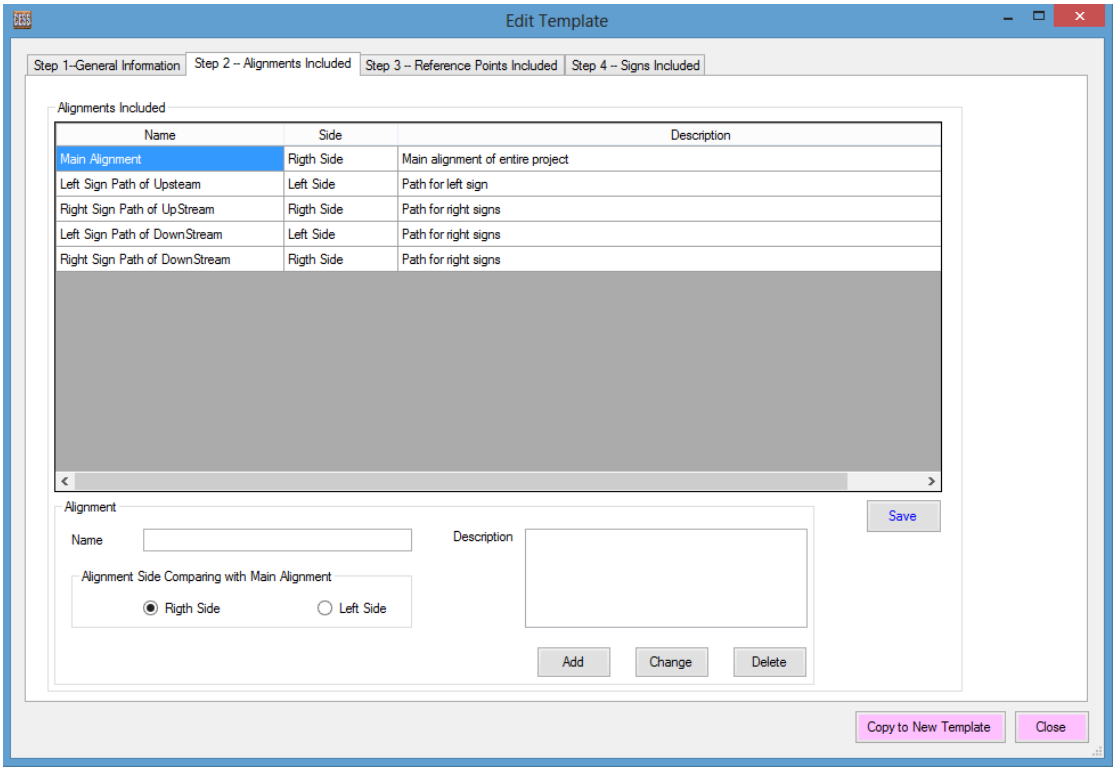
Input basic information of the template, then select an image file for legend, and image will display. Using mouse to scroll up and down, Image can be zoomed in, zoomed out, or moved. Double click the image, and it will be reset to original size.

Step 2: Alignment Included

Alignments can be added, edited, or removed from template. For a new template, user need input name, side, and description. Alignment name should be unique, if side set as RIGHT, signs

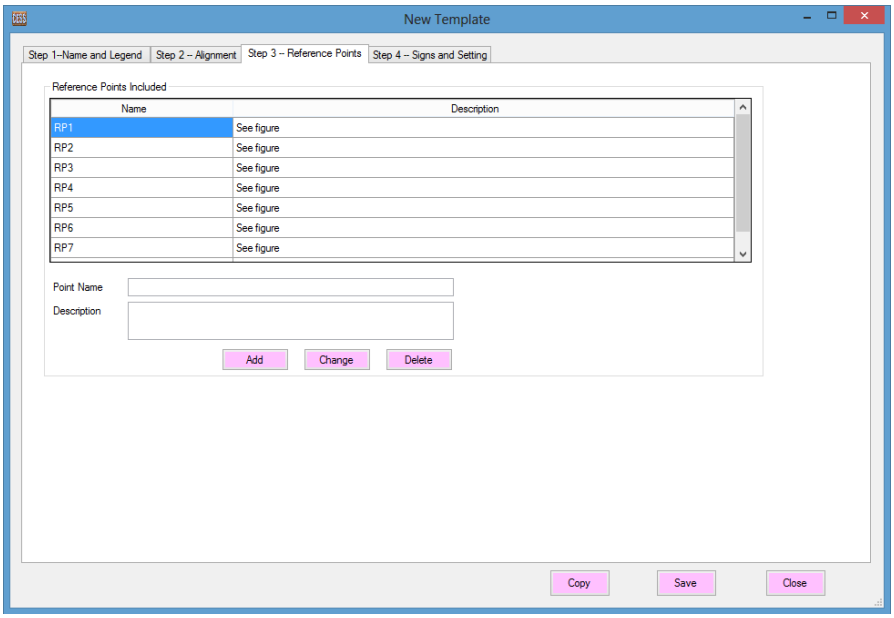
will be placed on right side of main alignment, otherwise signs will be placed on left side when they applied in real application.

Technically, at lease two kinds of alignments are needed for a template: main alignment of the project and a sign path. Additional alignments can be added if needed for different templates.



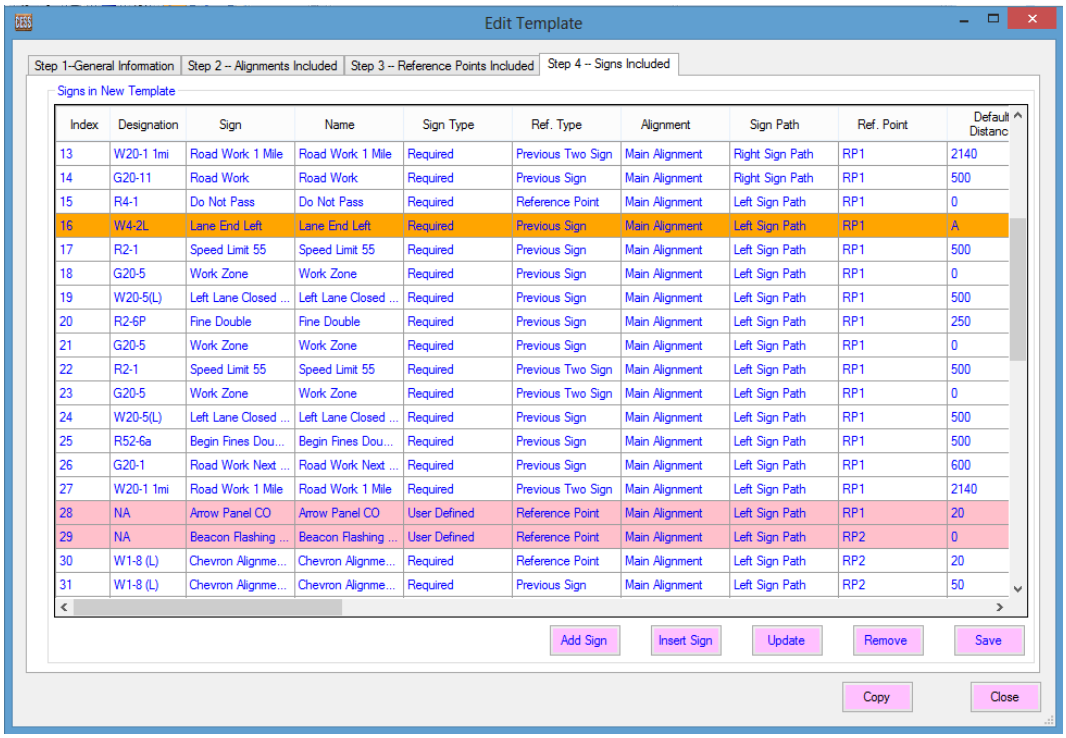
Step 3: Reference Points Included

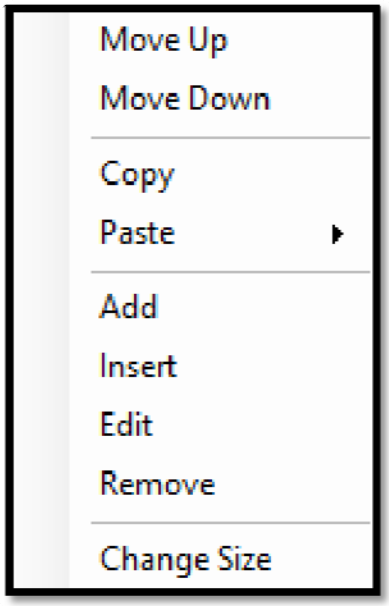
Reference Points can be added, edited, or removed from template. Only name and description need to be provided for template. (comparing with reference points of application in project, reference point in template don't need to be specified from DGN file). Technically, at lease one reference point is needed for one template. And additional reference points can be added if needed for different templates.



Step 4: Signs Included

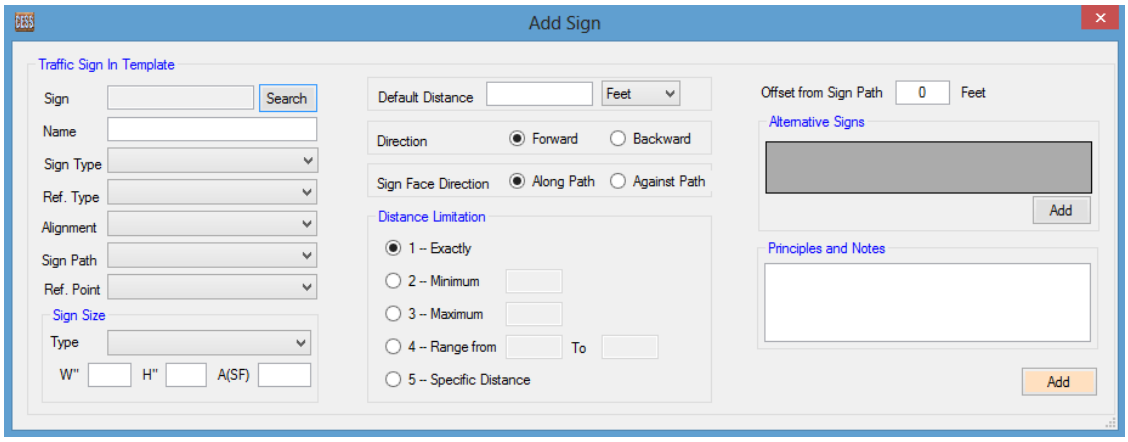
All signs in template are listed in data grid. signs without background are regular, and signs with pink background are user defined, which is not counted in quantity takeoff, and signs with orange background need pay more attention because the default distance are specified and it varies according to design speed and offset width of the project.





