Safety Office

Florida Department of Transportation

605 Suwanee Street, M.S. 53

Tallahassee, FL 32399-0450

Crash Reduction Analysis System Hub (CRASH)

User's Manual

For the

Florida Department of Transportation Traffic Safety Web Portal

Prepared by:

Enterprise 24 x 7, Inc.

In cooperation with

Safety Office
State of Florida Department of Transportation
605 Suwannee Street, M.S. 53
Tallahassee, Florida 32399-0450

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Document Revision History

Date	Version	Author(s)	Description
	Draft 0.0	Esra Erimez, Cindy Walters, Kathryn Waters, Marco Cristofari	Initial draft.
5/14/2014	v1.0	Jason Nelms	Initial version.

1. FLORIDA TRAFFIC SAFETY PORTAL

1.1 Introduction

The Florida Traffic Safety Portal is designed to serve as a gateway to accessing pertinent traffic safety data, information, and tools for the Florida traffic safety community. The portal includes both public (*internet*) and restricted areas (*intranet)*. The public areas are accessible without the need for an access account and serve as a public information portal. The restricted areas require a Florida Department of Transportation (FDOT) login and password.

This document highlights the navigational components related to accessing the Crash Reduction Analysis System Hub (CRASH) application and focuses primarily on using it via the portal. An overall Navigation Guide for the portal is available on the Florida Traffic Safety Office Homepage by clicking on the **Help** button on the Welcome banner.

Access to the CRASH application is restricted to authorized FDOT users and it requires a User ID and password to log into the system. This document explains how to request an access account to become an authorized user. The CRASH application functionality available to authorized users will be covered in detail in Section 3.

1.2 System Requirements

Below are the recommended system and software requirements for the Florida Traffic Safety Portal.

1.2.1 Browser Requirements

Web Browsers:

- Internet Explorer 7.0 or higher.

  Note: If using Internet Explorer 9.0, turn off Compatibility Mode

- Mozilla Firefox 8.0 or higher.

- The minimum display resolution is 1024 x 768. This is also the recommended resolution.

  Note: Use zoom levels of 100% or greater on the user's monitor to ensure proper display.

Browser Settings:

- Enable JavaScript.

- Enable File Download prompt

1.2.2 Required Applications to View Documents

- Adobe Acrobat Reader (download link available under Downloads section)

- Microsoft Excel

- Microsoft Word

1.2.3 Generic Features on the Portal Homepage

The portal includes several generic features, in the right side panel and bottom of the homepage, which allows the user to perform various functions on the website. Refer to the green labeled circles in the picture below. Some of these noted features will appear on all ten of the main pages of the portal; see the detailed explanation of each feature below.

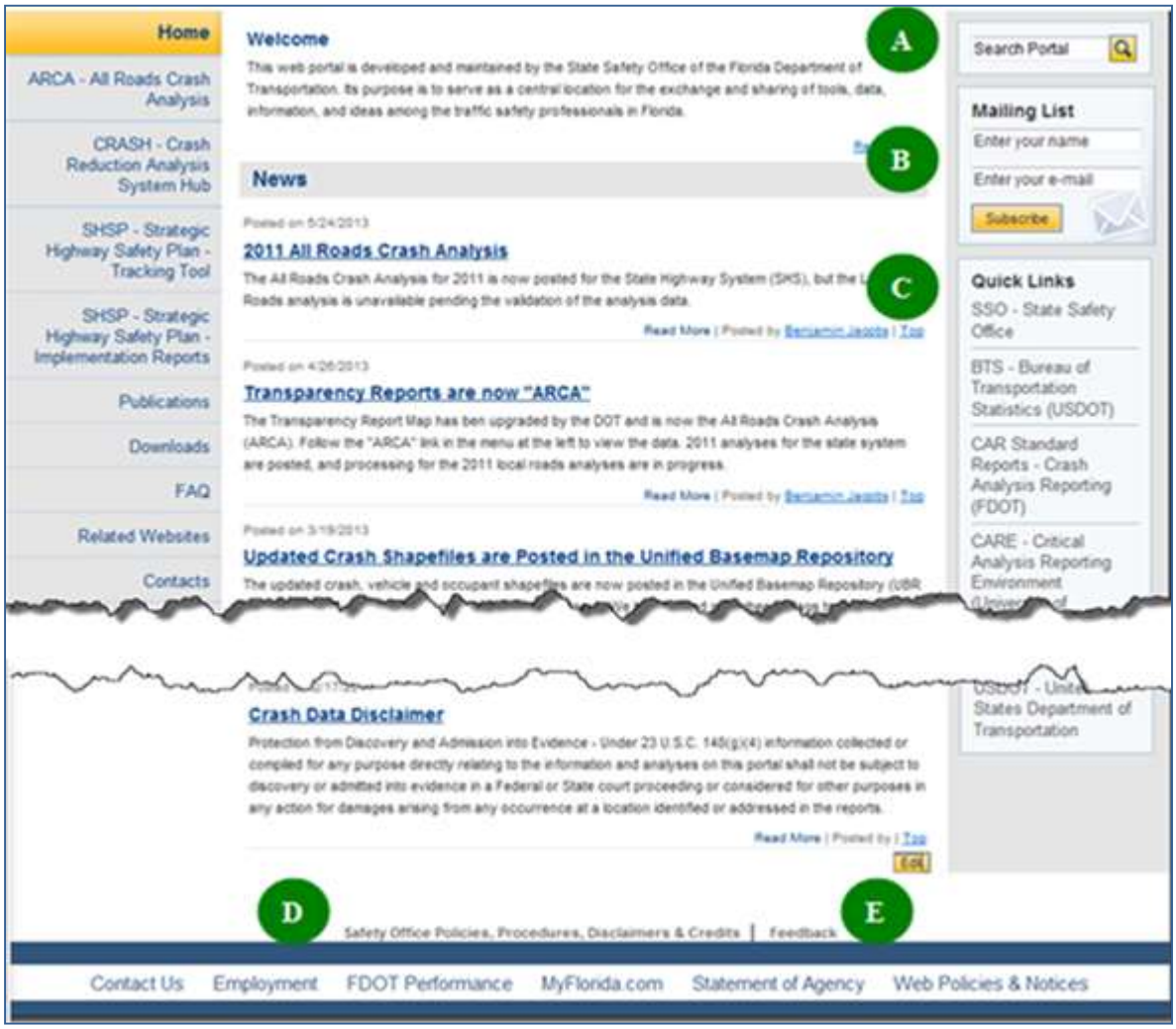
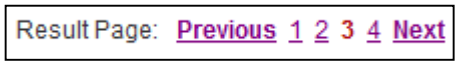


Figure 1 Portal Homepage – Generic Features

A. **Search Portal**. Allows the user to search the entire Traffic Safety Portal, from *most* of the main web pages, by typing keywords into the Search Portal box and clicking on the Search (magnifying glass) icon .

   a. A list of results is returned. The results may include web pages, html content, Microsoft Word documents, Excel spreadsheets, etc. which contain any reference to the keywords entered in the Search.

   b. The results are displayed 10 objects per page and include a paging feature,

Example: 

which allows the user to page through, go to a specific page, use the **"Next"** button, or **"Previous"** button to navigate through the Search results list.

c. The user can click on the **Home** link, at any time to return to the Traffic Safety Portal's Homepage.

d. Or, use the browser's **Back** arrow button to back out page-by-page to the Portal's Homepage.

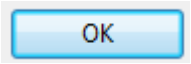
B. **Mailing List**. Found on *most* of the main web pages, this feature allows a user to register to participate in the Florida Traffic Safety Portal mailing list.

a. Enter the user's name in the **"Enter the user's name"** box.

b. Enter the user's email address in the **"Enter the user's e-mail"** box.

c. Click the 

button.

d. The following message will be displayed. Click the 

button or the 
button to close the message window.

e. The user will receive an email confirmation.

f. Once the user clink on the link provided in the confirmation email, the user will be added to the mailing list.

g. If the user does not confirm within 48 hours the subscription request expires and the user will not be added to the mailing list.

C. **Quick Links.** Provides links to a list of other traffic safety tools and organizations, such as the State Safety Office.

a. Select one by clicking the desired link from the list.

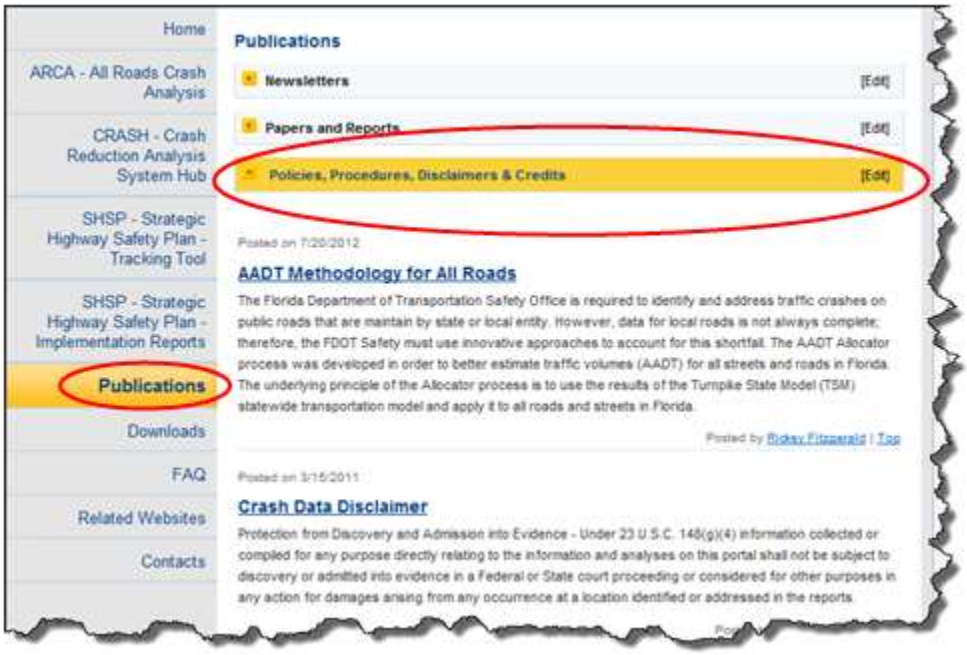
b. The selected link's webpage will open in a separate window. The functionality of that webpage is not under the control of the Florida Traffic Safety Portal. The user will need to contact the administrator for the specific web site if the user have questions or issues related to that site.

c. The current Florida Traffic Safety Portal webpage will remain open, and active, in the background.

d. Please check the **Quick Links** frequently as the content may change periodically.

D. **Safety Office Policies, Procedures, Disclaimers & Credits**. Located at the bottom of *each* of the main web pages on the Florida Traffic Safety Portal.

a. By clicking on this link the user is transferred to the **Publications** subpage with the **Policies, Procedures, Disclaimers & Credits** subsection highlighted and expanded for view.



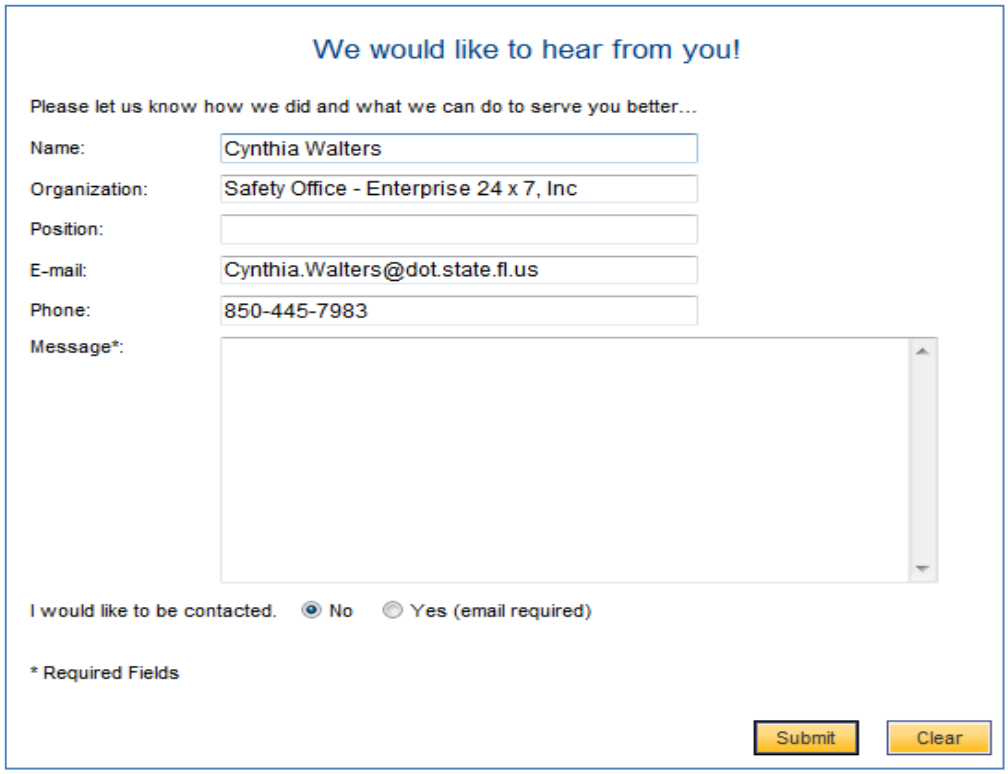
b. Use the browser's **Back** arrow button to return to the previous page in focus.

E. **Feedback.** Located at the bottom of *each* page on the Florida Traffic Safety Portal. Provides a means for the user to send feedback to the department by clicking on the link.

a. Once clicked, a form is generated for the user to submit comments and/or questions.

i. If the user is an internal FDOT user several fields are pre-populated based on the information listed for the user in Active Directory.

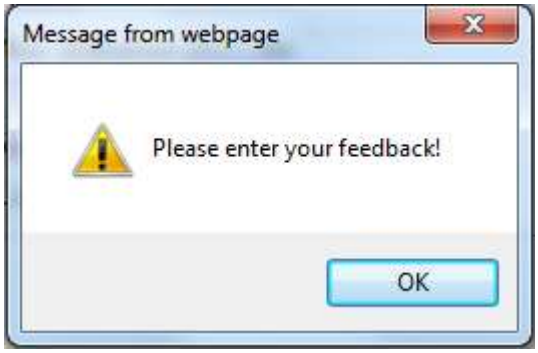
ii. If the user is a non-registered public user using the PRODUCTION Internet URL, all fields shown in the screenshot below will be blank unless entered manually by you.



b. The user must enter comments or questions in the **Message** field before submitting the feedback.

   i. This is a required field.

   ii. If not entered before clicking on the Submit button, the following warning message is displayed. Click the OK button or the X button to close the message window.

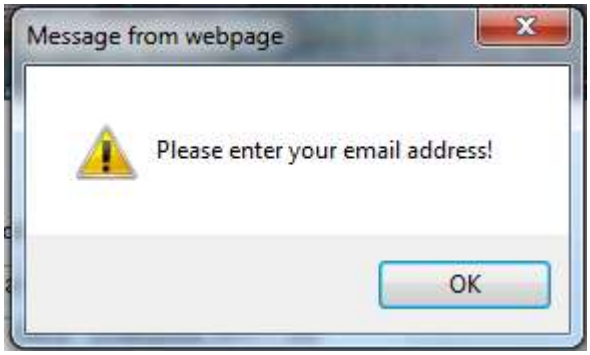


iii. Enter feedback in the Message field, click on the Submit button and an email is sent to a group email account (co-tsw@dot.state.fl.us).

1. Note – the system will check for email address, as noted below, before sending the feedback email.

c. The system defaults to **"No"** for the **"I would like to be contacted."** statement. If the user wish to be contacted, please select the **"Yes"** radio button and enter the user's email address before submitting the feedback.

i. If **"Yes"** is selected without information in the **E-mail** field, the following warning message is displayed. Click the OK button or the button to close the message window.



ii. Enter the user's email address into the "**E-mail:"** field, click on the Submit button and an email is sent to a group email account (co-tsw@dot.state.fl.us).

d. The user can click the Clear button to reset the feedback form to its original display state.

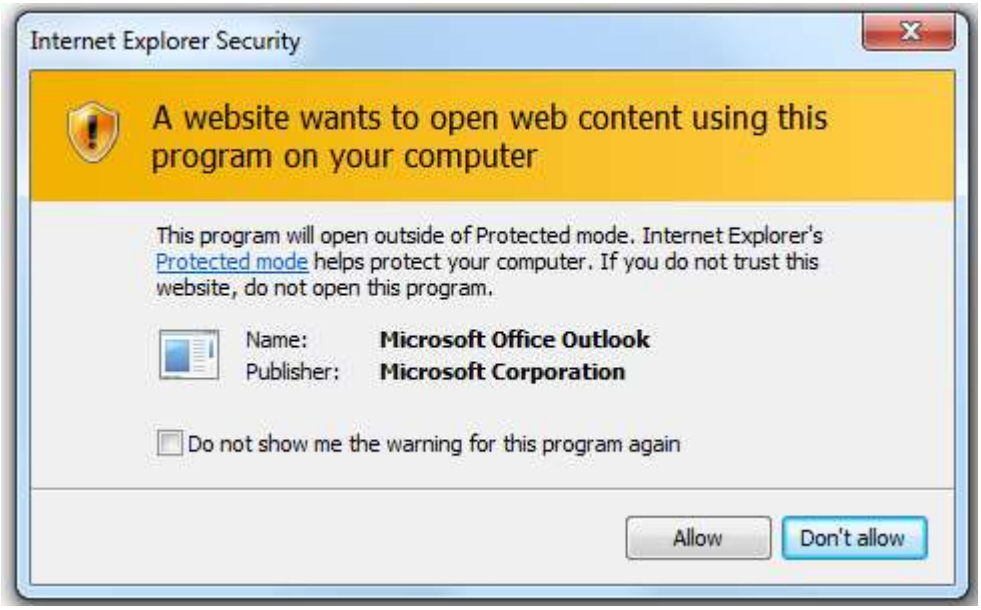
e. Use the browser's **Back** arrow button to abandon the Feedback process or when the Feedback process is completed, to return to the previous page in focus.

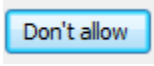
f. The user may use any of the other navigational links available, if desired.

A Read More link appears below descriptive text in a section, or posted News article, etc., when clicked the user can read the full content of the post. This allows for more informational links to be displayed on the page while providing a means for the user to optionally read more detail, if needed. When the user is transferred to a specific subpage to read the full content of the information, a Back link is available, which will return the user to the previous page in focus when clicked. Informational text usually includes the date it was posted. The text **"Posted by"** will be displayed, and optionally, when available, will include the **poster's name** displayed as a link, example:

| Posted by Benjamin Jacobs |

When a poster's name is displayed, the user may click on that link to send an email to the poster, if needed. A security message dialog box opens



Click  to proceed to create the email. The poster's email address is pre-populated into the Microsoft Outlook message page. After the email is sent the user is returned to the previous page in focus. If the user click on  or close the dialog box by clicking the  button, no email is sent and the user is returned to the previous page in focus.

As the user scroll down a webpage,  links are available within sections to re-set the webpage display to the top of the page. By clicking on a  link in whatever section the user have in focus, the webpage is re-displayed from the top, rather requiring the user to scroll up the webpage. This is particularly useful on pages with numerous articles or links to other pages within a subpage.

Links provided to web pages outside the control of the Florida Traffic Safety Portal will display the information for that link in a separate window, while keeping the current page of the portal open and in focus.

2. System Management

2.1 User Accounts

The user will need to login to access the CRASH application and its associated subpages. An authorized user can access CRASH from either the *Intranet* or *Internet* URLs.

If the user does not currently have access to CRASH, the user must request that an account to be added for access. If the user need to access to the CRASH application from the *Internet* the user must submit an **Access Request Form**. The current contact for access authorization is:

FDOT Safety Office

605 Suwannee Street, M.S. 53

Tallahassee FL 32399-0450

Phone: (850) 414-3100

Fax: (850) 414-4221

Email: co-tsw@dot.state.fl.us

For the CRASH System the user may be assigned edit and/or view permissions based on the user's district and county affiliations.

The user may also be granted posting privileges for individual pages.

2.2 URLs

2.2.1 Public Users

PRODUCTION Internet: http://www2.dot.state.fl.us/TrafficSafetyWebPortal

2.2.2 Internal FDOT staff only

(**Note**: The user must be logged into the FDOT network to access the Intranet pages.)

PRODUCTION Intranet: http://webapp02.dot.state.fl.us/TrafficSafetyWebPortalFDOT/

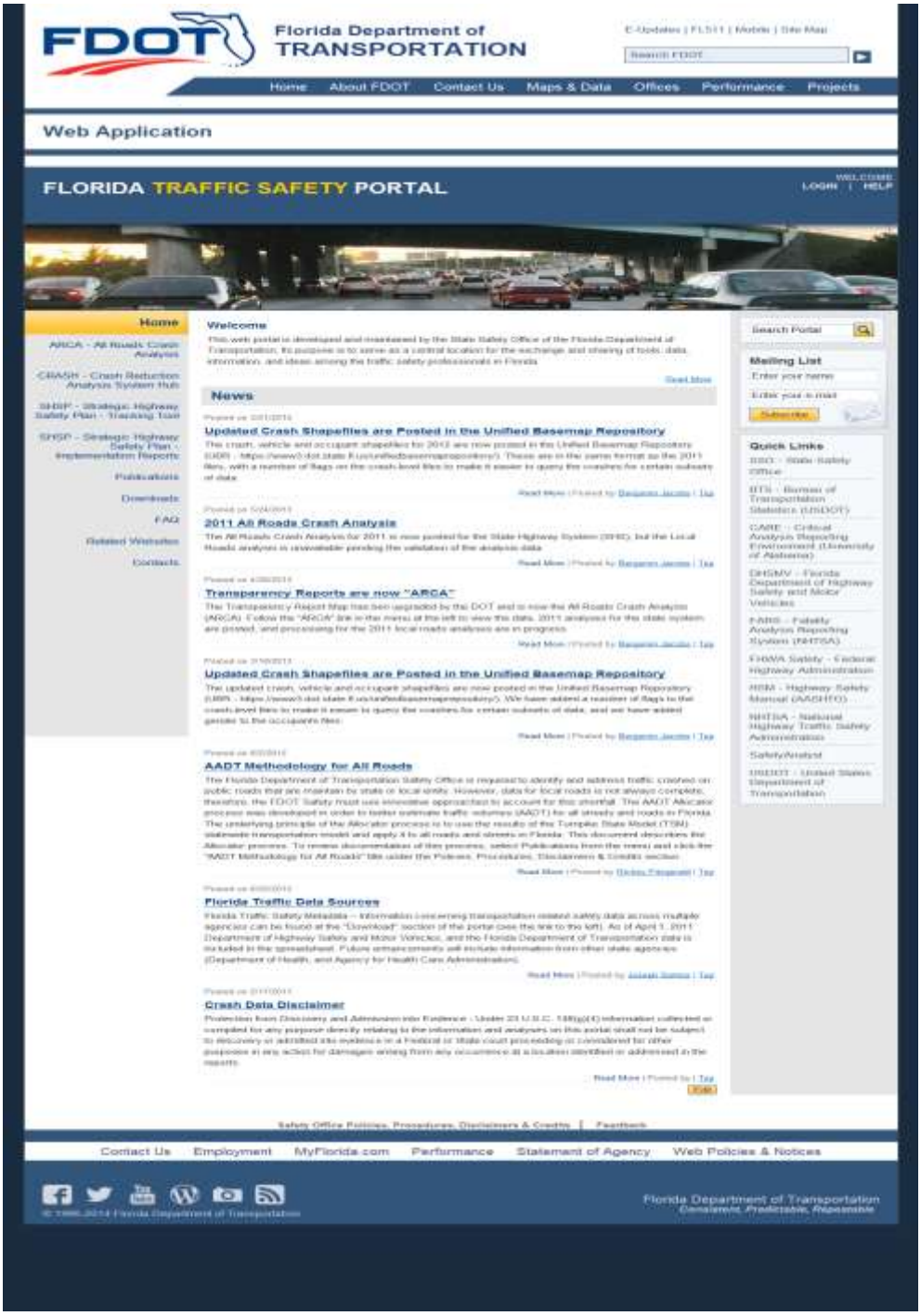


Figure 2 Portal Homepage - Full View

2.3 Webpage Structure and Navigation

The Florida Traffic Safety Portal consists of a login feature, several main web pages, quick links to additional sites and data (e.g., policies, procedures, and disclaimers), search features, and an area where users provide feedback on the portal and its contents.

The main web pages are accessible via a standard menu panel displayed on the left side of the screen. If a main page contains multiple subpages, the links to the subpages are listed on the main page and a brief description is provided for each subpage. Clicking on a subpage link will open a new page. Each subpage may further include multiple subpages. The user may click the Back button of the browser to return to the previous page, or click Home on the subpage to return to the portal's Homepage. Wherever applicable, buttons are provided on a floating panel so they are easily reachable within the current screen view.

2.4 Main Web Pages

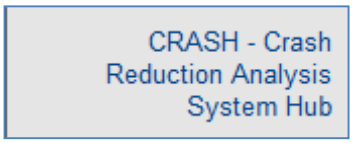
The left panel in the portal is the navigation menu. The portal provides links to each of the ten main web pages. This document will focus primarily on the CRASH application functionality only (see the red highlighting below). The Welcome banner includes **LOGIN** and **HELP** buttons (see below). Click on **HELP** to view the Navigation Guide for the overall portal.

Figure 3 Portal Homepage - Main Web Pages

3. Crash Reduction Analysis System Hub (CRASH)

3.1 Prerequisites

This section assumes that the user have successfully logged into the portal as an authorized user and have accessed the CRASH (Crash Reduction Analysis System Hub) application from the Florida Traffic Safety Portal's Homepage via the CRASH webpage link.



This document outlines all available functionality within CRASH. However, the user's access to certain features may be restricted based upon permissions associated with the user's account and the user's designation as an Administrator or general user. For users with limited access to specific district information, the district from the dropdown lists will be automatically selected. For example, if the user can only access District 6, "District 6" will be automatically selected in filtering data retrieval or reporting queries, with no other selections available unless needed within certain processes.

3.2 Introduction

While the FDOT maintains a comprehensive crash database for the state roadway system, it does not have a central database for safety improvement projects. Consequently, historical data for safety improvement projects are maintained separately at various district offices in various formats, limiting accessibility for the transportation analyst and impeding the development of crash reduction factors (CRFs).

CRASH is a web-based application developed for FDOT's State Safety Office to update and apply CRFs for economic analysis of highway safety improvement projects. CRASH systematically maintains a statewide safety improvement project database which facilitates the continual process of updating CRFs.

The CRASH system allows the following tasks to be performed in an automated manner:

1. Recording and maintaining improvement projects.
2. Updating CRFs based on the latest available improvement project and crash data.
3. Applying ***calculated*** CRFs in the benefit-cost analyses of specific projects.

In addition, the system provides various data retrieval and export functionality, which can be used for

analysis and reporting tasks.

3.2.1 CRASH Login

Click on **LOGIN** to log into the portal in order to access the CRASH application restricted pages and the functionality available to the user based on the permissions which have been granted to the user's access account.

The user is presented with the following Login subpage where the user can login if the user is an authorized user or get assistance if the user wants to make a request for access as an authorized user.

Note: The user must log into the portal in order to use the CRASH application. The functionality in CRASH may be further restricted based on permissions granted to the user's access account.

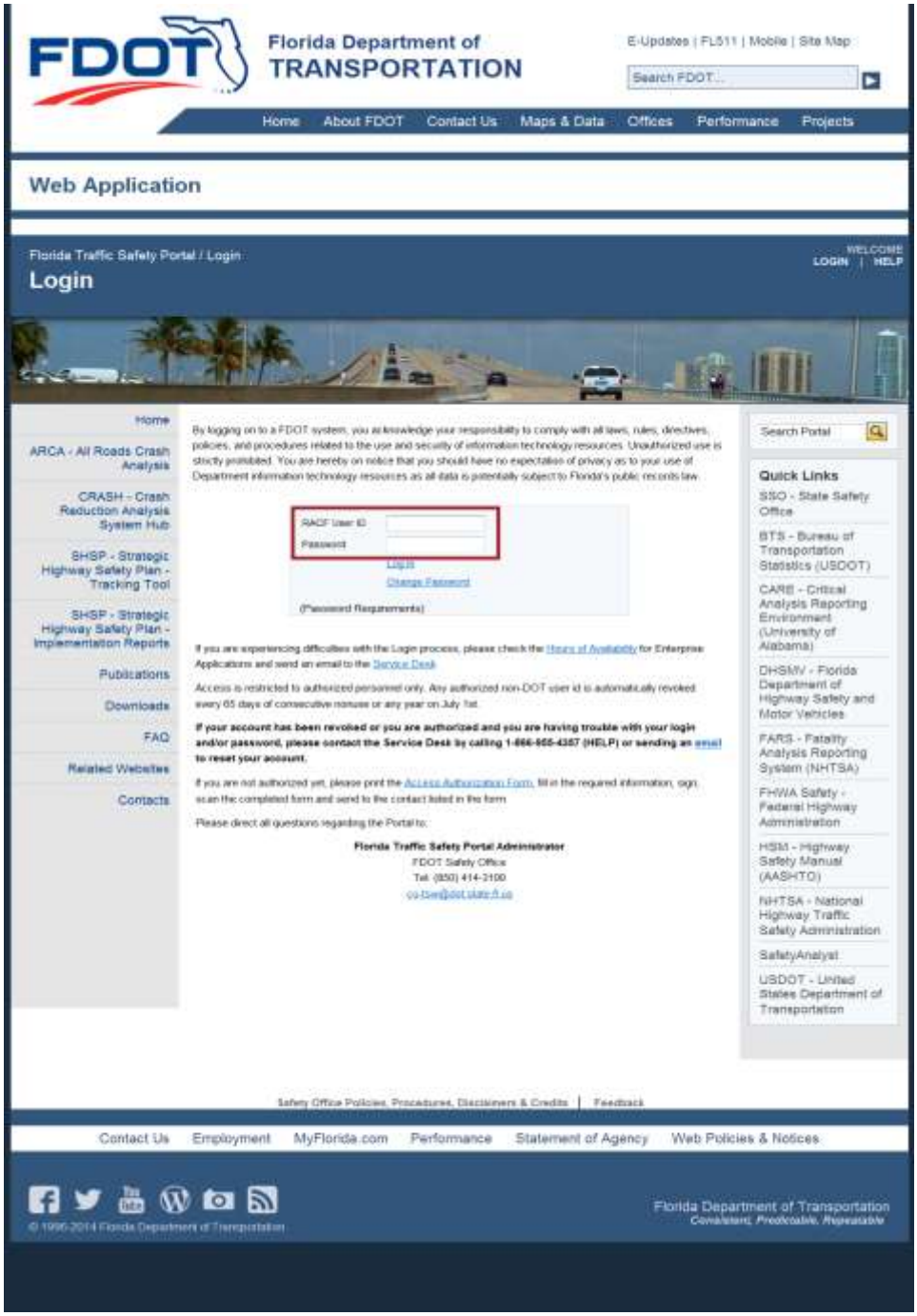


Figure 4 Homepage Portal – Login Subpage

Authorized users will log in using their assigned Resource Access Control Facility (RACF) User ID and password and click on the Log In link just below the Password box. By hovering over the

Password Requirements text the user can see the requirements for a valid password, if the user wants to change their password. The user can communicate with the FDOT Service Desk or the Florida Traffic Safety Portal Administrator from this Login page. Users should address questions or seek assistance by using the available links and following the instructions that best fit the user's need.

