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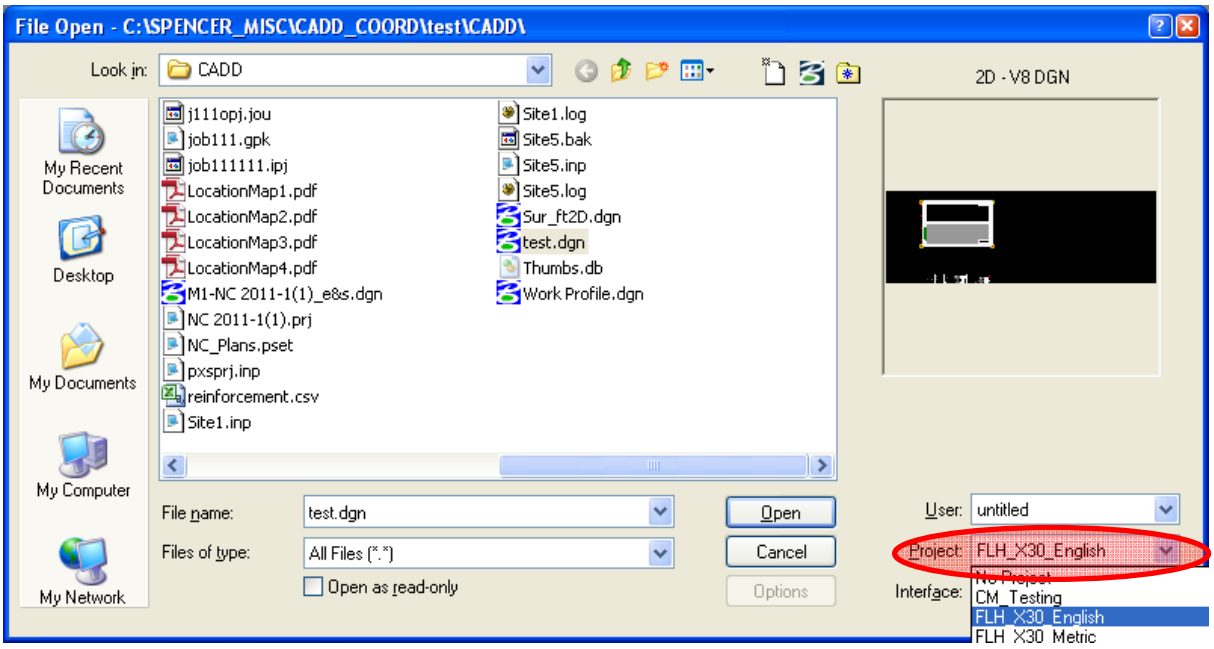
CHAPTER 12 : EFLHD STANDARD CADD PROCEDURES

12.1 – Standard Settings

12.1.1 – Open a MicroStation File

ALWAYS check the **Project** workspace from the "**MicroStation Manager**" dialog box as shown below.



Select **FLH_X30_English** for U.S. Customary (English) projects, and FLH_X30_Metric for Metric projects in the Highway Design Section.

Using the Project Configuration of workspace "**FLH_X30_English**" will give the user access to the **X30** Generation of Standard Files (Level library, line styles, cell library, color table, text styles, ddb files, etc) and also set the MicroStation in **Survey Feet Unit** environment.

12.1.2- Creating a New CADD File

All design files must be created from a Seed file. A separate two dimensional seed file has been developed for English and Metric scale design file. These are "**Sur_ft2D.dgn**", and "**Metric_2D.dgn**".

ALWAYS use the seed files from;
M:\Engineering_Software\Cadd_resource_v8i\X30\Standard\seed when creating a new file. There is an English one (Sur_ft2D or 3D) and a metric one (Metric_2D or 3D). While in the MicroStation Manager Window (the first screen that pops up when you open MicroStation), make sure that the workspace is set to "FLH_X30_English" under Project.

Next, rename the file and save it in your project folder.

Note - *These seed files have several operating parameters set specific to that sheet's purpose and scale .Some of the parameters are as follows:*

a. Working Units: Imperial --- Master Unit- Survey Feet (')
Sub Unit- Survey Inches (")
Resolution- 10000 per Survey Foot
b. Global origin set to lower left (GO=0,0)

See M:\Engineering_Software\Cadd_resource_v8i\X30\Standard\seed\ for available standard EFLHD Seed Files.

12.1.3 – Text Styles in use at EFLHD

See Chapter 4 for Text Styles and how to set Annotation Scale in EFLHD drawings.

12.2 – Border Sheet

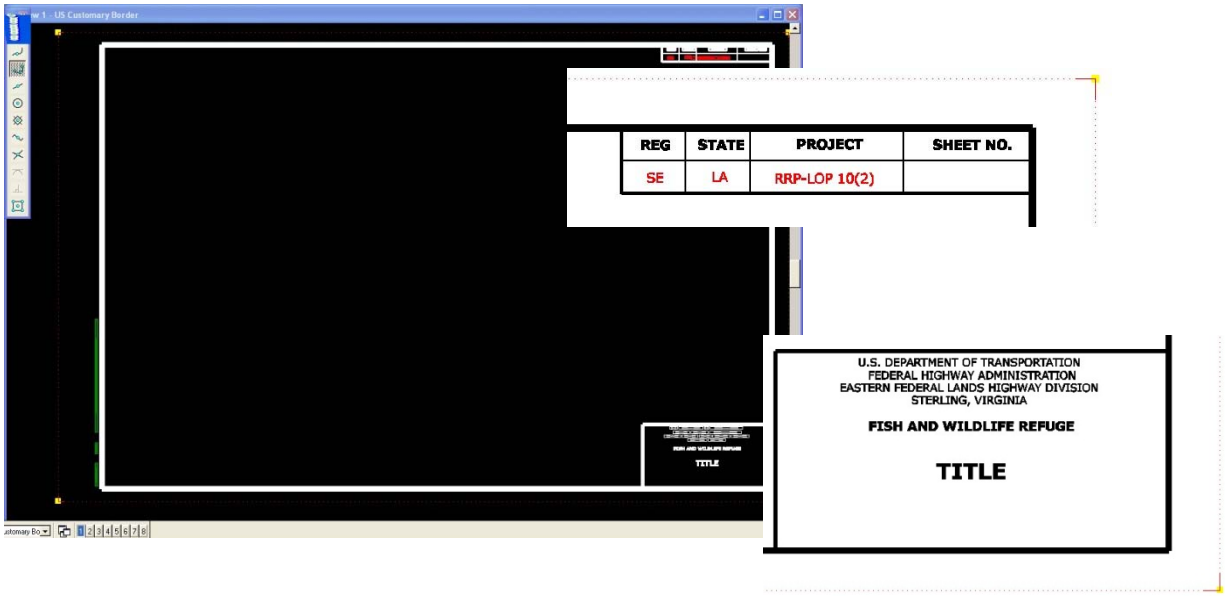
- Standard Border Sheets have been developed by the EFLHD Highway Design Section and will be used for all EFLHD projects.
- Border design files are accessed through the EFLnet http://eflnet.flhd.fhwa.dot.gov/tools/template-drawings.aspx

  Originals are kept in the following directory.
  "**M:\Engineering_Software\Cadd_resource_v8i\Borders**".

  Border template 01-EFLHD_bdr.dgn or 01-EFLHD_bdr-nps.dgn will be used for most sheets in the plans.
  (01-EFLHD_bdr-nps.dgn is developed specifically for NPS projects and includes the PMIS # and NPS # cells in the upper title block)

  Detail border template 01-EFLHD_bdr-nps.dgn will be used for Standards and Details on NPS projects. (also includes the PMIS # and NPS # cells)
- English and Metric borders are kept in different models of this border design file.

- Designer needs to copy this file into project working directory.
- Rename this file according to the EFLHD's naming convention [e.g. "**01-lop10(2)_bdr.dgn**" for RRP-LOP 10(2) project].
- Edit all project information of the English and Metric border according to the working project.
- Attach the edited Border to the Sheet dgn's as a reference file as required.

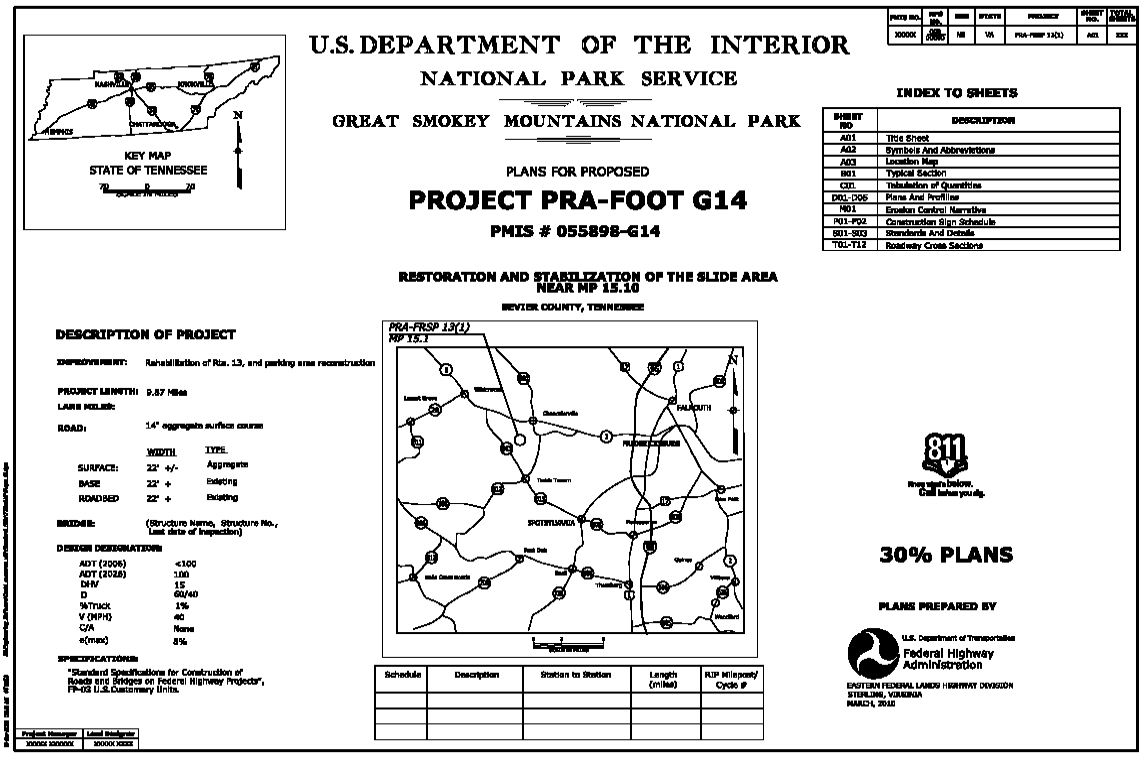


12.3 – Title Sheet

The Title Sheet identifies the set of plans, conveys the general type of improvement planned, and locates the improvement. The Title Sheet includes, at least the major criteria under which the improvement is designed, a sketch showing the location of the proposed project, a State map, a complete index of the sheets in the plan set, and the length of project.

- Standard Title Sheets for each partner agency have been developed and are accessed through EFLnet http://eflnet.flhd.fhwa.dot.gov/tools/template-drawings.aspx
  Originals are kept in the following directory.