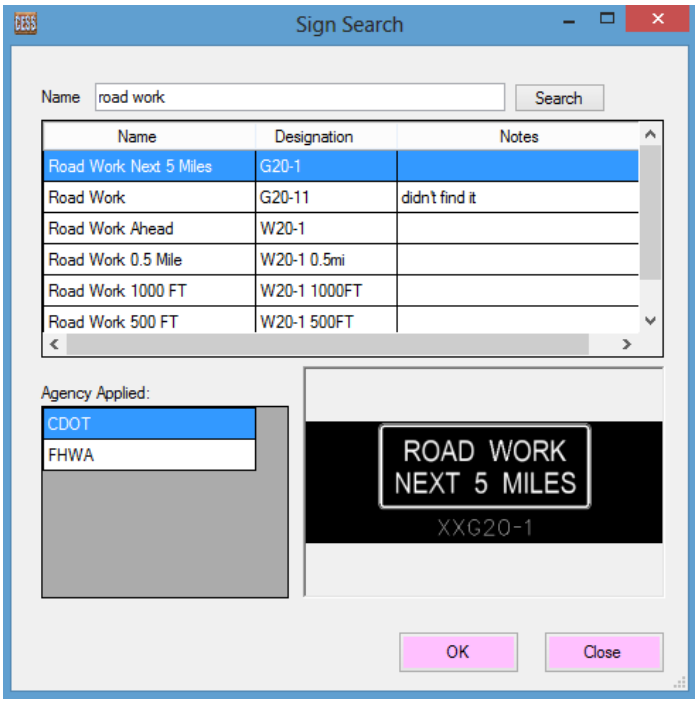
- Move Up /Down: Move current sign up or down.
- Copy: Copy all selected signs.
- Paste:
  1. By Order: paste all selected signs to specified location in order.
  2. Revised: paste all selected signs to specified location in revised order.
  3. To end by order: paste all signs to end.
  4. To End Revised: paste all signs to end revised.
- Add: Add a sign to template by the end.
- Insert: Insert a sign to specified location
- Edit: Edit a sign in the template.
- Remove: Remove a sign from the template.
- Change Size: change size for all signs in template

In this module, signs can be added, inserted, updated, or removed. Following will introduce how to add a new sign to the template:



1. Sign Name:

Clicking ***Search*** button and open Sign Search interface. The signs that whose name or designation contains the letters in search text box are listed, and all registered signs are listed if search text box is blank. Select a sign then click ***OK*** button.



2. Sign Type:

- *Required*: Sign is required in the template.
- Recommended: Sign is recommended in the template.
- *Optional*: Sign is optional and not required.
- *User Defined*: Sign is defined by user, it is not counted in when quantity takeoff.

3. Reference Type:

- *Reference Point: Location of current sign is associated to one of reference point in template.*
- *Previous Sign: Location of current sign is associated to previous sign.*
- *Next Sign: Location of current sign is associated to next sign.*
- *Previous Two Sign: Location of current sign is associated to previous two sign.*
- *Next Two Sign: Location of current sign is associated to next two sign.*
- *Previous Three Sign: Location of current sign is associated to previous three sign.*
- *Next Three Sign: Location of current sign is associated to next three sign.*
- *Manual Pick: If sign location cannot be determined, Manual Pick can be set for Reference Type.*

4. Alignment: Select alignment from alignments in template, which is used for quantity takeoff detail.

5. Sign Path: Select an alignment in template as sign path, and it is vital because all sign will be followed the path.

6. Reference Point: Reference Point needs to be assigned for a sign if reference type is set as reference point. Otherwise it does not matter whatever point is selected.

7. Sign Size: Width and height will be loaded automatically when size type is selected.

8. Default Distance: Distance from current sign to associated sign or reference point along the specified sign. Only two units are provided for distance: Feet and Mile.

9. Direction: When direction of sign path is same as main alignment direction, direction set as "Forward", otherwise set as "Backward".

10. Sign Face Direction: When driving along sign path (station number increasing), if sign faces to driver, Sign Face Direction set as "Along Path", otherwise set as "Against Path".

11. Distance Limitation:

- *Exactly: Distance is exactly from referred sign or reference point.*
- *Minimum: Set minimum distance from current sign to referred sign or reference point.*
- *Maximum: Set maximum distance from current sign to referred sign or reference point.*
- *Range from: Set range of distance from current sign to referred sign or reference point.*
- *Specific Distance: Distance is depended on Speed or specific distance. If default distance is not number, specific distance should be selected.*

12. Offset from Sign Path: Distance from sign to sign path.

13. Alternative Sign: Add alternative sign for current sign.

14. Principle and Note: Input principle and note for the sign.

Click ***Add*** button, a new sign adds to the end of data grid.

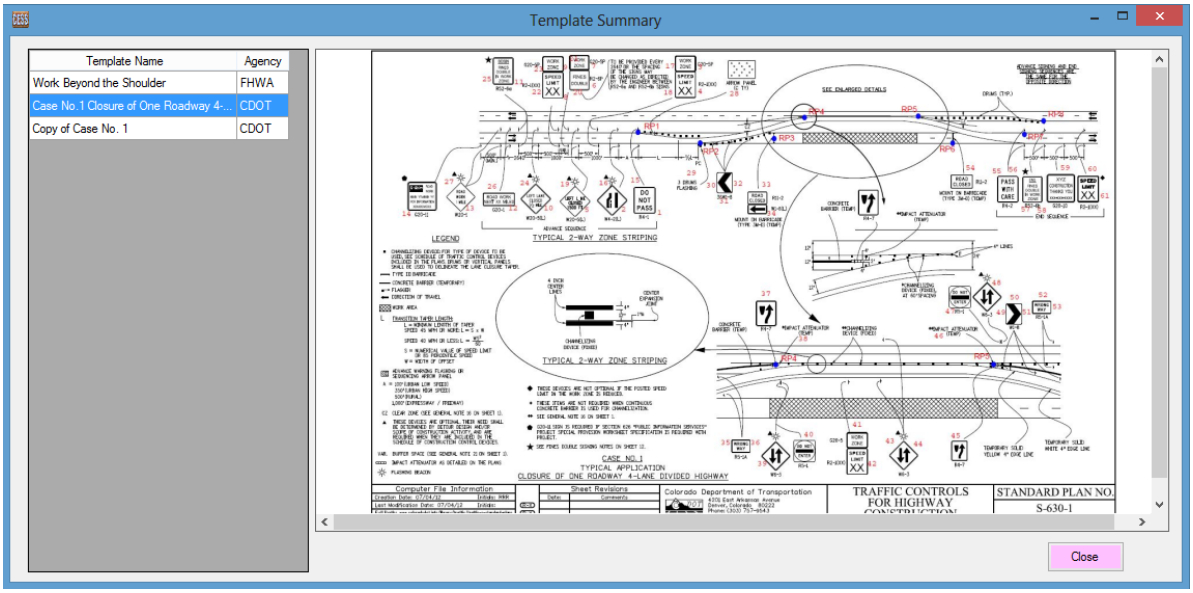
Click ***Insert*** button, a new sign insert to the data grid ahead of the current sign.

To adjust order or remove signs in data grid, right click on data grid, and select functions to complete. Once all steps complete, click ***Save*** button to save the template.

If another template is similar to current template, open existing template and edit it, then click ***Copy*** button, new template will be saved.

6.2 Template Library

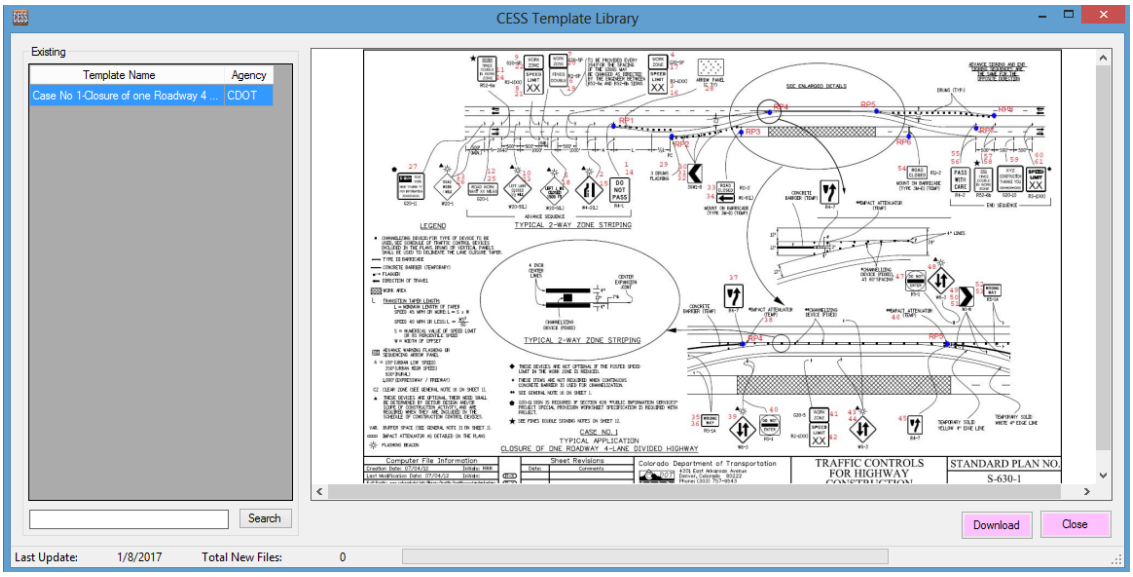
In this module, all registered templates are listed. Right click on the data grid, a menu with two sub-menus displays: ***Edit***, ***Remove***. Using these two functions, the template can be edited or removed.



6.3 CESS Template Library

In this module, all templates provided by CESS LLC are listed.

On bottom left, user can search template by inputting keywords or some letters into the textbox, and click ***Search*** button, then templates containing the keyword or letters are filtered and listed in the data grid.

