

Consultant Management Estimating Tool Users' Manual

**Appendix to Final Report
for New York State Department of Transportation**

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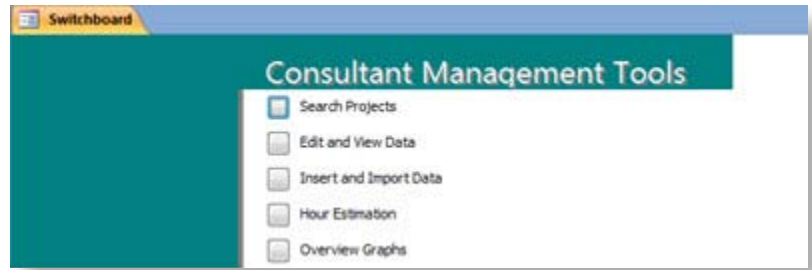
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Switchboard: The Main Menu

The Switchboard is the opening form displayed to users. Use the Switchboard to access the main functions of the estimating tool. Double-click on a box to select the desired function. From the Switchboard a user can initiate a search for projects, edit and view data that has already been input, insert and import new data, get an estimate of projects hours, and display graphs about the composition of the data.

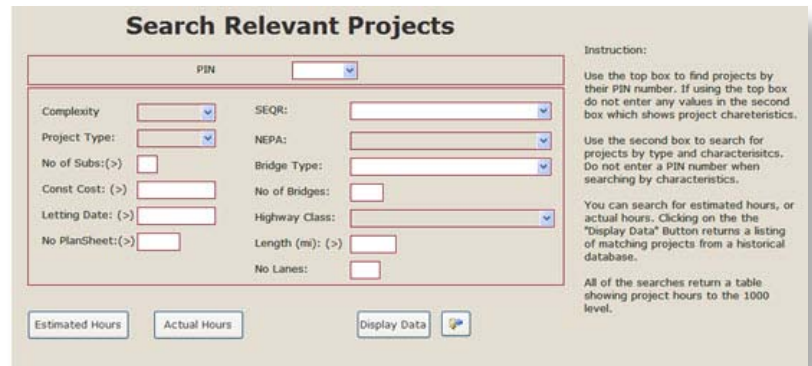
Figure 1. Switchboard



Search Projects

After double-clicking the “Search Projects” button in the Switchboard, the Search Relevant Projects form (see Figure 2) is displayed to the user. The search function allows users to view aggregated (thousand level) estimated and actual hours of projects matched with specific criteria.

Figure 2. Search Form



Select your preference, and click one of the bottom three buttons (“Estimated Hours,” “Actual Hours,” or “Display Data”). To view an estimated hours report, click on “Estimated Hours”; a report will be created with the estimated hours of the matched project as shown in Figure 3. From that point, you may view that project’s actual hours by clicking the “Actual Hours” button on the Estimated Hours report (see Figure 3). You may also view actual hours for projects by clicking on the “Actual Hours” button displayed at the bottom of the Search Relevant Projects form (see Figure 2).

Figure 3. Outputs from a Search for Estimated Hours

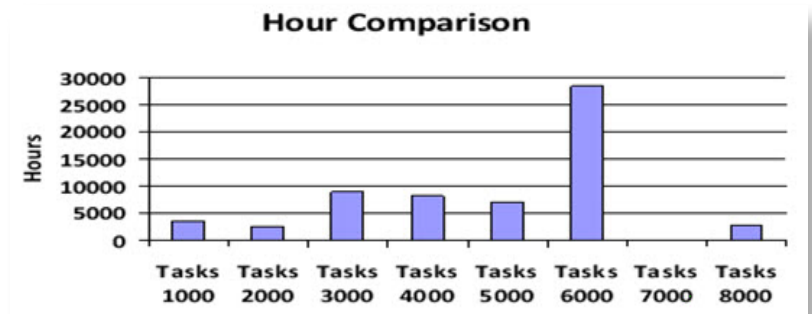
Estimated Hours

PIN	DNumber	1000	2000	3000	4000	5000	6000	7000	8000	
004202	0	3521	2487	8873	8228	7043	28438	0	2827	Show
022900	0	0	9980	1311	5839	5920	88199	19482	10169	Show
051641	0	879	2283	4842	10380	6416	14642	3892	6593	Show
172151	0	0	0	0	0	0	0	0	0	Show
420202	0	0	0	0	0	0	0	0	0	Show
504401	0	0	0	0	0	0	9365	1703	400	Show
511713	0	0	4742	717	1052	67	2974	2239	126	Show
520940	0	0	2925	4641	10037	4450	14314	0	261	Show
530790	0	0	1200	2630	4288	2498	7625	1610	0	Show
547014	0	7857	2553	980	21258	5084	0	0	3026	Show
580335	0	93	2742	2097	6322	3806	5242	0	542	Show
623900	0	9032	1779	582	8752	3771	18725	1500	522	Show
780426	0	0	0	0	0	0	0	0	0	Show
800648	0	0	0	0	0	0	0	0	0	Show
800672	0	12585	3411	326	13559	5745	2298	158	316	Show