  "M:\Engineering_Software\Cadd_resource_v8i\Standard_Shts\Titles"
- Copy these files into your project working directory.
  Rename the files according to the EFLHD's naming convention
  [e.g. "A01-lop10(2)_ttl.dgn" for RRP-LOP 10(2) project].
- Replace location map and key map for the required State. Edit all required information according to the project.



12.4 – Symbols and Abbreviations Sheet

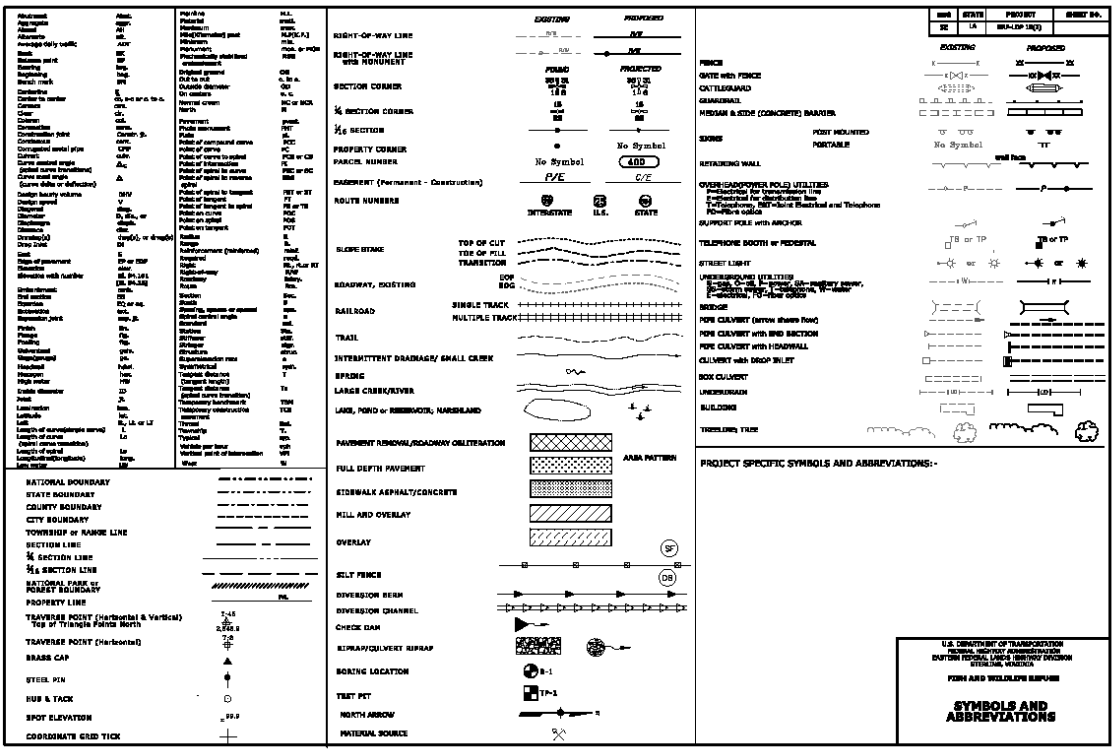
The Symbols & Abbreviations Sheet details all of the standard plan symbols and abbreviations currently in use by EFLHD. The symbols and abbreviations should not be changed on a project-to-project basis. When a special symbol is required for a specific project, show it in the space designated for the **Project Specific Symbol**.

- A standard Symbol and Abbreviation Sheet is developed for EFLHD and will be used for all EFLHD projects.
  Access the sheet through EFLnet http://eflnet.flhd.fhwa.dot.gov/tools/template-drawings.aspx. See
  M:\Engineering_Software\Cadd_resource_v8i\Standard_Shts\Symbol&Abbre\EFLHD_sym.dgn

- Copy this file into the project working directory.

- Rename the file according to the EFLHD naming convention [e.g. "A02-lop10(2)_sym.dgn" for RRP-LOP 10(2) project].

- Re-attach the project Border sheet file of your working project directory.



12.5 – Location Map Sheet

The Location Map shows the location and limits of the improvement. The location sketch shows physical features that will aid in the identification of the proposed road location, including intersecting and adjacent roads, prominent landmarks, towns, property lines, and a north arrow. A graphic scale is included for the location sketch so the scale will be applicable on reduced size prints.

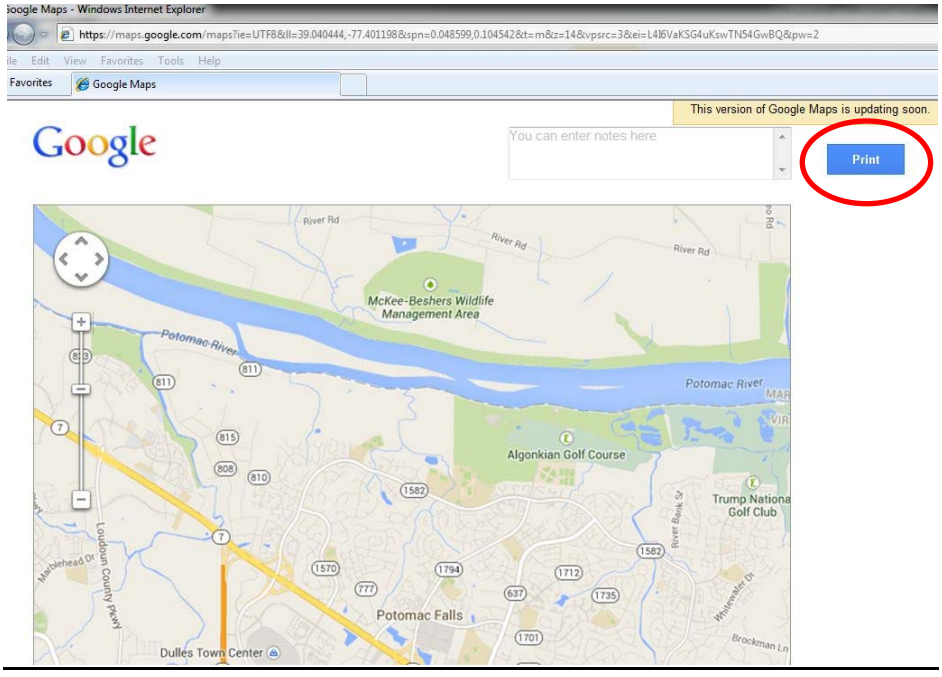
- Create a new DGN file using "**Sur_ft2D.dgn"** seed file.
- Name this file according to the EFLHD Naming Convention [e.g. "A03-lop10(2)_loc.dgn" for RRP-LOP 10(2) project].
- Attach your project Border file using reference default model selection (Note the Border is drawn for 1"=100' US Customary).
- Use models in the same Location Map design file, if project has more than one Location Map sheet.

12.5.1 – Capture a Google Map image for Location Map

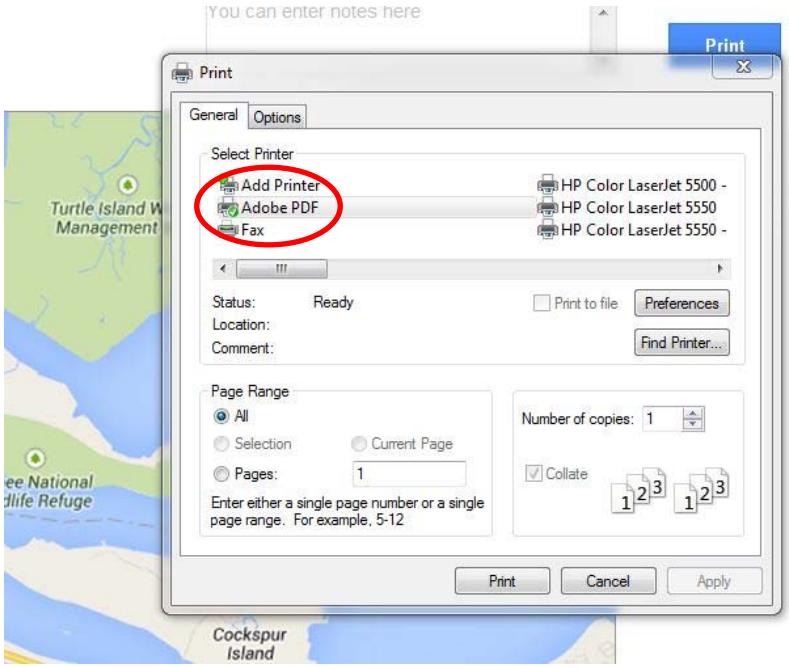
If you do not have a digitized or CADD drawn location map, you may choose to capture an image of the project location/vicinity using other online map sources.

If using Google Maps, navigate to project location. Zoom in to provide a scale that shows the project limits, major and minor access routes. Leave enough room to clip off the pan/zoom tool in the view.

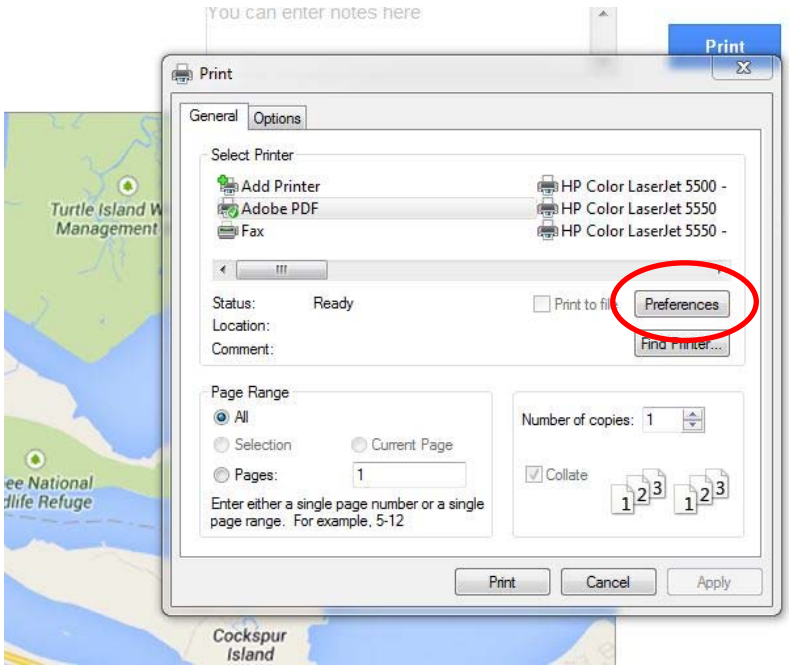
From the Google Maps screen, hit the **Print** button:



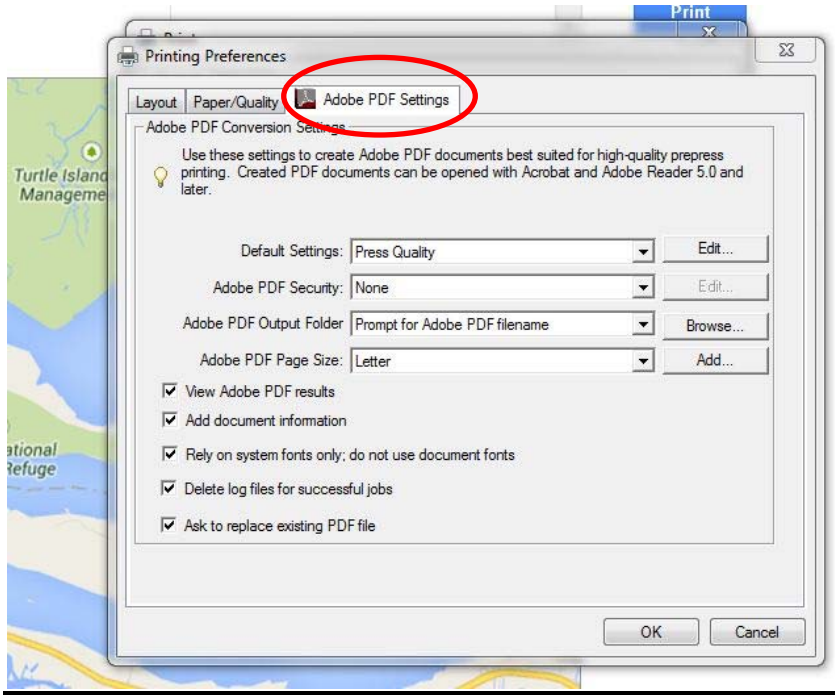
Choose the **Adobe PDF** Printer:



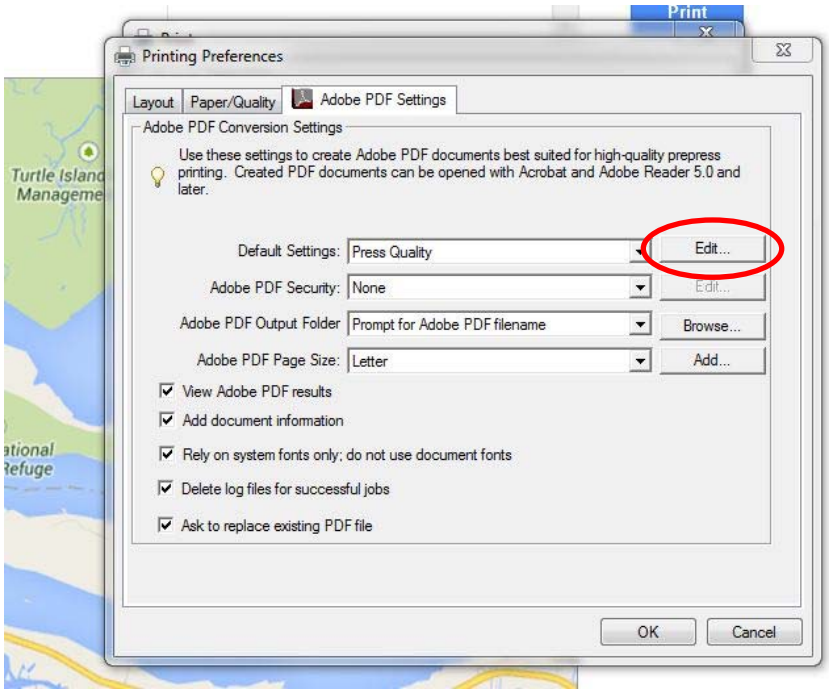
Select the **Preferences** button:



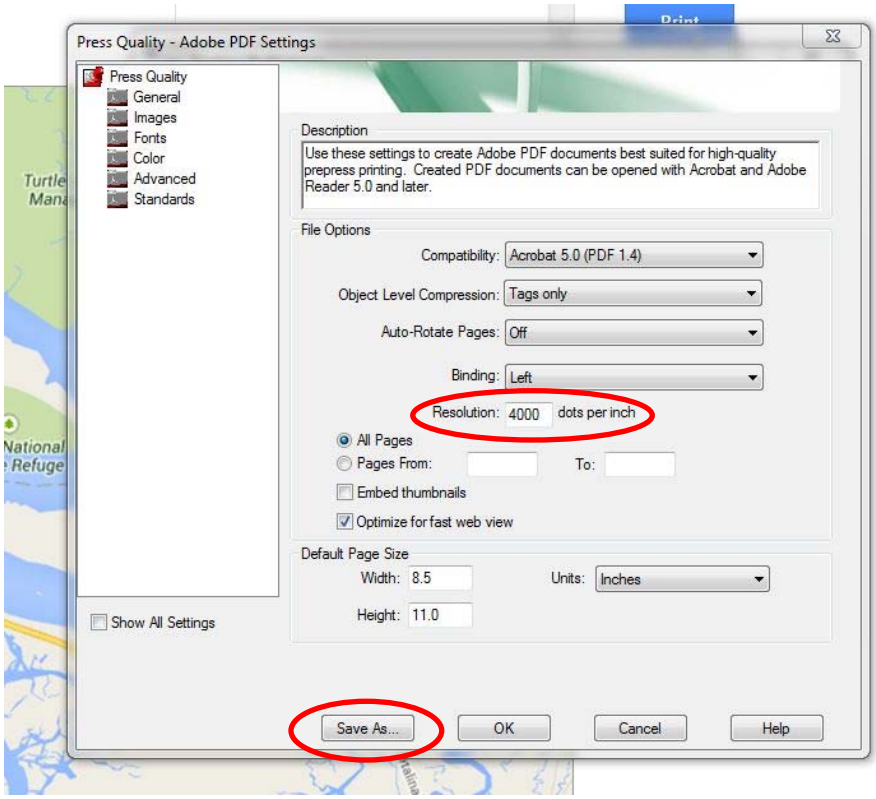
Inside the Printing Preferences dialog box, select the **Adobe PDF Settings** tab:



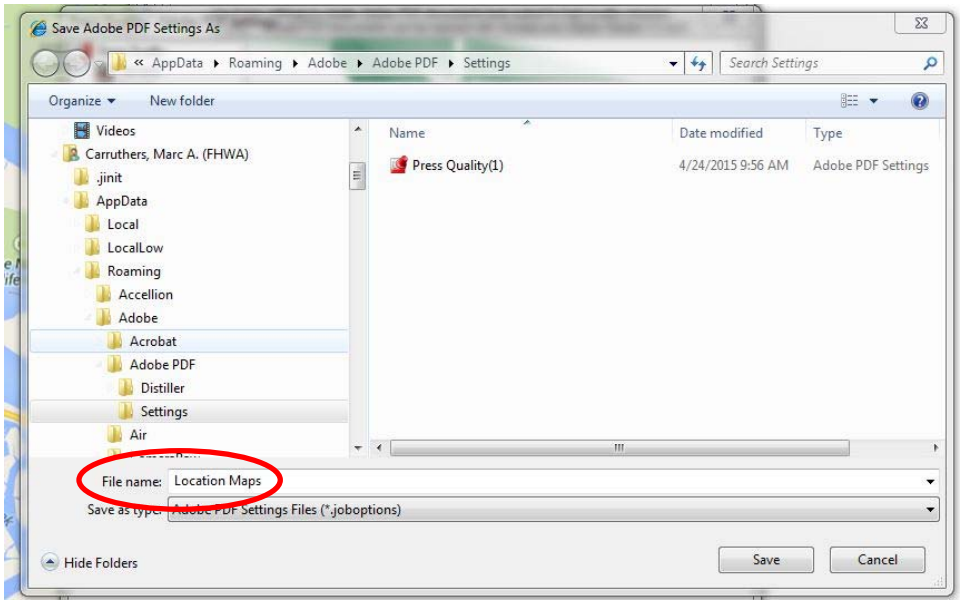
Hit the **Edit** button to the right of the Default Settings field.



Change the **Resolution** to the maximum allowed of **4,000** dots per inch.



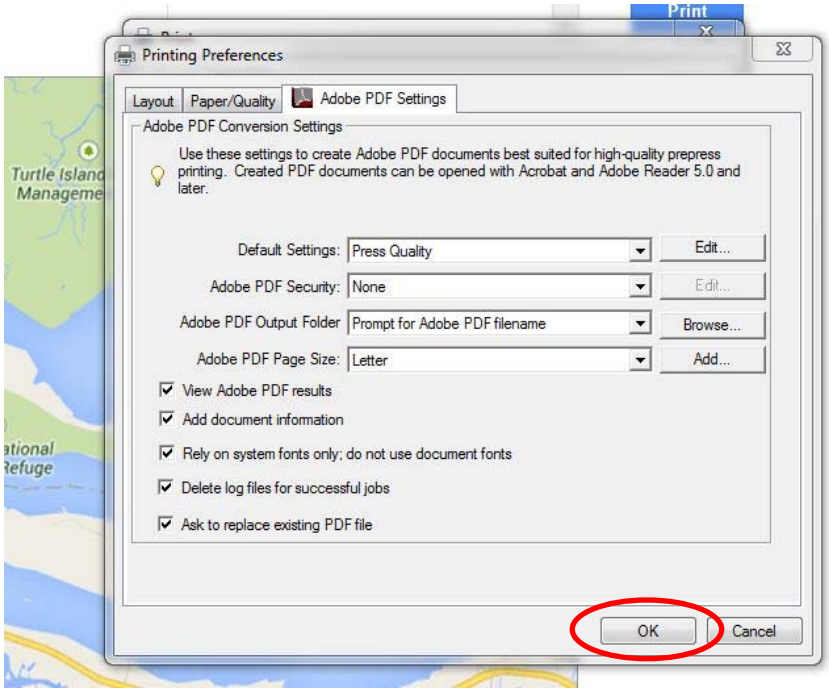
Hit **Save As** to save this setting for future use.



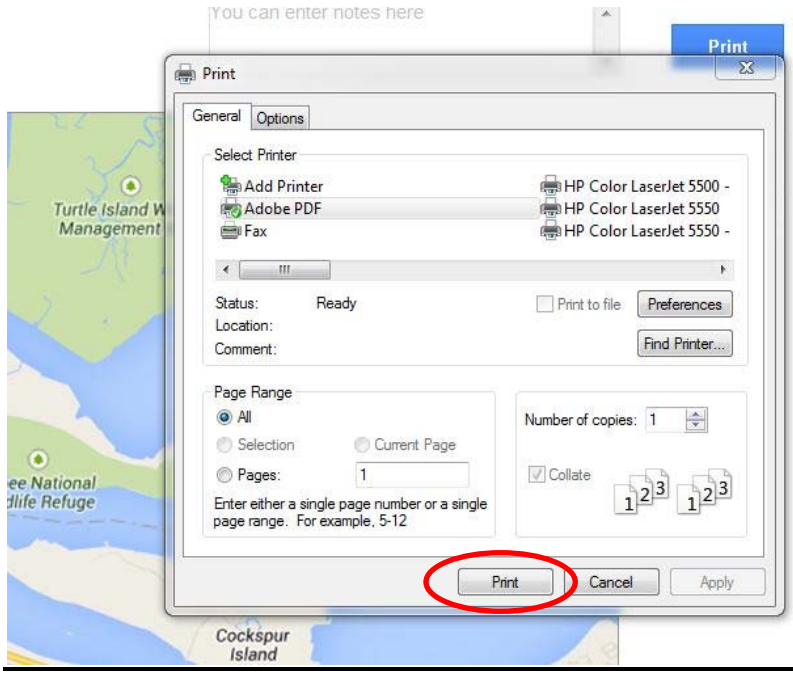
Give the setting a descriptive name to easily identify the settings file.