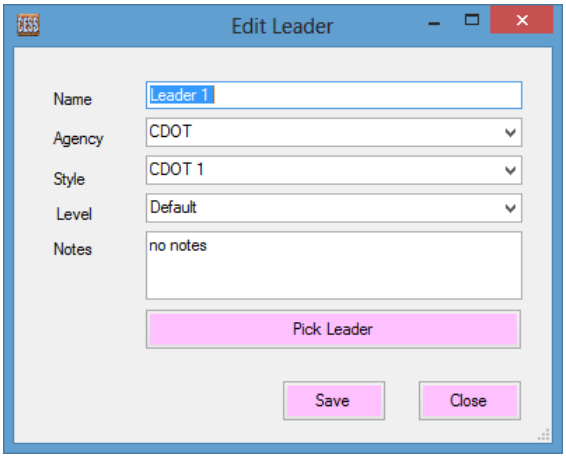

CESS Template Library
Existing
Template Name
Agency
Case No 1-Closure of one Roadway 4 ...
CDOT
Search
Download
Close
Last Update:
1/8/2017
Total New Files:
0
TYPICAL 2-WAY ZONE STRIPING
CASE NO. I
TYPICAL APPLICATION
CLOSURE OF ONE ROADWAY 4-LANE DIVIDED HIGHWAY
TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION
STANDARD PLAN NO.
S-630-1

7. Leader Library

7.1 New / Edit Leader

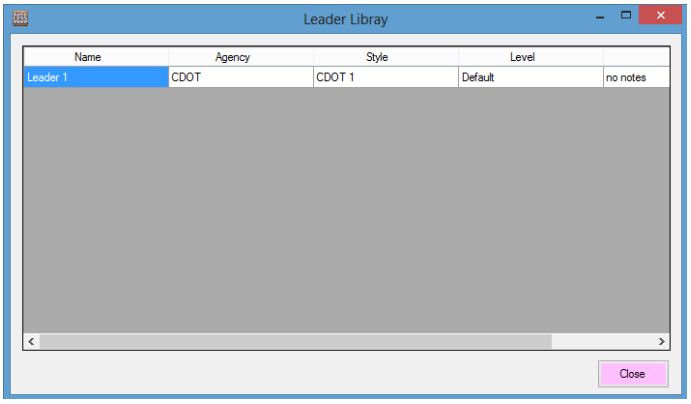
In this interface, user can create a new leader or edit a leader. All information of leader need to be provided, such as Name, Agency, Style, Level, and Notes. If user knows Style and Level of leader, select them from combo box, otherwise, click ***Pick Leader*** button, and select Leader object from Microstation file, Style and level of leader are loaded automatically.

Click ***Save*** button to save the leader to database.



7.2 Leader Library

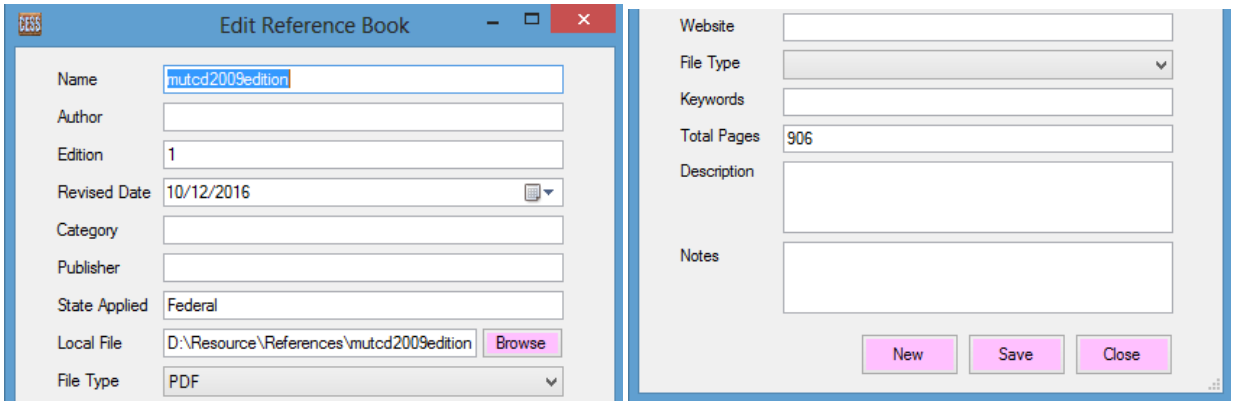
In this module, all registered leaders are listed in data grid. Right click on it, a menu with two sub-menus displays: ***Edit***, ***Remove***. Using these two functions, the template can be edited or removed.



8. Reference Book Library

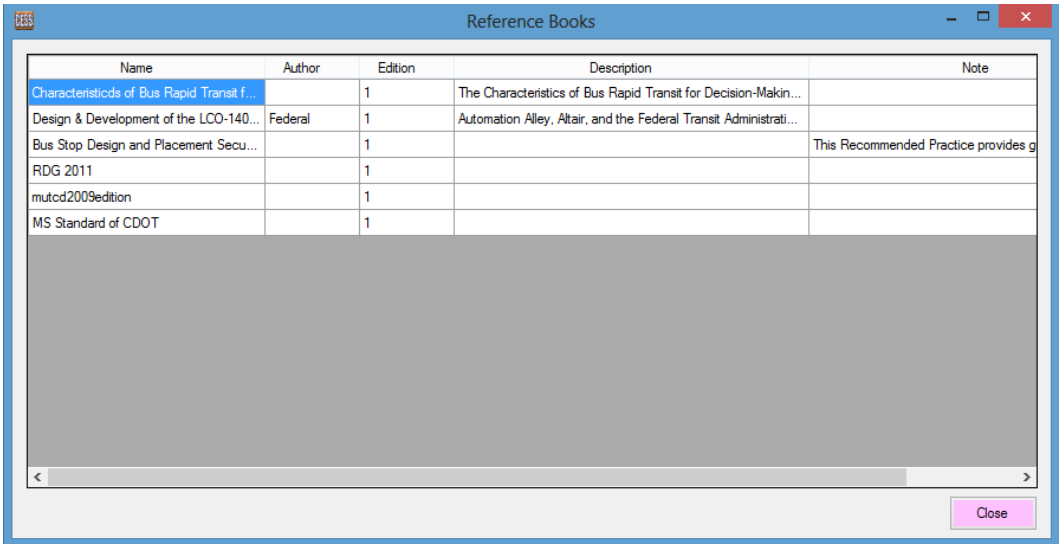
8.1 New / Edit Reference Book

In this interface, user can add, or edit a reference book. Click ***Save*** button to save the reference book



8.2 Reference Book List

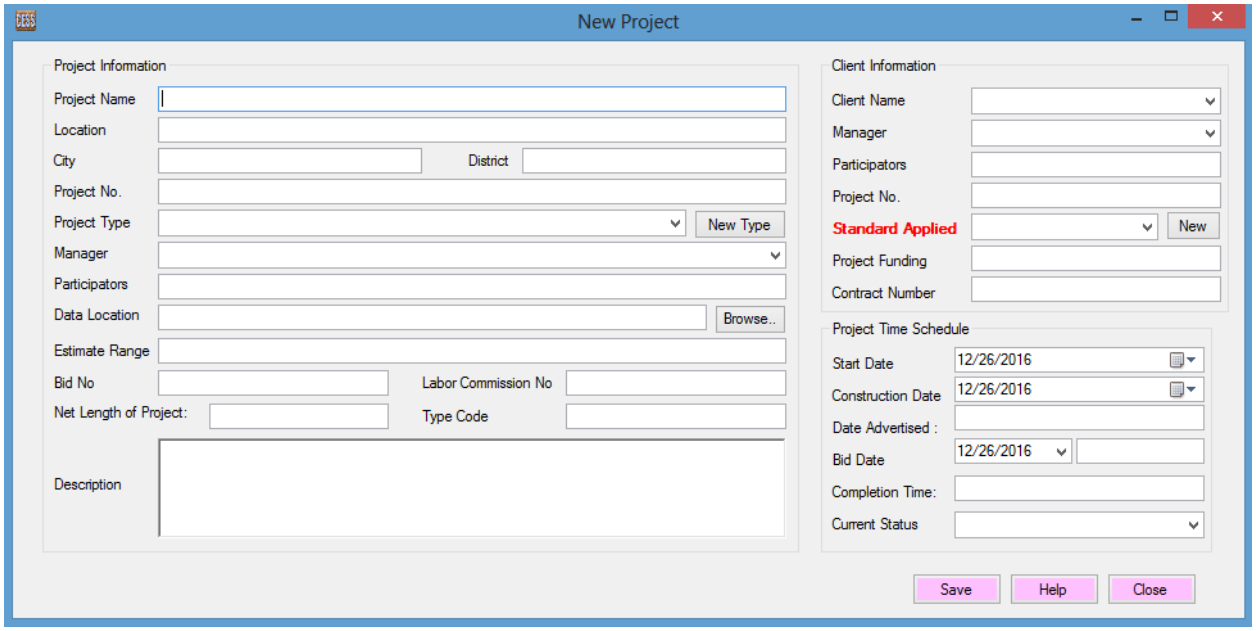
In this module, all registered reference books are listed in the data grid. Right click on it, a menu displays and user can use those functions to edit/remove the reference book. Users also can open the reference book from local disk or from internet.



9. Project Management

9.1 New / Edit Project

To add a new project, click ***New Project*** sub menu, then input new project information, and click the ***Save*** button once input is completed.



9.2 Project List

In this interface, all existing projects are listed. Right click on the data grid, a menu with two sub-menus displays: ***Refresh*** and ***Set as Working Project***.

Using ***Refresh*** function, user can reload all projects to data grid.

Using ***Set as Working Project*** function, users can set the project as working project temporarily.