After logging in, the welcome banner on the Florida Traffic Safety Portal will change to include the user's User ID, a LOGOUT button, an ADMIN button (if administrative privileges have been granted to the user's user account), and the HELP button.

Figure 5 Welcome Banner – Authorized User

The user's session is terminated either when the user click **LOGOUT** to end the user's session or when the user's session times out (i.e., after 20 minutes of inactivity). Once a session terminates, the user is returned to the Portal homepage, and the welcome banner uses the standard view (i.e., the user's User ID is removed and only the LOGIN and HELP buttons remain).

Figure 6 Welcome Banner – Non-Authorized User

Note: Once logged out of the system, a user must log back into the Portal in order to access restricted pages within CRASH.

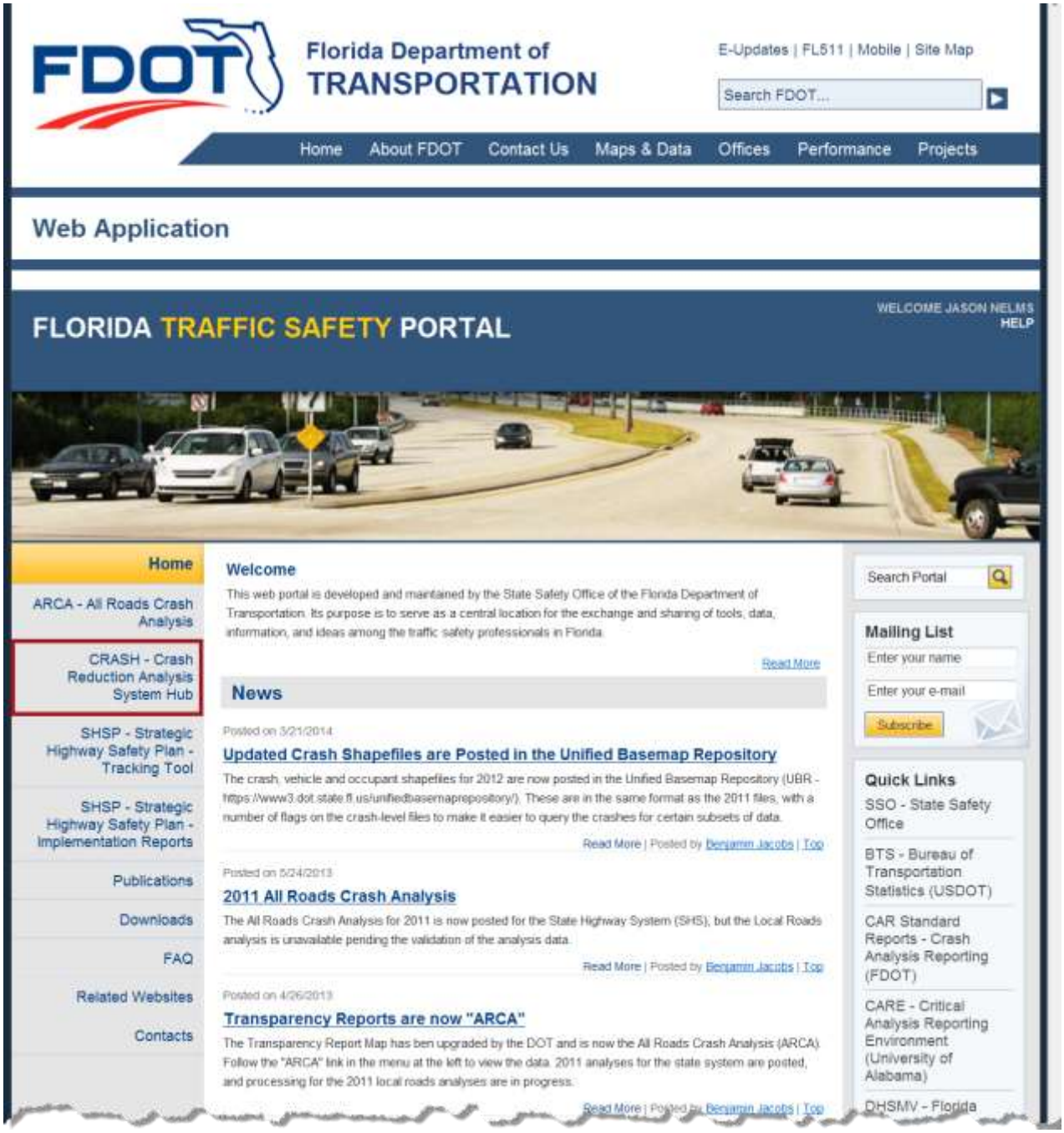


Figure 7 Portal Homepage – Access CRASH

3.3 CRASH Main Webpage

Access to the CRASH system is restricted to authorized personnel only and therefore requires user to log into the portal. If the user does not login *before* clicking the CRASH link on the Portal's

Homepage the user will experience one of the outcomes as shown below.

3.3.1 CRASH Main Webpage View – Non-authorized User

Non-authorized users will see the initial CRASH Main Webpage displayed as shown below.

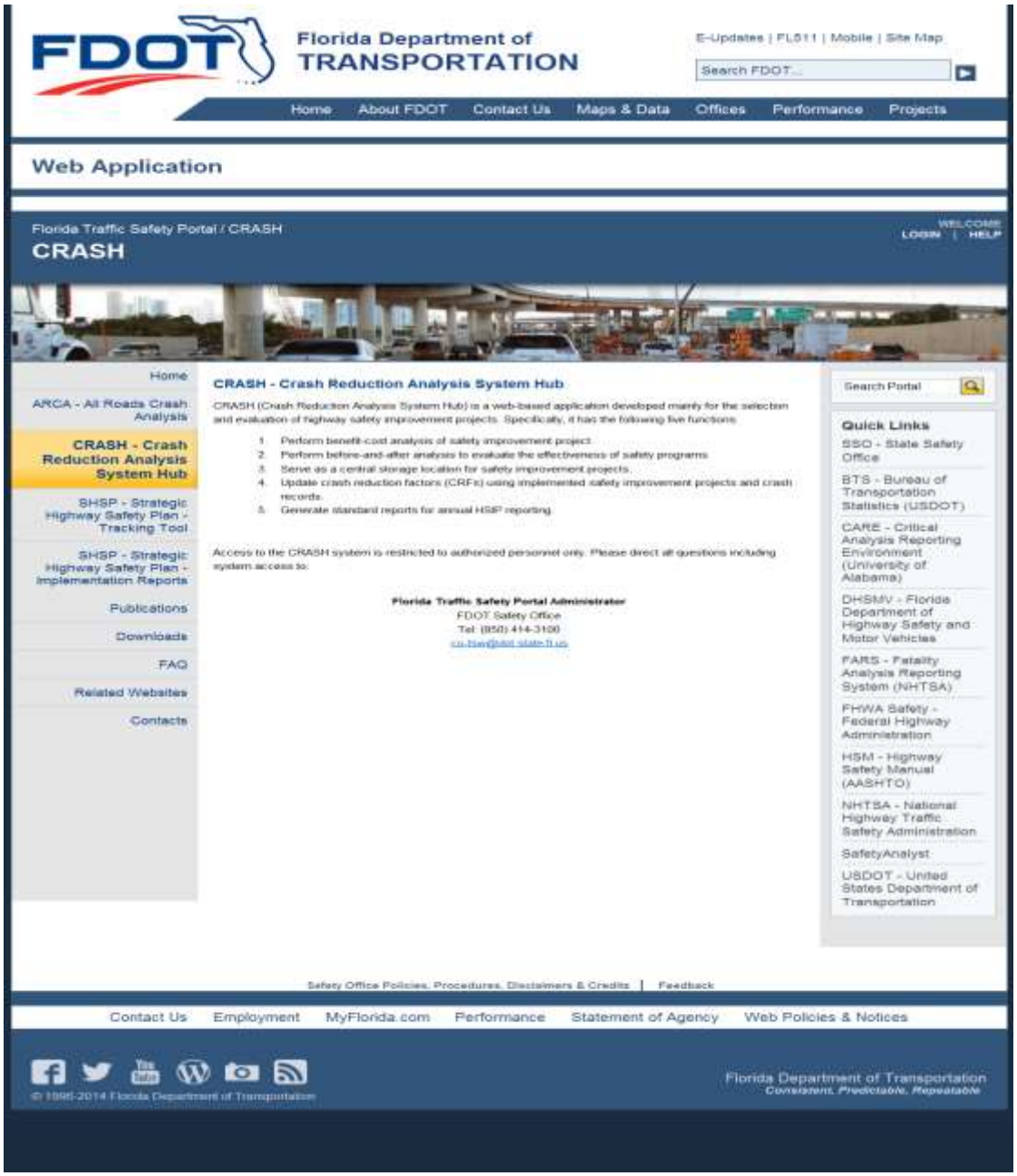


Figure 8 CRASH Main Webpage View for Non-Authorized User

3.3.2 CRASH Main Webpage View for Authorized Users

An FDOT authorized user will see the initial CRASH Main Webpage displayed as shown below.

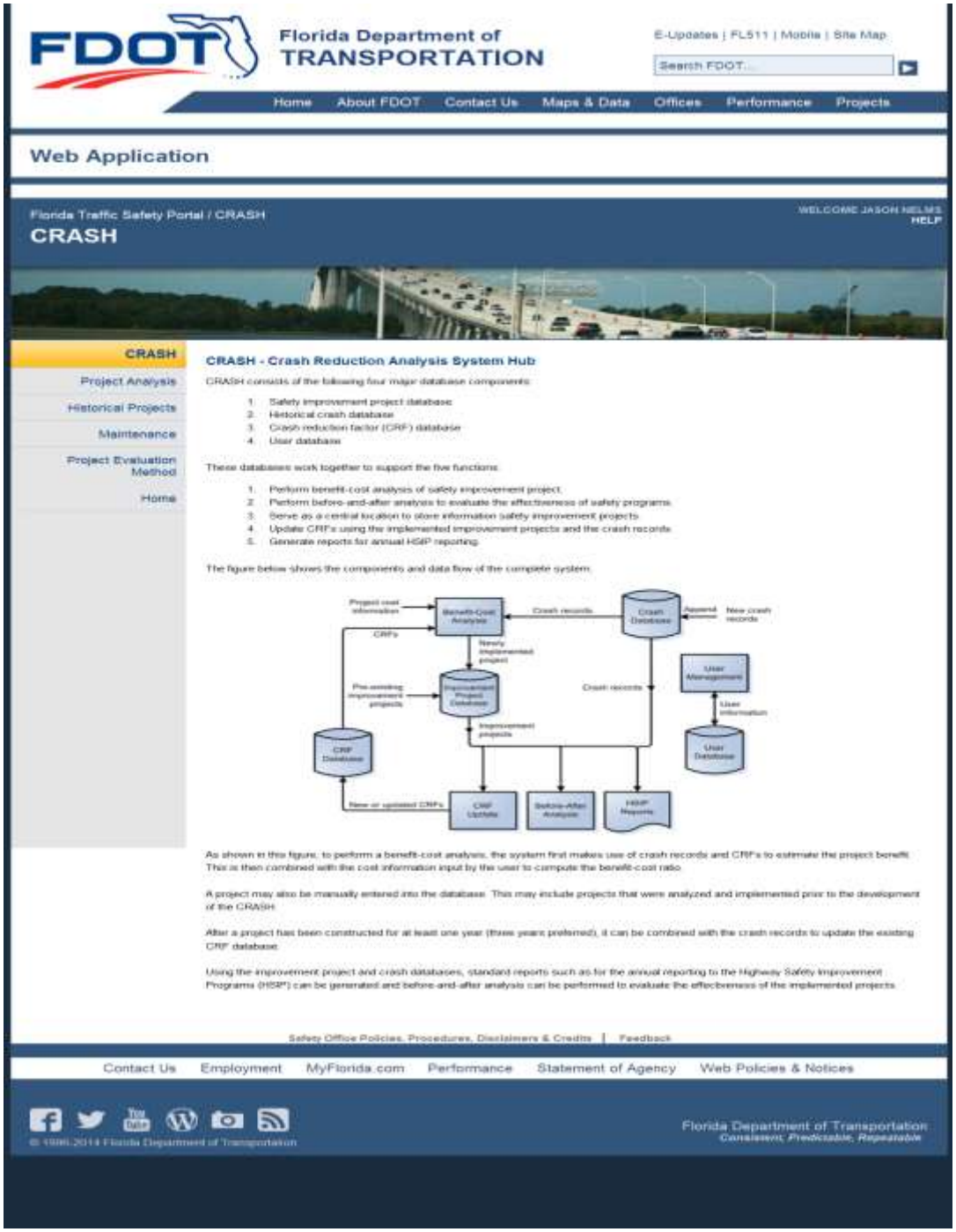


Figure 9 CRASH Main Webpage View for Non-Authorized User

3.4 System Functions

The CRASH system currently performs the following five major functions:

1. *Benefit-cost analysis:* The system makes use of the crash record and Crash Reduction Factor (CRF) databases to estimate the project benefit. The benefit is then combined with project cost to compute the benefit-cost ratio. If a project is selected for implementation, it is saved to the improvement project database.

2. *Before-and-after analysis:* Using both the improvement project database and the crash database, before-and-after analysis can be performed to evaluate the effectiveness of implemented projects.

3. *Historical project data recording:* An improvement project may be manually entered into the database. This may include projects that were analyzed and implemented prior to the development of the CRASH system, as well as new ones.

4. *CRF update:* After an improvement project has been constructed for at least one year (though three years is preferred), it can be combined with the crash records to update the existing CRF database.

5. *Reporting:* Similarly, using both the improvement project database and the crash database, CRASH can produce Highway Safety Improvement Programs (HSIP) reports for annual reporting to Federal Highway Administration (FHWA).

3.5 System Database Components

CRASH is designed as a Microsoft ASP.NET web application that uses the following major database components:

1. Safety improvement projects since 1992.

2. Historical crash records from 1984 through the latest available year.

3. Crash reduction factors and associated statistics.

3.6 System Data Flow Diagram

The data flow diagram below shows how the database components (red numbered circles) listed above are used within the CRASH system to accomplish the five major functions (blue numbered circles) listed above.

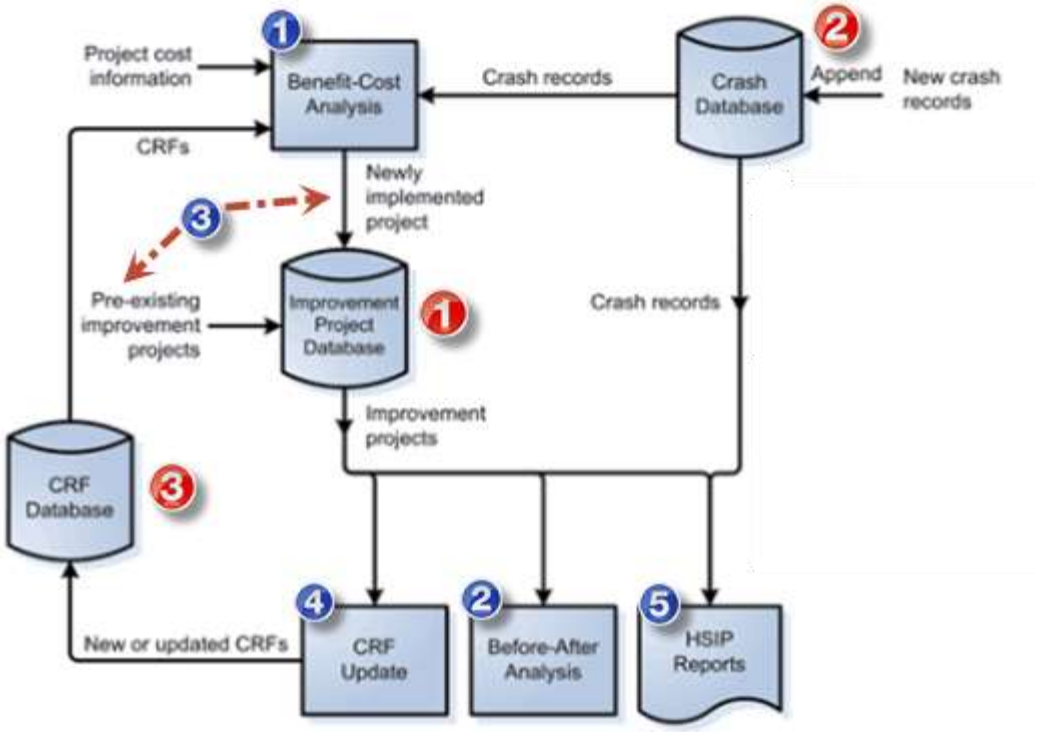


Figure 10 CRASH System Components and Data Flow Diagram

3.7 CRASH Menu Views

The CRASH Menu is used to navigate to the CRASH subpages to access the functional components within the CRASH application. Access to these processes is based on the permissions granted to the user's access account. For example, some users may be restricted to a single District's data; some may have no Edit permissions, etc. By clicking on one of the functional component buttons the features available will be shown in the middle panel.

Figure 11 below illustrates the difference in the CRASH menu between administrative and non-administrative users.

Authorized users will see the navigation menu in the left panel change to a CRASH application specific menu. A user designated as an Administrator will see the menu as shown in the

"Administrator View" above, with **Administration** on the fourth row. Otherwise, the menu will be displayed as shown in the "Non-Administrator View" above, with **Maintenance** on the fourth row.

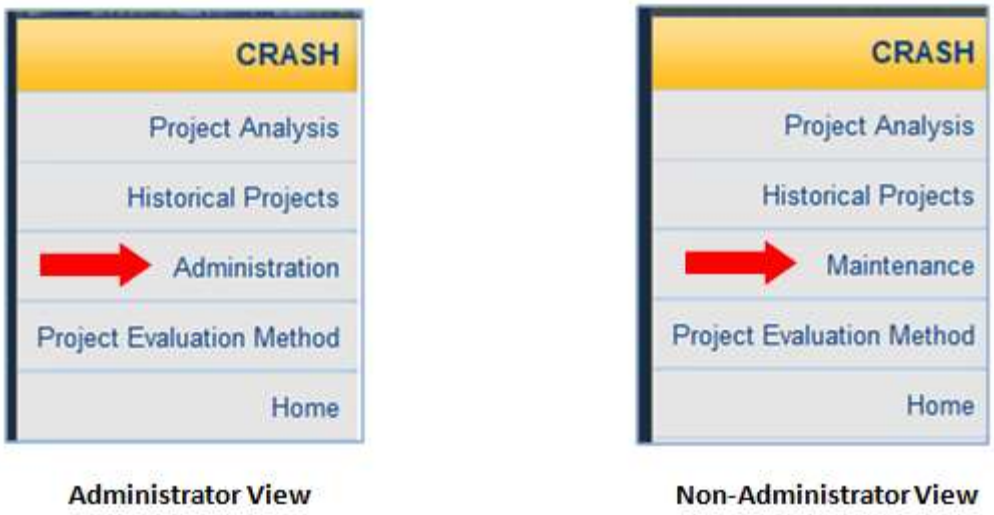


Figure 11 CRASH Menu View Options

The features in CRASH will vary based on the user's role (i.e., whether or not the user is an administrator). Specific features available to administrative users are covered in the Administration User's Manual for the Florida Traffic Safety Portal, which is available on the Administration submenu page.

This document covers only those features and functions available to *Non-Administrator* authorized users who have been granted access to CRASH. Thus, the user's menu should match that of the "Non-Administrator View" as shown in Figure 9.

3.8 Crash Functional Component Overview

Click the Home button to return to the Traffic Safety Portal's Homepage. The remaining functional components of CRASH are examined in greater detail below.

3.8.1 Project Analysis Submenu

The Project Analysis submenu is shown below. It is accessed by clicking on the Project Analysis button on the CRASH navigation menu in the left panel.

Each feature shown on the Project Analysis submenu will be documented in detail in the

Project Analysis section below.

As illustrated in the figures below, users with edit permissions within the Portal have access to all links within the submenu. For those without edit permissions, the *Start a New Improvement Project* and *Edit Improvement Projects* links are disabled.

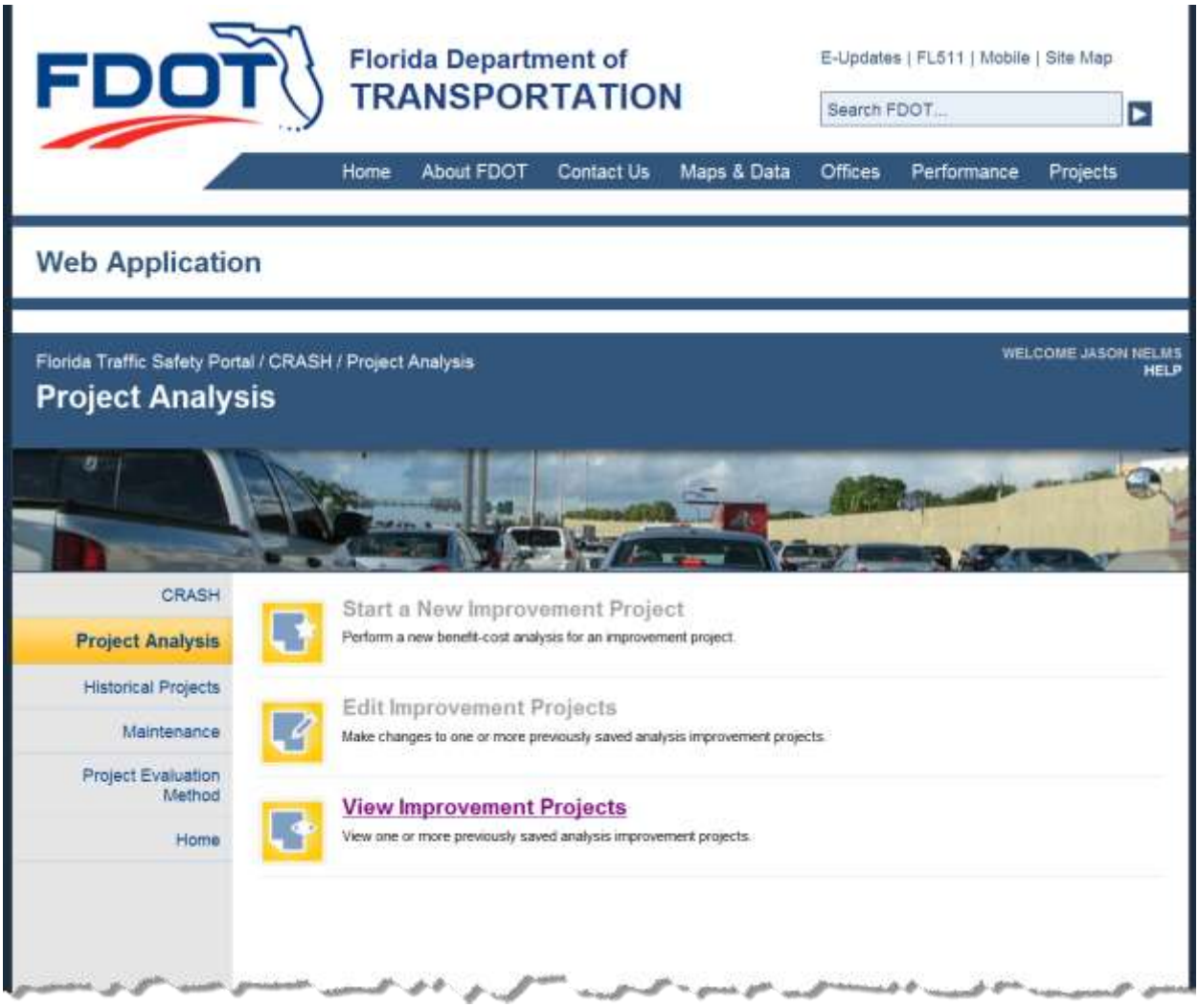


Figure 12 Project Analysis Submenu – User without Edit Permissions

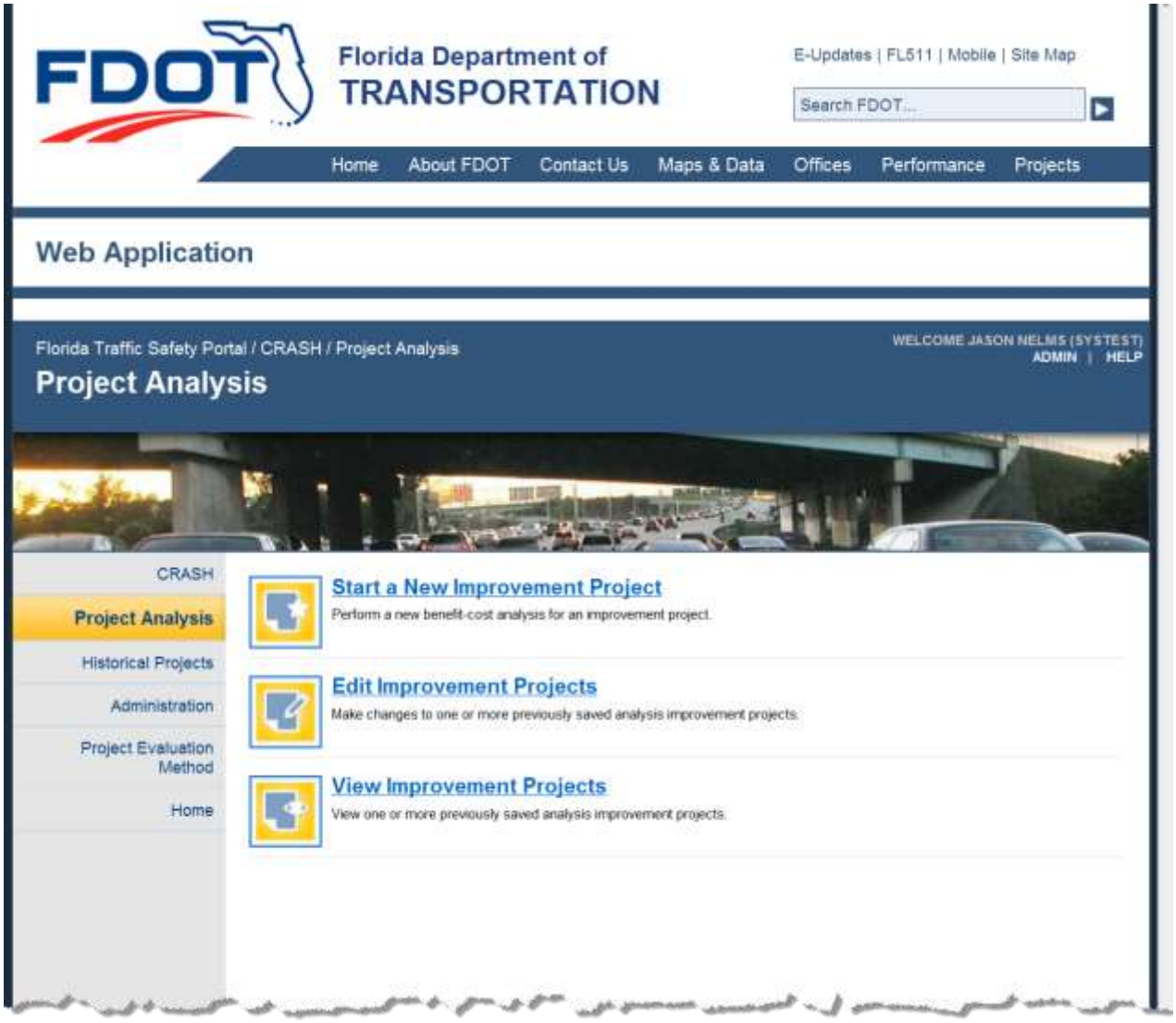


Figure 13 Project Analysis Submenu – Non-Administrative User with Edit Permissions

3.8.2 Starting a New Improvement Project

The first step in starting a new improvement project is to perform a new benefit-cost analysis. The user begins this process by selecting the Start a New Improvement Project link from the **Project Analysis** navigation submenu. Doing so directs the user to a blank standard Benefit-Cost Analysis form.