Hit **Save.**

Hit **OK** on the Printing Preferences dialog:



Hit **Print.**



Print the PDF to the project's CADD folder or the Plots > Adobe folder.

Use the Microstation **Reference > Attach** tool to attach the saved image to the Location Map CADD file. Resizing may be needed.

12.6 – Survey Information Sheet

The Survey Information Sheet shows the horizontal and vertical datum notes (State Plane Coordinates; NAD, NAVD, mapping on grid or ground with scale factor; location maps showing all primary and secondary control points; sketches of references of project control points including staked centerline points (POT, PC, PT, etc.); subsurface utilities notes (SUE Level A, B, C or D); coordinate listing of project control points (NEZ plus the type of points); and coordinate listing of proposed alignment or staked centerline data.

The EFLHD Survey Office assists Highway Design by providing all of the data required for the Survey Info Sheet in the final mapping CADD file delivered to Highway Design.
The Project Manager/Highway Design Manager will notify the Lead Designer when the final mapping is available.

- You can copy the final mapping CADD file to your project folder OR reference the original final mapping file from the Survey > Final Mapping folder.
- Create a new DGN file using "**Sur_ft2D.dgn"** seed file.
- Name this file according to the EFLHD Naming Convention [e.g. "A04-lop10(2)_sur.dgn" for RRP-LOP 10(2) project].
- Attach your project Border file using Microstation Reference tool. Change the scale according to the project requirement.
- Within the Border, include Horizontal Alignments, Existing Features, Datum Information, Coordinate Listing, Sketches of References, and other survey information from the final mapping CADD file.
- Use Models in the same design file, if project will have more than one Survey Info Sheet.

Some editing of the Sketches of References element symbology may be required for printing purposes, to eliminate pen table shading of existing features.
Example; change level name from "E_Utilities" . . . to AUX_ or Default.

EFLHD Survey will notify Highway Design if any updates/ revisions are made to the final mapping CADD files.

12.7 – Typical Section Sheet

The Typical Section shows the shape of the finished cross-section within the construction limits, and represents the appearance of the completed project. It must be specific enough to describe the proposed work, its location, and material needed.

- Create a new DGN file using "**Sur_ft2D.dgn"** seed file.
- Rename this file according to the EFLHD Naming Convention [e.g. For one sheet typical sections. The file name will be "**B01-lop10(2)_typ.dgn**". Use models if you have more than one sheet. The file name will be "**B-lop10(2)_typ.dgn**". B1, B2 will be the models name for RRP-LOP 10(2) project].

  Attach your project Border file . (Attach reference on other models also if you have more than one sheet).

- Use models in the same Typical Section sheet design file, if project have more than one Typical Section sheet.

- Show sections for Normal Crown and Superelevated areas, as applicable.

12.8 – Quantities and Summaries Sheet

The Summary of Quantities tabulation combines and summarizes the contract quantities for all pay items. This summary informs prospective bidders where to locate work within the plan sheets, the difference between plan quantities and bid schedule quantities, if any, and expands on contract bid schedule information.

12.8.1 – EFLHD Quantity Sheet Information

Standard Quantity Design Sheets are developed by EFLHD to improve efficiency and consistency in the process of generating quantity summaries and schedules sheets for the PS&E Package.

There are two design files and one excel file.

- Border file, **01-EFLHD_bdr.dgn** (M:\Engineering_Software****Cadd_resource_v8i\Borders**01- EFLHD_bdr.dgn**). This file is used for borders as referenced to the quantity design sheets in each model.

- Quantity Sheet Design File, **Quantity.dgn** (M:\Engineering_Software****Cadd_resource_v8i\Quantity_Shts**Quantity.dgn**) (This file has different summaries and Schedules on each model)

- Quantity Spread Sheet, **Quantity.xls** (M:\Engineering_Software****Cadd_resource_v8i\Quantity_Shts**Quantity.xls**) (This file has same summaries and Schedules in each of the sheets)

  Note: For A/E's, these files are available through the CADD_Resources_V8i.zip download (See Chapter 1.4).

12.8.2- Summaries & Schedules Sheets

Step I

- Copy these files (explained above in Section 12.8.1) into the working directory.
- Rename these files as per EFLHD Naming Convention (See Section 2 of this guide).

Step II

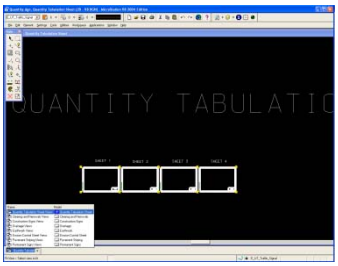
- Open Quantity Sheet Design file.

  Note: This file has the Tabulation of Quantities sheets in the Default Model and all other Summaries and Schedules sheets in different Models of the design file. 01-EFLHD_bdr.dgn border file is already referenced to these models. You can't see the border in any of the models as you have changed the border file name and directory.

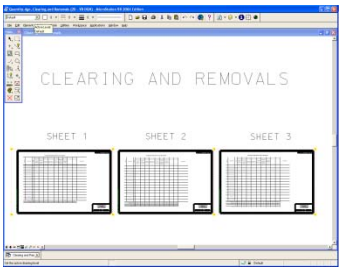
- Reattach all border reference files you need to use with your project border file.

- Click model view at the bottom left and select different Summaries and Schedules in your design file.

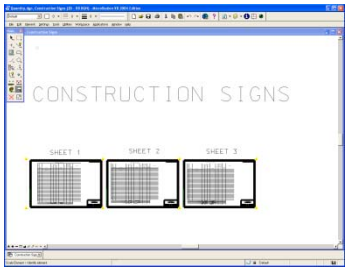
  Some are shown as below:



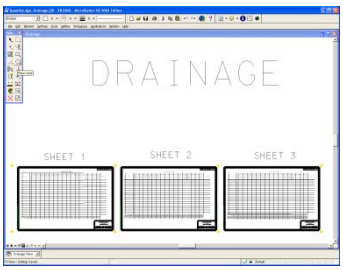
Tabulation of Quantity



Clearing And Removals



Construction Signs

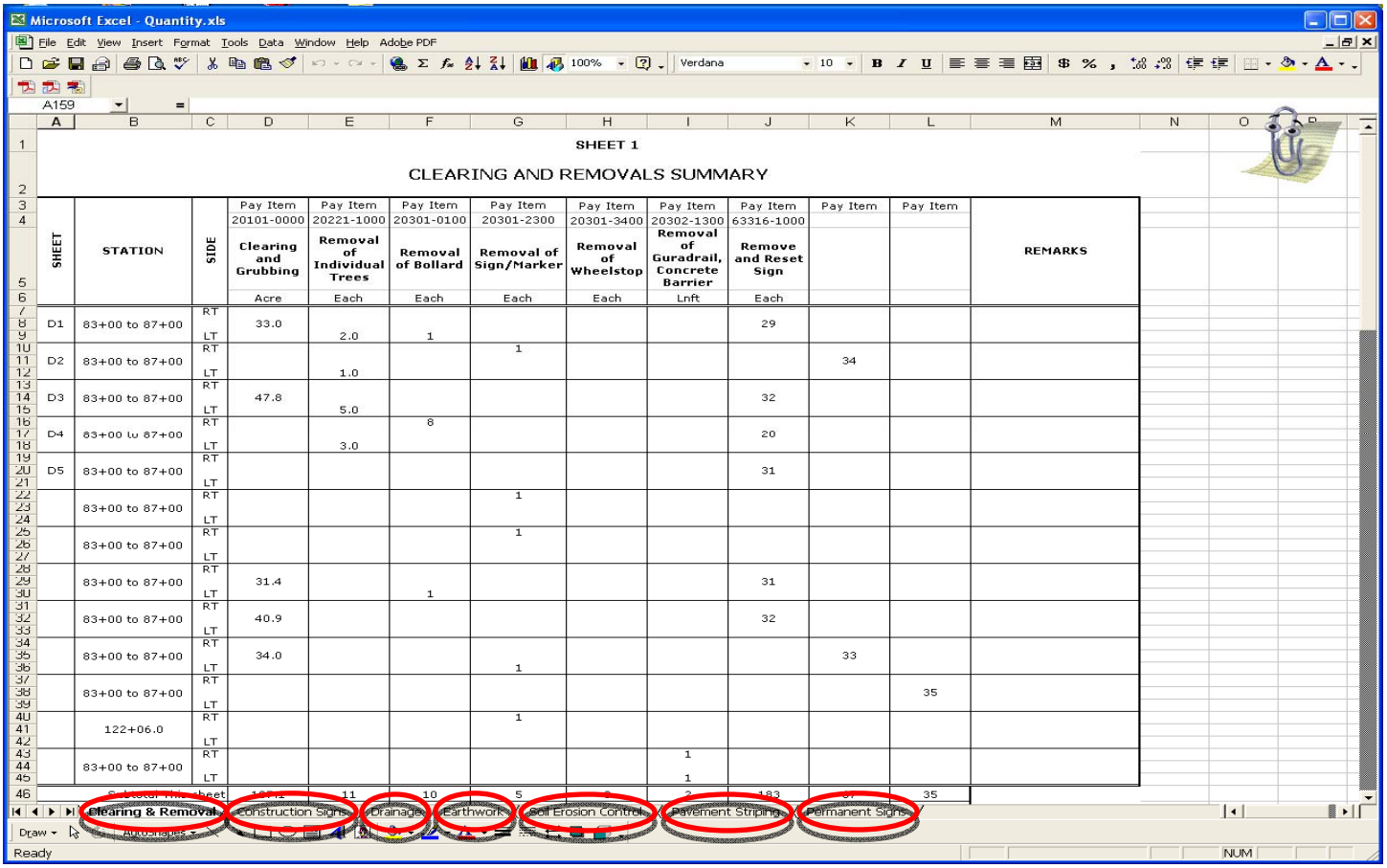


Drainage

- The Tabulation of Quantity Sheet is in the Quantity Tabulation Sheet Views model and Summaries and Schedules Sheets are in different models of the design sheet.

- Summaries and Schedules are as follows:
  i) Clearing and Removals, ii) Construction Signs, iii) Drainage, iv) Earthwork, v) Erosion Control, v) Pavement Striping, and vi) Permanent Sign Sheets.