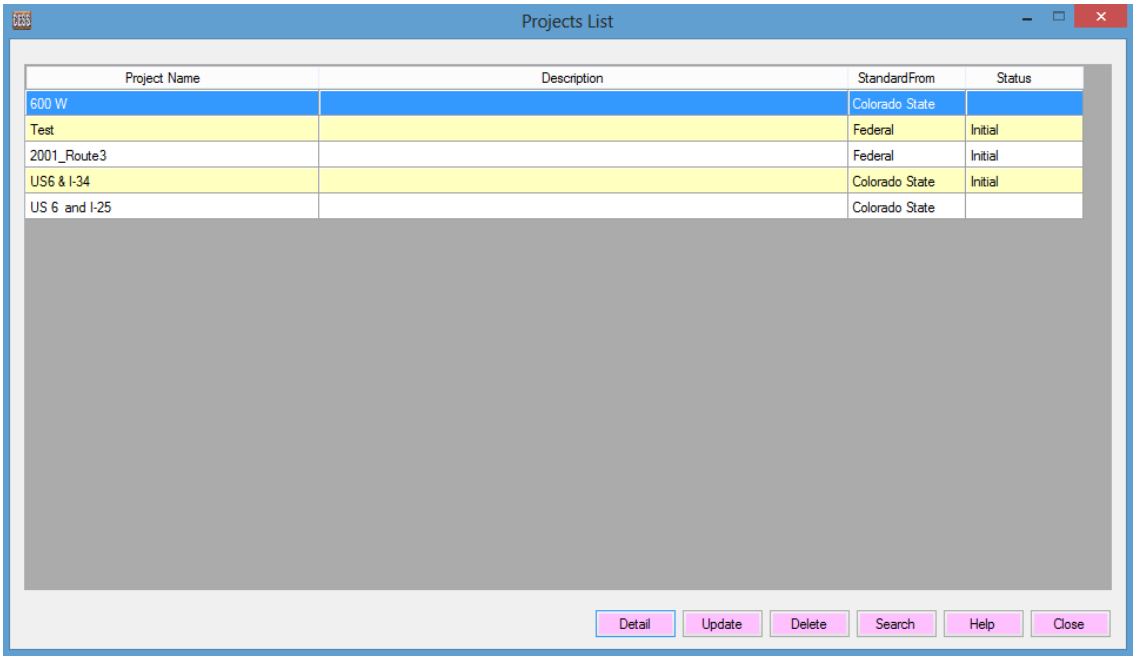
There are some buttons:

Details: Details of the project are shown in the new window.

Update: Edit the project details in new window.

Delete: Delete the project, if it is not being used.

Search: If multiple projects exist, use the search function to locate the desired project.



9.3 Alignments of Project

9.3.1 New / Edit Alignment

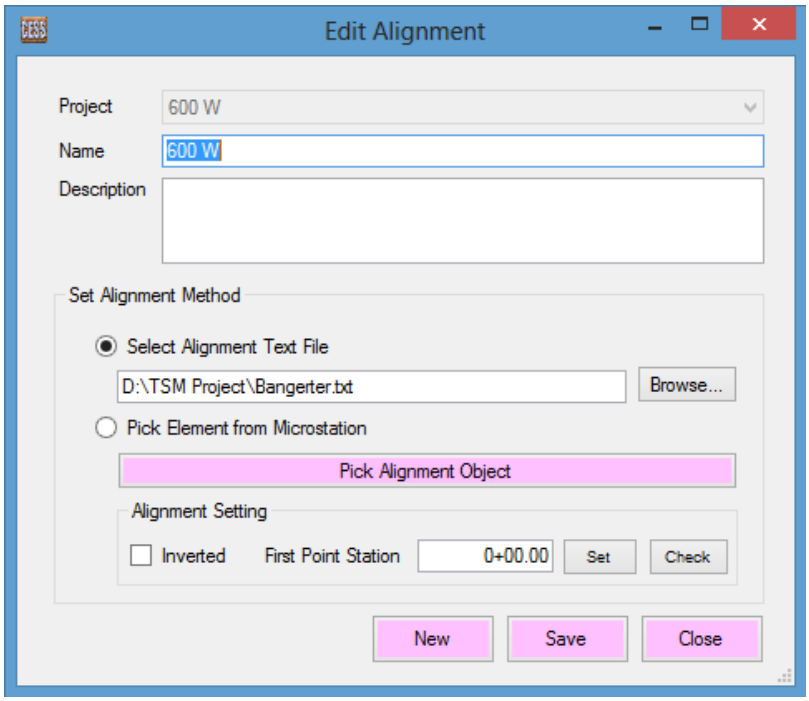
In this module, user can create a new alignment, or edit existing alignment in the project.

For a new alignment in project, besides alignment name and description need to be assigned, users have to assign the element for alignment. There are two methods to assign it: From text file, and element from design file.

Method 1: Select a text file exported from Inroads and it contains all information about the alignment. (Right click the alignment in Geometry tab -->Review --> Save As)

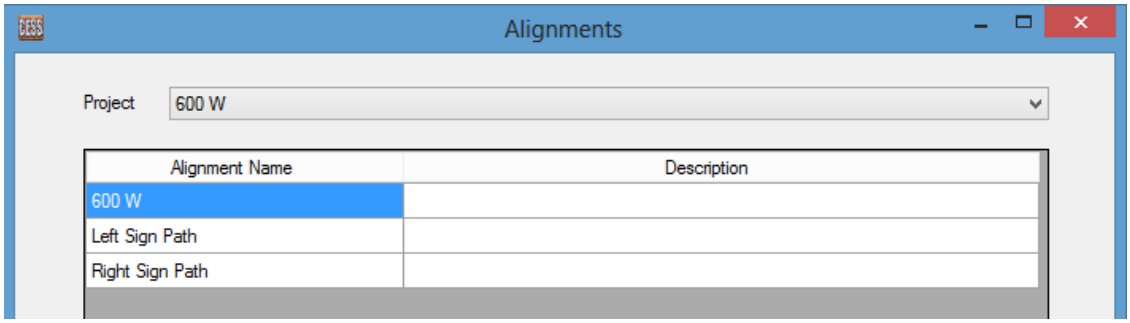
Method 2: Pick Alignment Object from MicroStation file (***make sure that object cannot be Line String***), and then input station of first point of the alignment, or using ***Set*** button to calculate

the station of first point (pick any point in alignment, and input its station, the station of the first point can be calculated automatically). Finally click ***Check*** button to make sure all settings are correct (Click any point on the alignment, the station of the point will be calculated, if it matches the station on the screen, it means settings are correct).

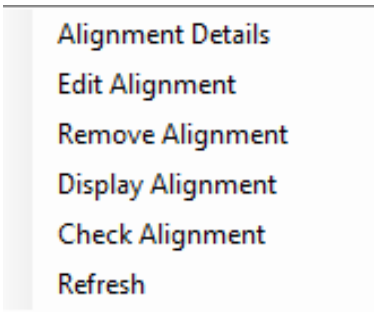


9.3.2 Alignment List

In this module, all alignments in the selected project are listed.



Right click on the data grid, a menu with six sub-menus displays:

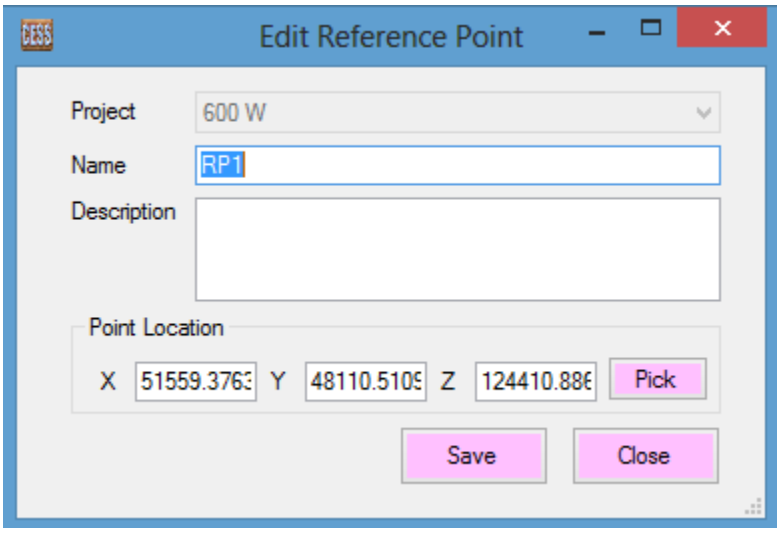


- **Alignment Details**: Details of the alignment are shown.
- **Edit Alignment**: Edit selected alignment
- **Remove Alignment**: Remove alignment from the project.
- **Display Alignment**: Display alignment in the design file.
- **Check Alignment**: Check whether alignment is available or valid.
- **Refresh**: Reload all alignments of the project.

9.4 Reference Point in Project

9.4.1 New / Edit Reference Point

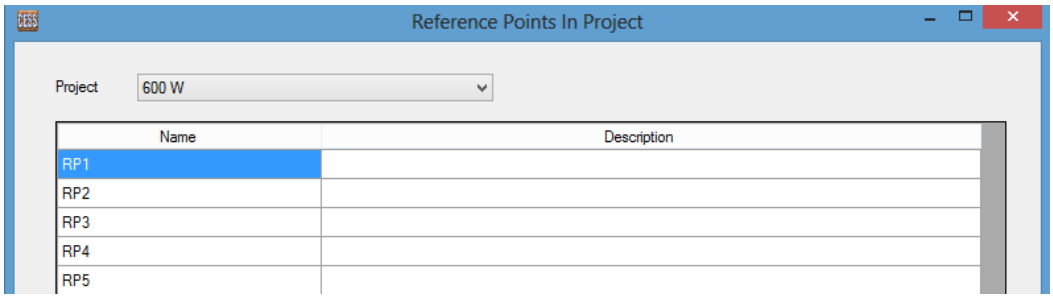
In this module, users can create a new reference point, or edit existing reference point in project.



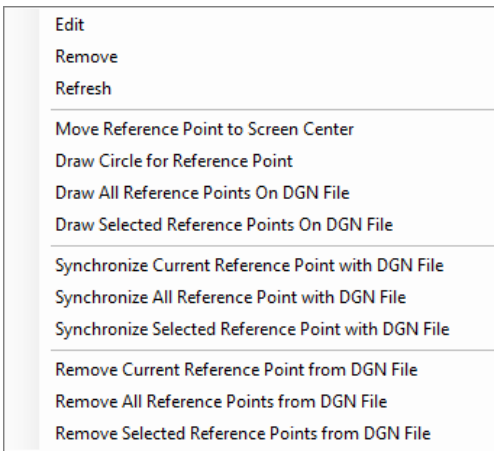
To create a new reference point, input name and description, and click ***Pick*** button, then move the mouse to MicroStation and pick a point, then click ***Save*** button.

9.4.2 Reference Points List

In this module, all reference points in the selected project are listed.