Buttons: [Actual Hours]

Selecting the “Display Data” button returns a tabular listing of projects matching the selected characteristics (project type, complexity, etc.). This report displays only the project characteristics. There are buttons on the historical data output report that allow the user to see a listing of project hours for either the estimated or actual projects. A project is searchable using the “Display Data” button only when the project data, estimated hours data, and actual hours data have been entered for a project. Figure 4 shows a bar chart that indicates the total hours allocated to each design task.

Figure 4. Graph of Estimated or Actual Hours



Edit and View Data

Selecting the “Edit and View Data” box on the Switchboard opens a submenu, shown in Figure 5, that has options for editing and viewing data for the projects, actual hours, and estimated hours tables.

Edit and View Projects

Figure 6 shows the form that allows users to view and edit data from the project table, which contains the characteristics of the project. Data can be viewed using next, previous, and search icon buttons (see button description chart, page 9). Any modification to a record will be saved automatically when the form is closed or a different record is visited.

Edit View Estimated Hours

Figure 7 shows the form that is used to view and edit data for the estimated project hours. Notice that most activities are input at the 100 series. The exception is for environmental work (5000) where design activities are input to the 10 level.

Edit View Actual Hours

This form allows a user to view and edit data from the actual hours table. A user can update and edit the total actual hours. This form is shown in Figure 8.

Main Menu

Double-clicking on the “Main Menu” button of the Edit and View Data menu returns the user to the main Switchboard menu.