- The tables of different sheets of each model are linked with Excel worksheets. The Excel file has the Summaries and Schedules in different worksheets as shown below in red circles:



SHEET 1

CLEARING AND REMOVALS SUMMARY

SHEET	STATION	SIDE	Pay Item 20101-0000 Clearing and Grubbing Acre	Pay Item 20221-1000 Removal of Individual Trees Each	Pay Item 20301-0100 Removal of Bollard Each	Pay Item 20301-2300 Removal of Sign/Marker Each	Pay Item 20301-3400 Removal of Wheelstop Each	Pay Item 20302-1300 Removal of Guradrail, Concrete Barrier Lnft	Pay Item 63316-1000 Remove and Reset Sign Each	Pay Item	Pay Item	REMARKS
D1	83+00 to 87+00	RT	33.0	2.0	1				29			
		LT										
D2	83+00 to 87+00	RT		1.0		1				34		
		LT										
D3	83+00 to 87+00	RT	47.8	5.0					32			
		LT										
D4	83+00 to 87+00	RT		3.0	8				20			
		LT										
D5	83+00 to 87+00	RT							31			
		LT										
	83+00 to 87+00	RT				1						
		LT										
	83+00 to 87+00	RT				1						
		LT										
	83+00 to 87+00	RT	31.4		1				31			
		LT										
	83+00 to 87+00	RT	40.9						32			
		LT										
	83+00 to 87+00	RT	34.0			1				33		
		LT										
	83+00 to 87+00	RT									35	
		LT										
	122+06.0	RT				1						
		LT										
	83+00 to 87+00	RT						1				
		LT						1				
Subtotal This Sheet			187.2	11	10	5	0	2	183	67	35	

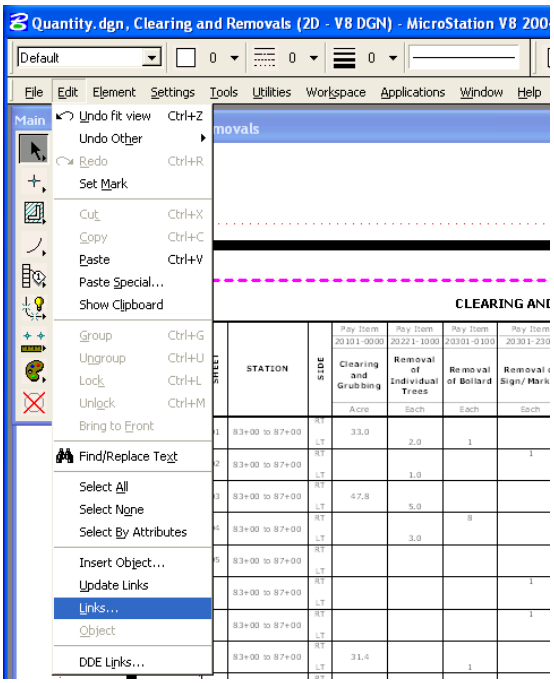
Clearing & Removal | Construction Signs | Drainage | Earthwork | Soil Erosion Control | Pavement Striping | Permanent Signs

The above spreadsheet has seven worksheets and each worksheet has three tables for different Summaries and Schedules (sheet1, sheet2 and sheet3). These sheets have a link connection with the Quantity Sheet design file. Any changes in the spreadsheet will automatically be changed in your Quantity Sheet design file.

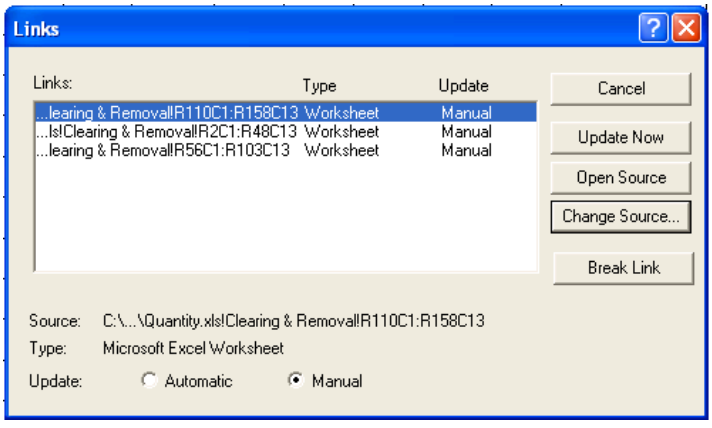
- The link in the Quantity Sheet design file with the Excel file will be lost because of a change in directory and files name. To reestablish the link, follow Step III.

Step III

- Open the Quantity Sheet design file. Open Clearing and Removal Models.
- Open **Links menu** through **Edit>Link** as shown below:

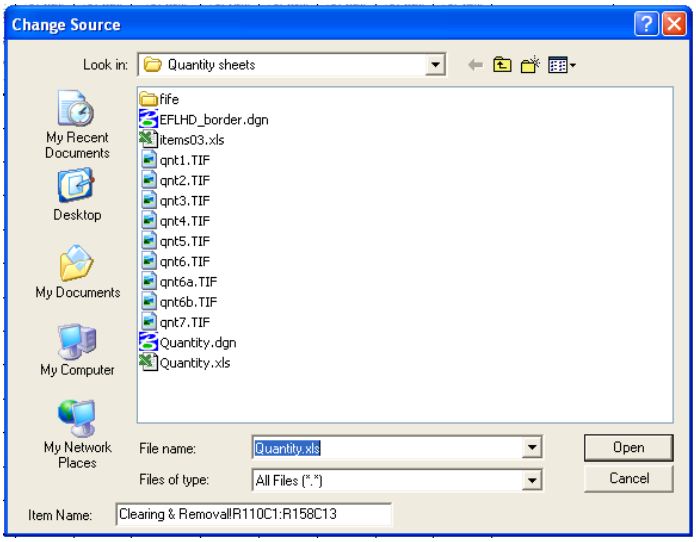


- The Links Menu for Clearing and Removal Models will appear.



- **Highlight** one line on link menu as shown above and click on **Change Source**.

- **Change Source** menu will appear.

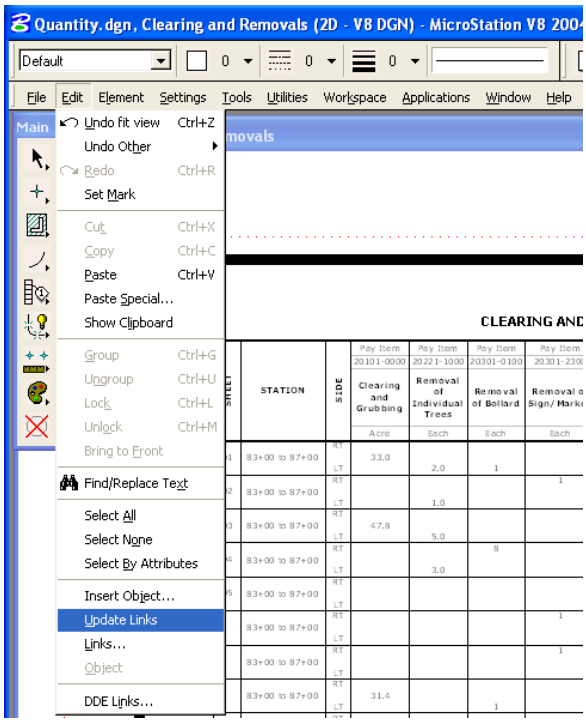


- Select the Quantity excel file from the working directory of the Change Source menu. Select all three lines one by one and change the source of the link by selecting the same Excel file.

- Change the source of all the links in each Model with the same Excel file.

- Open the Excel file and select the working sheets of Summaries and Schedules to use. Edit according to the project information and **save** the Excel spreadsheet file.

- Open the Quantity Sheet design file and select **Edit > Update Links** as shown below. Your design file will be updated according to the Excel Spreadsheet.


Quantity.dgn, Clearing and Removals (2D - V8 DGN) - MicroStation V8 200
Default
File
Edit
Element
Settings
Tools
Utilities
Workspace
Applications
Window
Help
Main
Undo fit view Ctrl+Z
Undo Other
Redo Ctrl+R
Set Mark
Cut Ctrl+X
Copy Ctrl+C
Paste Ctrl+V
Paste Special...
Show Clipboard
Group Ctrl+G
Ungroup Ctrl+U
Lock Ctrl+L
Unlock Ctrl+M
Bring to Front
Find/Replace Text
Select All
Select None
Select By Attributes
Insert Object...
Update Links
Links...
Object
DDE Links...
CLEARING AND
STATION
SIDE
Clearing and Grubbing
Removal of Individual Trees
Removal of Bollard
Acre
Each

12.8.4 – EEBACS

The Engineer Estimating, Bidding, Award and Construction System (EEBACS) is an integrated system that provides for estimation, solicitation/award, and contract administration of FLH's construction projects. EEBACS is a Web-based system that is maintainable and scalable. Portions of the Construction module will also be offered in an off-line version – Not available, under development. EEBACS consists of a series of components that tracks costs from a project's inception through final acceptance.
The Design module begins the EEBACS process with the inputting of project data and development of cost estimates during project development. This module tracks the development of estimates and produces documents that are incorporated into a solicitation package. In the Design phase, EEBACS provides the capability to:

- Document project data;
- Develop a list of the pay items for a project;
- Record quantities, price pay items, and calculate incentives;
- Develop Summary of Quantities containing the pay items;
- Create an independent government estimate for the project (IGE); and
- Pass information needed by the Acquisition staff to generate the bid schedule for the construction contract.

Refer to the EEBACS site on the **FLH webpage > Resources > PS&E Preparation > Engineer's Estimates > EEBACS** for general information, Design module chapter, overall users guide, user account requests and new project requests.

http://flh.fhwa.dot.gov/resources/pse/estimate/

The primary source for information about EEBACS is the EEBACS User Guide, specifically Chapter 2 - Design Module.

The following provides additional information/tips for creating estimates in EFLHD.

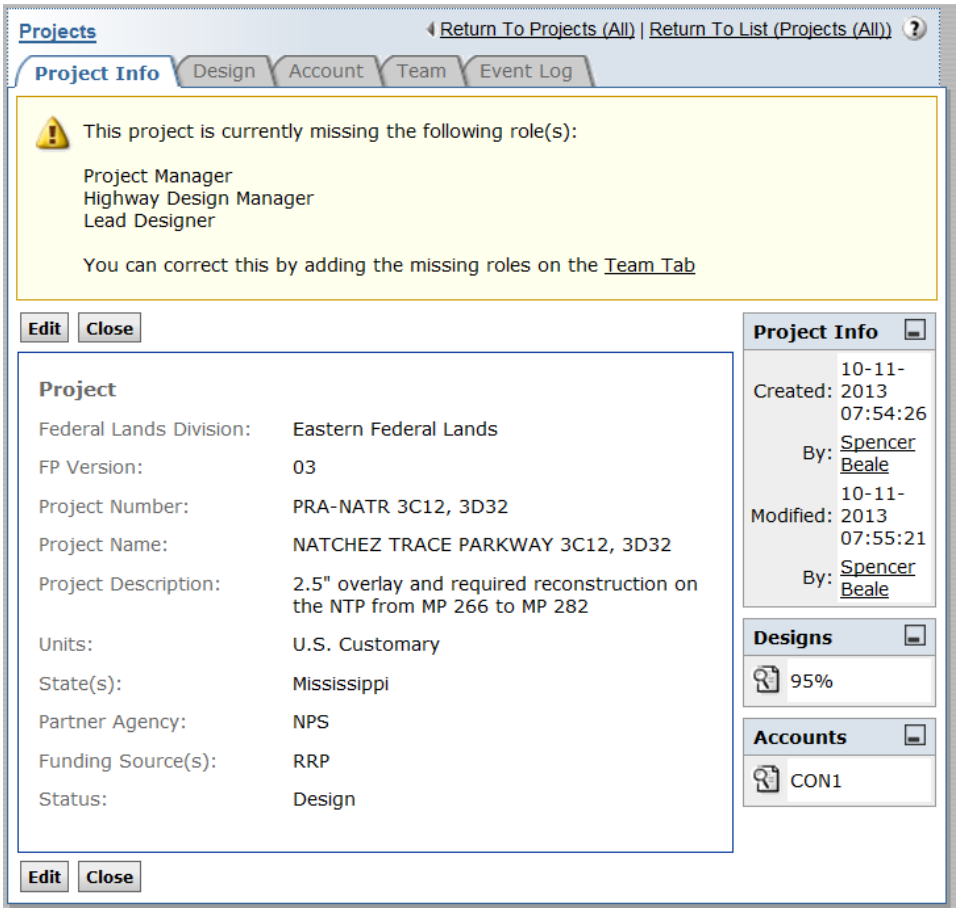
EEBACS-005: Use this form to request a new project, or to modify an existing project. **The Project Manager is required to sign this form**. Submit the PM signed form to the EEBACS Design Component Lead (Spencer). The project information on the form will be used to create the EEBACS Project. (Dan Van Gilder is the back-up contact to the Design Component Lead)

Project Info

Roles: There is an alert (yellow triangle) that roles are missing. On the *Team* tab assign a "Highway Design Manager" a "Lead Designer" and. “Project Manager”.