3.8.2.1 Standard Benefit-Cost Analysis Form

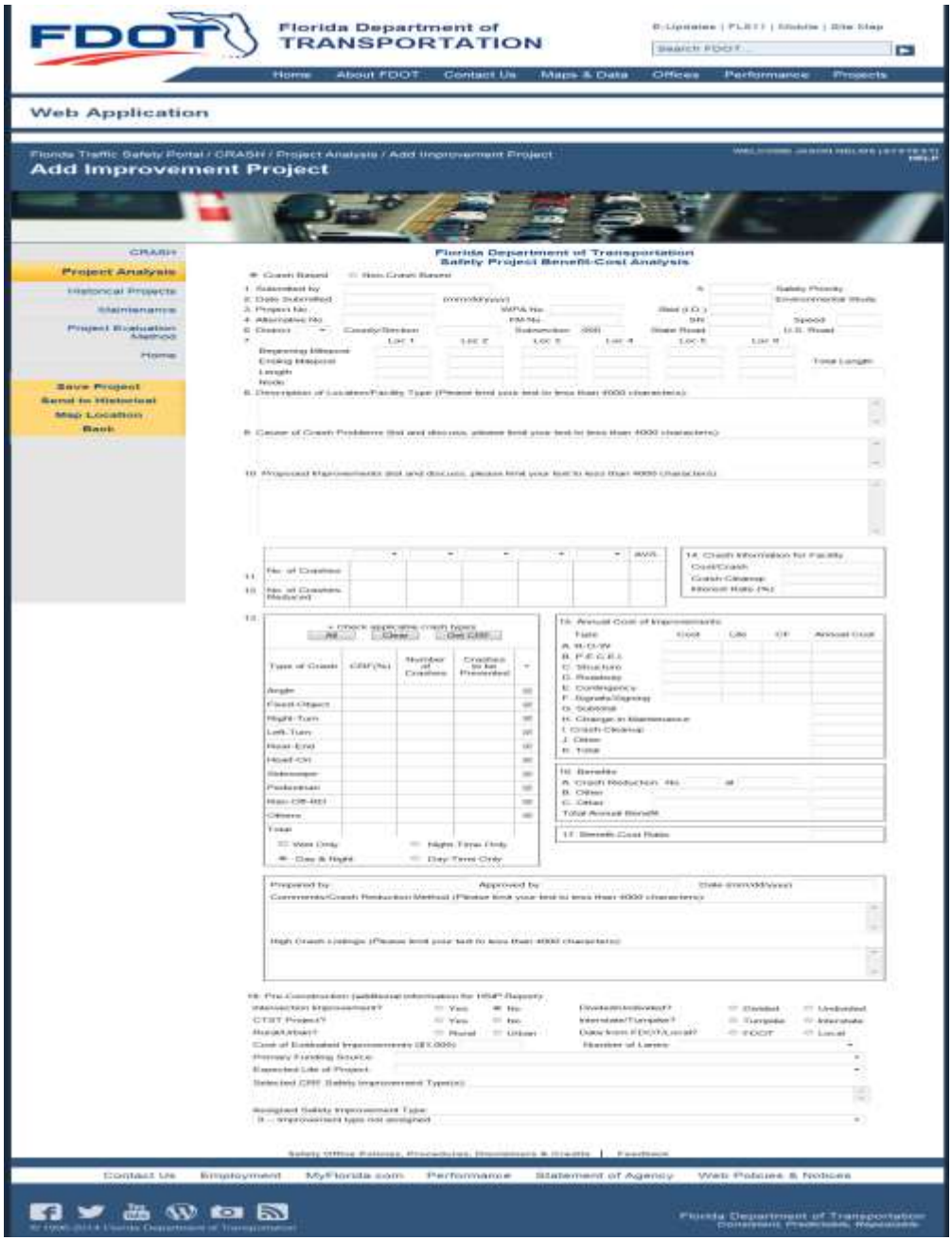


Figure 14 Project Analysis Submenu – Non-Administrative User with Edit Permissions

3.8.2.1.1 Benefit-Cost Analysis Form – Crash based vs. Non-crash based

The first item on the form is used to specify whether an improvement project is **Crash Based** or

Non-Crash Based, as shown in the red rectangles in the next two figures. The default is **Crash Based**, which is for projects that are being considered in response to specific crash problems.

Unlike Crash Based projects, which are reactive in nature, Non-Crash Based projects include proactive projects such as school zone signing, pavement markings, sidewalks, elder driver programs, etc. When the Non-Crash Based option is selected Item 9 of the form will change from "Cause of Crash Problems" to "Non-Crash Based Project Justification" (see the green rectangles in the two figures).

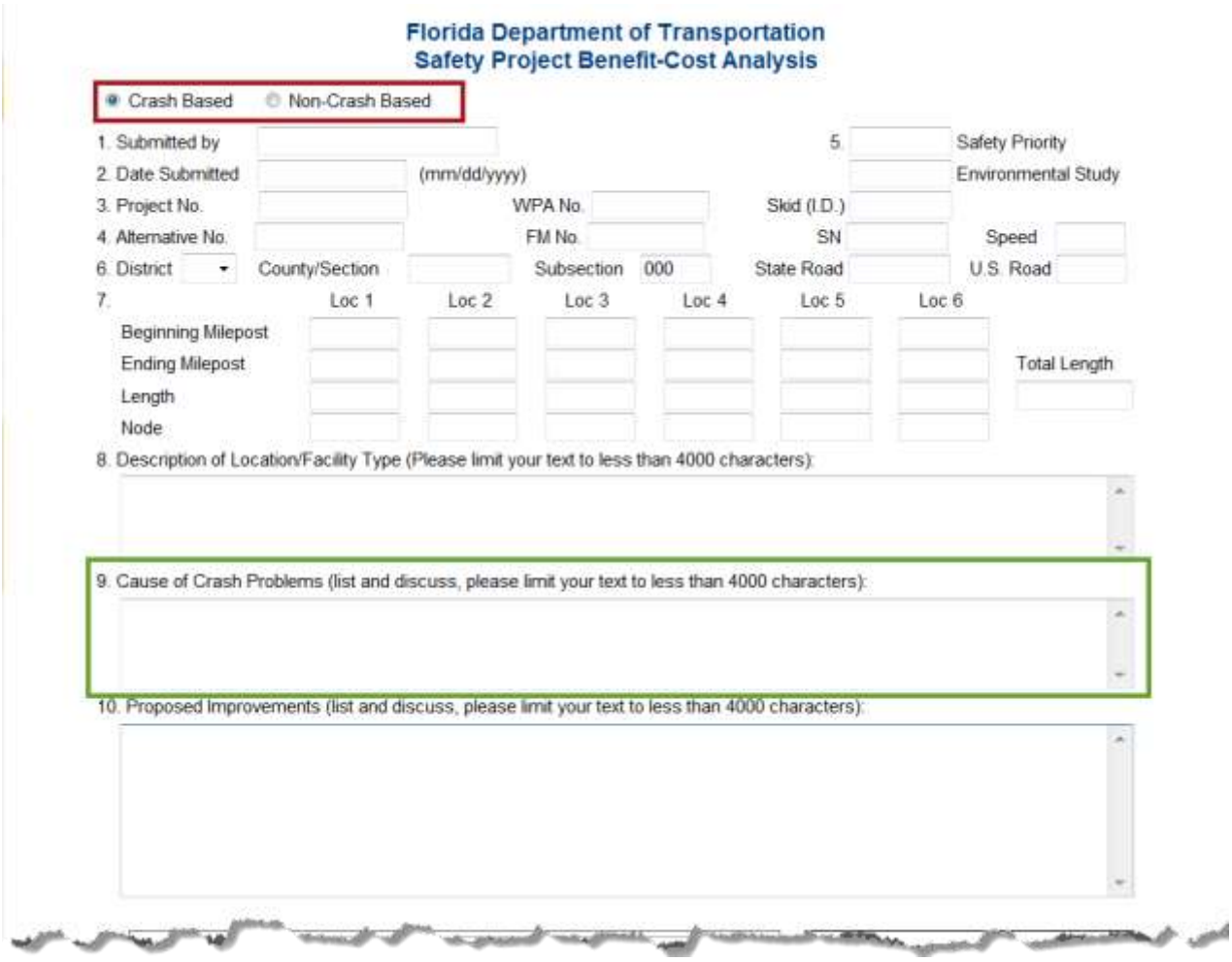


Figure 15 Benefit-Cost Analysis Form (Top Part) – Crash Based

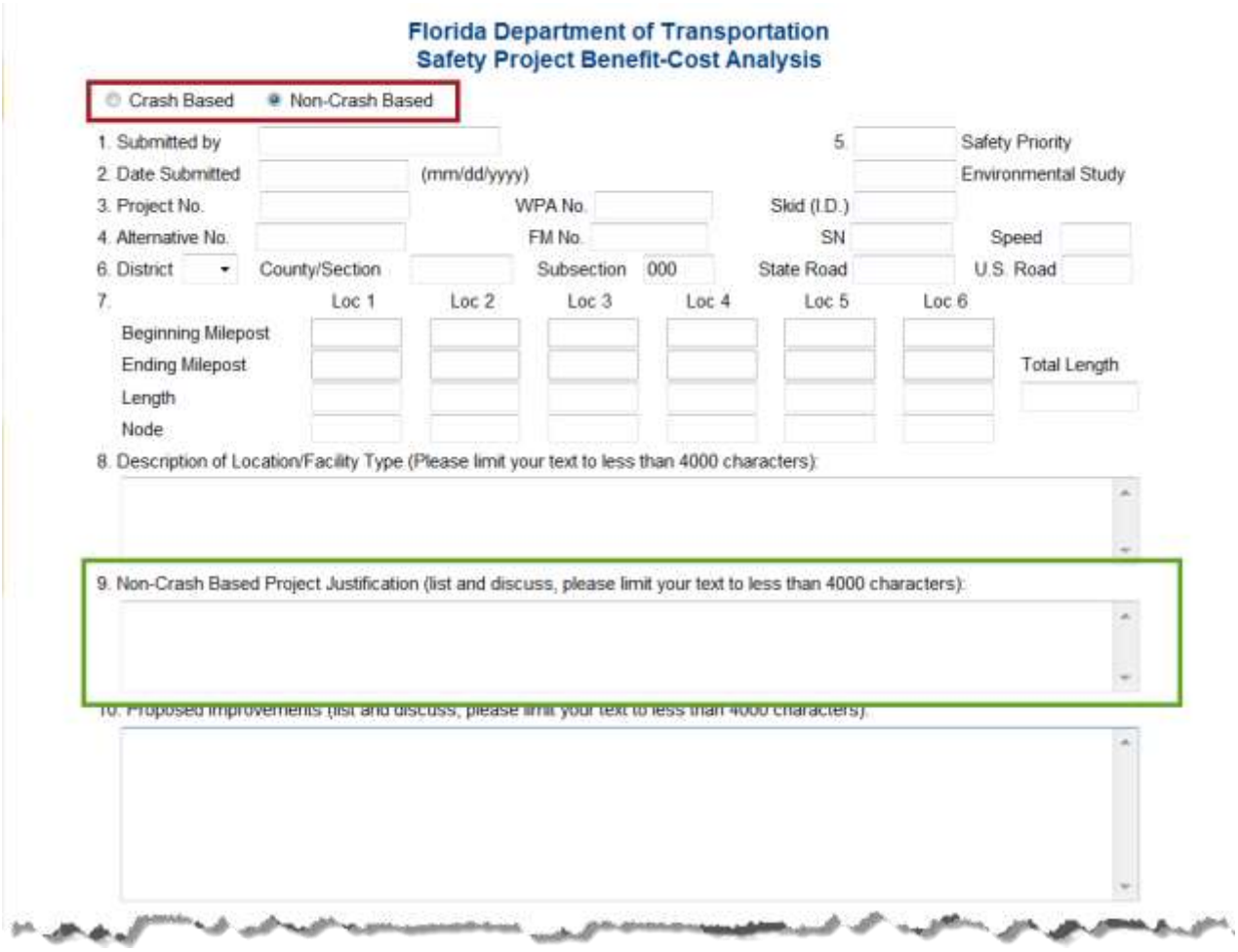


Figure 16 Benefit-Cost Analysis Form (Top Part) – Non-Crash Based

Note: To help improve the accuracy of crash reduction factors, it is imperative that a project be described in as much detail as possible.

3.8.2.2 Benefit-Cost Analysis Form – Data Entry Instructions

The webpage is designed for the user to use the **Tab** key to advance through the form to enter data fields relevant to whether the user selected **Crash Based** or **Non-Crash Based** in the top item.

Note: Though you may use the user's mouse to click directly into a particular data field, it is *recommended* you use the **Tab** key unless explicitly directed differently in the instructions below.

These instructions document the fields in in their tab order. Refer to the figures above when noted to see where each data field resides on the Benefit-Cost Analysis Form. At minimum, tooltip instruction is provided for each field. When possible, other data validation rules are included. Over the next several pages, we examine the various parts of the Benefits-Cost Analysis Form in small segments. Other sections of this document (i.e., Project Analysis, Historical Projects and Maintenance) refer to this section, particularly when a functional component uses part of Benefit-Cost Analysis Form in its operation or for reporting purposes.

3.8.2.2.1 General Information

Each Data Field includes a tooltip, which the user can see by hovering in the data entry box. Example, shown below is the tooltip displayed by hovering in the "**Submitted by**" field:

3.8.2.2.2 Required Fields

The Location fields, including **County/Section**, **Subsection**, **Beginning Milepost**, and **Ending Milepost** (at least one) are required in order to use the CRASH feature which retrieves previous years crash related information in this Benefit-Cost Analysis process and to effectively use the Map Location feature on the navigation menu. Up to six different locations for a project may be entered. This is used when a project involves multiple locations; for example, to improve lighting at several interchanges.

3.8.2.3 Project Analysis - Data Variables

Variables for improvement projects are categorized as ***pre-construction*** and ***post-construction***. Data for pre-construction variables are entered during a benefit-cost analysis, while data for post-construction variables are entered only after a project has been selected and its construction is complete. Pre-construction variables include those in the standard Benefit-Cost Analysis Form, plus

several variables required for Highway Safety Improvement Program (HSIP) reporting. Post-construction variables include those that are known only after a project is selected and approved for construction, including the beginning and ending of the construction period.

This document defines these data variables in detail by examining each of the functional features available from the Project Analysis submenu. This document describes this process from the perspective of an authorized user starting a new improvement project, then editing and viewing the project. We describe each data variable in detail and identify whether they are required in order to save the new or edited improvement project in preparation for further processing.

The standard Benefit-Cost Analysis Form used by FDOT is shown below in its entirety. It is displayed once the user clicks on the Start a New Improvement Project on the Add Improvement Project links. Later in this document we examine the various data variables by zooming in on subparts of the form. When using the actual webpage the user will simply enter the information as described below and continue scrolling down the page to complete the required fields. The action items shown in the left panel's navigation submenu are explained relative to their use in each processing feature.

As described in the remaining pages of the Project Analysis subsection, this Benefit-Cost Analysis Form is used throughout analysis-related functions. It begins with data entered for a new improvement project and can be edited, saved, deleted or transferred to Historical Projects. Only minimal data is required in order to save a new project. However, certain features within the Benefit-Cost Analysis Form will require location-related data to be entered so that the feature functions properly.

If needed, the user can select a specific project to edit or delete upon clicking the "Edit Improvement Projects" feature. The user will also be able to view a specific project, displayed in view-only mode upon clicking on the View Improvement Projects feature.

3.8.2.3.1 Numbered Data Items 1-10

The following figure shows numbered data items 1-10 from the Benefit-Cost Analysis form.

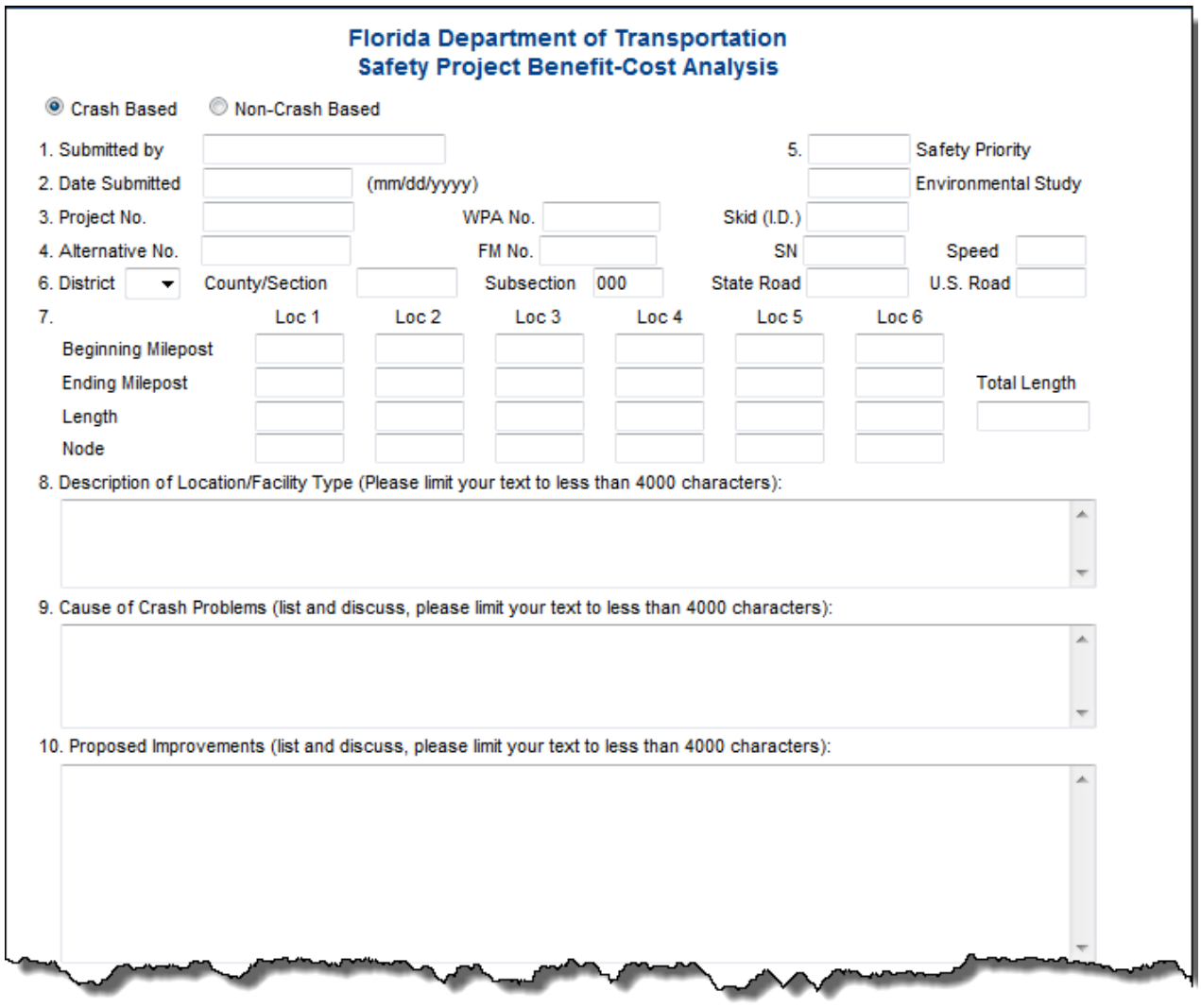


Figure 17 Benefit-Cost Analysis Form – Zoomed-In View of Numbered Items 1-10

1. **Submitted by**: Using this text field, enter the name or other identifier of the person submitting the form.

2. **Date Submitted**: Enter the date the form is being submitted in MM/DD/YYYY format.

3. **Project No.**: Enter the project number.

WPA No.: Enter the WPA number.

4. **Alternative No.**: Enter the project alternative number.

   FM No.: Enter the FM number. This is a free-text field, but if available, should contain the Financial Management project number from the Work Program system.

   Note: In the Work Program System, the *expected* format for this number is defined below using color coded groups for ease of reference in this document:

   - Maximum size and format: 999999-9-99-99.
   - May or may not include a dash (hyphen) between color code field groups shown above.
   - The first six digits (999999) above represents the significant digits of the unique ID that should link to a specific project in the Work Program System.
   - The next single digit, in the 7th position (9) above represents the Segment, valid values are 1-9.
   - The next two digits, in the 8th and 9th positions (99) above will contain a single character for Phase Group and a single character for Phase Type. Below is an excerpt from the Work Program Quick Reference listing the valid values and meanings for Phase Group and Phase Type:

Phase Group

1 - Planning
2 - Pd & E
3 - Preliminary Engineering
4 - Right Of Way
5 - Construction
6 - Construction Support
7 - Maintenance
8 - Operations
9 - Capital
A - Administration
B - Research
C - Environmental
D - Debris Removal
E - Sign Repair/Replacement
F - Signal Repair/Replacement
G - Emergency Road Repair
H - Emergency Bridge Repair
J - Emergency Contract Management
K - Emergency Facilities Repr/Repl
L - Maintenance Of Traffic
M - Service Patrol (Discontinued)

Phase Type

1 - In-House
2 - Consultants/Contractors
3 - Purchase
4 - Grant
5 - Relocatee
6 - Utility
7 - Railroad
8 - Other Agency
9 - Indirect Support
A - Contract Bonus
B - Services
C - Pcr - Proj Cost Redistribution
D - Repayment

5. The final two digits, in the 10th and 11th positions (99) above contain a simple sequence number that the system generates. Valid values range from 01-99.

   Safety Priority: Enter the safety priority**.**

   Environmental Study: Enter the Environmental Study**.**

   Skid (I.D.): Enter Skid (I.D.). This should contain the Skid Test Number from the Skid Hazard Reporting System (SHR).

   SN: Enter the SN. This should contain the Mean Friction Number for the lane and direction for the project, or as close to it as is possible, from the Skid Hazard Reporting System (SHR).

   Speed: Enter the speed limit.

6. **District**: Select the District number using the dropdown list by clicking on the down arrow, then on the desired District from the list.

   County/Section: Enter the four or five-digit county and section number.

   Subsection: Enter the three-digit subsection number. System defaults to 000.

   State Road: Enter the state road number.

   U. S. Road: Enter the U. S. road number.

7. The following notes pertain to the **Beginning Milepost**, **Ending Milepost**, **Length**, **Node**, and **Total Length** fields.

   For Crash Based Benefit-Cost Analysis purposes:

   Up to six columns (labeled **Loc 1** – **Loc 6**) of location data, consisting of the following informational data fields can be entered (or generated) in this area of the form.

   Note: If the user does not have six different locations, the user may use the mouse to click directly into the "**Description of Location/Facility Type**" data field after the user enter the last location.

   Beginning Milepost: Enter the beginning milepost of Location #, where # is the value 1-6

corresponding to the **Loc** numbered column the user is typing into. The system recognizes up to three decimal places and forces three decimal places if not entered (i.e., 13 will be converted to 13.000; 1.3 will be converted to 1.300; 1.31 will convert to 1.310). An all zero value (i.e., 0.000) will display as blank.

Ending Milepost: Enter the ending milepost of Location #, where # is the value 1-6 corresponding to the **Loc** numbered column. The system recognizes up to three decimal places and forces three decimal places, if not entered (i.e., 13 will be converted to 13.000; 1.3 will be converted to 1.300; 1.31 will convert to 1.310). **Ending Milepost** must be greater than or equal to the **Beginning Milepost** value.

Length: This is a ***calculated*** field of the length between the **Beginning Milepost** and the **Ending Milepost**. It is calculated as **Ending Milepost** value minus **Beginning Milepost** value. It displays up to three decimal places. If the result is zero, it is not displayed. The field does not accept input, but populates as the user tabs out of the **Ending Milepost** fields.

Node: Enter the node number of Location #, where # is the value 1-6 corresponding to the **Loc** numbered column the user is typing into.

For Non-Crash Based Benefit-Cost Analysis purposes:

Up to six columns (labeled **Loc 1 – Loc 6**) of location data, consisting of only the **Node** data field can be entered in this area of the form. **Note**: If the user does not have six different locations' "**Node**" data, the user may use the mouse to click directly into the "**Description of Location/Facility Type**" data field after the user enter the last location's **Node**.

Node: Enter the node number of Location #, where # is the value 1-6 corresponding to the **Loc** numbered column where data is entered.

For Crash Based Benefit-cost Analysis purposes:

Total Length: This is a ***calculated*** field representing the total sum of all ***calculated*** **Length** results as they are entered is the six columns of location data columns. It displays the results with up to three decimal points.

Note: **Total Length** will remain blank for **Non-Crash Based** Benefit-Cost Analysis purposes.

8. **Description of Location/Facility Type**: Enter up to 4000 characters of text to describe the project location/facility type. The system provides a vertical scroll bar to allow the user to view the entire text in instances where the block of text entered is larger than what can be viewed in the text box.

For Crash Based Benefit-cost Analysis purposes:

9. **Cause of Crash Problems**: Enter up to 4000 characters of text to describe the cause of the crash problems.

For Non-Crash Based Benefit-cost Analysis purposes:

Non-Crash Based Project Justification: Enter up to 4000 characters of free text to describe the justification for the Non-Crash Based Improvement Project.

10. **Propose Improvements**: Enter up to 4000 characters of free text to describe the proposed improvements.

3.8.2.3.2 Numbered Data Items 11 - 17

Figure 18 Fields Displayed – Numbered Data Items 11-17

The following subsections detail the functionality contained within each of the controls in the figure above.

3.8.2.3.3 Numbered Data Item 18

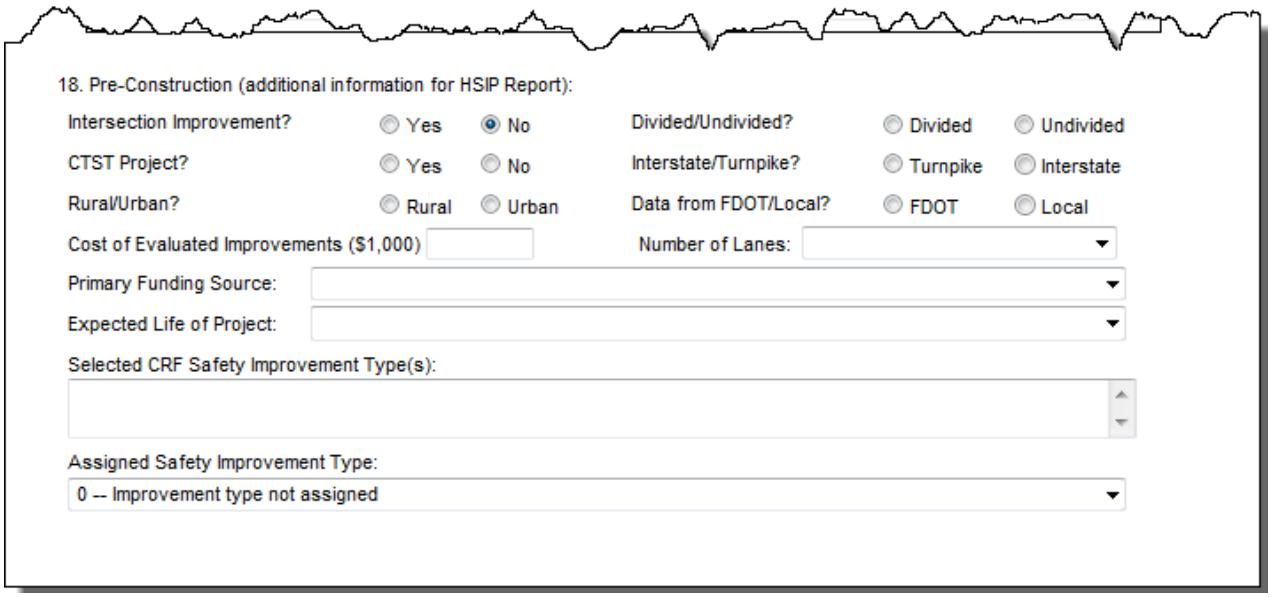


Figure 19 Fields Displayed – Numbered Data Item 18 Block

The Pre-Construction (additional information for HSIP Report) portion of the Benefit-Cost Analysis Form contains various radio buttons used to describe characteristics of the improvement project, roadway information, estimated cost, funding source, project life expectancy, and crash reduction factor(s) safety improvement types. This is also the section where a Safety Administrator designates or assigns the primary Safety Improvement Type for the project. The fields displayed or used to define the project are:

- **Intersection Improvement?:** This is a **Yes** or **No** set of radio buttons that defaults to "No".
- **CTST Project?**: This is a **Yes** or **No** set of radio buttons with no default. It remains blank unless an explicit selection is made.
- **Rural/ Urban?**: Select the appropriate radio button (no default).
- **Divided/Undivided?**: Select the appropriate radio button (no default).
- **Interstate/Turnpike?**: Select the appropriate radio button (no default).