Figure 5. Edit and View Data Sub Menu

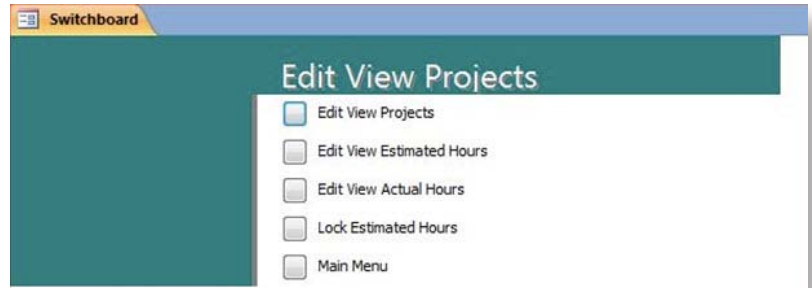


Figure 6. View Projects Form

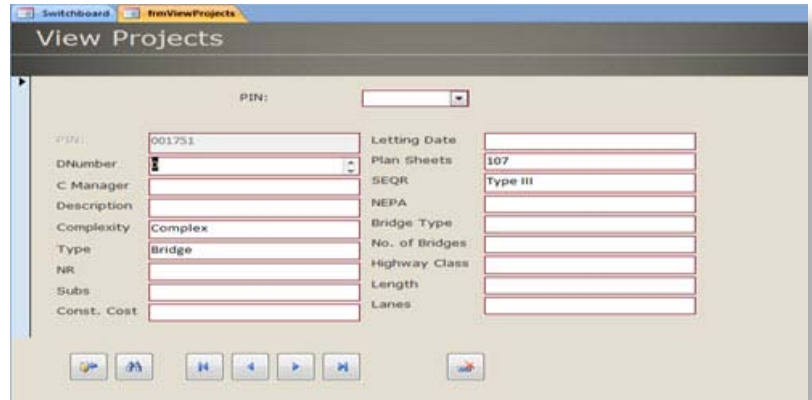


Figure 7. Edit View Estimated Hours Form

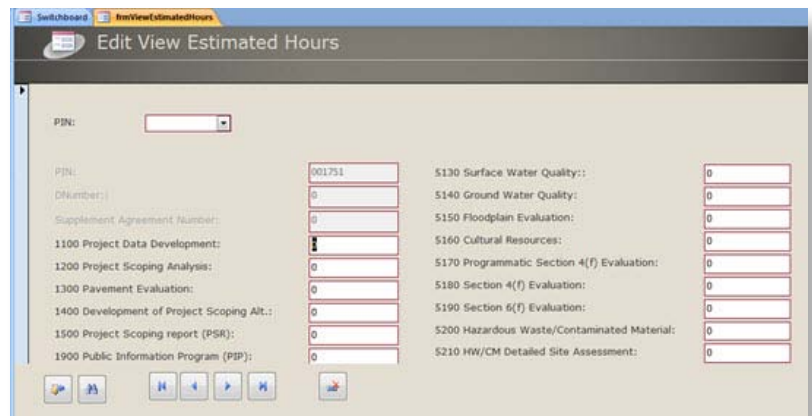
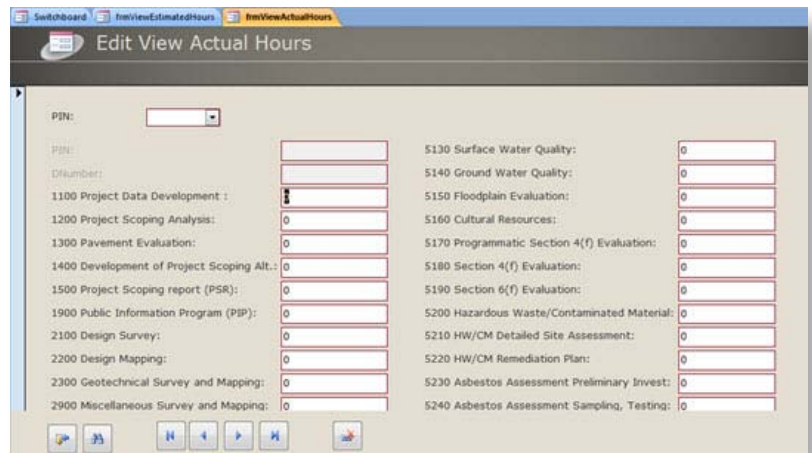


Figure 8. Edit View Actual Hours



Insert and Import Data

Selecting the “Insert and Import Data” button on the Switchboard menu will open a submenu (Figure 9) that has options for inserting and importing data to projects, actual hours, and estimated hours tables.

Insert New Project

The Insert New Project form (see Figure 10) allows users to type in a new record to the project table. This form requests information about the project characteristics. It is important to input the project information on this form before inserting estimated and actual hour data.

Insert Estimated Hours

This form (shown in Figure 11) is used to enter estimated project hours for a new project. A new record is added to the estimated hours table.

Insert Actual Hours

This form allows users to manually insert actual hours data for a new project to the actual hours table. It is shown in Figure 12.

A new project is defined when the PIN and Consultant Contract Number combination of the project has not previously been entered in the actual hour table. Use the Edit View Actual Hours form shown in Figure 8 to modify actual hour information of a project that already exists in the database.

Import Estimated Hours

This form allows the user to input a new record to the estimated hours table from an Excel template file by first filling out the data in the spreadsheet template shown in Figure 13, then inputting the project data and estimated hours using the form in Figure 14. This form allows users to browse their computer to find the necessary Excel file.

Click “Browse” as shown in Figure 14, and a file window opens as shown in Figure 15 that allows the user to find and select the Excel file for the project they want to input. Once the Excel file is selected, the text box in Figure 14 will display the import steps. If the import process was successful it will display an import success message. The Excel file has to meet the specific structure of the provided Excel template. If the file has a project with the same PIN, Consultant Contract Number, and supplement agreement number as an existing record in the