Most of the other Project Information was filled out when the project was created. Changes to the *Project Number, Name, Description, etc* must be done by by the Design Component Lead.

Press the **Edit** button to modify the remaining project information. Fill out as much information as is appropriate for the project.



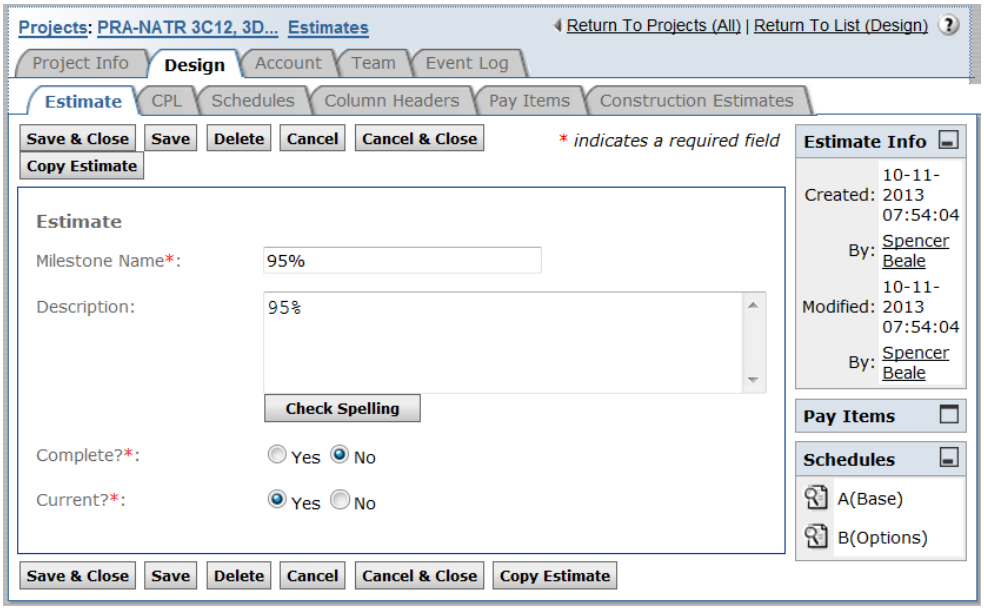
Estimate

Milestone Name: A default/ un-named estimate will come with the new project.
Edit this estimate according to the *Milestone* the estimate is at.

EFL will commonly save 15%, 30%, 70%, 95%, 99% and 100% milestone estimates.

DO NOT delete the base estimate, as the default settings will be lost.

Name the last milestone "*100%*" before Promoting the estimate to Acquisitions.



Schedule

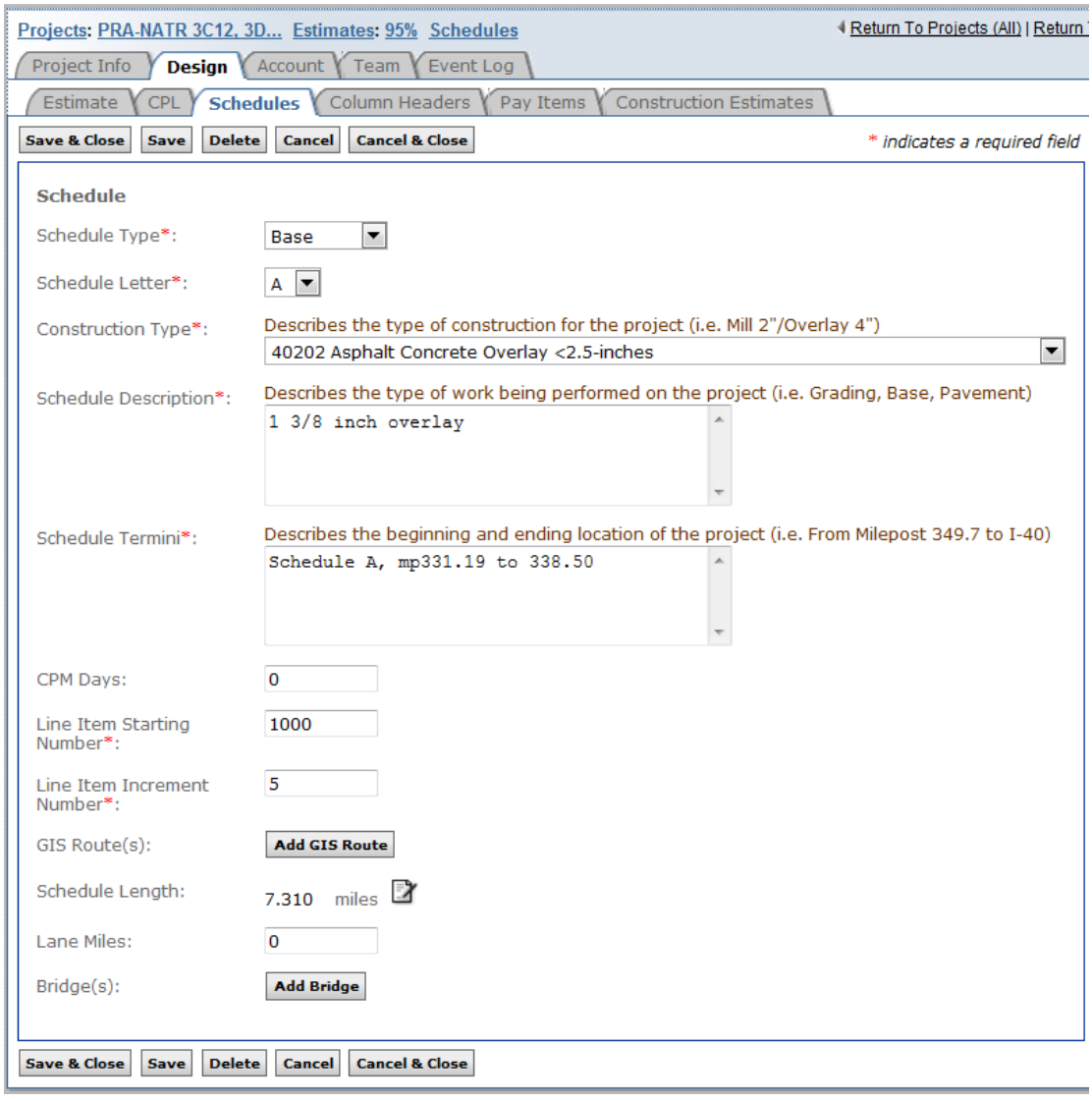
The user should set up a "Base" schedule. Use **"A"** for the base schedule letter. It should be edited to suit the needs of the individual project. If more than one schedule is used for the project, set up Schedule A as the "Base" schedule and all others as an "Option" schedule.

Construction Type: Change this field to the value that most closely matches the project's construction type.

Also add the **Schedule Description** and **Schedule Termini** for the project.

Line Numbers: Line numbers are very important in EEBACS. Each pay item is automatically assigned a line item number. Line item numbers are four digits. Start the first line item number with 0020 or 0100 depending on the amount of pay items.

Use a value of 20 for the **Line Item Increment Number.**



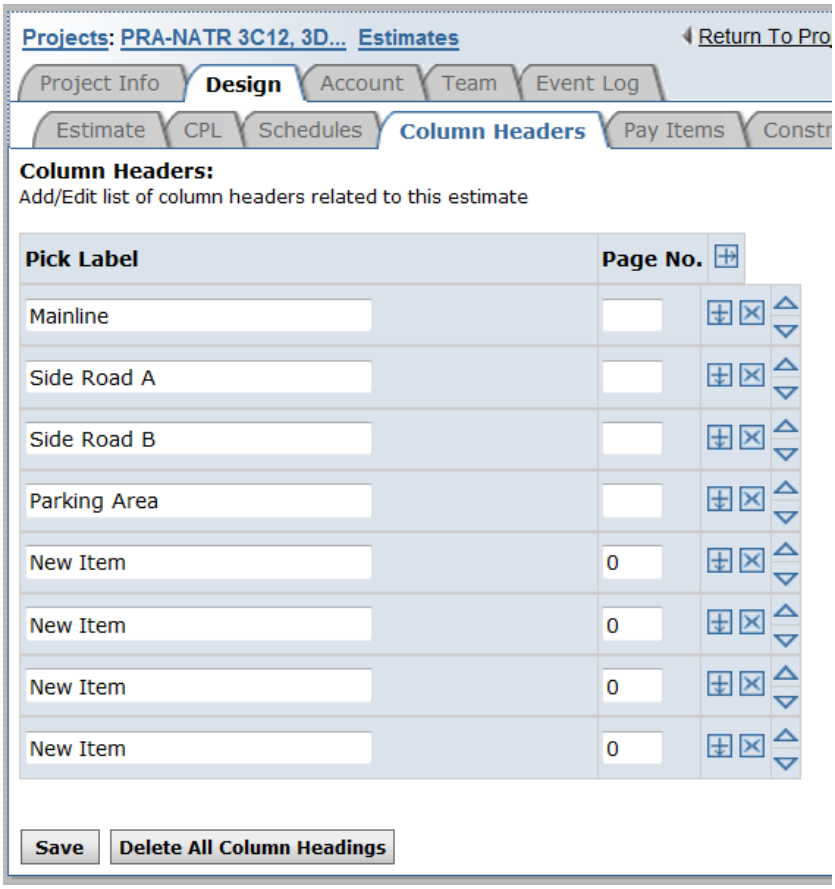
Column Headers

EFLHD will normally use column headers in the Summary of Quantities plan sheet to separate pay item quantities by alignment or site.
Set up column headings based on Name, Route, Area. Etc.

The Page No. field MUST have a SPACE inserted if you want the field to remain empty on the Summary Sheet.

Optionally, create an *Allowance* column to provide additional quantity used to round the bid quantity to some interval.

See the Summary of Quantities appendix for more information on creating the output and using the spreadsheet.



Adding Quality Incentives

See the EEBACS User Guide, Chapter 2.5.8 - Adding Incentives, for general guidance.

EFL Highway Design is responsible for calculating quality incentives for applicable pay items.

It is EFLHD practice to add a **Material Quality** incentive for Section 301, 304, 401, 402, 405 and 409 pay items when the item quantity is **3,500 tons or more for an individual pay item.**

Do not add quantities of multiple items (in the same Section) together to achieve the 3,500 ton threshold. Each pay item should be considered separately. This includes not adding quantities for same items that appear in each Schedule.