- **Data from FDOT/Local?**: Select the appropriate radio button (no default).
- **Cost of Evaluated Improvements ($1000s)**: Enter the estimated cost of the improvement project in thousands of dollars.
- **Number of Lanes**: The number of existing lanes prior to an improvement project? Use the dropdown arrow to make the user's selection.
- **Primary Funding Source**: The primary funding source for the improvement project. Use the dropdown arrow to make a selection
- **Expected Life of Project**: The expected realized period of service from the planned improvement. Use the dropdown arrow to make the user's selection.
- **Selected CRF Safety Improvement Type(s):** Refer back to the Apply Crash Reduction Factors section for the explanation of how this is populated.
- **Assigned Safety Improvement Type**: If ***only one*** improvement type has been selected, it will be listed as the **Assigned Safety Improvement Type** in the last data field box on the form. If more than one improvement type has been selected, this box will show "0 – Improvement Type Not Assigned". The user can click the dropdown arrow to show the list of improvement types and then select the ***primary*** improvement type.

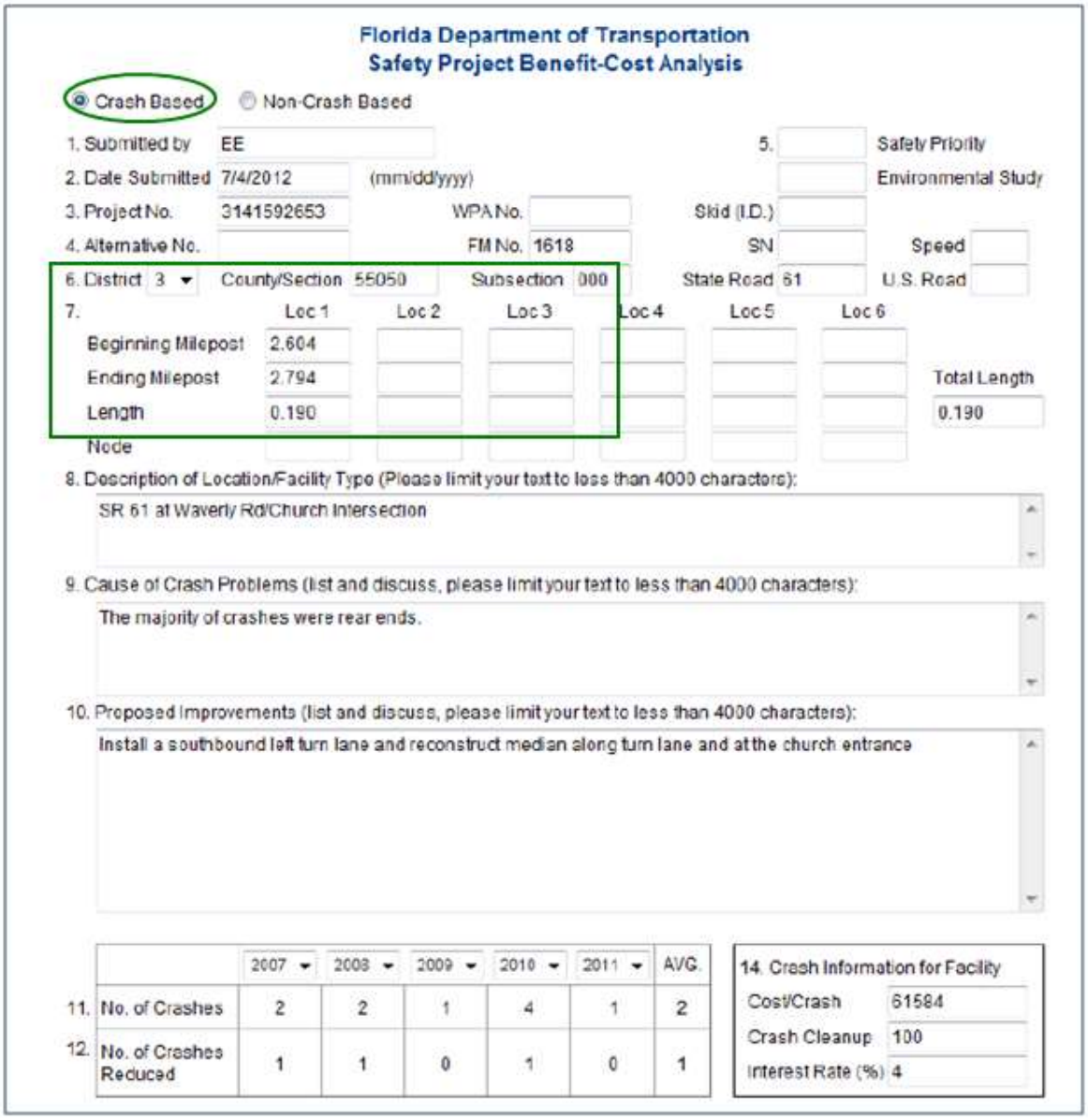
  Note: When a project is initially started, this will default to "0 – Improvement type not assigned".

3.8.2.3.4 Automatic Data Retrieval

An important capability of the Benefit-cost Analysis Form is that it allows the user to automatically retrieve crash statistics and CRFs for calculation. This replaces the previously time-consuming, non-repeatable, and potentially error-prone process of manual data entry.

To demonstrate how the various parts of this process work we will view a blank screenshot followed by one that is filled using the sample project for FM No. 1618 – a crash based project – with its

location-related data shown below. Once data has been entered in the location fields, users can select a data year from the dropdown menu to automatically retrieve crash statistics. When a specific year has been selected, crash records specific to the project location, are automatically retrieved, summarized, and displayed. Up to five years of crash records may be included in each analysis.



Florida Department of Transportation
Safety Project Benefit-Cost Analysis

(●) Crash Based ( ) Non-Crash Based

1. Submitted by: EE
2. Date Submitted: 7/4/2012 (mm/dd/yyyy)
3. Project No.: 3141592653 WPA No.: Skid (I.D.):
4. Alternative No.: FM No.: 1618 SN: Speed:
6. District: 3 County/Section: 55050 Subsection: 000 State Road: 61 U.S. Road:
5. Safety Priority:
Environmental Study:

7.

	Loc 1	Loc 2	Loc 3	Loc 4	Loc 5	Loc 6	Total Length
Beginning Milepost	2.604						
Ending Milepost	2.794						
Length	0.190						0.190
Node							

8. Description of Location/Facility Type (Please limit your text to less than 4000 characters):
SR 61 at Waverly Rd/Church Intersection

9. Cause of Crash Problems (list and discuss, please limit your text to less than 4000 characters):
The majority of crashes were rear ends.

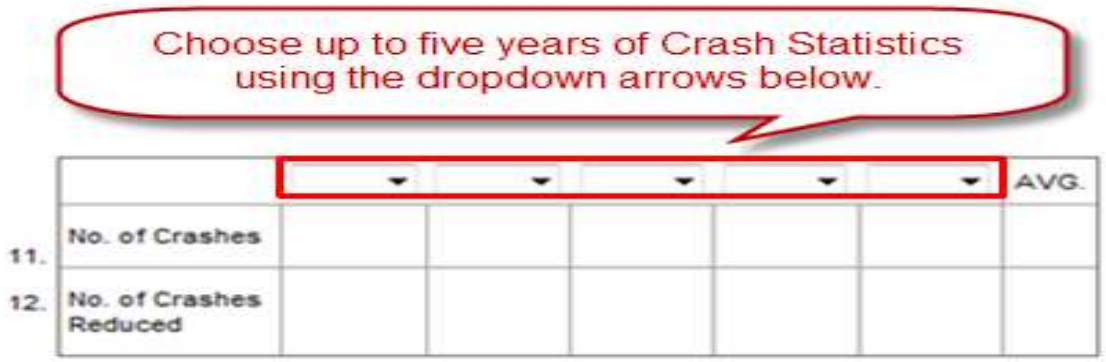
10. Proposed Improvements (list and discuss, please limit your text to less than 4000 characters):
Install a southbound left turn lane and reconstruct median along turn lane and at the church entrance

		2007	2008	2009	2010	2011	AVG.
11.	No. of Crashes	2	2	1	4	1	2
12.	No. of Crashes Reduced	1	1	0	1	0	1

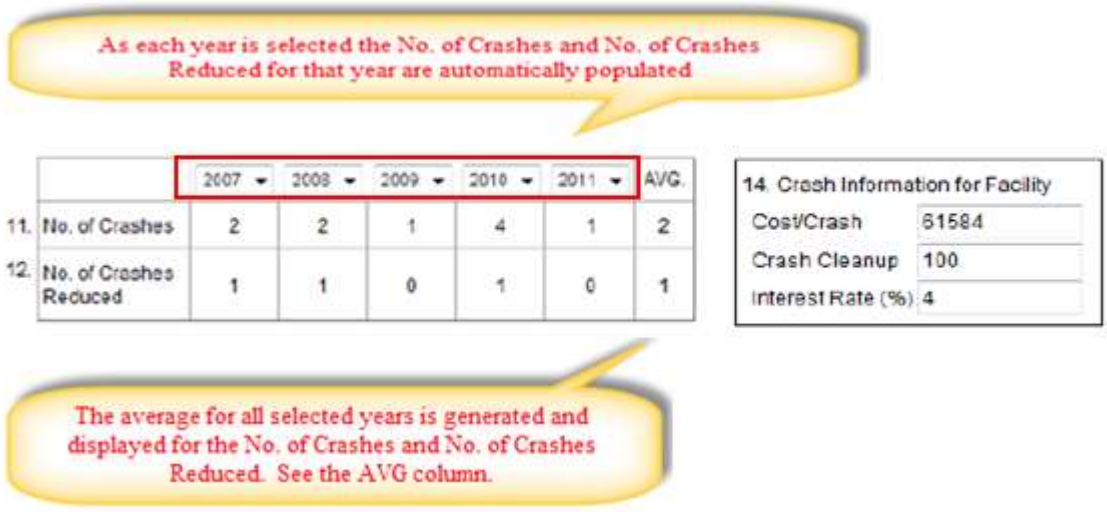
14. Crash Information for Facility

Cost/Crash	61584
Crash Cleanup	100
Interest Rate (%)	4

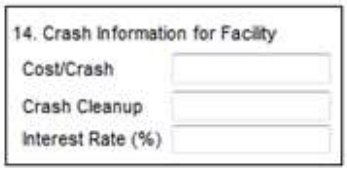
An initially-blank example of the grid is present below to illustrate the grid's appearance prior to selections by the user.



The screenshot below shows the results after year selections are complete:



Using the **Tab** key  to advance out of the last year the user need, the cursor will go to the next numbered data item (**14. Crash information for Facility)**. The illustration below shows blank and completed fields for the item.



Cost/Crash: The monetary cost of the crash incident.

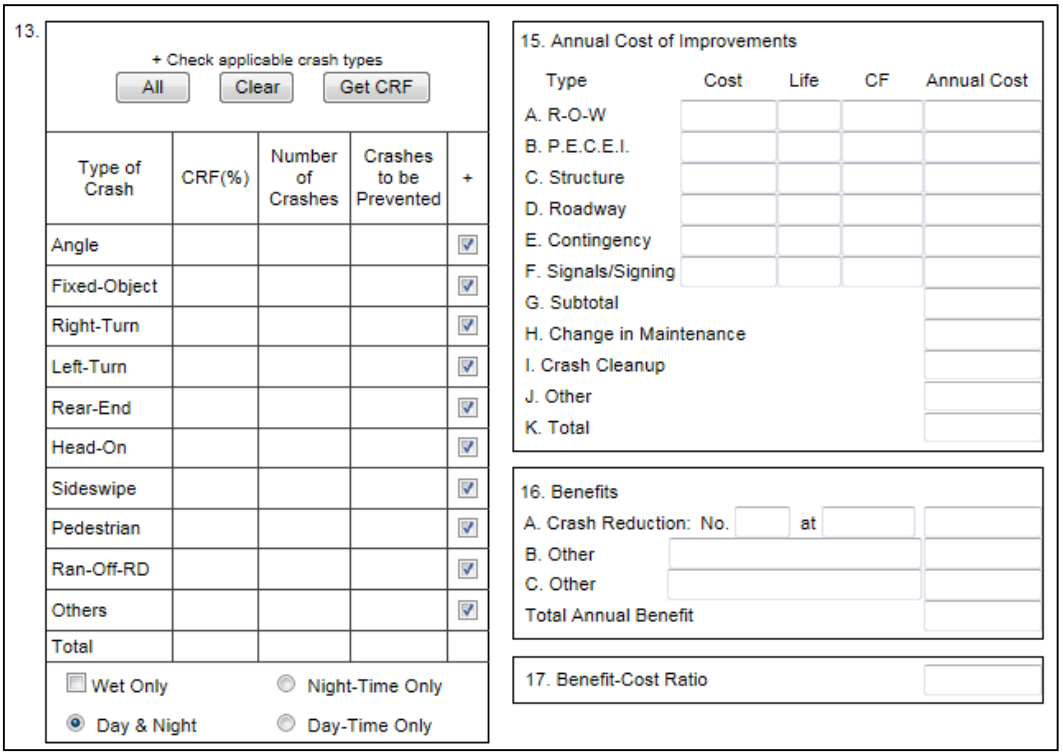
Crash Cleanup: The monetary cost of cleanup.

Interest Rate (%): The interest rate applied to both costs.

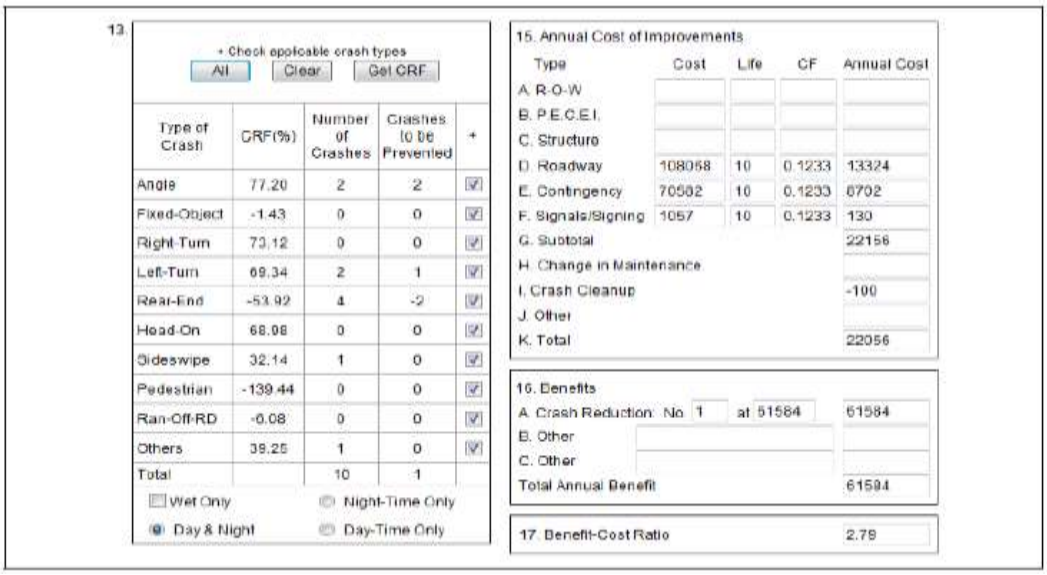
3.8.2.3.5 Applying Crash Reduction Factors

To obtain an estimate of the number of crashes to be prevented as a result of an improvement project(s), the CRFs associated with the particular type of project(s) must be specified. To do this:

1. Click the **Get CRF** button on the form shown below.



The following displays for sample project FM No. 1618:



13. Check applicable crash types

All | Clear | Get CRF

Type of Crash	CRF(%)	Number of Crashes	Crashes to be Prevented	+
Angle	77.20	2	2	☑
Fixed-Object	-1.43	0	0	☑
Right-Turn	73.12	0	0	☑
Left-Turn	69.34	2	1	☑
Rear-End	-53.92	4	-2	☑
Head-On	68.08	0	0	☑
Sideswipe	32.14	1	0	☑
Pedestrian	-139.44	0	0	☑
Ran-Off-RD	-0.08	0	0	☑
Others	39.25	1	0	☑
Total		10	1	

☐ Wet Only ○ Night-Time Only

◉ Day & Night ○ Day-Time Only

15. Annual Cost of Improvements

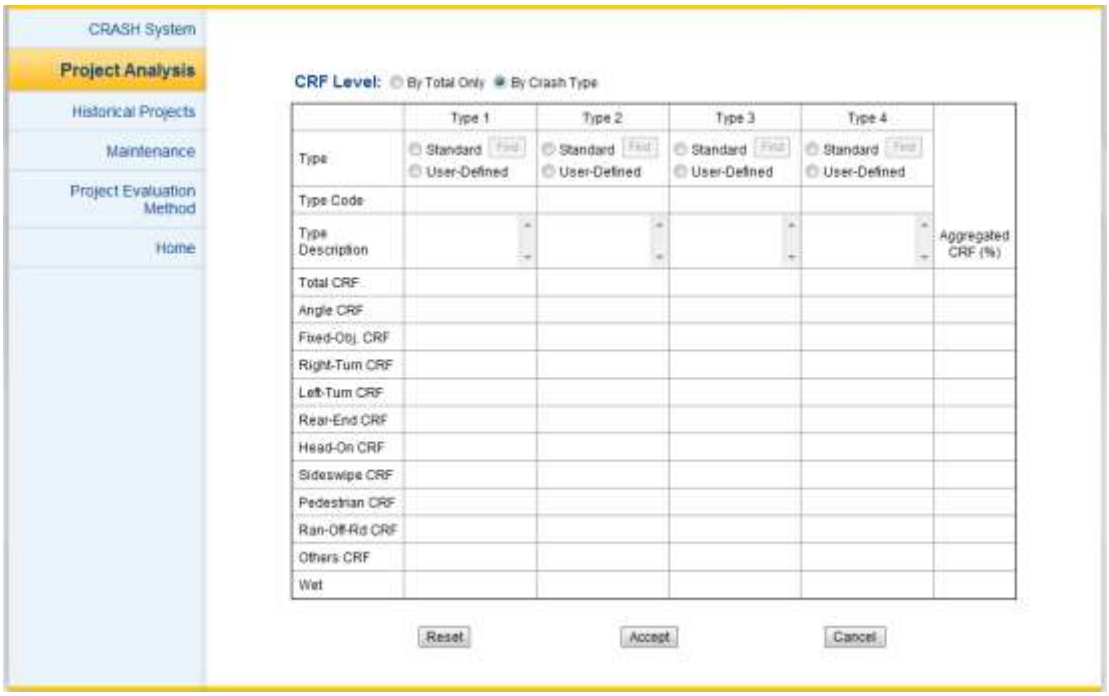
Type	Cost	Life	CF	Annual Cost
A. R-O-W				
B. P.E.C.E.I.				
C. Structure				
D. Roadway	108058	10	0.1233	13324
E. Contingency	70582	10	0.1233	8702
F. Signals/Signing	1057	10	0.1233	130
G. Subtotal				22156
H. Change in Maintenance				
I. Crash Cleanup				-100
J. Other				
K. Total				22056

16. Benefits

A. Crash Reduction: No. 1		at 51584	51584
B. Other			
C. Other			
Total Annual Benefit			51584

17. Benefit-Cost Ratio 2.79

1. The CRF Selection form opens. Select to apply either a single CRF based on the total crashes (default) or detailed CRFs for different crash types.



CRASH System

Project Analysis

Historical Projects

Maintenance

Project Evaluation Method

Home

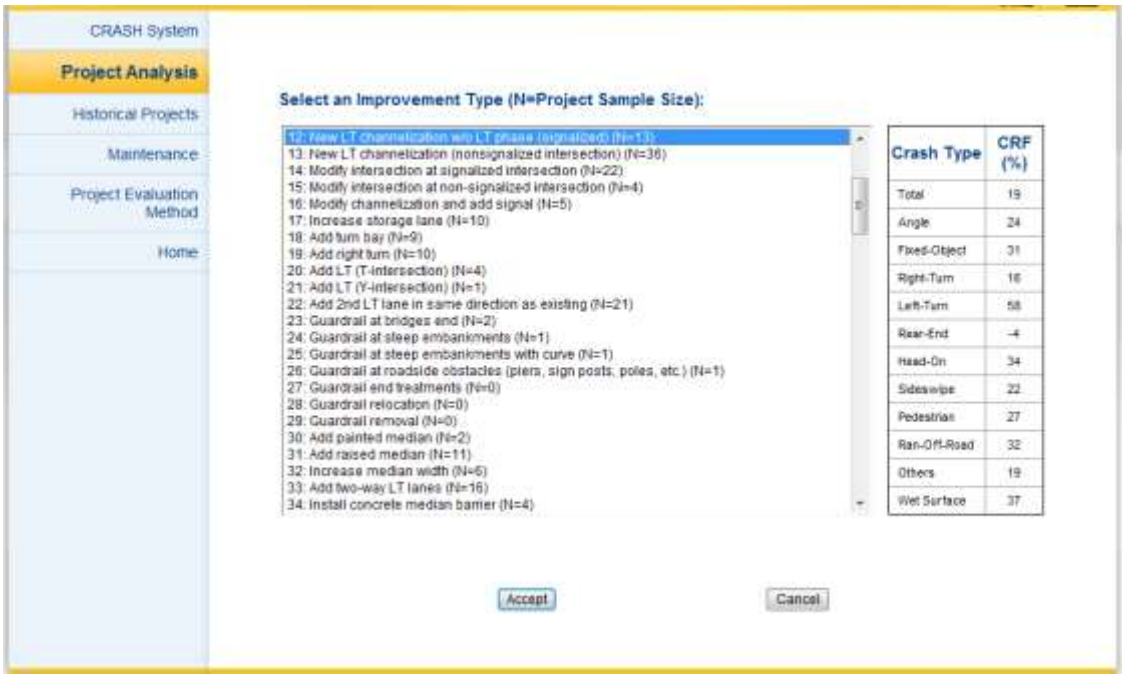
CRF Level: ○ By Total Only ◉ By Crash Type

	Type 1	Type 2	Type 3	Type 4	
Type	○ Standard Find ○ User-Defined	○ Standard Find ○ User-Defined	○ Standard Find ○ User-Defined	○ Standard Find ○ User-Defined	
Type Code					
Type Description					Aggregated CRF (%)
Total CRF					
Angle CRF					
Fixed-Obj. CRF					
Right-Turn CRF					
Left-Turn CRF					
Rear-End CRF					
Head-On CRF					
Sideswipe CRF					
Pedestrian CRF					
Ran-Off-Rd CRF					
Others CRF					
Wet					

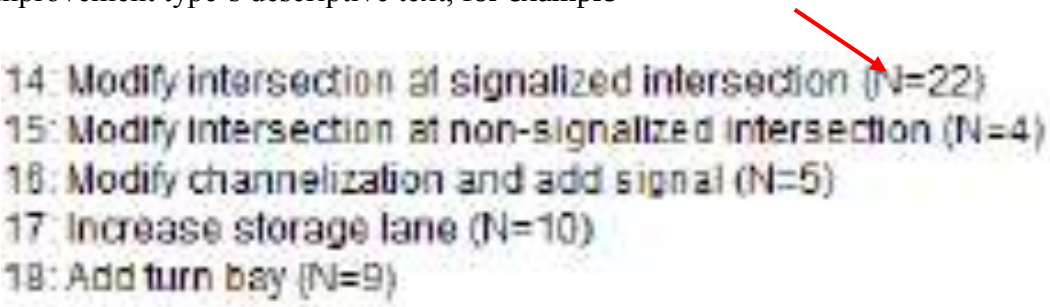
Reset | Accept | Cancel

2. Select whether to apply standard or user-defined CRFs.

To use standard CRFs, click the **Find** button to view the screen for Selecting Standard CRFs (see below).



This screen displays a list of available improvement types. Note that on this list, the number of projects (N) available to develop the CRFs is displayed in ***parentheses*** at the end of each improvement type's descriptive text, for example



Note: For statistical purposes, it is advisable to use only those with a project sample size of at least five.

When a sample size of less than five is selected, the user will be prompted with an advisory message.

Upon selecting an improvement type by clicking the appropriate list item, the corresponding CRFs will be listed on the right.

Click the Accept button to retrieve the CRFs and exit the screen.

3. If the CRFs for a specific improvement type are not available, they must be obtained from another source and entered manually as User-Defined CRFs. To use CRFs from other sources, enter the factors in the appropriate fields manually. When CRFs are User-Defined, a "**" note will appear on top of the selected CRFs to indicate that the CRFs being used are ***non-standard***.

4. Once the CRFs have been selected, users can click the Accept button to retrieve the CRFs into the Benefit-Cost Analysis form. Choose up to four different improvement types if a project involves multiple improvements. The aggregated CRFs, shown in the last column, will be automatically ***calculated*** based on the following formula:

$$CRF_t = CRF_1 + (1 - CRF_1)\,CRF_2 + (1 - CRF_1)\,(1 - CRF_2)\,CRF_3 + \ldots$$

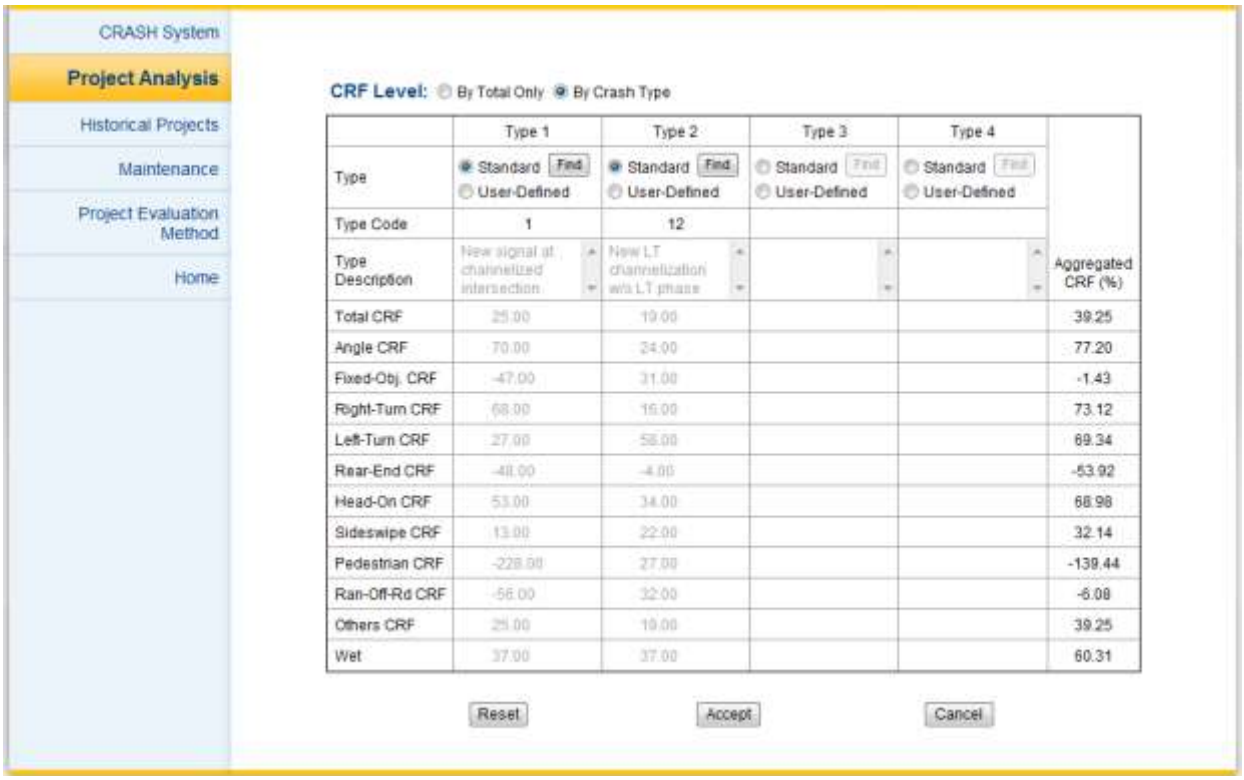
where

CRF_t= Aggregated CRF,

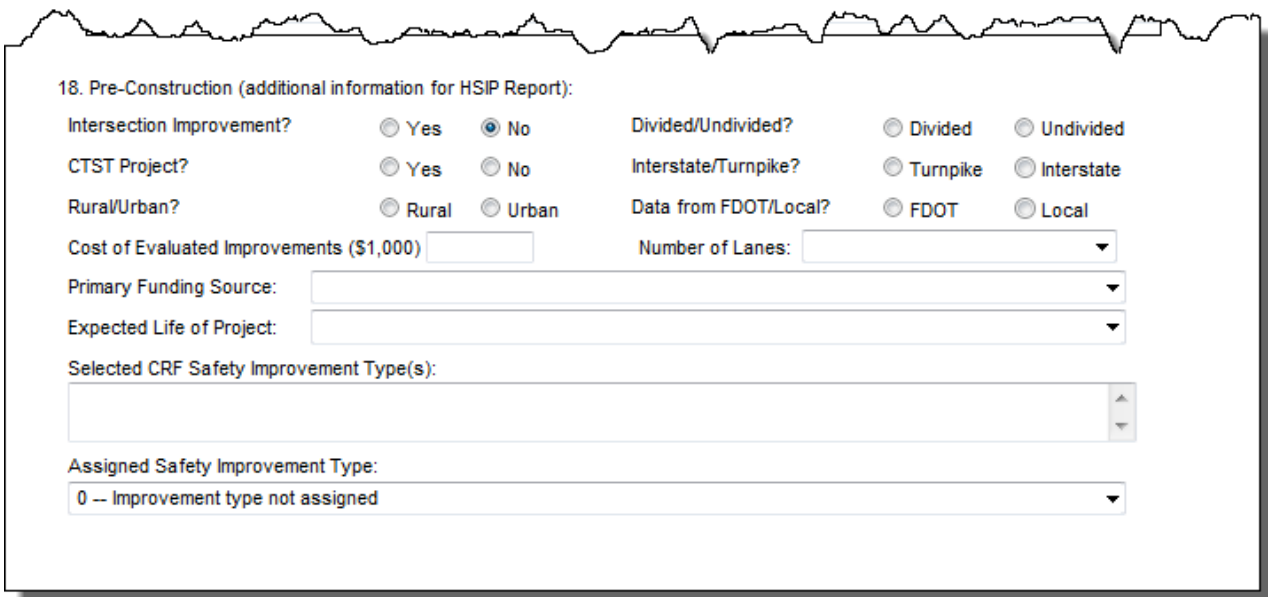
CRF_1= CRF for the first improvement project,

CRF_2= CRF for the second improvement project, and

CRF_3= CRF for the third improvement project.