Right click on data grid, a menu with thirty sub-menus displays:



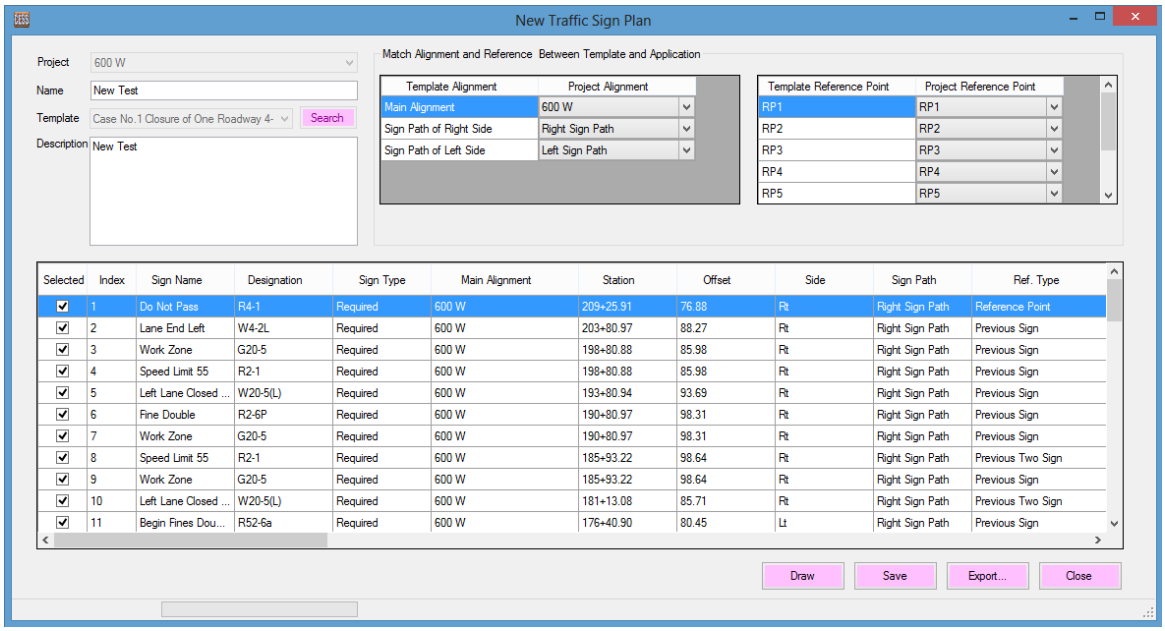
- **Edit**: Edit a reference point, which is similar as creating a new reference point.
- **Remove**: Remove the reference point from project.
- **Refresh**: Reload all reference point in the project.
- **Move Reference Point to Screen Center**: Reference point will be moved to the center of MicroStation.
- **Draw Circle for Reference Point**: A circle with 2 feet radius will be drawn.
- **Draw All Reference Points on DGN File**: Draw all reference points on Microstation.

- **Draw Selected Reference Points on DGN File**: Draw all selected reference points on Microstation.
- **Synchronize Current Reference Point with DGN File**: When the design is changed and some reference points are changed, to synchronize current reference point in the database, move the reference point circle to the right place and click this submenu, new location information of the reference point will be obtained from MicroStation and saved to the database.
- **Synchronize All Reference Points with DGN File**: Synchronize all locations of reference points with MicroStation and database.
- **Synchronize Selected Reference Points with DGN File**: Synchronize all locations of selected reference points with MicroStation and database.
- **Remove Current Reference Point from DGN File**: Reference point circle is removed from MicroStation.
- **Remove All Reference Points from DGN Files**: All reference points are removed from MicroStation.
- **Remove Selected Reference Points from DGN Files**: All selected reference points are removed from MicroStation.

9.5 Application in Project

9.5.1 New / Edit Application

In this module, users can create a new application, or edit existing application in the project.



To add a new application, user need to follow the steps below.

1. Select a project, input application name, then select template. If it is hard to find the template, click ***Search*** button to search specific template. Right click on screen, and user can open the reference book of template and legend of template.
2. Once a template is selected, all alignments in the template are listed in the data grid, and all alignments in the project are loaded in the combo boxes of data grid. Meanwhile, all reference points in the template are listed in the other data grid, and all reference points in the project are loaded in the combo boxes of data grid.
3. Select alignments from combo boxes in the data grid to match template alignments one by one.
4. Select reference point from combo boxes in the data grid to match template alignment one by one.
5. Click ***Load Signs*** button, all signs in the template are loaded to sign data grid, and alignments and reference points change from template to project automatically.

6. If all signs are valid, then use ***Analyze All Signs*** function to calculate location, station, offset, and side of all signs and sign structure.
7. If all signs are analyzed, click ***Save*** button to save the application.
8. Click ***Draw*** button, all signs are drawn in MicroStation.

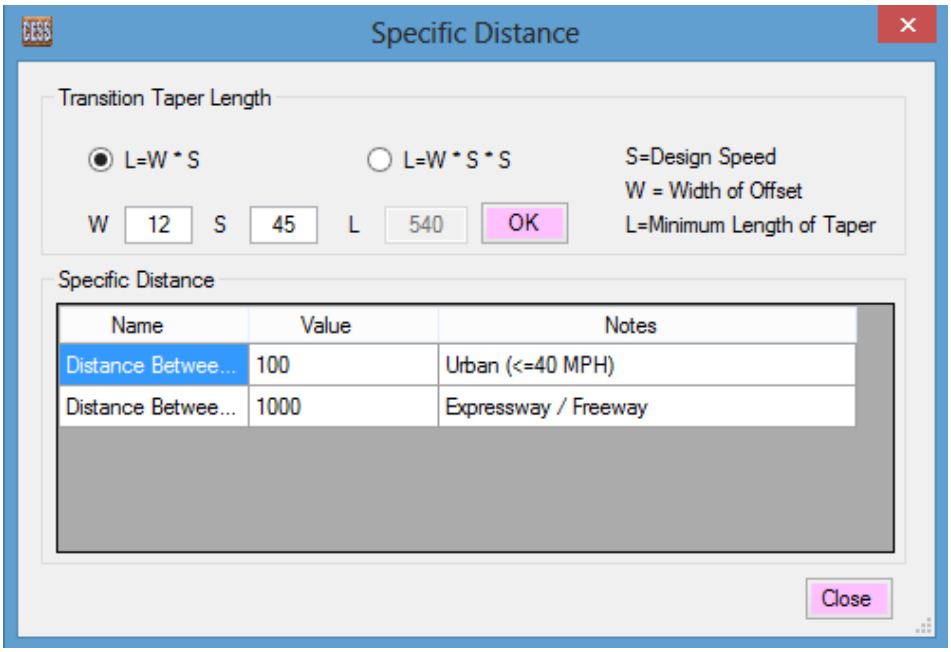
Click ***Export...*** button, all sign's information is exported to a spreadsheet automatically.

Right click on data grid, a menu with 19 submenus displays:

- ***Edit Current Sign***: Edit current sign, similar as editing sign in template.
- ***Add Current Sign***: Add a new sign for application, similar as adding sign in template.
- ***Insert New Sign***: Insert a new sign ahead of current sign, similar as inserting sign in template.
- ***Add Related Sign***: Add related sign of current sign to application.
- ***Move up***: Move current sign up. If the sign is locked, it cannot be moved up.
- ***Move Down***: Move current sign down. If the sign is locked, it cannot be moved down.
- ***Remove Current Sign***: Remove current sign.
- ***Analyze Current Sign***: Current sign is analyzed.
- ***Analyze All Signs***: All signs in application are analyzed.
- ***Analyzed Selected Signs***: All selected signs are analyzed.
- ***Validate All Signs***: All signs are validated.
- ***Set Specific Distance***: If Sign Distance Limited (SDL) set as Specific Distance, use this function to select specific distance, or calculate distance by speed and offset. Following is the interface to specify.

  1. Transition Taper Length: Select formula, then input width and design speed, click ***OK*** button.

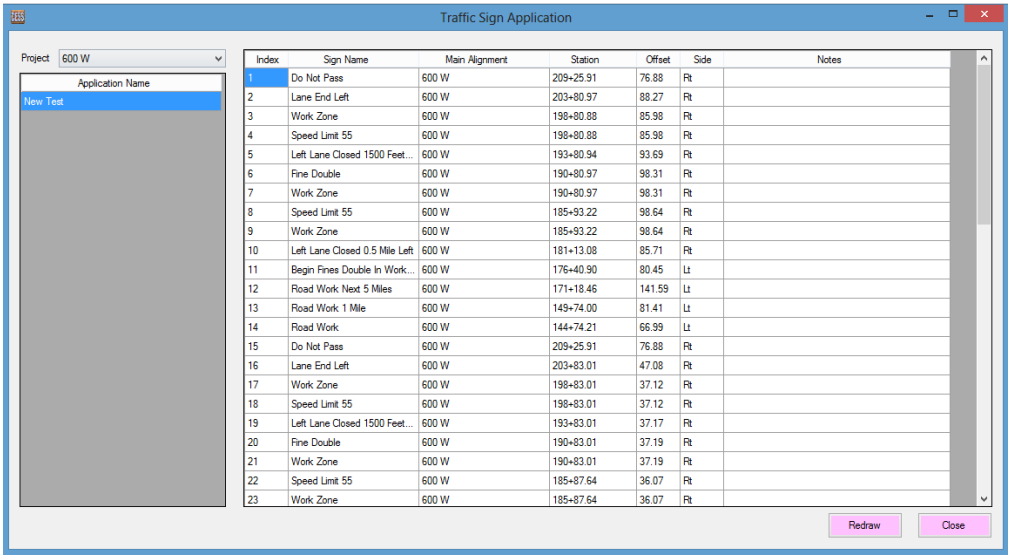
  2. Specific Distance: Select a specific and **double click**



- ***Recalculate Specific Distance:*** Recalculate all specific distance in data grid.
- ***Change All Sign Size***: Select size type for all signs, all sign sizes are changed automatically.
- ***Center Current Sign on Screen***: Move current sign to center of screen.
- ***Center Current Sign Structure on Screen***: Move current sign structure to center of screen.
- ***Synchronize Current Sign with DGN File***: When the sign in MicroStation is moved, use this function to update sign information.
- ***Synchronize All Signs with DGN File***: Update all signs information according the sign in MicroStation.
- ***Remove all Application Sign in DGN File***: Remove all application signs in MicroStation.
- ***Lock/Select***: lock / select signs, when a sign is locked, all information of the sign cannot be changed. All unselected signs cannot be processed.

9.5.2 Application List

In this module, all applications in a selected project are listed.