It is also EFLHD practice to add a pavement **Roughness Quality** incentive for 401 and 402 pay items, and a **Smoothness Quality** incentive for 501 pay items when there is **0.1 LANE MILES of continuous paving**.

For estimating both incentives, access the **EEBACS US Incentives and Adjustments** worksheet in QBS. (http://fhfl15print.flhd.fhwa.dot.gov/default.aspx)
Save the worksheet to the project's **Quantity** folder.

Material Quality Incentive

In the worksheet;

Enter the item quantity and unit price in the gray fields. The incentive price will be calculated for you.

Multiple tabs are available for additional Schedules if needed.

Federal Lands Highway
Worksheet for Estimating Quality Materials & Profilograph Incentives
ENGLISH

Page 1

Project:								**Schedule:**	A
Enter data in gray cells only, aqua cells will calculate automatically.								**Date:**	10/11/13
301-Untreated Aggregate Courses									
				Rounded (Unit Price x 5%)			(Tons x Q_Tons Unit Price)	**Materials**	
4,550	**Tons**	$60.00	**Unit Price**	**$3.00**	***Q_TON***	**Unit Price**	**$13,650.00**	**Incentive**	
Note: Use this if your item quantity is greater than 3500 tons									
304-Aggregate Stablization									
				Rounded (Unit Price x 5%)			(Tons x Q_Tons Unit Price)	**Materials**	
	Tons		**Unit Price**		***Q_TON***	**Unit Price**		**Incentive**	
Note: Use this if your item quantity is greater than 3500 tons									
401-Superpave Hot Asphalt Concrete Pavement									
				Rounded (Unit Price x 6%)			(Tons x Q_Tons Unit Price)	**Materials**	
5,250	**Tons**	$85.00	**Unit Price**	**$5.10**	***Q_TON***	**Unit Price**	**$26,775.00**	**Incentive**	
Note: Use this if your item quantity is greater than 3500 tons									
402-Hveem or Marshall Hot Asphalt Concrete Pavement									
				Rounded (Unit Price x 6%)			(Tons x Q_Tons Unit Price)	**Materials**	
	Tons		**Unit Price**		***Q_TON***	**Unit Price**		**Incentive**	
Note: Use this if your item quantity is greater than 3500 tons									

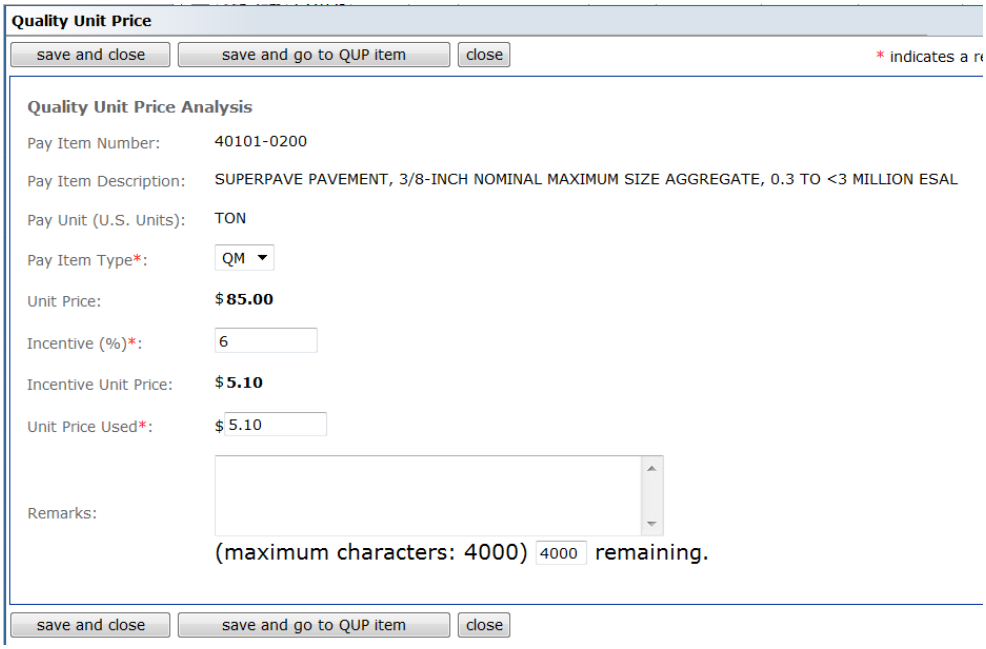
In EEBACS, hit the **QUP** (Quality Unit Price) button;

☐		40101-0200	A	NR	SUPERPAVE PAVEMENT, 3/8-INCH NOMINAL MAXIMUM SIZE AGGREGATE, 0.3 TO <3 MILLION ESAL (TYPE 1 PAVEMENT ROUGHNESS)	TON	$85.00	8,700	$739,500.00	yes	BHUP CBUP QUP

Fill in the required fields. It should match what is shown in the worksheet.

Toggle the Pay Item Type to “QM” (Quality Material)

Save and Close.



This adds a material quality incentive item to your list of pay items.

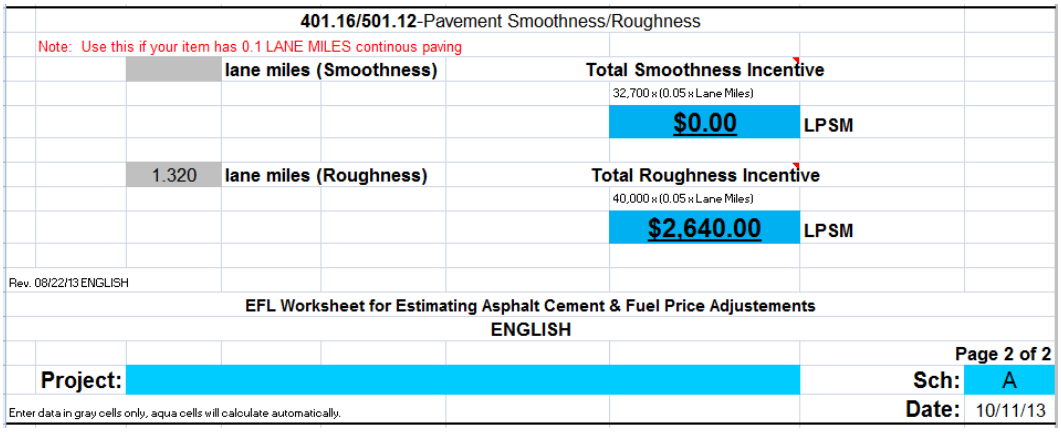
☐		40101-0200	A	NR	SUPERPAVE PAVEMENT, 3/8-INCH NOMINAL MAXIMUM SIZE AGGREGATE, 0.3 TO <3 MILLION ESAL (TYPE 1 PAVEMENT ROUGHNESS)	TON	$85.00	8,700	$739,500.00	yes	BHUP CBUP QUP
☐		40101-0200	A	QM	SUPERPAVE PAVEMENT, 3/8-INCH NOMINAL MAXIMUM SIZE AGGREGATE, 0.3 TO <3 MILLION ESAL (TYPE 1 PAVEMENT ROUGHNESS) (Quality)	Q_TON	$5.10	8,700	$44,370.00	yes	

Pavement Smoothness/Roughness Incentive

In the worksheet;

Enter in the total Lane Miles for the material in the gray area.

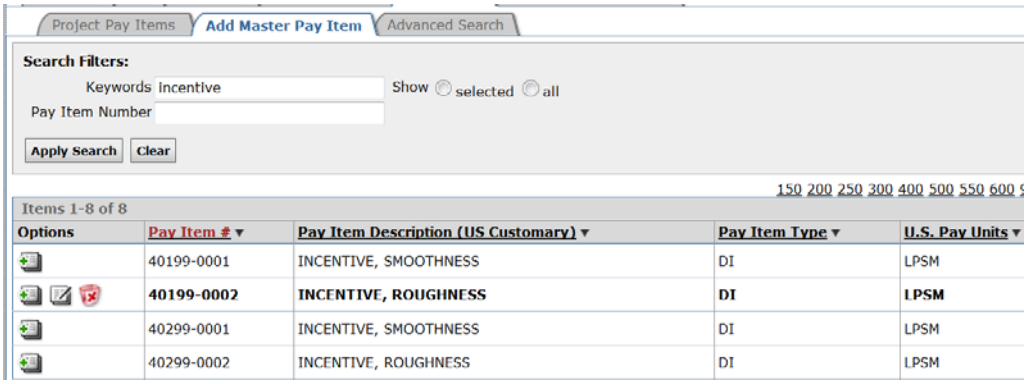
The lump sum incentive price is calculated for you.



(EFL will generally use the Roughness Incentive)

In EEBACS;

ADD the incentive pay item to the estimate from the **Add Master Pay Item** tab. (keyword search "incentive"). Be sure to select the appropriate item (in this example, it would be the **40199- 0002 Incentive, Roughness**).



Options	Pay Item #	Pay Item Description (US Customary)	Pay Item Type	U.S. Pay Units
	40199-0001	INCENTIVE, SMOOTHNESS	DI	LPSM
	40199-0002	**INCENTIVE, ROUGHNESS**	**DI**	**LPSM**
	40299-0001	INCENTIVE, SMOOTHNESS	DI	LPSM
	40299-0002	INCENTIVE, ROUGHNESS	DI	LPSM

Go back to the **Project Pay Items** tab and edit the 40199 incentive item. Enter the lump sum unit price from the worksheet.

Save and Close.

This adds a pavement roughness quality incentive item to your list of pay items.

Update/Create the **Construction Estimate** and verify that the Incentive items have been added correctly.

Estimated Quality Material Incentive:

Pay Item #	Description	Quantity	U.S. Pay Units	Unit Price	Total Price
40101-0200	SUPERPAVE PAVEMENT, 3/8-INCH NOMINAL MAXIMUM SIZE AGGREGATE, 0.3 TO <3 MILLION ESAL (TYPE 1 PAVEMENT ROUGHNESS) (Quality)	8,700	Q_TON	$5.10	$44,370.00
40101-1400	SUPERPAVE PAVEMENT, 1-INCH NOMINAL MAXIMUM SIZE AGGREGATE, 0.3 TO <3 MILLION ESAL (Quality)	10	Q_TON	$10.50	$105.00
40102-0200	SUPERPAVE PAVEMENT, 3/8-INCH NOMINAL MAXIMUM SIZE AGGREGATE, 0.3 TO <3 MILLION ESAL, WEDGE AND LEVELING COURSE (Quality)	100	Q_TON	$6.00	$600.00
					$45,075.00

Estimated Quality Smoothness Incentive: No Estimated Quality Smoothness Incentive

Estimated Quality Roughness Incentive: No Estimated Quality Roughness Incentive

Other Estimated Incentive:

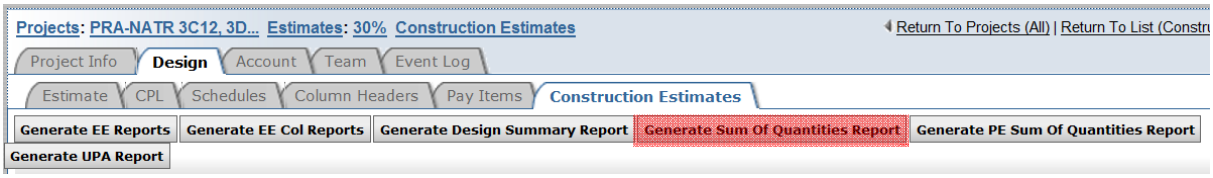
Pay Item #	Description	Quantity	U.S. Pay Units	Unit Price	Total Price
40199-0002	INCENTIVE, ROUGHNESS	All	LPSM	$2,640.00	$2,640.00
					$2,640.00

(Currently, the system places the Roughness Incentive under "Other . . . ")

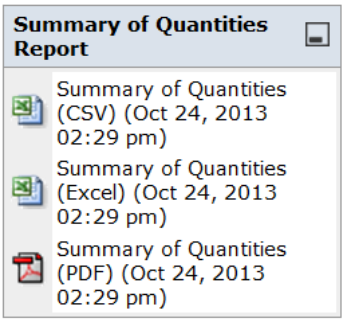
Summary of Quantities (Tabulation of Quantities) Sheet

See the EEBACS User Guide Chapter 2.5.9.1.4 for general guidance.