By default, all CRFs for different crash types are included. The user may uncheck any crash types that are not applicable to the specific improvement project. Unchecked crash types are excluded from the analysis. **Note**: The list of improvement type(s) selected will be displayed under the **Selected CRF Safety Improvement Type(s)** box as part of the Pre-construction (additional information for HSIP Report) category.



Shown below is a blank copy of the next numbered data item "**15. Annual Cost of Improvements**". On the right is the completed section for our sample project. The user will enter information only in **Cost** and **Life** columns in rows A-F. The other columns - **CF** and **Annual Cost** – are ***calculated*** and populated by CRASH system. Additionally, rows **G. Subtotal, I. Crash Cleanup,** and **K. Total** are ***calculated*** and populated by the system.

15. Annual Cost of Improvements

Type	Cost	Life	CF	Annual Cost
A. R-O-W				
B. P.E.C.E.I.				
C. Structure				
D. Roadway				
E. Contingency				
F. Signals/Signing				
G. Subtotal				
H. Change in Maintenance				
I. Crash Cleanup				
J. Other				
K. Total				

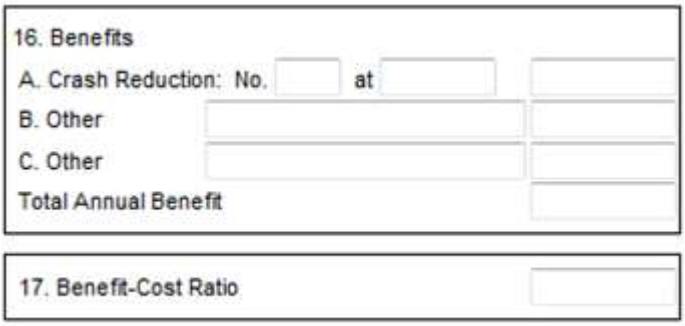
15. Annual Cost of Improvements

Type	Cost	Life	CF	Annual Cost
A. R-O-W				
B. P.E.C.E.I.				
C. Structure				
D. Roadway	108068	10	0.1233	13324
E. Contingency	70582	10	0.1233	8702
F. Signals/Signing	1057	10	0.1233	130
G. Subtotal				22156
H. Change in Maintenance				
I. Crash Cleanup				-100
J. Other				
K. Total				22056

The following are data fields displayed in the "**15. Annual Cost of Improvements"** section:

- R-O-W: Right of Way
- P.E.C.E.I
- Structure
- Roadway
- Contingency
- Signals/Signing
- Subtotal: Contains the ***calculated*** Subtotal of the Annual Cost column of rows A-F summed together.
- Change in Maintenance
- Crash Cleanup
- Other
- Total: Contains the ***calculated*** total of the Annual Cost column of rows G-J summed together.

The next two sections, "**16. Benefits**" and "**17. Benefit-Cost Ratio**", on the Benefit-Cost Analysis form will be covered together.



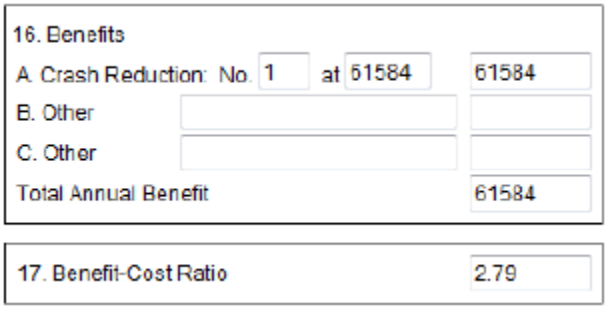
- **Crash Reduction**: Contains the number of crash reductions expected at the Cost/Crash rate from the "**14. Crash Information for Facility**" section above, with the ***calculated*** **Annual Cost** benefit for that number of crash reductions at that cost rate.

- **Other**: Enter information regarding additional benefits for the improvement project.

- **Other**: Enter information regarding additional benefits for the improvement project.

Total Annual Benefit: will contain the ***calculated*** result of the sum of the **Annual Cost** columns in rows A-C in section **16. Benefits** only.

The final numbered data item **17. Benefit-Cost Ratio:** Contains a ***calculated*** result which contains the results of dividing the value of the **Total Annual Benefit** from **16. Benefits** by the **Total** field from **15. Annual Cost of Improvements** (see the sample calculation below)**.**



3.8.2.3.6 Prepared by/Approved by

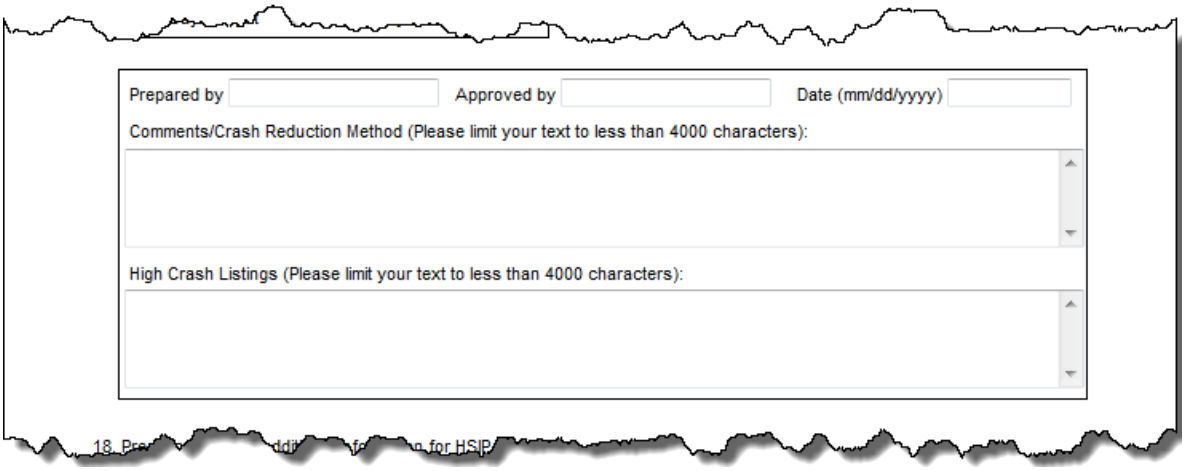


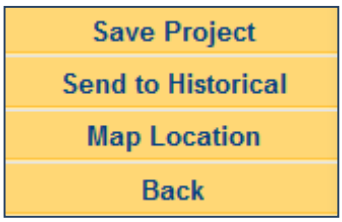
Figure 20 Prepared by / Approved by Block

- **Prepared by**: Enter the name of the person who prepared the Benefit-Cost Analysis for the project.
- **Approved by**: Enter the name of the person who approved the project.

- **Date (mm/dd/yyyy)**: Enter the date when the project was approved, in mm/dd/yyyy format.
- **Comments/Crash Reduction Method**: Enter up to 4000 characters of free text to provide general comments or a crash reduction method.
- **High Crash Listings**: Enter up to 4000 characters to list high crash areas related to the project.

3.8.3 Saving Projects

Once all necessary data has been entered into the Benefit-Cost Analysis Form, the project can be saved using available functionality within the navigational menu (left panel).



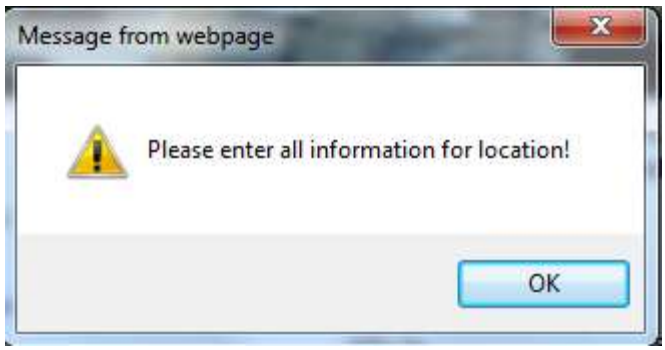
After entering at least the minimal data on the "**Add Improvement Project**" webpage there are several functional options available to the user on the navigational menu. We will review these slightly out of order.

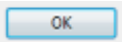
Clicking the **Back** button prior to saving the new project, returns users to the "**Project Analysis**" main menu page and erases any unsaved data.

The system allows users to send new projects to the Historical Projects component. Although this functionality is available, it is ***not recommended*** unless the selected project has been entered into the Benefit-Cost Analysis form and construction is ready to begin. Upon clicking this button, the system saves the new project to the database, automatically opens the

project in the Edit Project page within in Historical Projects, and changes the Project Status to *Construction*.

The system displays the following message dialog box if the project was saved without a location.



The user must click 

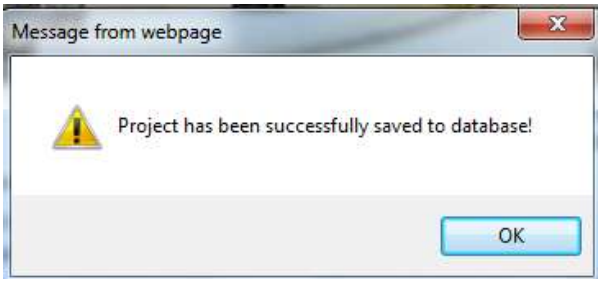
or  to close this dialog box.

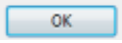
Before using this feature, the user must enter the required location information. CRASH interfaces with a map server to generate map data for all safety improvement projects within the database. Provided that the given coordinates are accurate, these functions automatically retrieve project data from the specified location(s) for further analysis.

Once the Benefit-Cost Analysis form contains the location data fields necessary (**County/Section, Subsection, Beginning Milepost and Ending Milepost**) to map the location, click on the 

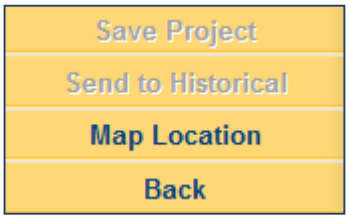
button. The SSOGis system opens in a separate window. SSOGis uses the project's Roadway ID (consists of the combination of **County/Section** and **Subsection** fields) and the location's Beginning Milepost and Ending Milepost to draw the location on the map. The Add Improvement Project webpage remains open and accessible.

By clicking on the **Save Project** button, the following confirmation message dialog box displays.

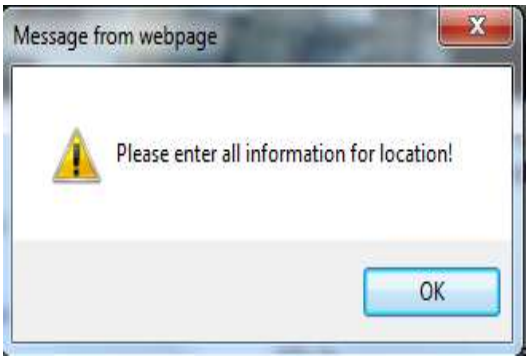


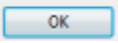
The user must click  or  to close this dialog box.

The Add Improvement Project webpage remains open and the Save Project and Send to Historical links in Project Analysis navigation menu become disabled (see below):



If the required location data was provided prior to saving, SSOGis will open in a separate window zoomed in on the location of the project. If the user saved this project without Location related data and click on the  button, the following message dialog box displays:



The user must click on  or  to close this dialog box.

Note: To enter the required location information the user will have access this project through the Edit Project process and then use the  feature on that page's navigation menu.

By clicking on the  button after saving the new project, the user will return to the Project Analysis main menu page. If the user select **Edit Improvement Projects** or **View Improvement Projects** the new project ***will*** now show in the improvement projects lists based on the query filters selected.

3.8.4 Editing and Viewing Improvement Projects

Saved projects can be either viewed or edited. In general, the user is allowed to view all projects from all districts, but if the user is limited to managing only one district, the user can only edit

projects from the user's own district. The Editing projects process includes deletion of a project record(s) from the database, when needed.

To edit projects, select the Edit Improvement Projects link from the **Project Analysis** navigation submenu. To view projects, select the View Improvement Projects link from the **Project Analysis** navigation submenu. These submenus have a couple of features in common:

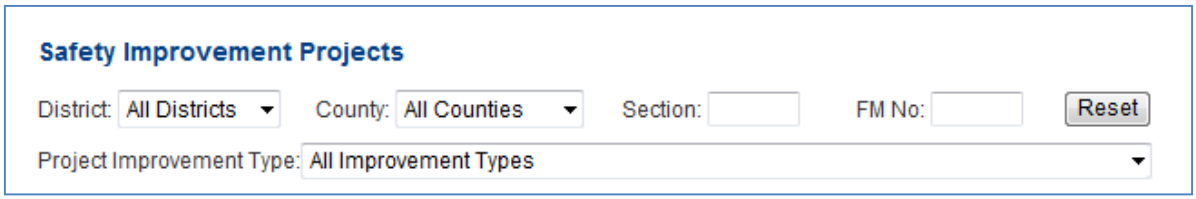
These submenus have these two features in common which will be covered together in the Edit and View Improvement Projects Common Features section.

For now we will begin by reviewing the Search Query process. The user is presented with a set of query filters, as shown below. These filters allow the user to retrieve a specific subset of the projects that meet filter conditions. Any combination of filters can be used. The default filter settings (shown below in the Query Filters Available section) automatically generate a list of safety improvements for all districts, all counties, and all improvement types. All filters are independent, except for the District and County, as noted below. When a filter is left unspecified, it is not included and no constraints will be imposed based on that filter.

Use the Reset button to clear the selected filtering criteria and use the dropdown arrow on fields where available to select from a specific available list of values, the rest of the fields are free-form text that should only be used when the user know the specific or partial value the user enter is present in the database in order to effectively narrow the user's search results.

As filters are specified, the list of all projects that satisfy the filter conditions will be updated. Examples of lists of retrieved projects are shown below. The list includes several major location data fields, plus the Financial Management project number (FM No. field) and the project Status.

3.8.4.1.1 Search Filters



- **District**: Select a district. The dropdown list defaults to "All Districts" yet allows users to choose a specific FDOT District, values 1-8.

> **Note:** If the user's user account is limited to a specific District, the user's assigned District will auto-populate and lock the **District** dropdown and you will not be able to change it.

- **County**: Select a county. The dropdown list defaults to *All Counties* when District contains *All Districts*. If a specific FDOT District is selected (or auto-populated), the Counties in the dropdown list will be restricted to only those in the selected District.

- **Section**: Enter a section. The Linear reference section for the road within County (first two digits shown), 3rd-5th digits of the roadway identifier.

  Note: This field can be partially entered and also provides for the use of the wildcard (%) feature. For example, if a there were several projects entered for Sections 11010 and 01010, the user would find projects for both upon entering *10* or *%10* or *10%* in the Section field.

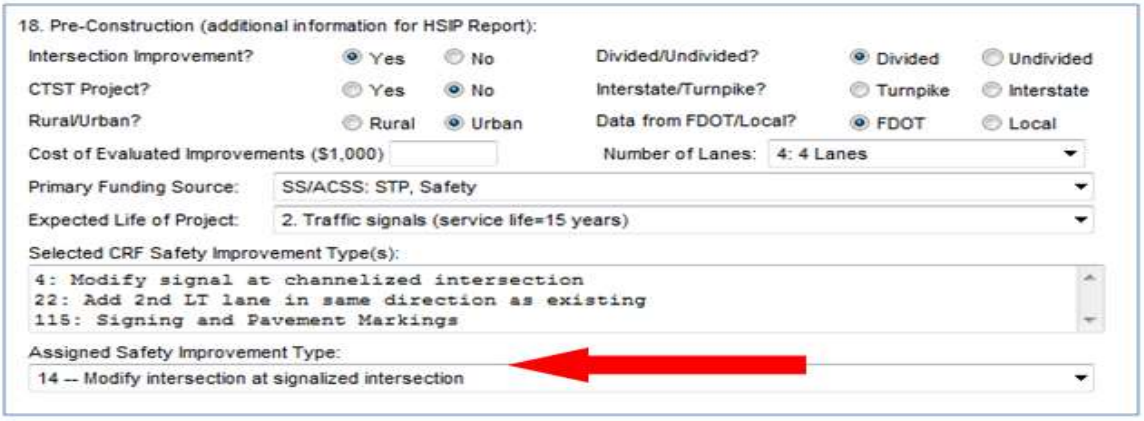
- **FM No**: Enter a FM No. "FM" represents the Financial Management project number from the Work Program System, which was entered, if available, when the improvement project was entered into the database. **Note**: This field is case-sensitive and provides for the use of the wildcard (%) feature. Information should only be entered here if the user know ***the exact case*** used when it was entered into the database, so as to ensure the most efficient and accurate query against the database.

- **Project Improvement Type**: Select a project improvement type. It defaults to "All

Improvement Types" unless another value is selected using the dropdown list. The query includes a project in the results based on the Assigned Safety Improvement Type for a project.

Note: Unlike the other filtering parameters listed above, this particular field is not included in the results column headings displayed. You will have to open the specific improvement project record to see it by checking the **Assigned Safety Improvement Type** field at the bottom of the Benefit-Cost Analysis block displaying numbered data item 18 (see the large red arrow in the example shown below.)

Only *one* Safety Improvement Type can be assigned to a project, though a single project may involve multiple improvements. This assignment is handled through the Administration menu, by a user designated as an Administrator. Each project defaults to having "0-Improvement type not assigned" (and therefore is automatically included in the default "All Improvement Types" selection) until an Administrator selects *one* as the primary assigned type.



3.8.4.2 Improvement Projects Query Results – Edit vs. View

Cutaway examples of the "**Edit Improvement Projects**" query results and the "**View Improvement Projects**" query results are shown below. **Note:** the columns of data returned are *similar*, but the "**Edit Improvement Projects**" data results list includes an extra "**Action**" column. These will be discussed in more detail later in this document as each operational feature (Edit, Delete, and View) is defined.

FM No	District	County	Section	Sub	BMP	EMP	CBD	CED	Status	Action	Action
11111112	0			000					construction	Edit	Delete
CBWTST1	0			000					construction	Edit	Delete
CBWTST2	0			000					construction	Edit	Delete

Figure 21 Edit Improvement Projects Query Results Columns

FM No	District	County	Section	Sub	BMP	EMP	CBD	CED	Status	Action
11111112	0			000					construction	View
CBWTST1	0			000					construction	View
CBWTST2	0			000					construction	View

Figure 22 View Improvement Projects Query Results Columns

3.8.4.2.1 Query Results Fields

The query results contain the following fields related to improvement projects:

- **FM No**: The Financial Management project number from the Work Program system.
- **District**: The DOT Managing District identifier.
- **County**: The DOT code for County. **Note**: County is the first two digits of the 8-digit roadway identifier. County is also included in the first two digits of the **Section** field.
- **Section**: The linear reference section for the road within County (first two digits shown), 3rd-5th digits of the roadway identifier.
- **Sub**: The ***subsection*** of the primary section, which is the last 3 digits of the 8-digit roadway

identifier.

- **BMP**: The Beginning Milepoint for the project, refers to inventoried length of the roadway identifier.
- **EMP**: The Ending Milepoint for the project, refers to inventoried length of the roadway identifier.
- **Status**: The project status. Valid values are listed below.
    - *Analysis*: The project is still in the analysis stage and may or may not be implemented. This is the default given when a project is initially started.
    - *Construction*: The project is being constructed, but the construction has not been completed.
    - *Completed*: The project has been completed and the construction periods have been entered.
- **Action** (or the two Action column headings): The column(s) contain an action verb *Edit* and *Delete* respectively when using the Edit Improvement Projects query or *View* when using the View Improvement Projects query. Choose the action verb that best fits the user's needs for the specific project data row selected.

3.8.4.3 Editing Improvement Projects

As illustrated in the figure above, the Edit Improvement Projects subpage includes two action columns (i.e., **Edit** and **Delete**), each of which opens a different view of the Benefit-Cost Analysis Form.

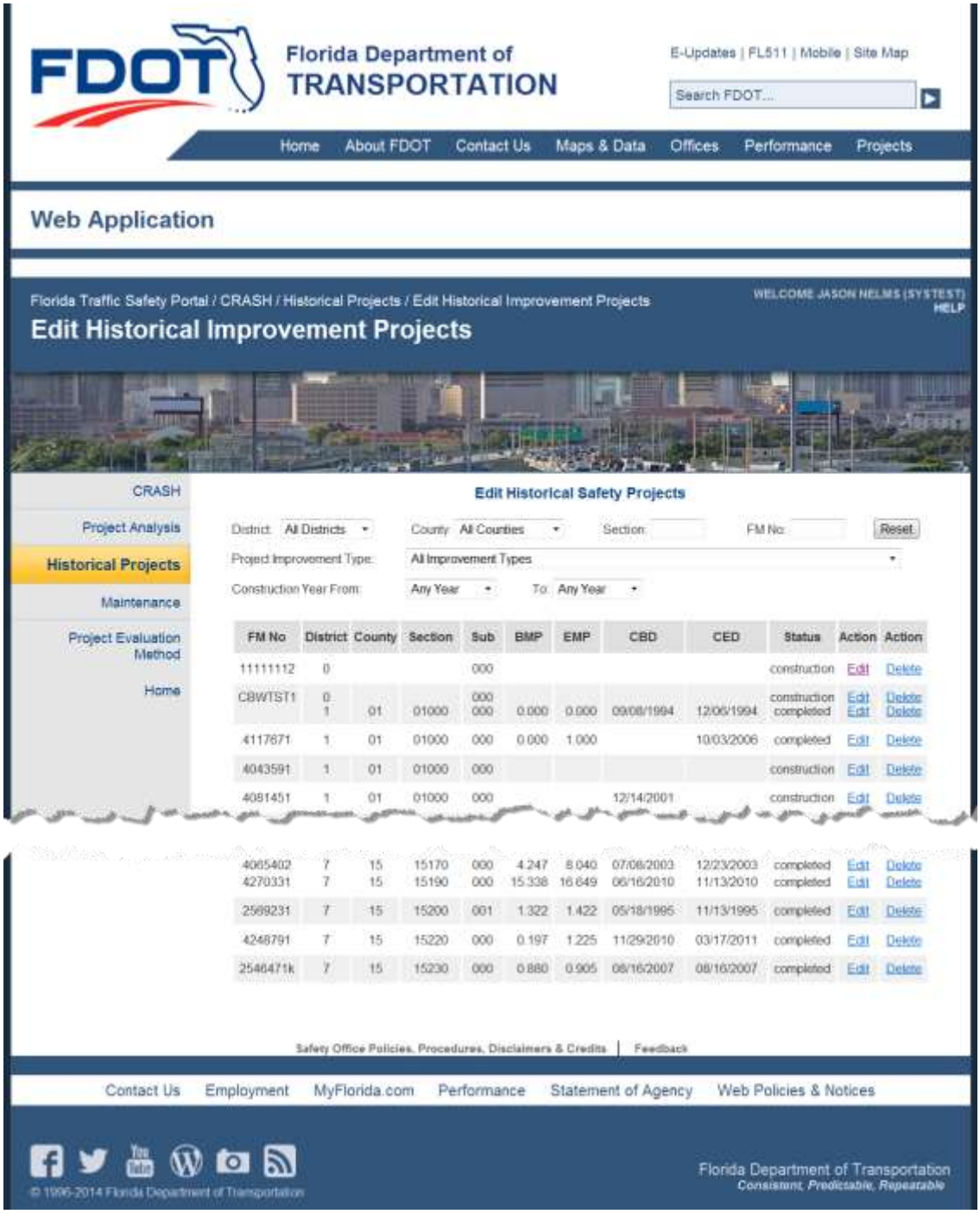


Figure 23 Project Analysis - Edit Improvement Projects Subpage

The navigation menu in the left panel of each project specific webpage is unique. Each one is displayed below to show the differences in the Edit vs. Delete related operations that can be

performed on the selected project.

3.8.4.3.1 Edit and Delete Project Navigation Menus

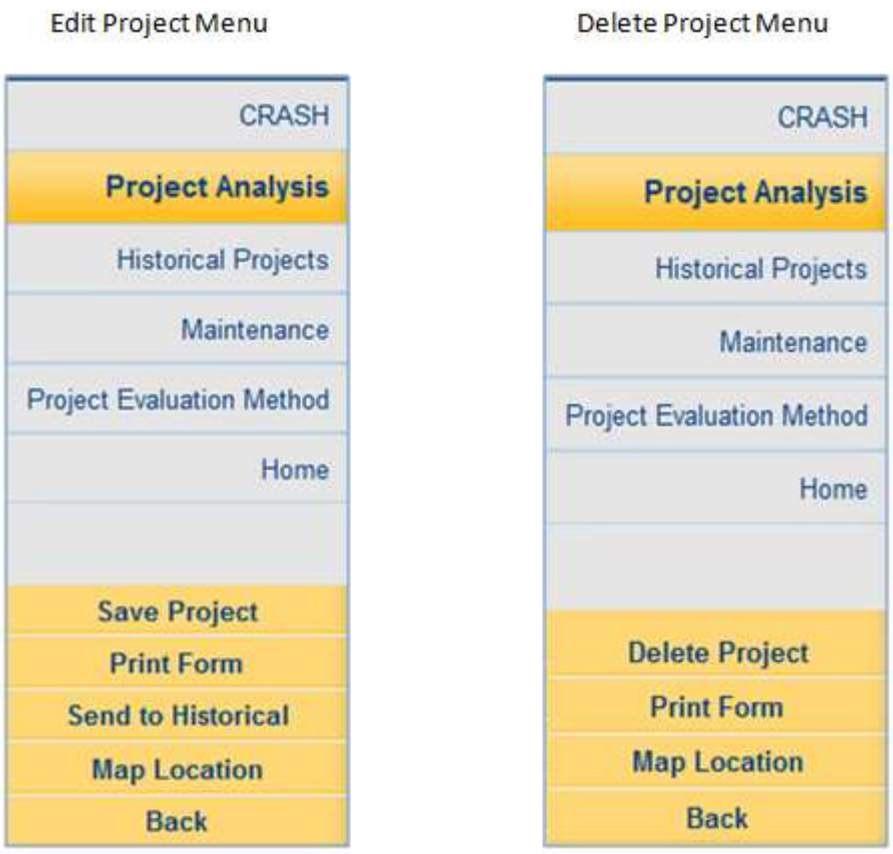


Figure 24 Edit vs. Delete Project Navigation Menus

Later in this document the functionality in each menu will be discussed, step-by-step, describing how to edit and how to delete an improvement project. For now we will only discuss each menu at a high level to quickly describe the operational commonalities and differences.

3.8.4.4 Edit Project Menu Features Overview

By selecting this feature the CRASH system will save changes made to the selected Project's Benefit-Cost Analysis Form.

Print Form By selecting this feature a printer friendly version of the selected Project's Benefit-Cost Analysis Form will be generated. A print dialog box will open for the user to choose a printer and print; or the user may elect to cancel the print request. **Note**: Whether the user choose to print or to cancel the print request, the user have to use the browser's Back arrow to return to the "**Edit Project**" detail subpage.

Send to Historical By selecting this feature the improvement project moves from the "**Project Analysis**" functional component to the "**Historical Projects**" functional component in the CRASH system. It will no longer be included on the **Project Analysis** "**Edit Improvement Projects**" list. **Note**: This selection should only be made when a project is ready for construction to begin.

Map Location Before clicking this feature ensure that the required location data items have been entered into the Benefit-Cost Analysis Form. CRASH interfaces with the map server to generate map data for all safety improvement projects within the database. Provided that the given coordinates are accurate, these functions automatically retrieve project data from the specified location(s) for further analysis. After clicking the SSOGis system will open in a separate window. The SSOGis uses the project's Roadway ID (consists of the combination of **County/Section** and **Subsection** fields) and the location Beginning Milepost and Ending Milepost to draw the location on the map.

Back By clicking this feature the user will be returned to the "**Edit Improvement Projects**" list. **Note:** It is important to use this **Back** button and *not the user's browser's Back button*, because the browser Back button may not take the user back to the Improvement Project list properly.

3.8.4.5 Delete Project Menu Features Overview

Delete Project By selecting this feature the CRASH system will delete the selected Improvement Project from the database. The user will be prompted to confirm the user want to delete the record.

Print Form By selecting this feature a printer-friendly version of the selected Project's Benefit-Cost Analysis form will be generated. A print dialog box will open to allow the user to choose a printer and print. **Note**: Whether the user choose to print or to cancel the print request, the user must use the browser's Back arrow to return to the "**Delete Project**" detail subpage.