Figure 9. Insert and Import Data Submenu



Figure 10. Insert New Project Data Form

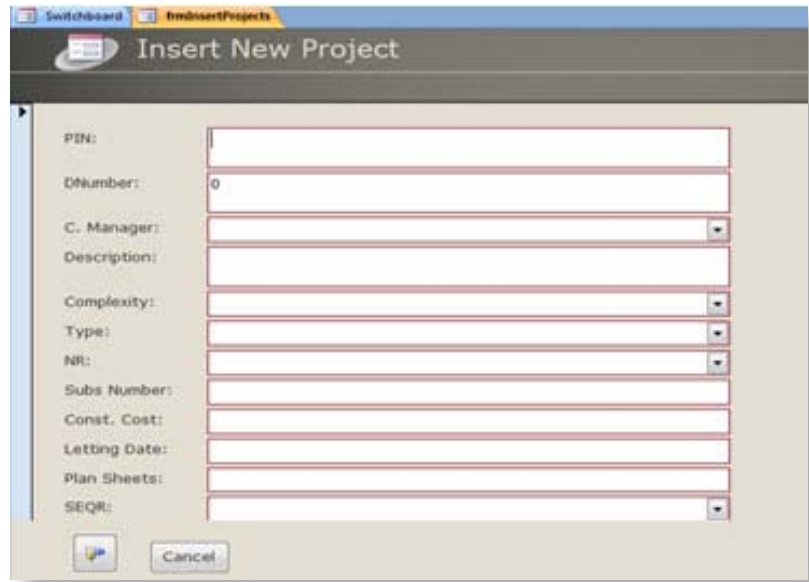


Figure 11. Insert Estimated Hours for a New Project Form

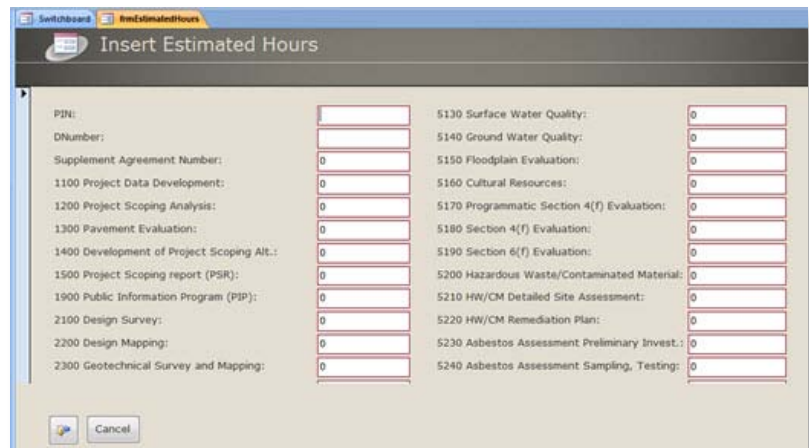


Figure 12. Insert Actual Hours Form

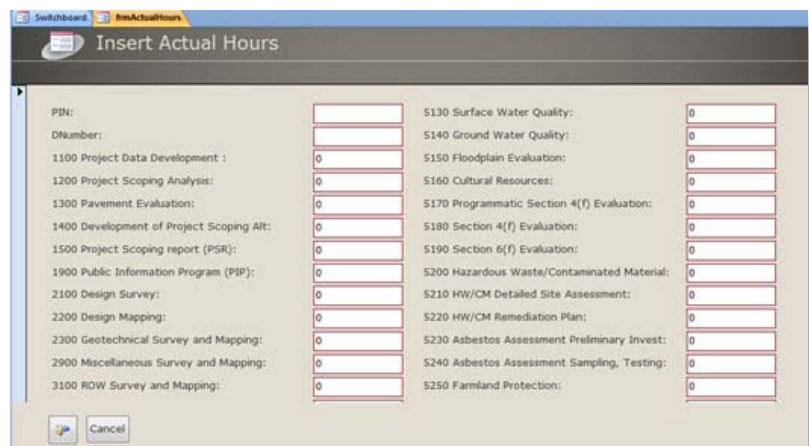


Figure 13. Estimated Hours Spreadsheet

Estimate No.		Project Description	
020547		Plattin Island Bridge/787 Interchange	
NYSDOT Agreement No.		Project Route	
		130	
PIN		Project From To	
9300		Region One	
Consultant Name		Project Location	
CME		Region One	
Consultant Contract Number		Begin Estimate Period	
Supplement Agreement Number		End Estimate Period	
HOURS/TASKS			
Task No. & Description			Total hours
1900 PROJECT DEVELOPMENT			19
1700	Project Data Development		19
1800	Project Scoping Analysis		0
1900	Pavement Evaluation		0
2000	Development of Project Scoping Alternatives		0
2100	Project Scoping report (PSR)		0
2200	Public Information Program (PIP)		0
2300 SURVEY AND MAPPING			8
2500	Design Survey		8
2600	Design Mapping		0
2700	Geotechnical Survey and Mapping		0
2800	Mechanical Survey and Mapping		0