Hit the "Generate Sum of Quantities Report" button under the Construction Estimates tab (be sure that the estimate and schedules are all up to date).



Three file formats are created (.csv, .xls, .pdf) for the Summary of Quantities Report.



The .csv file is used with the prepared summary sheet (not generally used in EFLHD).

EFLHD will normally use the Excel .xls spreadsheet to create the Summary of Quantities plan sheet. Hide unused columns and resize columns as needed. **DO NOT hide the "Line Item No." column**. It is useful in the Amendment/ Contract Modification process.

Reference or Link the .xls spreadsheet into a Microstation CADD file. Attach your project sheet border to create the Summary of Quantities plan sheet.

Use the .pdf for a quick review of the summary.

12.9 – Plan and Profile Sheets

The designer may incorporate plan and profile sheets, plan sheets, line graphs, or other descriptive sheets that describe the proposed work. When laying out plan and profile sheets, avoid dividing major structures, highway intersections, interchanges, or grade separations between sheets.

See **GEOPAK V8i Section 2.1** to create **Plan & Profile Sheet Clipping** using Geopak Civil Software.

12.10 – Approach Roads and Parking Areas

Plans, profiles, and details for approach roads, parking areas, turnouts, and other associated roadways may be placed in a single section or in multiple sections as appropriate. It may be appropriate to include approach road plans with the mainline plan and profile sheets. Use unique stationing for designed approach roads and secondary roads.

12.11 – Erosion and Sediment Control Narrative and Sheets

- A standard Erosion and Sediment Control Narrative Sheet is developed for EFLHD and will be used for all EFLHD projects with Erosion and Sediment Control Plans.

  Access the Narrative Sheet through EFLnet
  http://eflnet.flhd.fhwa.dot.gov/tools/template-drawings.aspx

  Original is kept at;
  M:\Engineering_Software\Cadd_resource_v8i\Standard_Shts\ESC_Narrative

- Copy this file into the project working directory.

- Rename the file according to the EFLHD naming convention
  [e.g. “M01-lop10(2)_e&s_nar.dgn” for RRP-LOP 10(2) project].

- Re-attach the project Border sheet file from your working project directory.

12.12 – Temporary Traffic Control

12.13 – Permanent Traffic Control

12.14 – Drainage Cross Sections, Pipe Profiles and Details

12.15 – FLH Standards and EFLHD Details

12.15.1- Introduction

FLH Standard Drawings are intended to cover various design elements and be applicable nationwide. They have been posted on the Western Federal Lands Highway Division office website for repetitive use in the plans. Each standard drawing is available in both Metric and US Customary units and conforms to the FP-03.

EFLHD Detail Drawings are also created within the Division on a continual basis by the Highway Design office to clarify the work required in the plans.

12.15.2 - EFLHD Policy

The following are the EFLHD policies regarding Standard Drawings and EFLHD Detail Drawings:

- All three Divisions have one set of Standard Drawings known as the FLH Standard Drawings. These Standards Drawings are located on the WFLHD website. http://www.wfl.fha.dot.gov/design/standard/

- Each Division also has their own set of Detail Drawings.
  EFLHD Detail Drawings are located on the EFLHD Intranet - Highway Design Tab Details 2011

  EFLHD Detail Drawings are also available in the following directory: - M:\Standards\EFLHD_Detail-Drawings\V8\

- Use EFLHD Detail Drawings when there is no available FLH Standard Drawing and/or when the Standard is not appropriate for the project.

- **FLH Standard Drawings and Eastern Federal Lands Detail Drawings may be modified based on individual project requirements. Submit modified FLH Standards, EFLHD Details and completely new project specific Details to the HD CADD Coordinator, through your HDM, for review prior to including the drawing(s) in your submittal plans. Describe any and all modifications made to the drawing when submitting to the CADD Coordinator.**

- **When FLH Standard Drawings are modified, renumber as follows:**

  i) Modified Standard Drawings become Project Specific Detail Drawings.

  ii) Change Drawing Numbers by adding alphabetic characters.
  (e.g. Standard Drawing # 635-01 will be renumbered as Project Specific Detail Drawing # 635-01A).

  iii) Replace the word "Standard" with "Detail".

  iv) Replace "Federal Lands Highway Division" with "Eastern Federal Lands Highway Division".

  v) Remove "Standard Approved For Use" and dates. (your changes will not have been approved on the FLH level)

  vi) Change the File Name to match the new Detail number.
  (e.g. A Standard file name st63501.dgn would change to st63501a.dgn).

- **When EFLHD Detail Drawings are modified, renumber as follows:**

  i) Modified EFLHD Detail Drawings become Project Specific Detail Drawings.

  ii) Remove "Detail Approved For Use" and dates. (your changes will not have been approved on the EFL level)

  iii) Change Drawing Numbers by adding alphabetic characters.
  (e.g. EFLHD Detail Drawing # E633-02 will be renumbered as Project specific Detail Drawing # E633-02A for the English version).

  iv) Change the File Name to match the new Detail number.
  (e.g. A EFLHD Detail file name st63302_detail.dgn would change to st63302a_detail.dgn).

- **When adopting a detail from a DOT / another source / or creating a completely NEW detail, number as follows;**

  i) New details are Project Specific Detail Drawings.
  ii) Add an "E" prefix and alphabetic character at the end. (e.g. #E602-A)
  iii) Provide a reference to the source of the adopted detail.
  iv) Provide the original source Detail No.
  v) Review/Revise original source detail's Notes.

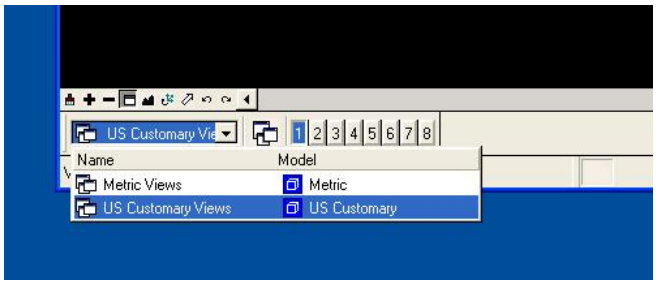
Always use FLH Standard Drawings and EFLHD Detail Drawings from the original sources/directory as shown above and NOT from old project directories.

12.15.3 - Use FLH Standard Details copied from WFLHD Website

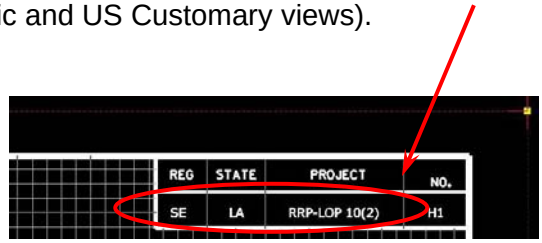
Step I

- Copy border file "**01-EFLHD_bdr.dgn**" or "**01-EFLHD_det_bdr-nps.dgn**" from "M:\Engineering_Software\Cadd_resource_v8i\Borders\ "directory into your project working directory. Change file name as per EFLHD naming Convention (e.g. 01-lop10(2)_bdr.dgn for LOP 10(2) project).

- Open the border file and choose Metric and US Customary views from the "View Groups" dialog (Metric and English need both views to use Standard drawings downloaded from WFLHD Website).



- Edit text for your project information "the top right corner of the border". (Edit this for both Metric and US Customary views).



Note: If you already have the Border for your project then skip Step I.

Step II

- Copy/Download the Standard drawing from WFLHD Website.
- Choose Metric or US Customary views from the "View Groups" as per your project requirement.
- Turn off the following levels from the active files:

  D_WFL_Arch

  D_Trad

  D_EFL_Handles
  D_EFL_Border
  D_EFL_Arch
  D_CFL_Print
  D_CFL_Iplot

- Attach your project border from your project directory. Attach Metric or US Customary view as your requirement of your reference file. (Only metric will be used for dual unit)
- Turn off level default and D_EFL_Handles in the border reference file.

Step III

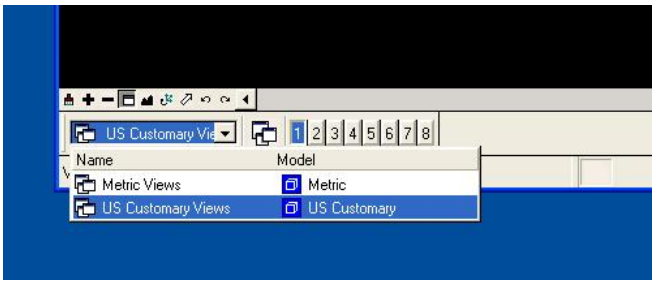
- Make sure to "Save Settings" for your permanent display.

12.15.4 - Use EFLHD Details (V8)

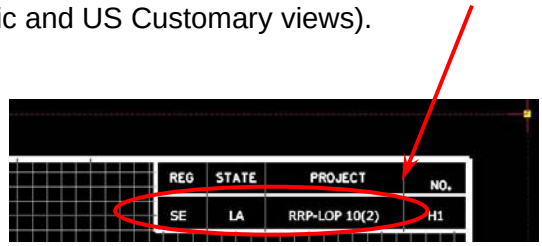
Step I

- Copy border file "**01-EFLHD_bdr.dgn**" or "**01-EFLHD_det_bdr-nps.dgn**" from "M:\Engineering_Software\Cadd_resource_v8i\Borders\ "directory into your project working directory. Change file name as per EFLHD naming Convention (e.g. 01-lop10(2)_bdr.dgn for LOP 10(2) project).

- Open the border file and choose Metric and US Customary views from the "View Groups" dialog (Metric and English both views need both views to use EFLHD Detail drawings).



- Edit text for your project information “the top right corner of the border”. (Edit this for both Metric and US Customary views).



Note: If you already have the Border for your project then skip Step I.

Step II

Copy/Download EFLHD Detail drawing from EFLHD Website.
Or copy from M:\Standards\EFLHD_Detail-Drawings\V8\ directory.

- Choose Metric or US Customary views from the “View Groups”
- Re-attach your project Border from your project directory.

Step III

Make sure to “Save Settings” for your permanent display.

12.16 – Cross Section Sheet

See **GEOPAK V8i Section 2.2** to create **Cross Section Sheets Clipping** using GEOPAK Civil Software.