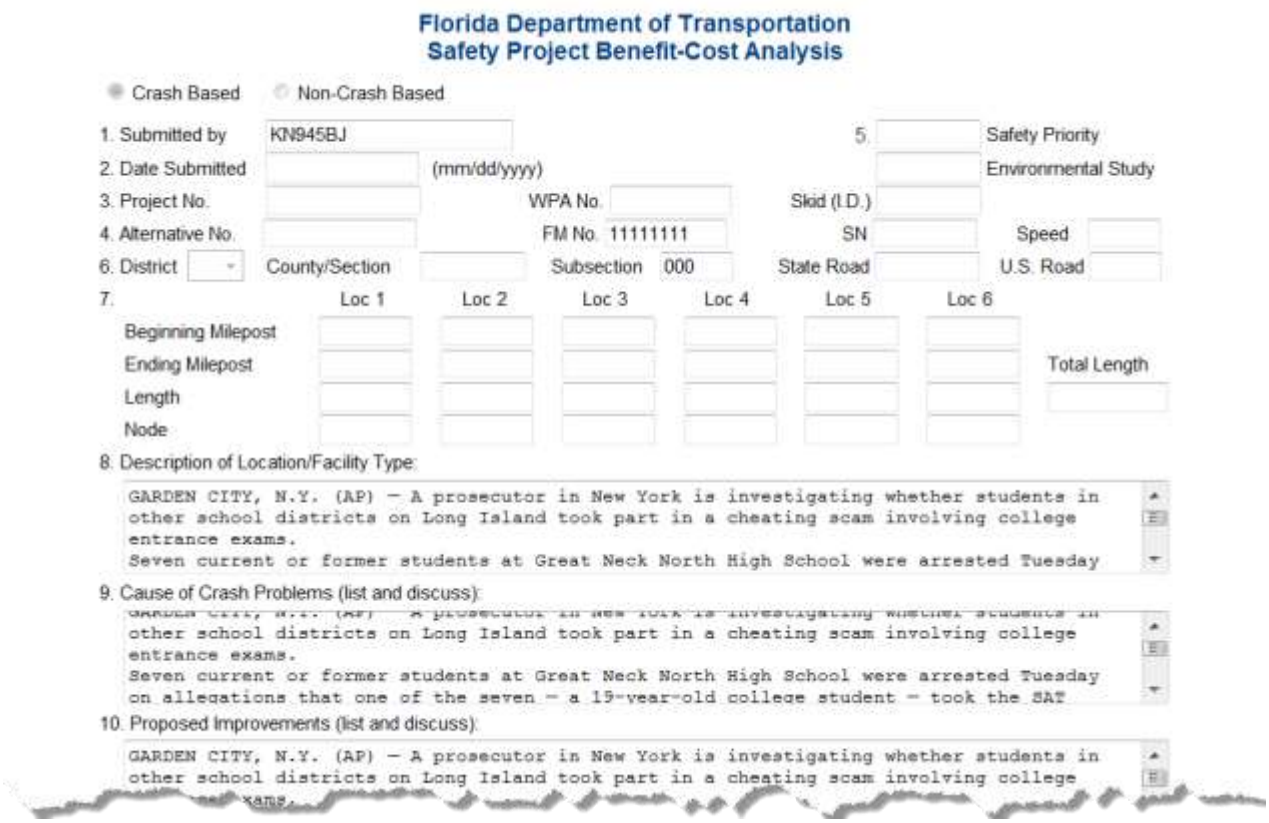
Map Location Before clicking this feature ensure that the required location data items have been entered into the Benefit-Cost Analysis Form. CRASH interfaces with the map server to generate map data for all safety improvement projects within the database. Provided that the given coordinates are accurate, these functions automatically retrieve project data from the specified location(s) for further analysis. After clicking the SSOGis system will open in a separate window. The SSOGis uses the project's Roadway ID (consists of the combination of **County/Section** and **Subsection** fields) and the location Beginning Milepost and Ending Milepost to draw the location on the map.

Back By clicking this feature the user will be returned to the Edit Improvement Projects list. **Note:** It is important to use this **Back** button and *not the user's browser's Back button*, Using the browser's **Back** button may not return the user to the Improvement Project list properly.

Because the **Delete** menu options are more simplistic and straightforward we examine those in detail first.

3.8.4.5.1 Deleting an Improvement Project

Clicking the Delete link opens the selected project's Benefit-Cost Analysis Form.



The navigation menu on the "**Delete Project**" webpage has several operational choices available. We will address them slightly out of order since the one the user choose first may make others un-accessible, cancel the delete request, or make some options not relevant.

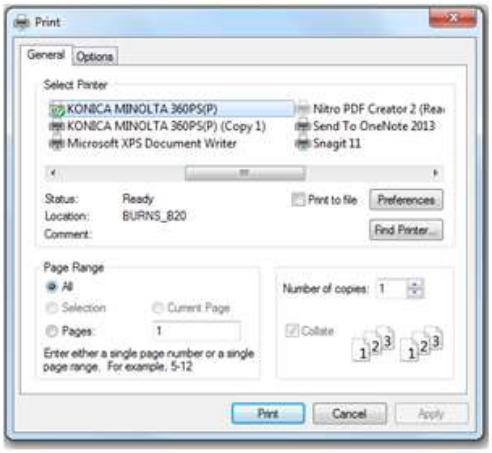
If the user click on the 

button before deleting the project the user will immediately return to the Edit Improvement Projects list with the record still showing (i.e., it will not have been deleted).

If the user click on the 

button *before* deleting the project, a Print dialog box and a report sample are displayed so the user can select a printer and print, or cancel the print

request.

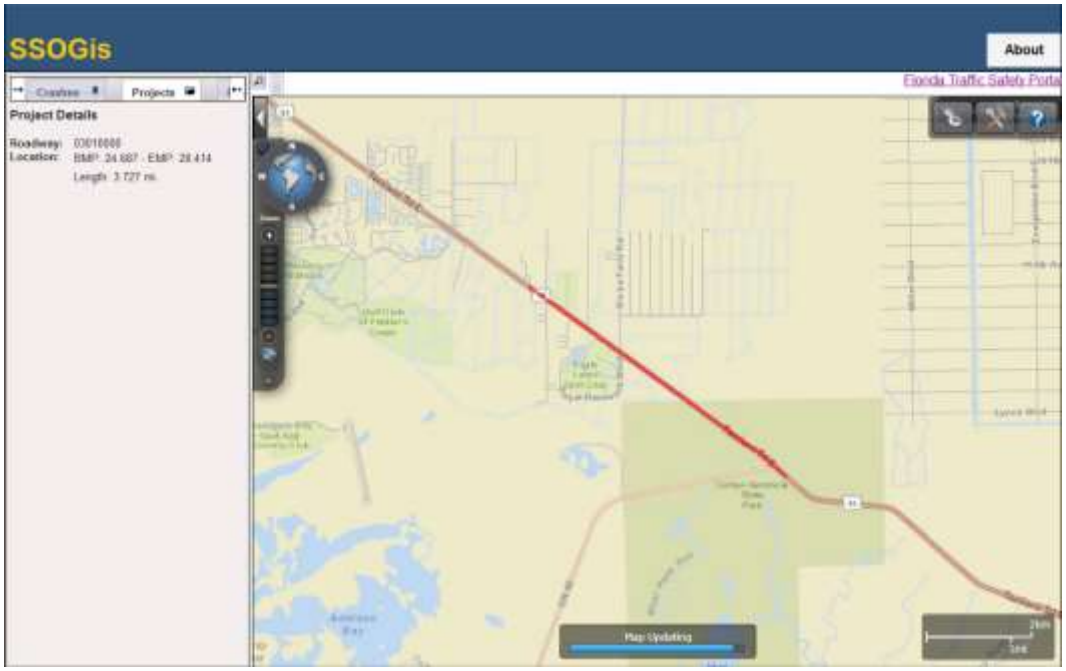


Note: Whether the user choose to print or to cancel the print request, the user have to use the browser's Back arrow to return to the Delete Project detail subpage.

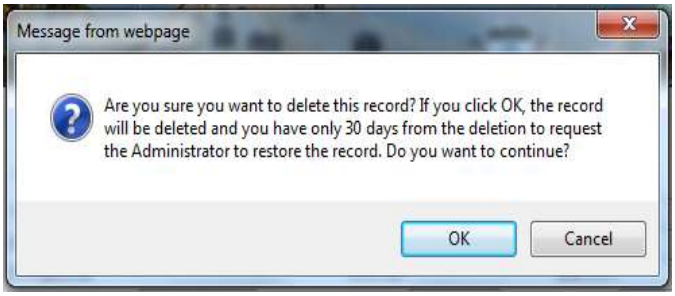
If the user click on the 

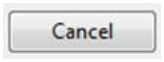
button *before* deleting the project the user will see the SSOGis system open in a separate window, zoomed-in to show the project's location on the map. The features available within the SSOGis system are covered in more detail in Section 3.

Note: The Traffic Safety Portal's Delete Project page for the selected project will remain open and accessible. There is no way to navigate back to that specific page from the SSOGis system.

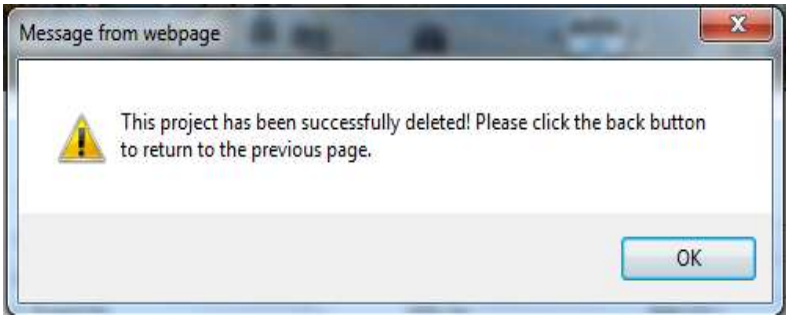


By clicking the  button on the navigational menu on the left panel of the "**Delete Project**" webpage, the following message dialog box is presented:

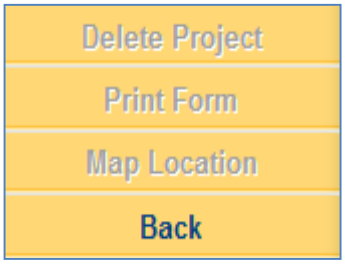


By clicking the  button, the Delete project request stops.

By clicking the  button, the following message dialog box is presented:



The user must click on OK or to close this dialog box.



The navigation menu is changed after a successful Delete, making several of the operational choices un-accessible. By clicking on the Back button the user return to the Edit Improvement Projects list with the deleted record no longer showing in the display list – refer to the Before and After Delete example below.

Improvement Projects list before Delete

FM No	District	County	Section	Sub	BMP	EMP	Status	Action	Action
	0			000	1.320	1.320	analysis	Edit	Delete
11111111	0			000			analysis	Edit	Delete
4117681	1	01	01000	000	0.000	0.322	analysis	Edit	Delete

Improvement Projects list after Delete

Note: The row shown in the red rectangle above is no longer in the list.

FM No	District	County	Section	Sub	BMP	EMP	Status	Action	Action
11111111	0			000			analysis	Edit	Delete
4117681	1	01	01000	000	0.000	0.322	analysis	Edit	Delete
	1	01	01010	000	11.965	12.965	analysis	Edit	Delete

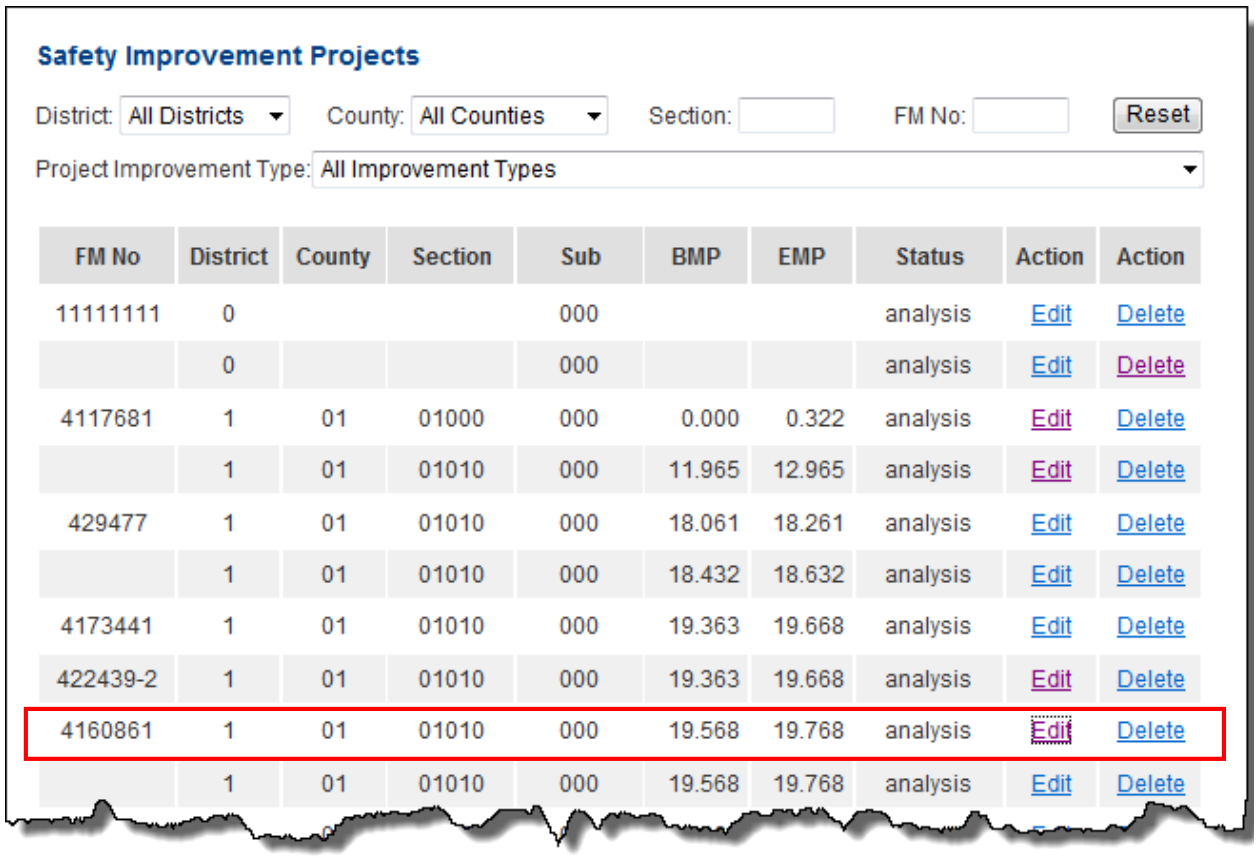
3.8.4.5.2 Editing an Improvement Project

To demonstrate how to edit a selected project we must first select the following from the Project Analysis main webpage:

Clicking on the above link redirects the user to the Safety Improvement Projects screen. By default, the screen displays projects in all districts, counties, and improvement types. The user may refine the search by selecting from the various search filters as we discussed in the Query Filters Available section above.

We use the following example to document how to edit the selected project (shown in the red rectangle below) because it is a Crash Based project with multiple years' crash and CRF data

available and contains location data that displays properly within the Map Location feature. If information is missing for a project, please use the editing process to enter the missing information in the Benefit-Cost Analysis Form.



Safety Improvement Projects

District: All Districts | County: All Counties | Section: | FM No: | Reset

Project Improvement Type: All Improvement Types

FM No	District	County	Section	Sub	BMP	EMP	Status	Action	Action
11111111	0			000			analysis	Edit	Delete
	0			000			analysis	Edit	Delete
4117681	1	01	01000	000	0.000	0.322	analysis	Edit	Delete
	1	01	01010	000	11.965	12.965	analysis	Edit	Delete
429477	1	01	01010	000	18.061	18.261	analysis	Edit	Delete
	1	01	01010	000	18.432	18.632	analysis	Edit	Delete
4173441	1	01	01010	000	19.363	19.668	analysis	Edit	Delete
422439-2	1	01	01010	000	19.363	19.668	analysis	Edit	Delete
4160861	1	01	01010	000	19.568	19.768	analysis	Edit	Delete
	1	01	01010	000	19.568	19.768	analysis	Edit	Delete

By clicking on the Edit link on the row for a given FM No (e.g., 4160861**)**, the Benefit-Cost Analysis form opens for this selected project (see the figure below).

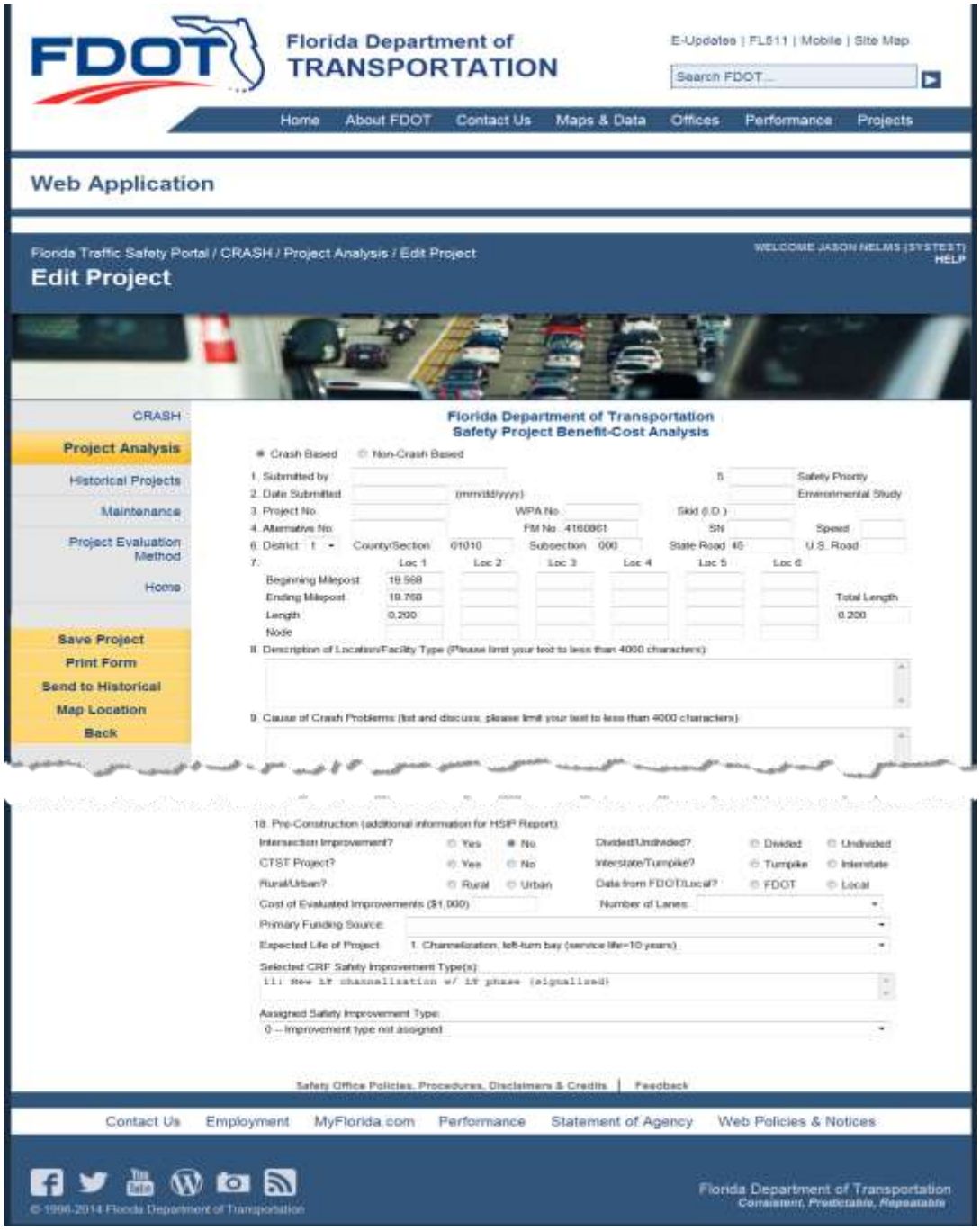
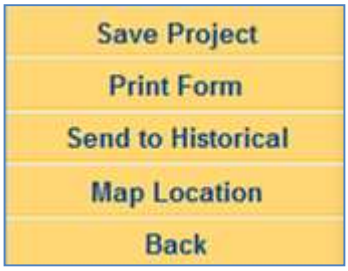


Figure 25 Sample Edit Project Detail Subpage

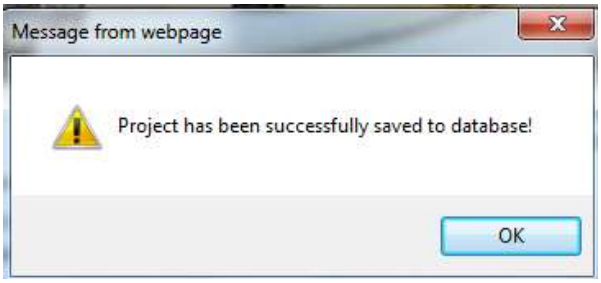
The Edit Project subpage consists of the Edit Project navigation menu and the selected project's Benefit-Cost Analysis Form. Using this form, users can update data contained within the form and save any new data entered. Below, we describe the operational functions that can be performed

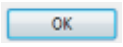
from the navigation menu on the Edit webpage in the order in which they are displayed.



After completing all data entry updates needed, by clicking on the 

button, the following confirmation message dialog box is displayed. The Edit Project page stays open. The Project Analysis navigation menu in the left panel *does not* change and the updated improvement project record is saved to the database.



The user must click on 

or 
to close this dialog box.

If the user click on the 

button, a Print Dialog box and a report sample display. The user can then select a printer and print, or cancel the print request.

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Note: Whether the user choose to print or to cancel the print request, the user must use the browser's **Back** arrow to return to the Delete Project detail subpage.

Send to Historical The Portal allows the user to send improvement projects to the CRASH Historical Projects functional component when the project is ready for construction to begin. ***Please ensure that all pre-construction related data entry is complete before making this selection***. After clicking on this button the system automatically sends the project to the Edit Project webpage to, and then opens, the Historical Projects functional component, changing the project status to "Construction".

Note: After this process is complete the improvement project will no longer appear in the Project Analysis Edit Improvement Projects or View Improvement Projects lists.

Clicking the Map Location button opens SSOGIS in a separate window, with the map

zoomed-in to the project's location. Features available within the SSOGis system are covered in more detail later in this document.

Note: The Traffic Safety Portal's Edit Project page for the selected project remains open and accessible to you. However, the user cannot navigate back to that specific page from the SSOGis system.

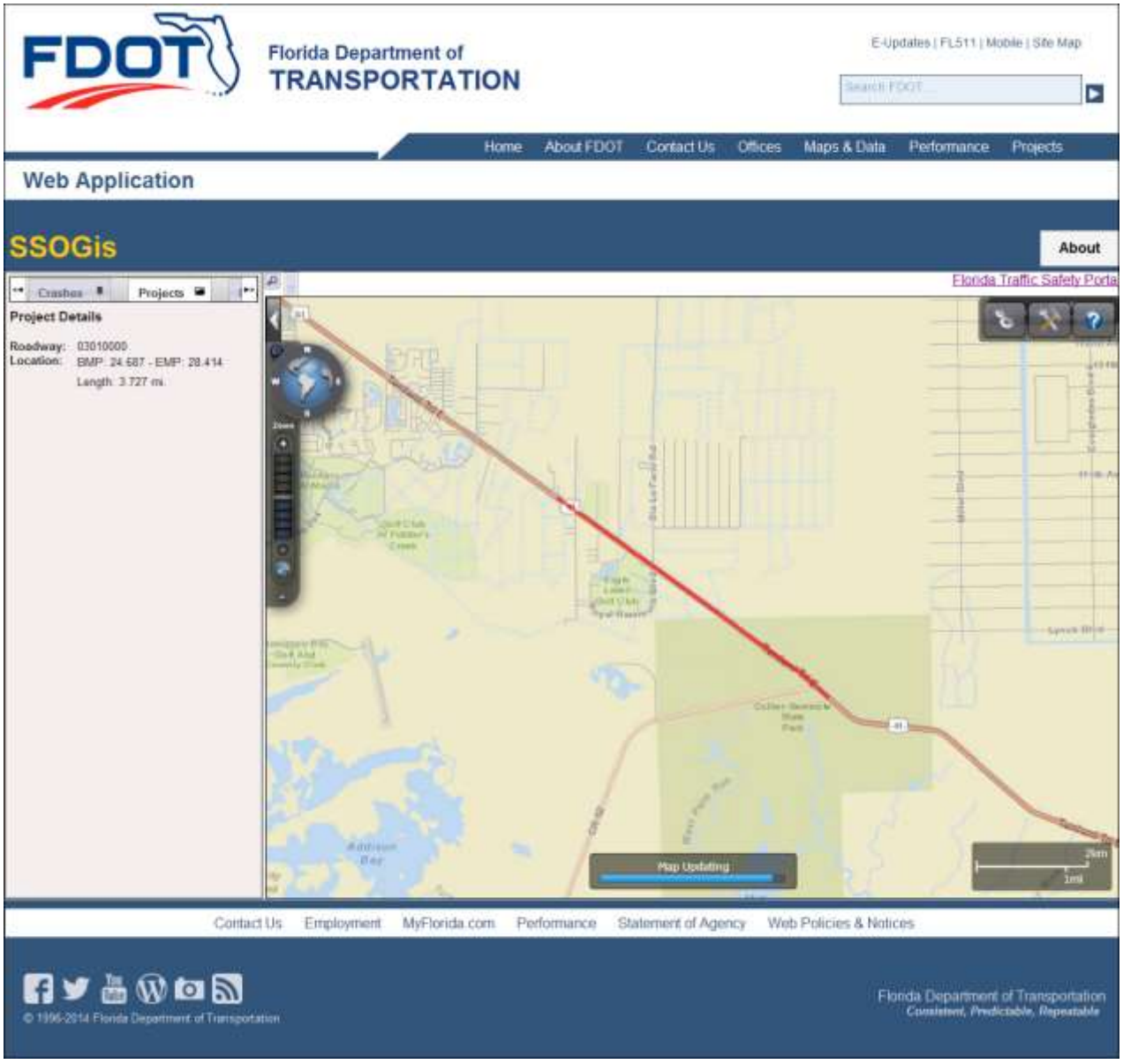


Figure 26 Improvement Project – SSOGis View

By clicking on the Back button the user return to the Edit Improvement Projects list. The user may select another project from the list to edit, delete, re-query using different filtering criteria, or use any other navigational buttons available on the Edit Improvement Projects subpage.

3.8.4.6 View Improvement Projects

Users can view individual improvement projects from this page by selecting on a View link on a selected row of the list (see the highlighted area below).

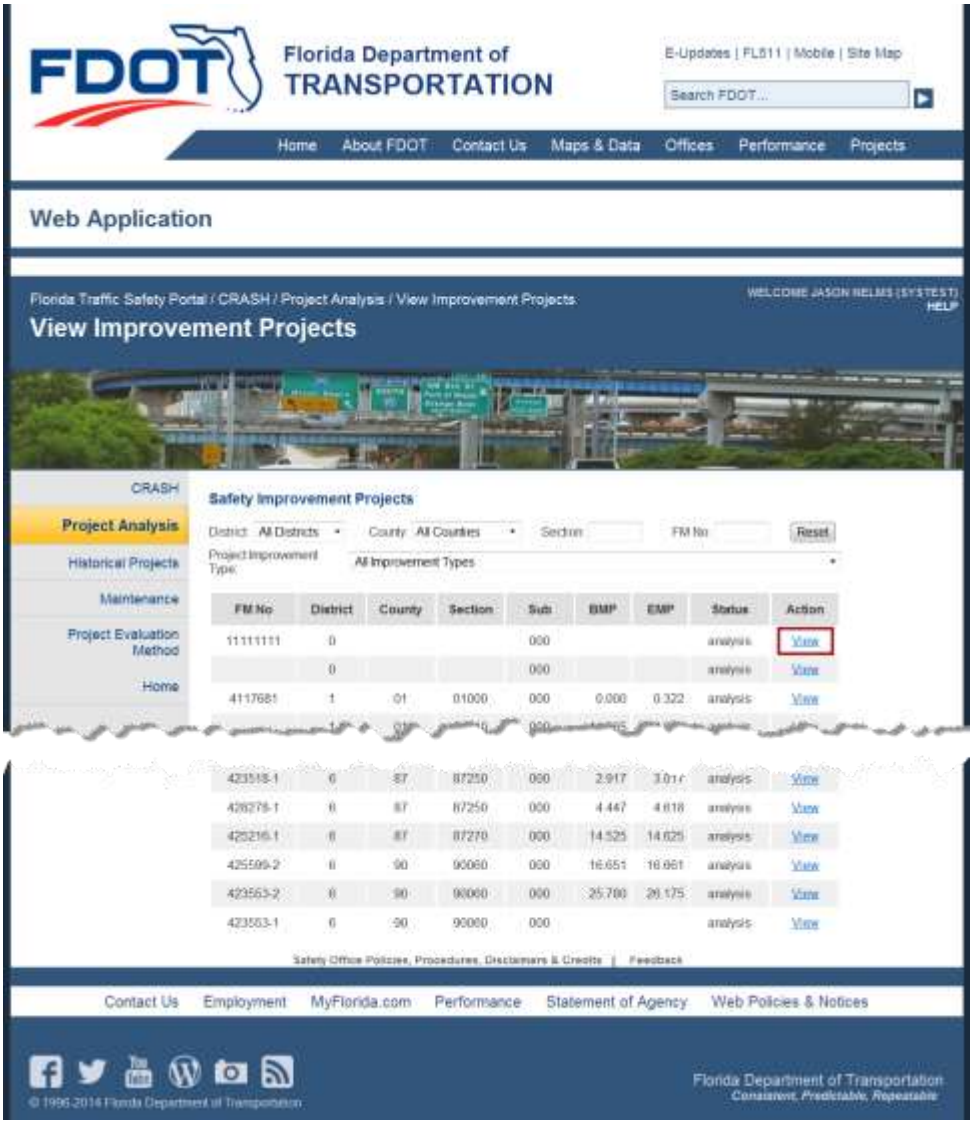


Figure 27 Project Analysis - View Improvement Projects Subpage

Upon clicking the link, the user will see the View Project webpage (i.e., the Benefit-Cost Analysis Form for the selected project).