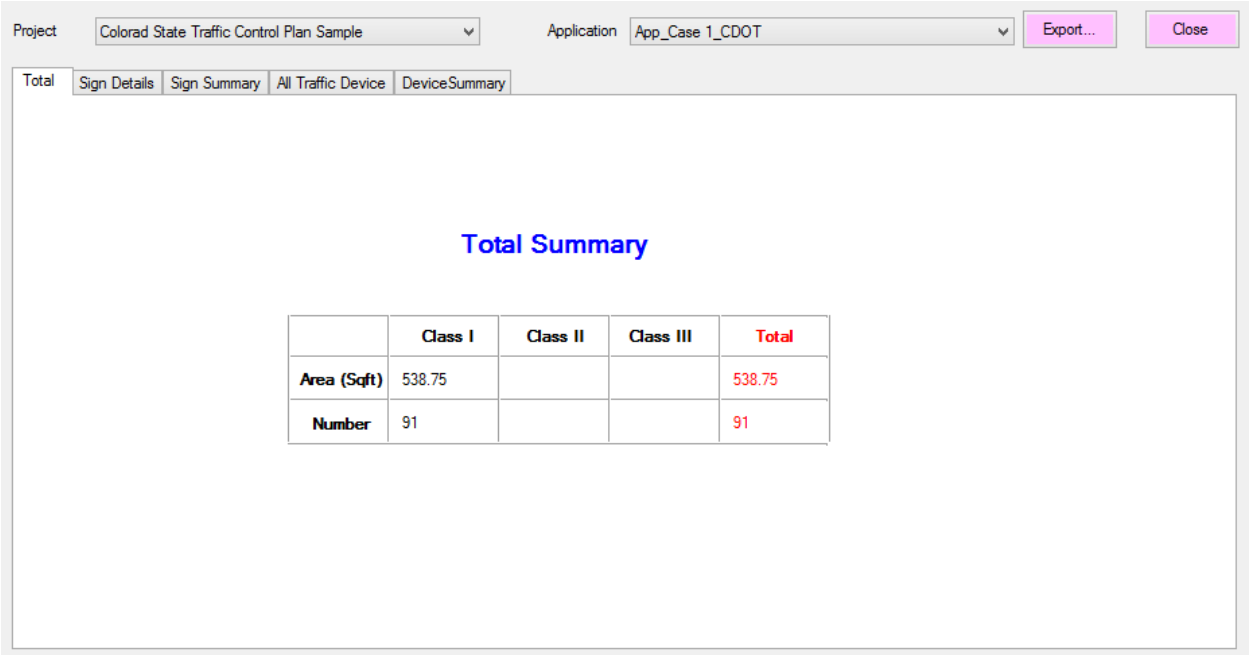
Double click an application and all signs in the application are listed in the data grid on the right. Right click on data grid, a menu with three sub menus displays: ***Edit***, ***Remove, and Refresh***, and using those functions, the application can be edited, removed or reload applications.

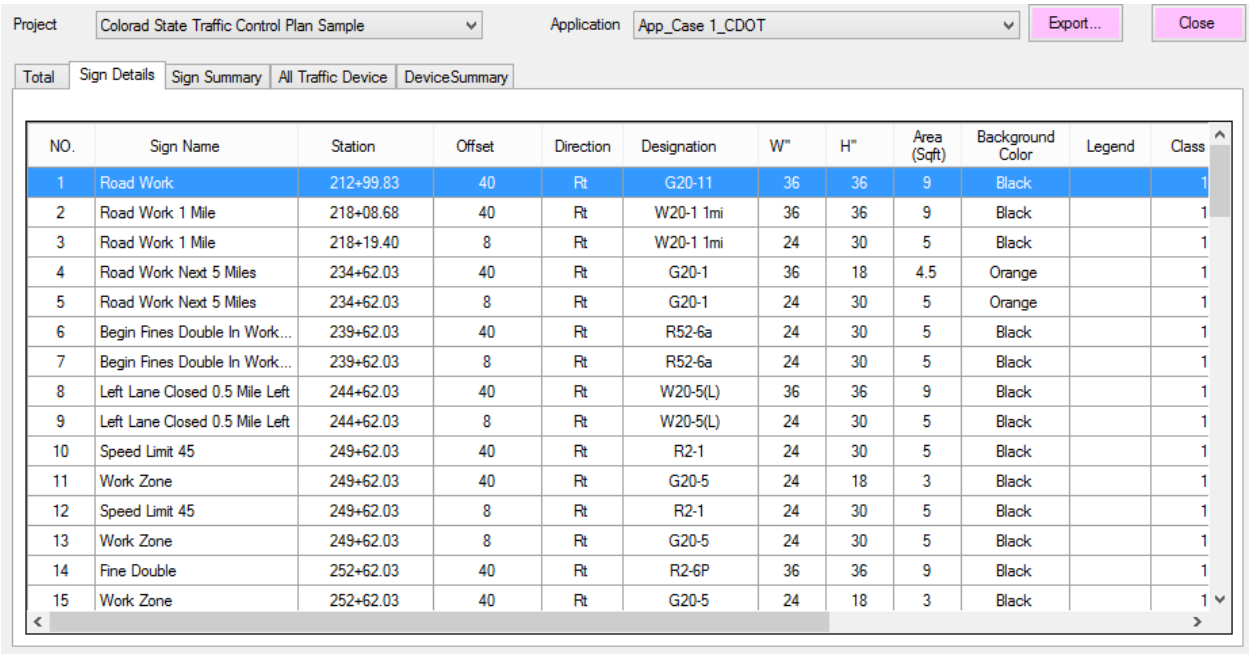
Click ***Draw*** button, all signs in the application will be drawn in the MicroStation, and previous signs will be removed from the MicroStation.

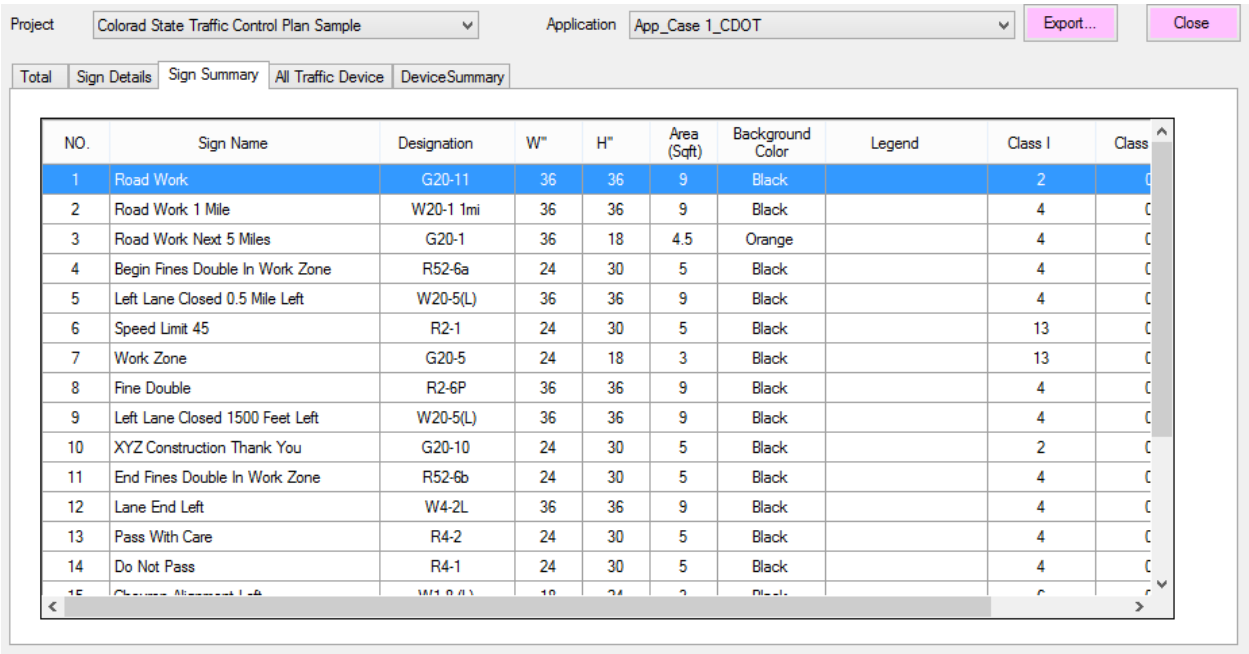
9.6 Application Report

Once the design is done, quantity report is generated automatically.

Total Summary, Sign Details, Sign Summary, All Traffic Device, and Device Summary are generated and shown in five tabs when a project is selected, and following figures are shown as example. Click Export... button, all summaries are export to spreadsheet.


Project
Colorad State Traffic Control Plan Sample
Application
App_Case 1_CDOT
Export...
Close
Total
Sign Details
Sign Summary
All Traffic Device
DeviceSummary
Total Summary
Class I
Class II
Class III
Total
Area (Sqft)
538.75
538.75
Number
91
91