Figure 14. Upload Estimated Hours Spreadsheet

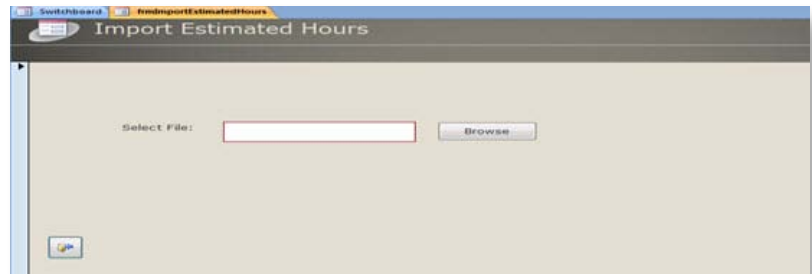


Figure 15. Select File After Clicking on Browse

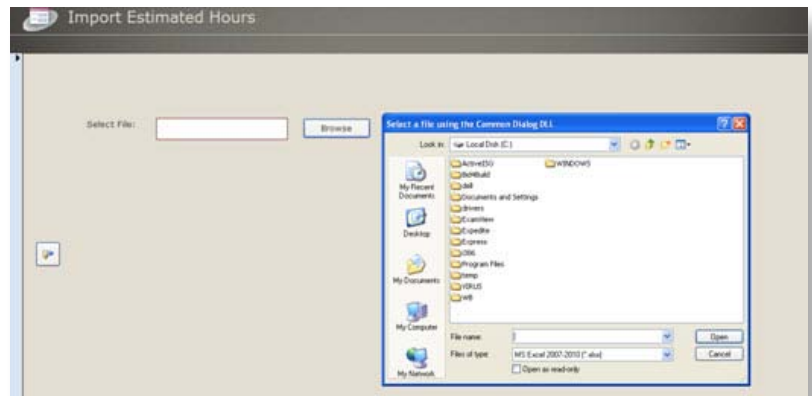
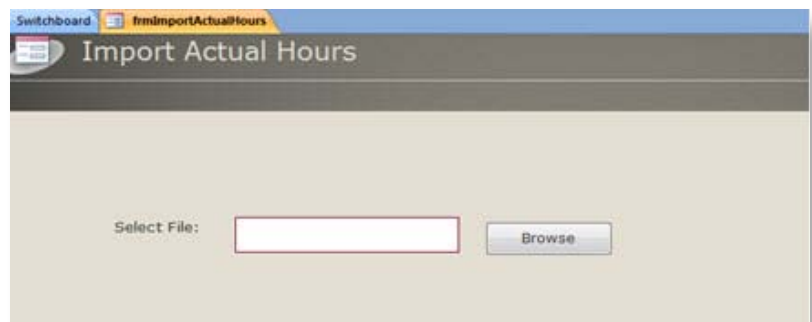


Figure 16. Excel Spreadsheet for Actual Hour Data Input

Estimate No.		Project Description	
020547		Plattin Island Bridge/787 Interchange	
NYSDOT Agreement No.		Project Route	
		130	
PIN		Project From To	
9300		Region One	
Consultant Name		Project Location	
CME		Region One	
Consultant Contract Number		Begin Estimate Period	
Supplement Agreement Number		End Estimate Period	
HOURS/TASKS		Total hours	
Task No. & Description	Approved	Unapproved	Budget
1900 PROJECT DEVELOPMENT	22.91	0	22.91
1700 Project Data Development	19.00	0	19.00
1800 Project Scoping Analysis	0.00	0	0.00
1900 Pavement Evaluation	0.00	0	0.00
2000 Development of Project Scoping Alternatives	0.00	0	0.00
2100 Project Scoping report (PSR)	0.00	0	0.00
2200 Public Information Program (PIP)	0.00	0	0.00
2300 SURVEY AND MAPPING	8.00	0	8.00
2500 Design Survey	8.00	0	8.00
2600 Design Mapping	0.00	0	0.00
2700 Geotechnical Survey and Mapping	0.00	0	0.00
2800 Mechanical Survey and Mapping	0.00	0	0.00

Figure 17. Import Actual Data Form in the Estimating Tool



database, then the hour information will be updated. If there is no entry in the project table, it means that the project has no description or information and will be added as a new project. Therefore, it is important to always fill out the project information on the Excel spreadsheet before attempting to import project hours.

Import Actual Hours

As with estimated hours, users may import new and updated data to the actual hours table from an Excel template file (see Figure 16). A user would copy the template and use a unique file name for each project. A user can add columns for additional invoices for a project and still use the automatic import feature. Figure 17 shows the form used to select and upload the spreadsheet file to the estimating tool. After updating the database, it will display the total hours for each item input thus far. So, if data are input for an ongoing project, the database will display the running total to date.

Main Menu

Clicking the “Main Menu” button in the Insert and Import Data subform returns the user to the main Switchboard.