Figure 28 View Project Page

3.8.4.7 Edit and View Improvement Projects Common Features

3.8.4.7.1 Export to Excel

If desired, all Improvement Projects matching the search query from the Edit Improvement Projects list or the View Improvement Projects list main pages can be exported to Excel using the **Export to Excel** button in the left panel navigation menu. Once this button has been clicked, the CRASH system retrieves data from Project Analysis results list directly into an Excel workbook. In the Excel summary table, the table title displays the date of the most recent improvement project. The system displays the Excel file name and provides the option to save or open the file, or to cancel the export process in a floating action bar at the bottom of the active list page. We use an example from the View Improvement Projects below to demonstrate (see the highlighted area in the figure below).

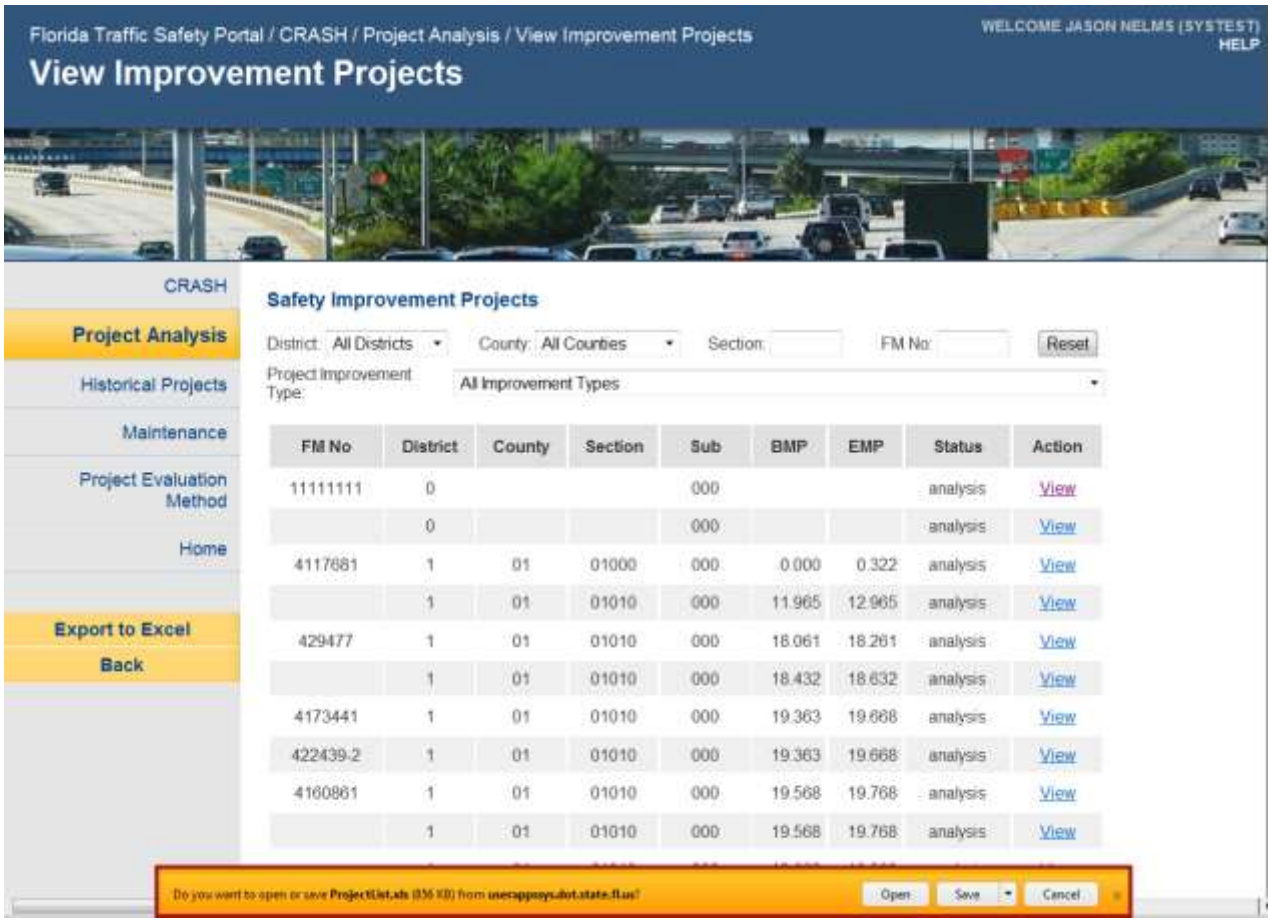


Figure 29 Export to Excel Results Sample

If the user choose to open or save, the user may receive the following message. Click **Yes** to continue to download the Excel file. Choose **No** to stop the download function. Choosing **Help** opens an Excel Help window explaining the message.

The Excel file opens in a separate window and contains more detailed information than what is shown on the query results list. The user can manage the file using all the normal Excel functionality. All downloaded Excel workbooks contain the following columns:

- Crash Based
- Submit By
- Submit Date
- Project No.
- WPA No.
- Alter No.
- FM No.
- Safety Priority
- Environmental Study
- Skid

- SN
- Speed
- District
- County
- Sub
- State Road
- U.S. Road
- Begin MilePost
- End MilePost
- Node
- Location/Facility Type
- Cause of Crash
- Proposed Improvements
- Year, Crash Number, and Reduced Number fields for five (5) years (e.g., Year1, Crash Number 1, Reduced Number 1, etc.)
- Avg Crash Number
- Avg Reduced Number
- Cost/Crash
- Crash Cleanup
- Interest Rate

- Benefit-Cost Ratio
- Prepared by
- Approved by
- Approved Date
- Comments/Crash Reduction Method
- High Crash Listings
- Intersection Improvement
- Divided/Undivided
- CTST Project
- Interstate/Turnpike
- Rural/Urban
- Data from FDOT/Local
- Cost Evaluated Improvements
- Number of Lanes
- Assigned Safety Improvement Type
- Status

By clicking on the 

button the user return to the Edit Improvement Projects or View Improvement Project.

Note: It is important to use this **Back** button and *not the user's browser's Back button*, because the browser's Back button may not return the user to the Improvement Project list properly.

The user may select another project from the list to edit or delete, re-query using different filtering criteria, or use any other navigational buttons available on the Edit Improvement Projects or View Improvement Projects subpage.

3.8.5 Historical Projects

Historical projects are projects that have been adopted for implementation. Unlike projects under **Project Analysis,** historical projects are those that are either under construction or have been constructed. The screen for **Historical Projects** is shown below and allows one to perform the following functions:

- **Add a Historical Improvement Project**: To enter information for an existing project on which analysis has been performed.
- **Edit Historical Improvement Projects**: To add post-construction information for projects that have been completed or are under construction.
- **View Historical Improvement Projects**: To view projects which have been completed or are currently under construction.
- **Generate HSIP Reports**: To generate the standard Highway Safety Improvement Program (HSIP) reports.
- **Perform Before-and-After Evaluation**: To generate before-and-after statistics for selected improvement projects to evaluate their effectiveness.

The Historical Projects submenu is shown below. It is accessed by clicking on the 

button on the CRASH navigation menu in the left panel.

As illustrated in the figures below, users with edit permissions within the Portal have access

to all links within the submenu. For those without edit permissions, the *Add a Historical Improvement Project* and *Edit Historical Improvement Projects* links are disabled.

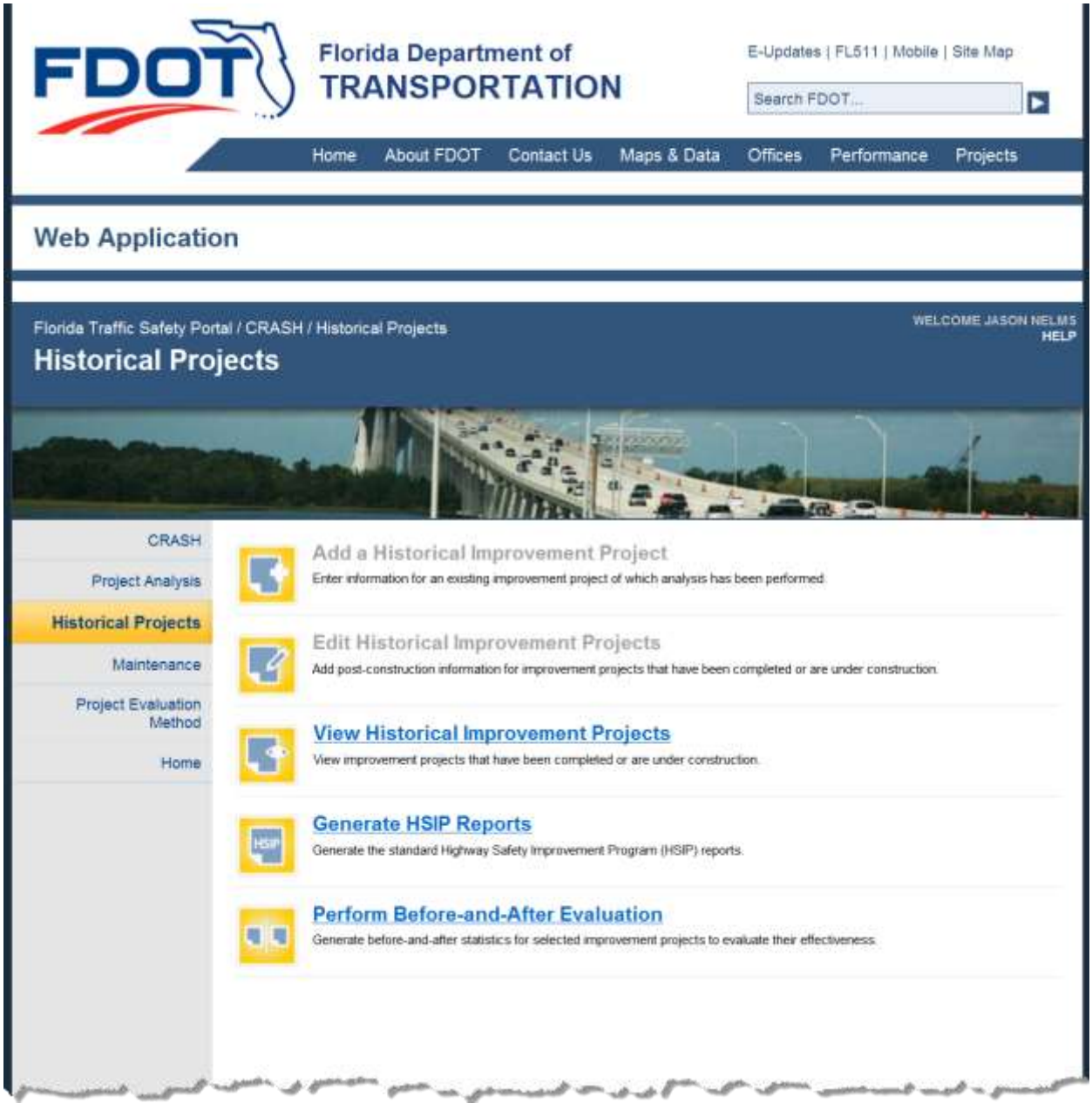


Figure 30 Project Analysis Submenu – Non-Administrative User without Edit Permissions

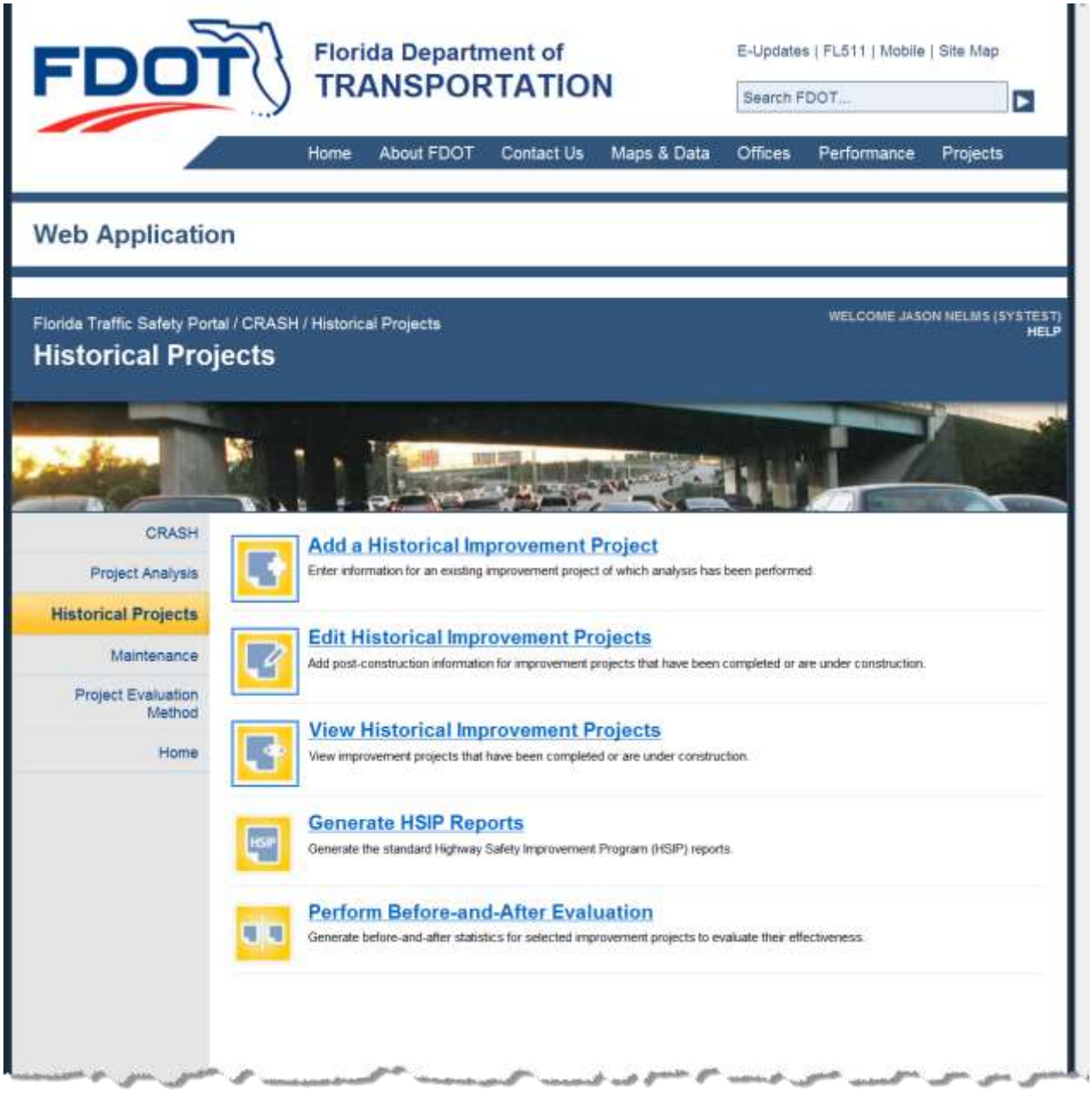
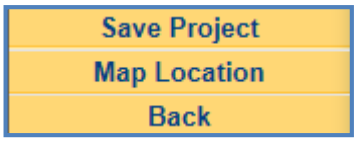


Figure 31 Project Analysis Submenu – Non-Administrative User with Edit Permissions

Each feature shown on the Historical Projects submenu will be documented in detail in the sub-section below.

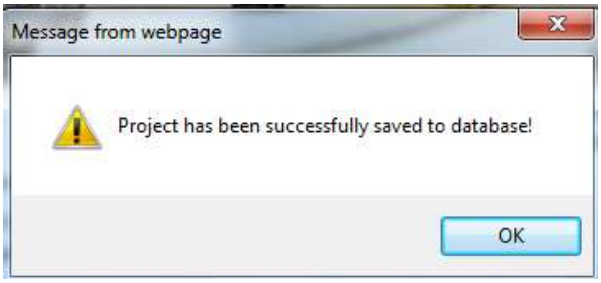
3.8.5.1 Navigation Menu Options

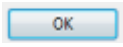
The Add Historical Improvement Project's navigation menu has the following options:



Clicking on the 

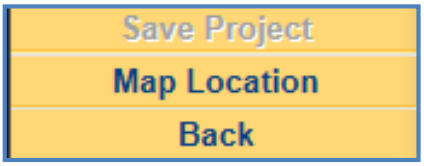
button, causes the system to save the active project and display the following confirmation message.



The user must click on 

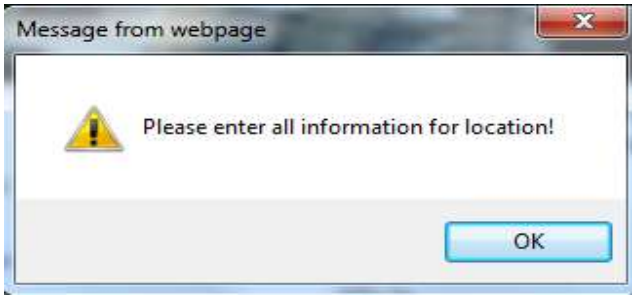
or  to close this dialog box.

The Add Historical Improvement Project form webpage stays open and **Save Project** link becomes disabled (see below).



If the required location data was provided before saving, SSOGis will open in a separate window zoomed into the location of the project. If location-related data has not been entered and the user clicks the 

button, the following message dialog box is displayed:

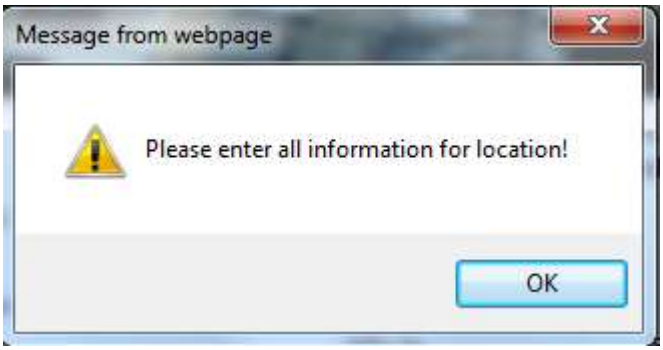


The user must click on OK or to close this dialog box.

Note: To enter the required location information, users must to access a project through the Edit Project page, using Map Location feature to create location data.

By clicking on the Back button after saving the new Historical Improvement Project, the user returns to the Historical Projects main menu page. If the user select Edit Historical Improvement Projects or View Historical Improvement Projects, the new project will appear in the historical improvement projects lists based on the query filters selected.

The system displays the following message dialog box if the user attempts to save a historical improvement project *without* entering location-specific data:



The user must click on OK or to close this dialog box.

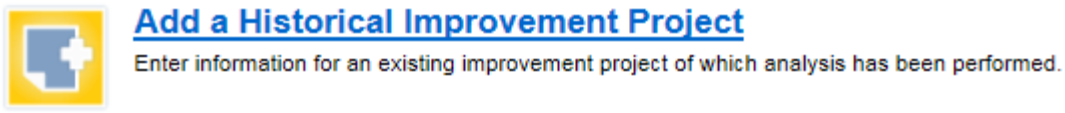
The user must enter the required location information before the user can use the Map Location feature. Once the form contains the necessary location data fields (i.e., County/Section, Subsection, Beginning Milepost and Ending Milepost) to map the location, click on the Map Location button and the SSOGis system will open in a separate window. SSOGis uses the project's Roadway ID – which consists of the combination of County/Section and Subsection fields and the location Beginning Milepost and Ending Milepost – to draw the location on the map. As the user navigate within SSOGis, the Add Historical Improvement Project page remains open.

Note: Clicking the 

button prior to saving a new Historical Project will return the user to the Historical Projects main menu page. The new project **will not be added** to the database.

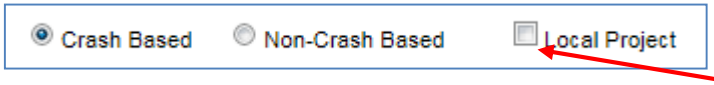
3.8.5.2 Adding a Historical Improvement Project

To add a historical project for which benefit-cost analysis has been performed, select the



menu item shown above. Doing so redirects the user to a Benefit-Cost Analysis form that is similar to the one included in the Project Analysis component. Unless noted differently refer to the Benefit-Cost Analysis Form - Data Entry Instructions. The differences are noted below.

Figure 32 Benefit-Cost Analysis Form for Adding Historical Projects



Note: The Benefit-Cost Analysis form presented above contains a **Local Project** that is not found on the Benefit-Cost Analysis form in the Project Analysis component. This checkmark differentiates historical projects as local or not local.

13.

Type of Crash	CRF(%)	Number of Crashes	Crashes to be Prevented
Angle	90.42	22	19
Fixed-Object	62.11	1	1
Right-Turn	90.99	1	1
Left-Turn	59.79	16	10
Rear-End	-8.65	17	0
Head-On	100.00	0	0
Sideswipe	36.83	5	2
Pedestrian	100.00	0	0
Ran-Off-Road	55.87	0	0
Others	60.22	4	3
Total		66	36

Wet Only Night-Time Only

Day & Night Day-Time Only

Unlike starting new a project in Project Analysis, this form ***does not*** allow the user to define Crash Reduction Factors (CRFs) or calculate crashes reduced.

Note: The example shown here is from the FM No. 2282241 Crash Based Improvement Project.

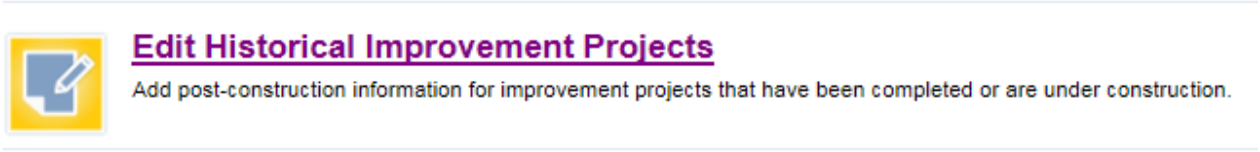
Another difference between this Benefit-Cost Analysis form and that included in the Project Analysis component is that this form contains input data fields for the Business Identification Number (**B.I. No.**) and Construction Begin and End dates (see the enlarged portion of last numbered data item on the Historical Projects form, also below).

- **B.I. No.**: Enter the seven-digit Business Identification Number.

- **Construction Dates (mm/dd/yyyy)**
  - **Begin**: Enter the construction begin date in the mm/dd/yyyy format.
  - **End**: Enter the construction end date in the mm/dd/yyyy format

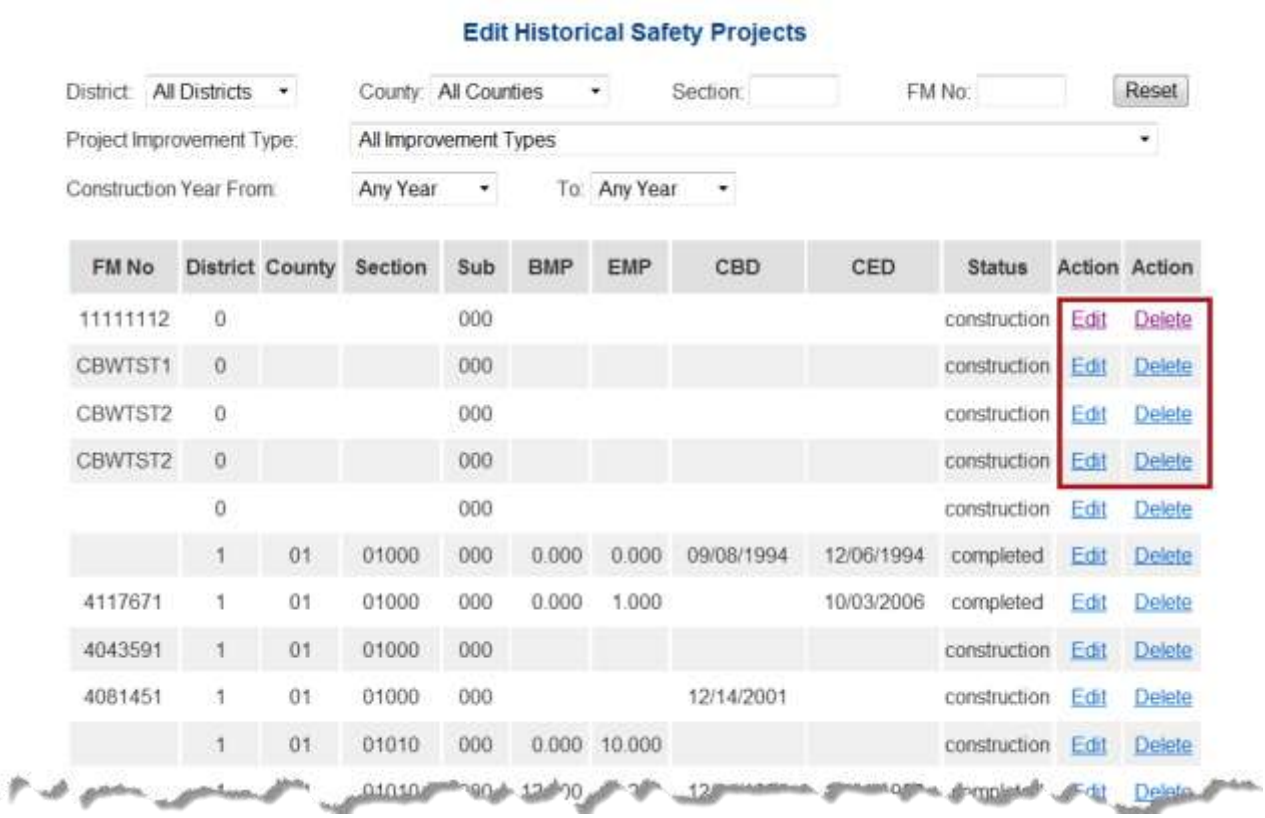
3.8.5.3 Edit and View Historical Improvement Projects

The Edit Historical Improvement Projects and View Historical Improvement Projects functions are accessed from the main Historical Projects menu by selecting either:



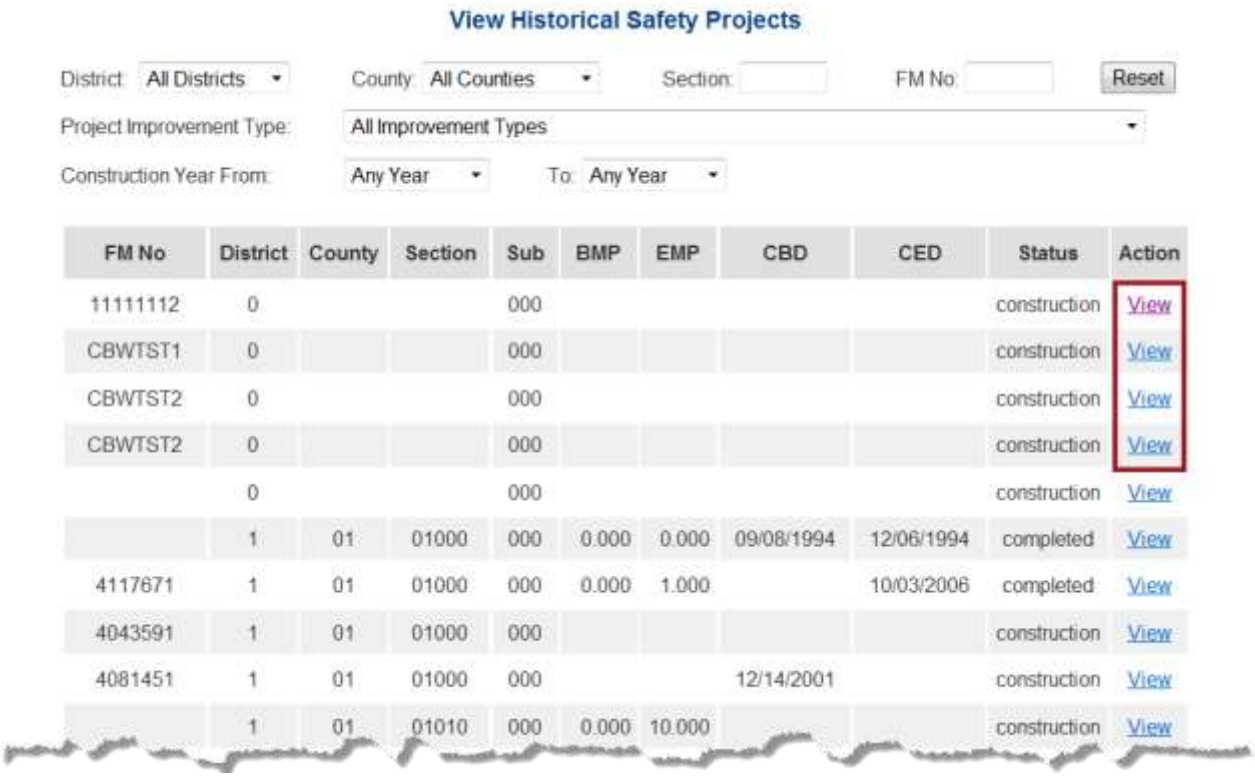
or

The options are similar to those within the Project Analysis component, with the exception that the form for Historical Projects contains the Local Project checkbox, Business Identification Number (B.I. No.) and Construction Begin and End Dates fields (see the Add a Historical Improvement Project section above), while the Project Analysis version of the form does not. The figure below shows a cutaway of the Edit Historical Improvement Projects list returned using the default filtering criteria.