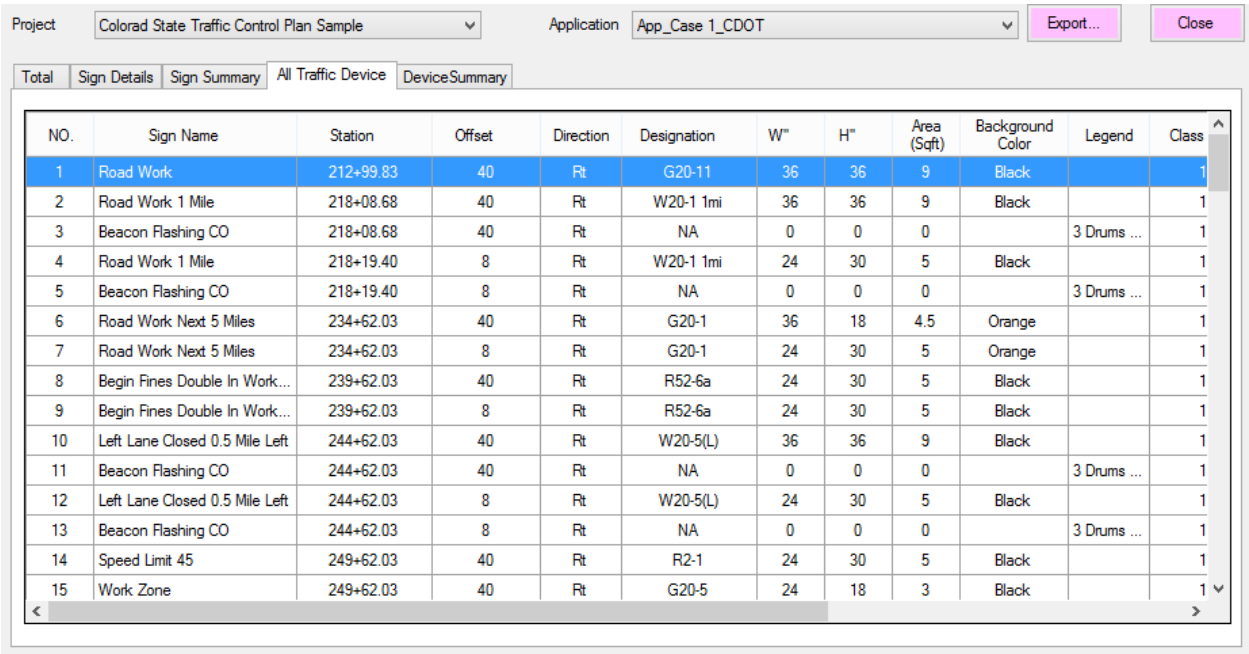

Project
Colorad State Traffic Control Plan Sample
Application
App_Case 1_CDOT
Export...
Close
Total
Sign Details
Sign Summary
All Traffic Device
DeviceSummary
NO.
Sign Name
Station
Offset
Direction
Designation
W"
H"
Area (Sqft)
Background Color
Legend
Class
1 Road Work 212+99.83 40 Rt G20-11 36 36 9 Black 1
2 Road Work 1 Mile 218+08.68 40 Rt W20-1 1mi 36 36 9 Black 1
3 Road Work 1 Mile 218+19.40 8 Rt W20-1 1mi 24 30 5 Black 1
4 Road Work Next 5 Miles 234+62.03 40 Rt G20-1 36 18 4.5 Orange 1
5 Road Work Next 5 Miles 234+62.03 8 Rt G20-1 24 30 5 Orange 1
6 Begin Fines Double In Work... 239+62.03 40 Rt R52-6a 24 30 5 Black 1
7 Begin Fines Double In Work... 239+62.03 8 Rt R52-6a 24 30 5 Black 1
8 Left Lane Closed 0.5 Mile Left 244+62.03 40 Rt W20-5(L) 36 36 9 Black 1
9 Left Lane Closed 0.5 Mile Left 244+62.03 8 Rt W20-5(L) 24 30 5 Black 1
10 Speed Limit 45 249+62.03 40 Rt R2-1 24 30 5 Black 1
11 Work Zone 249+62.03 40 Rt G20-5 24 18 3 Black 1
12 Speed Limit 45 249+62.03 8 Rt R2-1 24 30 5 Black 1
13 Work Zone 249+62.03 8 Rt G20-5 24 30 5 Black 1
14 Fine Double 252+62.03 40 Rt R2-6P 36 36 9 Black 1
15 Work Zone 252+62.03 40 Rt G20-5 24 18 3 Black 1



Project: Colorad State Traffic Control Plan Sample | Application: App_Case 1_CDOT | Export... | Close

Total | Sign Details | Sign Summary | All Traffic Device | DeviceSummary

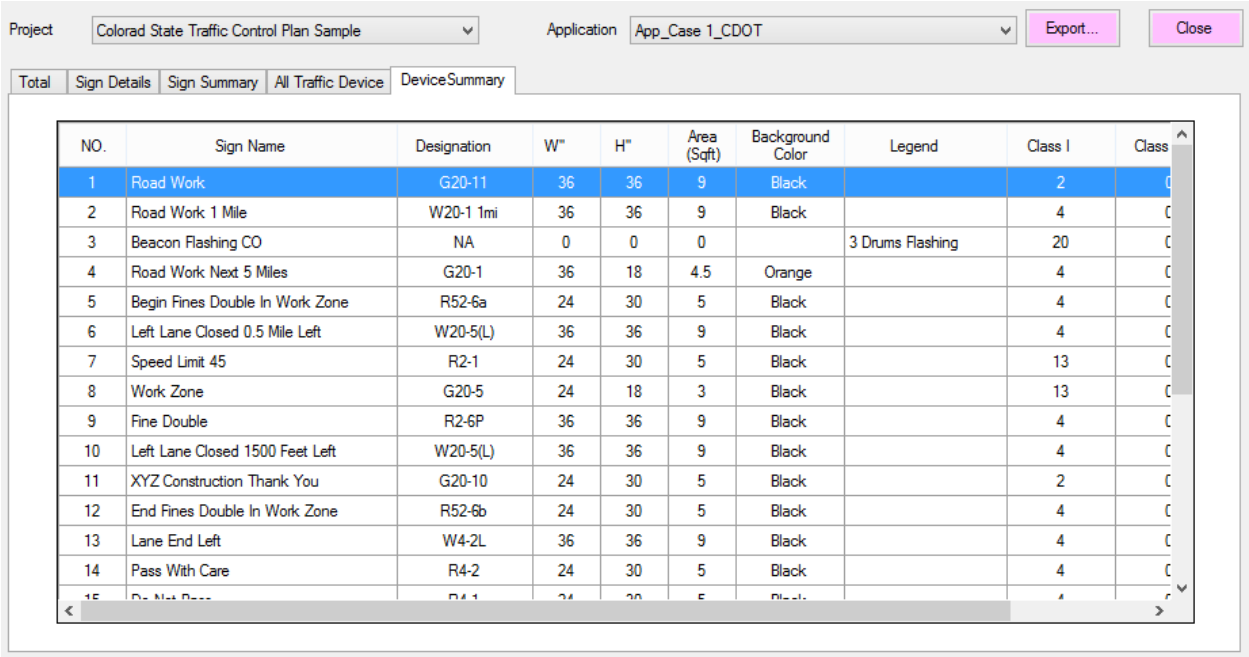
NO.	Sign Name	Designation	W"	H"	Area (Sqft)	Background Color	Legend	Class I	Class
1	Road Work	G20-11	36	36	9	Black		2	
2	Road Work 1 Mile	W20-1 1mi	36	36	9	Black		4	
3	Road Work Next 5 Miles	G20-1	36	18	4.5	Orange		4	
4	Begin Fines Double In Work Zone	R52-6a	24	30	5	Black		4	
5	Left Lane Closed 0.5 Mile Left	W20-5(L)	36	36	9	Black		4	
6	Speed Limit 45	R2-1	24	30	5	Black		13	
7	Work Zone	G20-5	24	18	3	Black		13	
8	Fine Double	R2-6P	36	36	9	Black		4	
9	Left Lane Closed 1500 Feet Left	W20-5(L)	36	36	9	Black		4	
10	XYZ Construction Thank You	G20-10	24	30	5	Black		2	
11	End Fines Double In Work Zone	R52-6b	24	30	5	Black		4	
12	Lane End Left	W4-2L	36	36	9	Black		4	
13	Pass With Care	R4-2	24	30	5	Black		4	
14	Do Not Pass	R4-1	24	30	5	Black		4	



Project: Colorad State Traffic Control Plan Sample | Application: App_Case 1_CDOT | Export... | Close

Total | Sign Details | Sign Summary | All Traffic Device | DeviceSummary

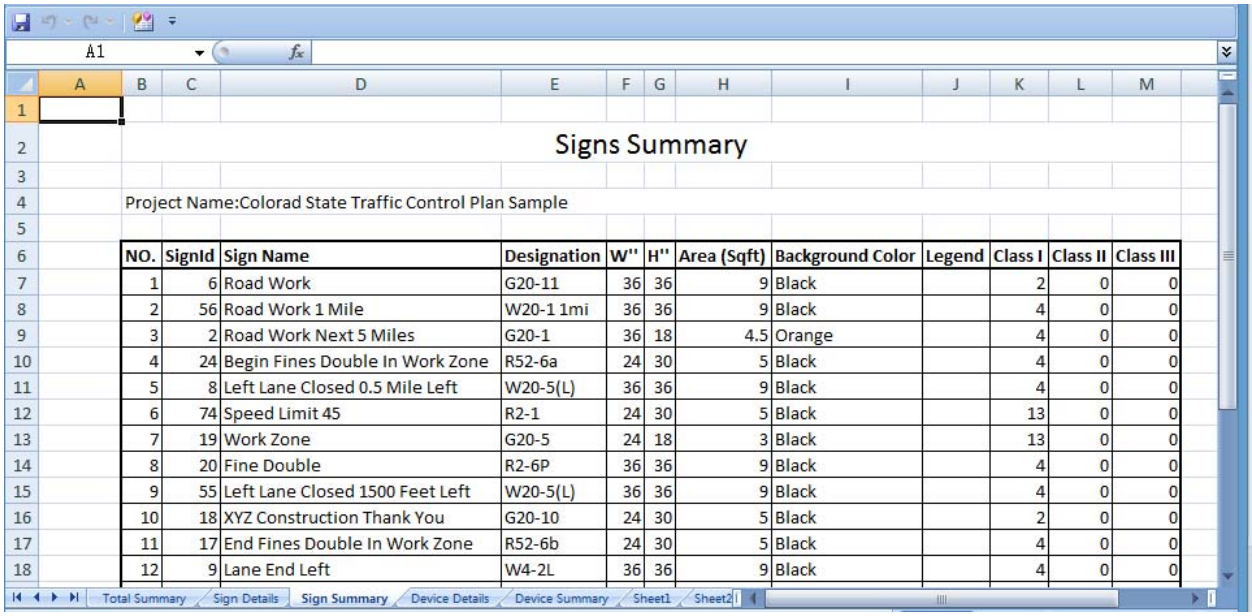
NO.	Sign Name	Station	Offset	Direction	Designation	W"	H"	Area (Sqft)	Background Color	Legend	Class
1	Road Work	212+99.83	40	Rt	G20-11	36	36	9	Black		1
2	Road Work 1 Mile	218+08.68	40	Rt	W20-1 1mi	36	36	9	Black		1
3	Beacon Flashing CO	218+08.68	40	Rt	NA	0	0	0		3 Drums ...	1
4	Road Work 1 Mile	218+19.40	8	Rt	W20-1 1mi	24	30	5	Black		1
5	Beacon Flashing CO	218+19.40	8	Rt	NA	0	0	0		3 Drums ...	1
6	Road Work Next 5 Miles	234+62.03	40	Rt	G20-1	36	18	4.5	Orange		1
7	Road Work Next 5 Miles	234+62.03	8	Rt	G20-1	24	30	5	Orange		1
8	Begin Fines Double In Work...	239+62.03	40	Rt	R52-6a	24	30	5	Black		1
9	Begin Fines Double In Work...	239+62.03	8	Rt	R52-6a	24	30	5	Black		1
10	Left Lane Closed 0.5 Mile Left	244+62.03	40	Rt	W20-5(L)	36	36	9	Black		1
11	Beacon Flashing CO	244+62.03	40	Rt	NA	0	0	0		3 Drums ...	1
12	Left Lane Closed 0.5 Mile Left	244+62.03	8	Rt	W20-5(L)	24	30	5	Black		1
13	Beacon Flashing CO	244+62.03	8	Rt	NA	0	0	0		3 Drums ...	1
14	Speed Limit 45	249+62.03	40	Rt	R2-1	24	30	5	Black		1
15	Work Zone	249+62.03	40	Rt	G20-5	24	18	3	Black		1