Hours Estimation

The Estimate Total Hours form shown in Figure 18 allows a user to estimate hours for a new project by providing an estimate of the number of plan sheets required.

The Estimate Total Hours tools have two sections. In the first section users can select the criteria in order to create a subset of projects that have characteristics similar to the new project (the project for which the hours are being estimating) and use that subset for a regression analysis that predicts total project hours. If nothing is selected in the first section, then all available projects will be used in the regression analysis operation.

In the second section the user must provide an estimate of the number of plan sheets the new project will have. The tool will calculate the estimated hours for the new project.

Figure 18. Total Hours Estimate Form

Estimate Total Hours

Filter Data

Complexity: SEQ#:

Project Type: NEPA:

No of Subs: (>) Bridge Type:

Const Cost: (>) No of Bridges:

No of Lanes: Highway Class:

No PlanSheet: (>) Length (m): (>)

Instruction:

Use Filter Data section to narrow down the data set that will be used in regression function.

Please click Filter Data button to create new data set.

Use View Data button to see the exact data set to be used in regression function.

Enter number of estimated plan sheet of the new project and range of hour will be estimated

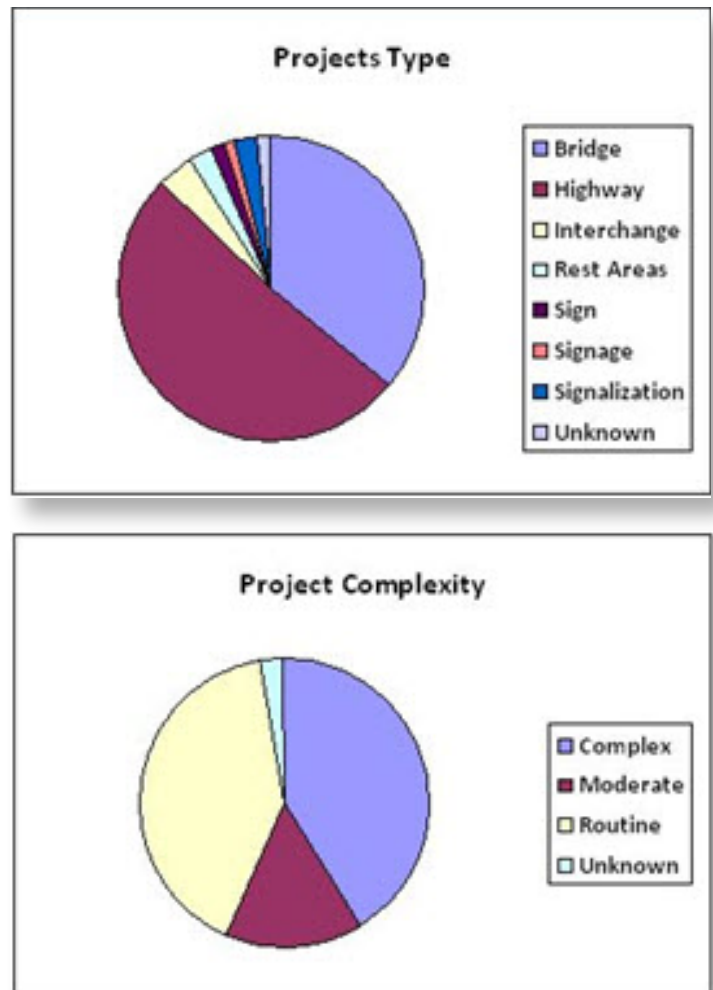
Enter No of Plan Sheets:

18500 Hours. With 44% Error. Range: 10351 To 26649 Hours








Overview Graphs

Clicking the “Overview Graphs” button (see Figure 1) on the main Switchboard menu displays pie charts of project type and complexity stored in the database. Figure 19 shows an example of the overview graph. An unknown project is a project for which no project type and/or complexity has been defined in the project input.

Figure 19. Summary of Project Data



Button Description

	Close current form, data will be saved
	Search for a record
	Go to first record
	Go to previous record
	Go to next record
	Go to last record
	Delete current record

Common Issues

- The database should have permission to run macro.
- Microsoft Access has some database locking issues under multi-user environments. It is recommended to restart the database if such an issue arises.
- For data import it is necessary to maintain correct file structure in the Excel template file.
- If a filtered subset is used to estimate hours, it requires some time in order to prepare a new dataset and calculate the new regression coefficient (about 2 seconds).
- In order to have all functionality enabled, it is necessary to insert corresponding records for both hour and project tables.
- PIN and Consultant Contract Number are the key columns, and they are required for every record.

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