Project: Colorad State Traffic Control Plan Sample | Application: App_Case 1_CDOT | Export... | Close

Total | Sign Details | Sign Summary | All Traffic Device | DeviceSummary

NO.	Sign Name	Designation	W"	H"	Area (Sqft)	Background Color	Legend	Class I	Class
1	Road Work	G20-11	36	36	9	Black		2	0
2	Road Work 1 Mile	W20-1 1mi	36	36	9	Black		4	0
3	Beacon Flashing CO	NA	0	0	0		3 Drums Flashing	20	0
4	Road Work Next 5 Miles	G20-1	36	18	4.5	Orange		4	0
5	Begin Fines Double In Work Zone	R52-6a	24	30	5	Black		4	0
6	Left Lane Closed 0.5 Mile Left	W20-5(L)	36	36	9	Black		4	0
7	Speed Limit 45	R2-1	24	30	5	Black		13	0
8	Work Zone	G20-5	24	18	3	Black		13	0
9	Fine Double	R2-6P	36	36	9	Black		4	0
10	Left Lane Closed 1500 Feet Left	W20-5(L)	36	36	9	Black		4	0
11	XYZ Construction Thank You	G20-10	24	30	5	Black		2	0
12	End Fines Double In Work Zone	R52-6b	24	30	5	Black		4	0
13	Lane End Left	W4-2L	36	36	9	Black		4	0
14	Pass With Care	R4-2	24	30	5	Black		4	0



A1

Signs Summary

Project Name:Colorad State Traffic Control Plan Sample

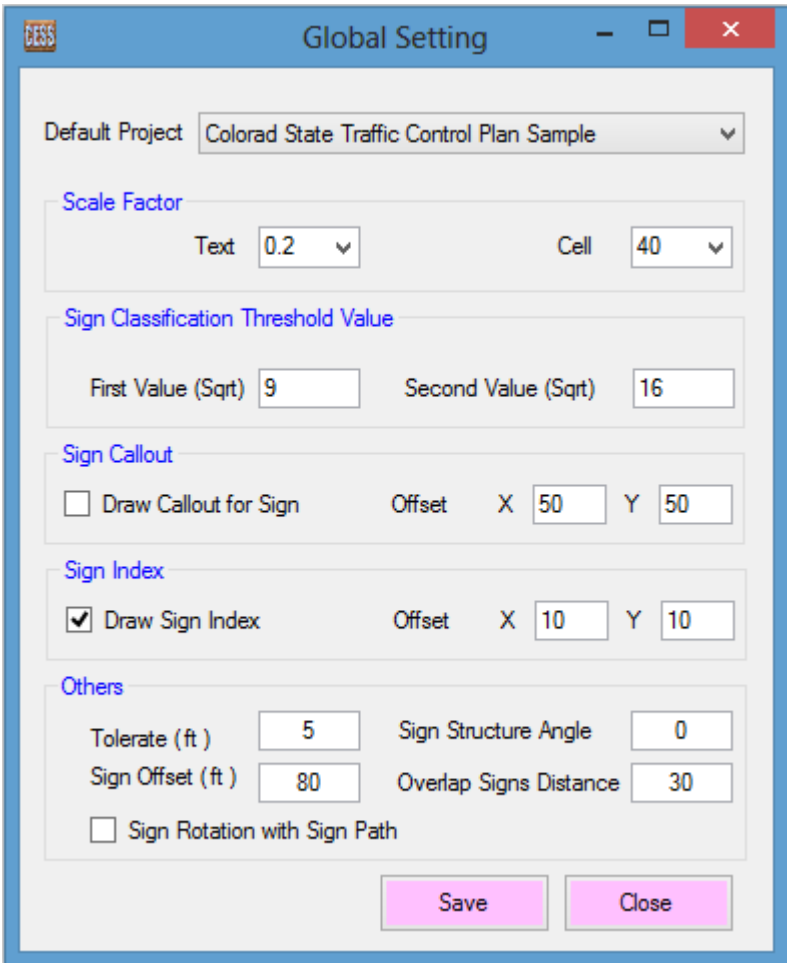
NO.	SignId	Sign Name	Designation	W"	H"	Area (Sqft)	Background Color	Legend	Class I	Class II	Class III
1	6	Road Work	G20-11	36	36	9	Black		2	0	0
2	56	Road Work 1 Mile	W20-1 1mi	36	36	9	Black		4	0	0
3	2	Road Work Next 5 Miles	G20-1	36	18	4.5	Orange		4	0	0
4	24	Begin Fines Double In Work Zone	R52-6a	24	30	5	Black		4	0	0
5	8	Left Lane Closed 0.5 Mile Left	W20-5(L)	36	36	9	Black		4	0	0
6	74	Speed Limit 45	R2-1	24	30	5	Black		13	0	0
7	19	Work Zone	G20-5	24	18	3	Black		13	0	0
8	20	Fine Double	R2-6P	36	36	9	Black		4	0	0
9	55	Left Lane Closed 1500 Feet Left	W20-5(L)	36	36	9	Black		4	0	0
10	18	XYZ Construction Thank You	G20-10	24	30	5	Black		2	0	0
11	17	End Fines Double In Work Zone	R52-6b	24	30	5	Black		4	0	0
12	9	Lane End Left	W4-2L	36	36	9	Black		4	0	0

Total Summary | Sign Details | Sign Summary | Device Details | Device Summary | Sheet1 | Sheet2

10. Setting

10.1 Global Setting

In this module, default project, text scale factor, cell scale factor, sign classification threshold value, sign callout and offset, tolerate, sign offset, and sign angle are set.



- ❖ Default project: A project is specified as default project. Users don't need select the project in other modules every time.
- ❖ Text Scale Factor: Set the scale factor when drawing text element in MicroStation.
- ❖ Cell Scale Factor: Set the scale factor for cell element when drawing cell element in MicroStation.

- Sign Classification threshold Value: Technically three classifications are set based on sign area, for example: in Colorado state, sign is set as Class I if area of the sign is equal to or less than 9 square feet; sign is set as Class II if area of sign is greater than 9 square feet and less than 16 square feet, and Sign is set as Class III if area of sign is equal or greater than 16 square feet.
- Sign Callout: Whether callouts of signs are drawn when signs are drawn, and how far the callouts are from the sign.
- Sign Index: Whether signs indexes are drawn when signs are drawn, and how far the indexes are from the signs.
- Tolerate: Determine the toleration of sign location that user specifies. For example, if the station of sign is 100+00 and the toleration is 5 feet, and the location of sign between 99+95 and 100+05 is acceptable.
- Sign Structure Angle: Normally, the sign is placed perpendicular to the sign path, and Sign Angle can be used to adjust angle of sign.
- Sign Offset: How far are signs far away from sign places.
- Overlap Signs Distance: Set offset between overlap signs.
- Sign Rotation with Sign Path: When checked, signs will be drawn perpendicular with sign path. Otherwise sign will be drawn regularly.

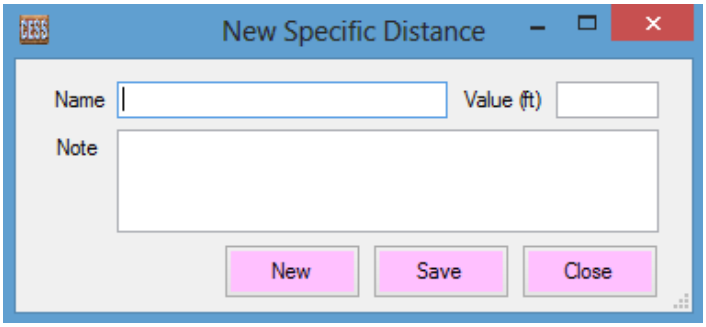
Click ***Save*** button, the setting is saved, and setting will be applied in entire program.

Click ***Close*** button, setting window is closed.

10.2 Specific Distance

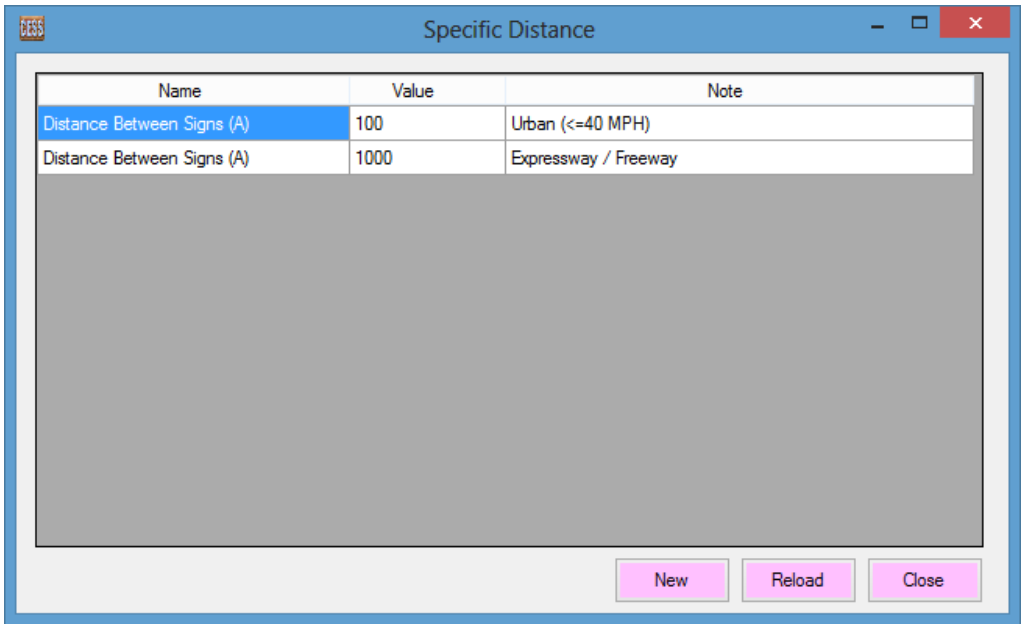
10.2.1 New / Edit Specific Distance

In this module, user can create a new specific distance, or edit existing specific distance. After inputting name, value, and note, click ***Save*** button to save specific distance.



10.2.2 Specific Distance List

In this module, all Specific Distance are listed in data grid.



Right click on data grid, a menu with two submenus displays: ***Edit*** and ***Remove***, and using these functions, specific distance can be edited or removed.

Click ***New*** button, user can add a new specific distance.