FM No	District	County	Section	Sub	BMP	EMP	CBD	CED	Status	Action	Action
11111112	0			000					construction	Edit	Delete
CBWTST1	0			000					construction	Edit	Delete
CBWTST2	0			000					construction	Edit	Delete
CBWTST2	0			000					construction	Edit	Delete
	0			000					construction	Edit	Delete
	1	01	01000	000	0.000	0.000	09/08/1994	12/06/1994	completed	Edit	Delete
4117671	1	01	01000	000	0.000	1.000		10/03/2006	completed	Edit	Delete
4043591	1	01	01000	000					construction	Edit	Delete
4081451	1	01	01000	000			12/14/2001		construction	Edit	Delete
	1	01	01010	000	0.000	10.000			construction	Edit	Delete

Figure 33 Edit Historical Improvement Projects Default Results



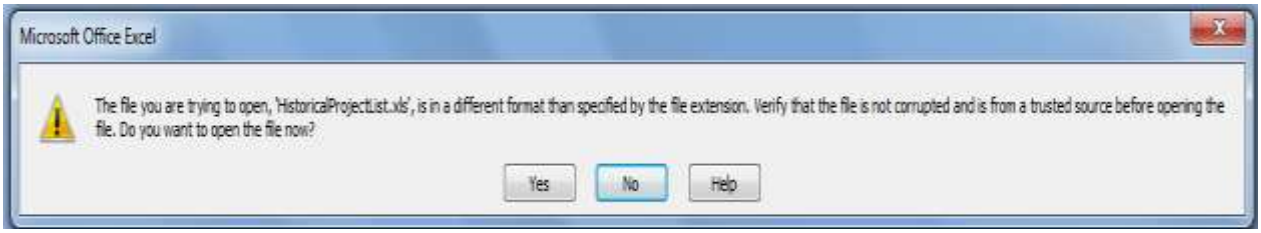
FM No	District	County	Section	Sub	BMP	EMP	CBD	CED	Status	Action
11111112	0			000					construction	View
CBWTST1	0			000					construction	View
CBWTST2	0			000					construction	View
CBWTST2	0			000					construction	View
	0			000					construction	View
	1	01	01000	000	0.000	0.000	09/08/1994	12/06/1994	completed	View
4117671	1	01	01000	000	0.000	1.000		10/03/2006	completed	View
4043591	1	01	01000	000					construction	View
4081451	1	01	01000	000			12/14/2001		construction	View
	1	01	01010	000	0.000	10.000			construction	View

Figure 34 View Historical Improvement Projects Default Results

Note: The Criteria Filters are the same, and the default filter values are the same whether the user select **Edit Historical Improvement Projects** or **View Historical Improvement Projects** from the Historical Projects main menu. The data fields for the results of both are the same except for the Action columns. The Edit Historical Improvement Projects option allows the user to edit or delete a project while the View Historical Improvement Projects option allows for the selected project row to be opened in *View-Only* mode, even if the user has edit permissions.

Users can export to Excel or return to the main Historical Projects page from either the Edit Historical Improvement Projects or View Historical Improvement Projects subpages. Refer to the Project Analysis' Export to Excel section described earlier in this document for functionality regarding the export process The following is an image of the dialog that Windows provides the user upon clicking the  link.

Upon clicking **Open** or **Save**, the user sees the following:



The data fields exported into the Excel spreadsheet are also the same as those shown in the Project Analysis Export to Excel process.

3.8.5.3.1 Edit and View Historical Projects Criteria Filters

Saved Historical Projects can be edited or viewed. In general, users can to view all Historical Projects from all districts, but managers of a single district can only edit historical projects from their own districts. The Editing Historical Safety Projects process includes deletion of a Historical Project record(s) from the database.

The Edit Historical Safety Projects page provides filters which allow users to retrieve a specific subset of the Historical Projects that meet filter conditions. Any combination of filters can be used. The default filter settings (shown below) automatically generate a list of historical safety improvements for all districts, all counties, and all improvement types. All filters are independent, except for the District and County, as noted below. When a filter is left unspecified, it is not used, and no constraints will be imposed based on that filter.

Use the 

button to clear the selected filtering criteria and the available dropdowns to select from specific lists of values. The remainder of the fields are free text and should only be used when the user know specific or partial values within the database. The following are filters present within the Edit Historical Safety Projects form:

- **District**: The dropdown list defaults to "All Districts" but allows the user to choose a specific FDOT District. Available values include integers 1 through 8.

> **Note:** For users who are assigned to a specific district, this field will be auto-populated with the assigned district's value and disabled.

- **County**: The dropdown list defaults to "All Counties", when District contains "All Districts". If a specific FDOT District is selected (or auto-populated), the Counties in the dropdown list will be restricted to only those in the selected District.

- **Section**: The Linear reference section for the road within County (first two digits shown), 3rd-5th digits of the roadway identifier. **Note**: This field can be partially entered and also provides for the use of the wildcard (%) feature. For example: If a there are several projects entered for Sections 11010 and 01010, the user would find projects for *both* if the user enter 10 or %10 or 10% in the Section field.

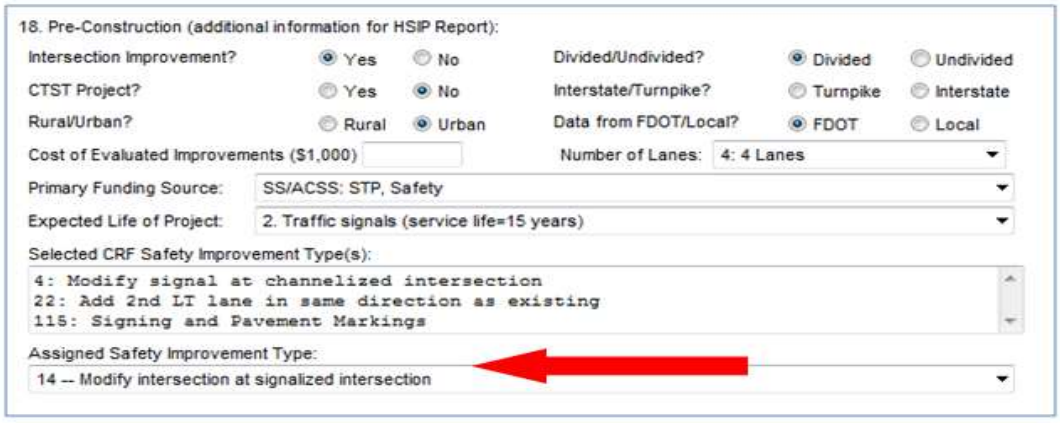
- **FM No**: The FM Number is the Financial Management project number from the Work Program System, which if available, was entered when the improvement project was entered into the database.

> **Note**: This field is case-sensitive, but provides for the use of the wildcard (%) feature. Information should ***only*** be entered here if you know ***exactly the case used*** when it was entered into the database to ensure accurate query results.

- **Project Improvement Type**: It defaults to "All Improvement Types" unless another value is selected using the dropdown list. The query includes a project in the results based on the Assigned Safety Improvement Type for a project.

Note: Unlike the other filtering parameters listed above, this particular field is not included in the results column headings displayed. You will have to open the specific historical improvement project record to see it by checking the "**Assigned Safety Improvement Type**" field at the bottom of the Benefit-Cost Analysis block displaying numbered data item 18 (see the large red arrow in the example shown below.)

Only *one* Safety Improvement Type can be assigned to a project, though a single project may involve multiple improvements. This assignment is handled through the Administration menu, by a user designated as an Administrator. Each project defaults to having "0-Improvement type not assigned" (and therefore is automatically included in the default "All Improvement Types" selection) until an Administrator selects *one* as the primary assigned type.



- **Construction Year From/To**: Defaults to "Any Year" for both the **From** and **To** Construction Year fields. Use the dropdown arrow to choose a specific year for the **From** year, which in turn will limit the dropdown list for the **To** year field to those years equal to or greater than the selected **From** year value. The query results will include historical project records where the project's Construction Begin Date or Construction End Date falls within the Construction Year From/To date range**.**

Examples of lists of retrieved projects are shown below. The list includes several major location data fields, plus the Financial Management project number (FM No field) and the project Status.

Following these definitions the "**Edit**" and "**Delete**" processes will be documented in detail.

3.8.5.3.2 Edit and View Historical Projects Query Results – Fields Displayed

The following figure shows the fields displayed on the Edit Historical Safety Projects and View Historical Safety Projects search results. Below the figure are individual description of each fields.

FM No	District	County	Section	Sub	BMP	EMP	CBD	CED	Status	Action	Action
CBWTST1	0			000					construction	Edit	Delete
4117671	1	01	01000	000	0.000	1.000	05/03/2006	10/03/2006	completed	Edit	Delete
429477	1	01	01010	000	18.061	18.261	07/08/2011		construction	Edit	Delete
422439-2	1	01	01010	000	19.363	19.668	04/20/2009	02/02/2011	completed	Edit	Delete
4160861	1	01	01010	000	19.568	19.768	11/30/2009	06/08/2010	completed	Edit	Delete
429776	1	01	01010	000	20.944	21.144	07/08/2011	10/14/2012	completed	Edit	Delete
1938301	1	01	01030	000	11.900	12.300	04/01/1997	04/29/1998	completed	Edit	Delete
416087-1	1	01	01050	000	3.897	4.087	07/06/2011	04/29/2013	completed	Edit	Delete
4267241	1	01	01050	000	9.056	9.256	09/24/2009	11/05/2010	completed	Edit	Delete
4234381	1	01	01075	000	9.775	13.788	05/11/2011	10/26/2011	completed	Edit	Delete
1976311	1	01	01603	000	6.951	7.216	12/01/1995	08/25/1996	completed	Edit	Delete
1974351	1	01	01605	000	0.000	1.165	09/01/1992	03/08/1994	completed	Edit	Delete
4155901	1	03	03000	000	0.000	0.200			construction	Edit	Delete
4043601	1	03	03000	000	0.000	10.000	01/09/2002	06/30/2005	completed	Edit	Delete
4155661	1	03	03001	000	0.000	1.005	01/13/2010		construction	Edit	Delete
4224001	1	03	03001	000	2.977	3.770	09/02/2009	02/12/2010	completed	Edit	Delete
195416-4	1	03	03001	000	4.084	5.493	05/31/2012		construction	Edit	Delete
4326601	1	03	03010	000	3.539	4.039	06/28/2013		construction	Edit	Delete

Figure 35 Historical Projects Query Results Sample

- **FM No**: The Financial Management project number from the Work Program system.
- **District**: The DOT Managing District identifier.
- **County**: The DOT code for County.

  Note: County is the first two digits of the 8-digit roadway identifier. County is also included in the first two digits of the **Section** field.

- **Section**: The Linear reference section for the road within County (first two digits shown), 3rd-5th digits of the roadway identifier.
- **Sub**: The subsection of the primary section; which is the last 3 digits of the 8-digit roadway identifier.
- **BMP**: The Beginning Milepoint for the project, refers to inventoried length of the roadway identifier.
- **EMP**: The Ending Milepoint for the project, refers to inventoried length of the roadway identifier.
- **CBD:** The Construction Begin Date (CBD), displayed in the MM/DD/YYYY format.
- **CED:** Contains the Construction End Date (CED), displayed in the mm/dd/yyyy format.
- **Status**: The project status. Valid values are as follows:
    - **Analysis**: The project is still in the analysis stage and may or may not be implemented.
    - **Construction**: The project is being constructed, but the construction has not been completed.
    - **Completed**: The project has been completed and the construction periods have been entered.
- **Action** (or the two Action column headings): The column(s) contain **Edit** and **Delete** links when viewing the Edit Historical Improvement Projects query or a **View** link when using the View Historical Improvement Projects query. Choose the link that best fits the user's needs for the specific project data row selected.

3.8.5.4 Generate HSIP Reports

The Historical Project Menu's Generate HSIP Reports link generates the Highway Safety Improvement Programs (HSIP) annual report for a selected project.

The figure below shows the screen used to apply a set of filters to identify desirable projects. Below the figure are descriptions of each filter.

Figure 36 Generate HSIP Reports Query Filters

- **Project Improvement Type**: Defaults to "All Improvement Types" or the user may use the dropdown arrow to select a specific improvement type.

- **District**: Defaults to "All Districts". Use the dropdown arrow to select a specific District, which if selected will limit the County dropdown list to only those counties within the specified District.

> **Note**: If the user's user account is restricted to only one specific District, you can still include "All Districts" in this report parameter filter.

- **County**: Defaults to "All Counties" if "All Districts" is selected. If a specific district has been selected, the user can choose "All Counties" or select a specific county from the dropdown.

- **Project End Construction Years From/To**: Select from which year and select to which year desired. Defaults to "Any Year" for both the **From** and **To** year filters. Once the user select a specific year in the "From" filter, the user's choices in the "To" filter dropdown is restricted to those years equal to or greater than the "From" filter year. The Year part of the Project's Construction End Date must fall within the designated **Project End Construction Years From/To** date range to be included in the report results.

Note: The following four criteria display the default values set by the system administrator using the CRASH Administration menu's Update Crash Reduction Factors feature:

- **Number of Months Before Construction**
- **Minimum Number of Months Before Construction**
- **Number of Months After Construction**
- **Minimum Number of Months After Construction**

These criteria are each entered as whole numbers, and only projects whose Construction Begin and End Dates meet the criteria specified by ***all four*** parameters will be included in the evaluation. The user can specify the number of months they would like to include for the before-and-after construction period. The user can also specify the desired ***minimum*** number of months before or after project construction. Projects that have not yet met the minimum number of months will not be included in the evaluation results.

Once the filters have been specified, the user can click the Submit button to generate statistics for the report, or Back to return to the Historical Projects menu.

Note: The report may take several minutes to run. The resulting report will be automatically displayed when ready. A sample HSIP report is shown below:

STATE Florida (FIPS CODE) F L

HIGHWAY SAFETY IMPROVEMENT PROGRAM
THE ANNUAL REPORT ON
EVALUATION DATA FOR COMPLETED SAFETY IMPROVEMENT PROJECTS

Page 1 of 63

FM NUMBER	PRIMARY FUNDING SOURCE	SAFETY IMPROVE TYPE	COST OF EVALUATED IMPROVEMENTS	CRASH BASED	NUMBER OF CRASHES										COST PER CRASH REDUCED			EVALUATE STATUS	VOLUME		RURAL or URBAN	NUMBER of LANES	DIVIDED or UNDIVID
					BEFORE					AFTER					Fat.	Inj.	Total		Before AADT	After AADT			
					Mos.	Fat.	Inj.	PDO	TOTAL	Mos.	Fat.	Inj.	PDO	TOTAL									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
2546772529	SS/ACSS	115	$64,000.00	Y	36	0	21	9	30									P	44900		U	6	D
2546772529	SS/ACSS	115	$36,000.00	Y	36	7	296	223	526									P	23605		U	4	D
2546772529	SS/ACSS	115	$36,000.00	Y	36	3	286	194	483									P	28063		U	6	D
2546772529	SS/ACSS	115	$71,000.00	Y	36	7	181	313	501									P	126029		U	6	D
2546772529	SS/ACSS	115	$43,000.00	Y	36	2	127	234	363									P	36218		U	6	D
2546772529	SS/ACSS	115	$43,000.00	Y	36	4	245	134	383									P	54725		U	6	D
2564677252	SS/ACSS	115	$43,000.00	Y	36	10	327	436	773									P	27420		U	4	D
428604-1	SS/ACSS	132	$548,000.00	Y	36	11	259	210	480									P	24705		R	4	D
2546772529	SS/ACSS	134	$99,000.00	Y	36	0	11	16	27									P	15000		U	1	U
2546772529	SS/ACSS	115	$53,000.00	Y	36	1	192	152	345									P	34307		U	6	D
2546772529	SS/ACSS	132	$250,000.00	Y	36	0	49	46	95									P	26245		U	4	D
2546772	SS/ACSS	115	$69,000.00	Y	36	0	64	70	134									P	26593		U	6	D
2546772	SS/ACSS	115	$69,000.00	Y	36	0	26	36	62									P	51957		U	4	D
425658-1	SS/ACSS	108	$960,000.00	N	36	0	0	0	0	18	0	0	0	0				P	0	0	U	2	U
2546772	SS/ACSS	115	$77,000.00	Y	36	3	152	334	489									P	39803		U	6	D
2546772	SS/ACSS	115	$77,000.00	Y	36	0	6	19	25									P	8368		U	2	U
2546772	SS/ACSS	115	$69,000.00	Y	36	1	69	54	124									P	44234		U	6	D
2546772	SS/ACSS	115	$50,000.00	Y	36	0	21	47	68									P	50199		U	6	D
2546772	SS/ACSS	115	$50,000.00	Y	36	0	21	13	34									P	7185		U	3	U
2546772	SS/ACSS	115	$50,000.00	Y	36	0	14	24	38									P	10750		U	3	U

Print Back Previous Next

Figure 37 Sample HSIP Report

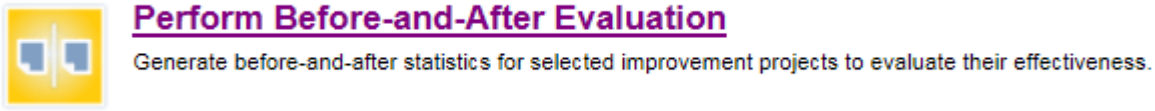
Click the Print button at the bottom of the HSIP report screen to print the report. A print dialog box will open where the user can select a Printer and Print the report, or choose to cancel the print request. The report remains open in the background.

If the user chooses the Back button at the bottom of the HSIP report screen, the user will be returned to the Generate HSIP Report page showing the Query Filters selected. The user may select new filters and submit the report again or use the Back button on the filter page to return to the Historical Projects main menu.

Note: the HSIP report includes Previous Next buttons at the bottom of the HSIP report screen which allows the user to page through all pages of the report.

3.8.5.5 Performing a Before-and-After Evaluation

The Perform Before-and-After Evaluation component of CRASH is accessed by selecting the feature from the Historical Projects main menu.



CRASH can perform a Before-and-After Evaluation for any subset of projects using the selection parameter filters seen and described below:

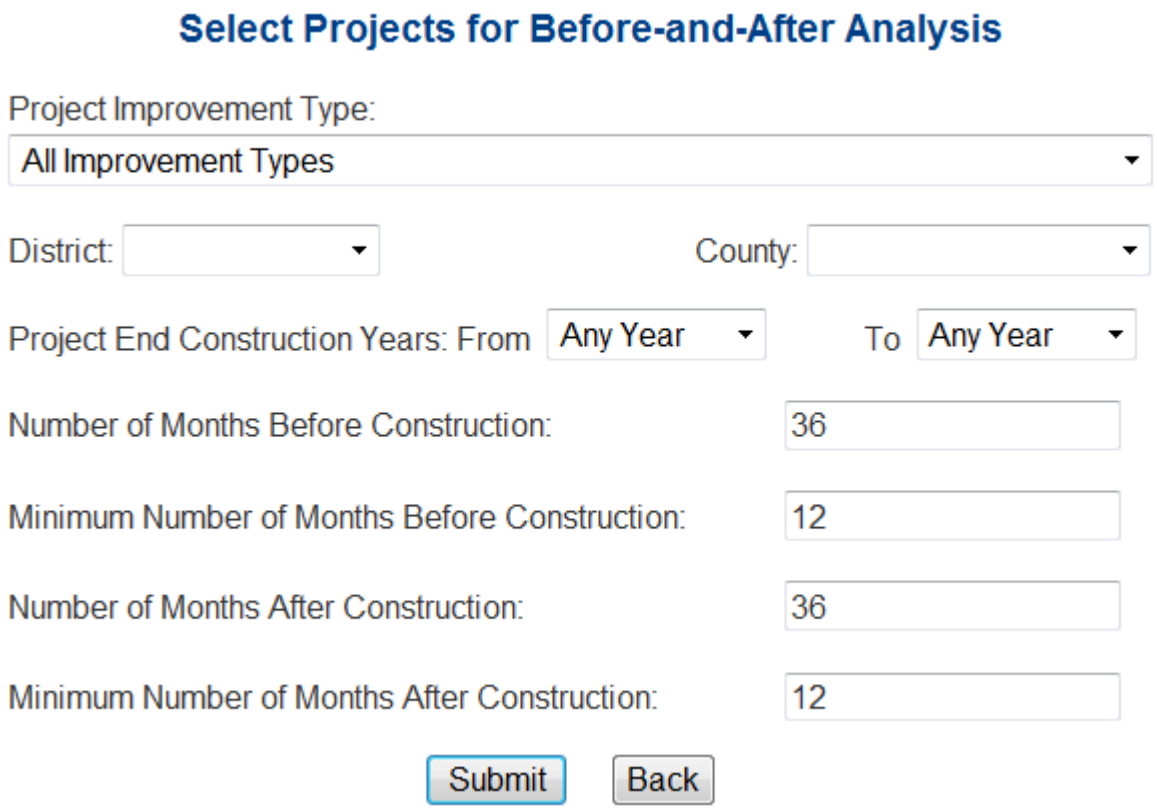


Figure 38 Historical Projects: Perform Before and After Evaluations Query Filters

- **Improvement Type**: Allows the user to query by improvement type. Defaults to "All Improvement Types".
- **District:** Allows the user to select a specific district. If left blank, the default is an implied "All Districts".

> **Note**: If the user's user account is restricted to only one specific district, you can still include "All Districts" as a report parameter.

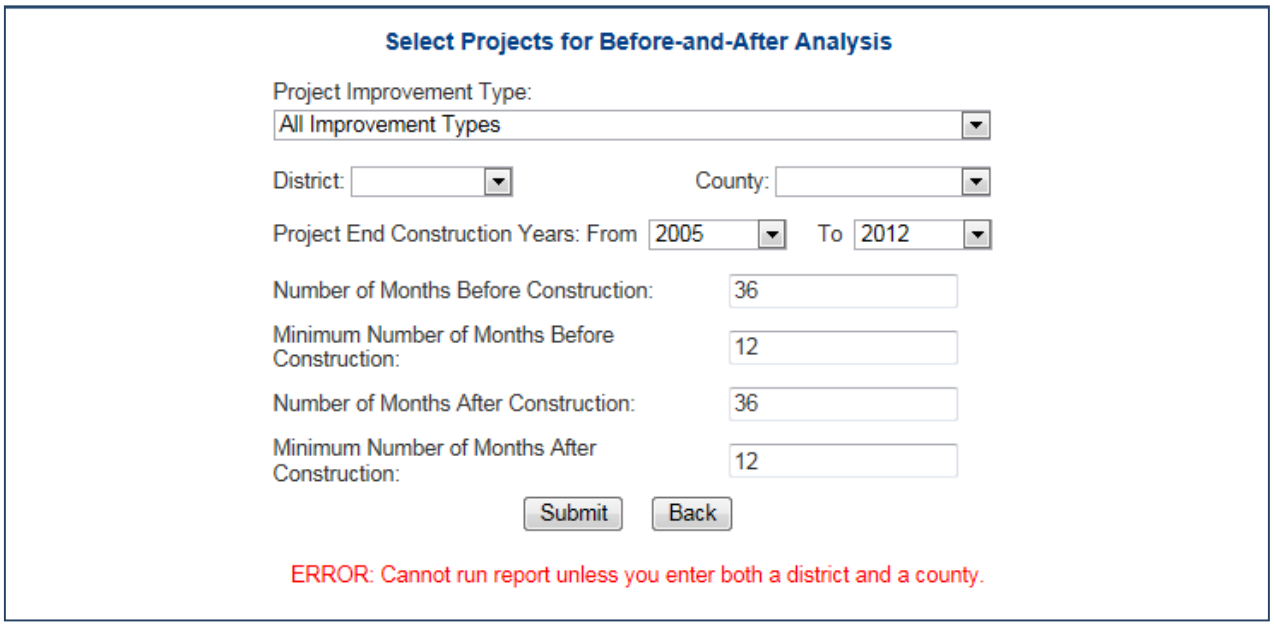
- **County:** Allows the user to select All Counties or a specific County.

> **Note**: If a District is specified, the County choices will be restricted to counties specific to the district.

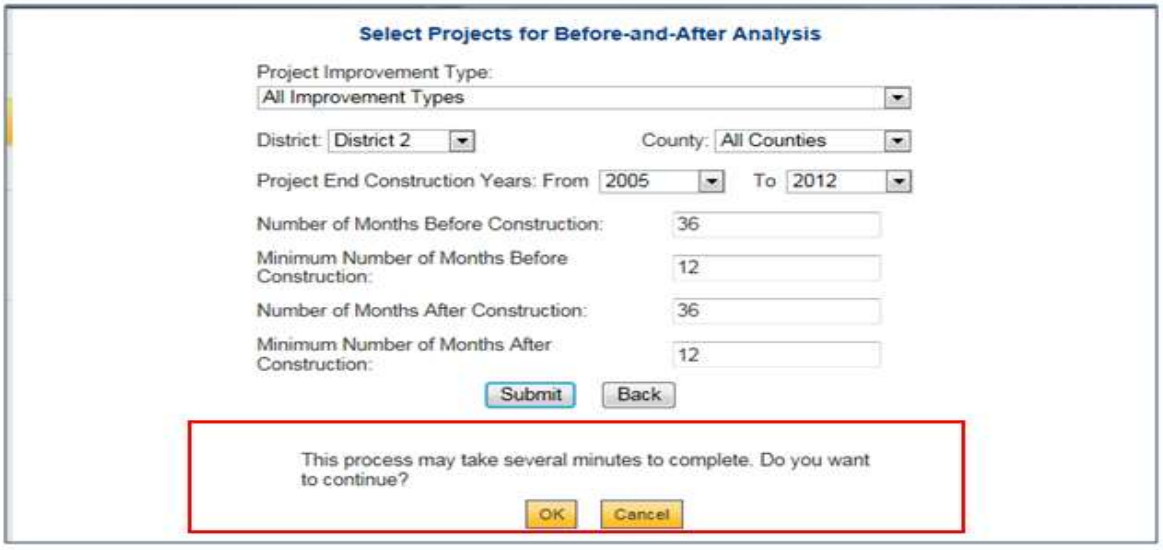
- **Project End Construction Years**
  - **From Year**: Allows the user to limit the analysis to projects that were completed starting this year.
  - **To Year**: Allows the user to limit the analysis to projects that were completed ending this year.

After the filters have been specified, the user clicks Submit button to start the automated analysis process, or the Back to return to the Historical Projects main menu.

Note: Both the District and County fields are required. Attempting to submit prior to making a selection within both dropdowns will result in the error below:

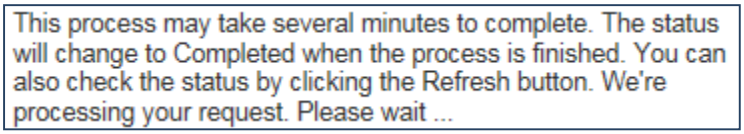


Once the user have selected a District and County, click Submit. The user will see the following prompt:



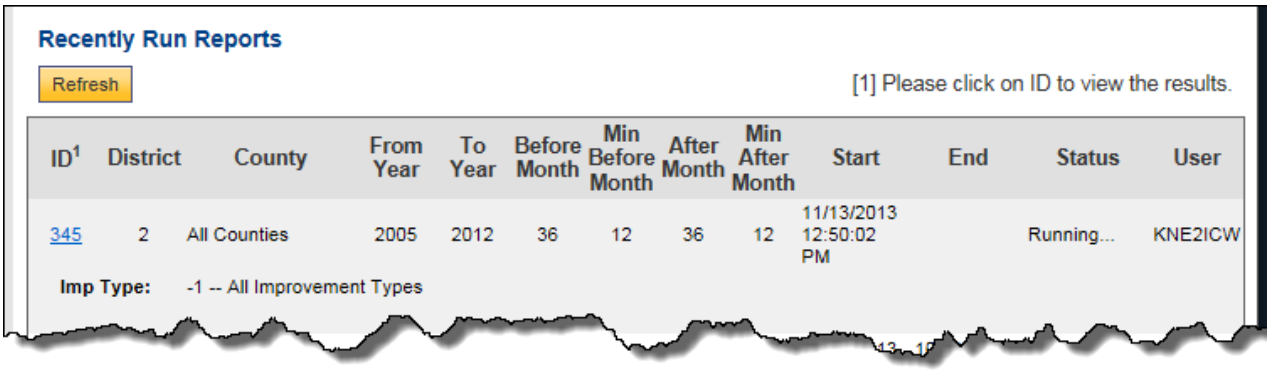
Because of the intensive data retrieval and calculations involved, the process may take several minutes. The user must confirm whether the user want to run this analysis or not. By clicking on the Cancel button at this point, the analysis evaluation request is cancelled. The user can change the selection parameter filters and re-submit the request, if desired.

By default, all projects will be included in the Before-and-After analysis. After clicking the OK button to the confirmation prompt, the analysis will be added to the list of **Recently Run Reports** in the lower half of the page. The user will also see a new message displayed, where the confirmation message was before:

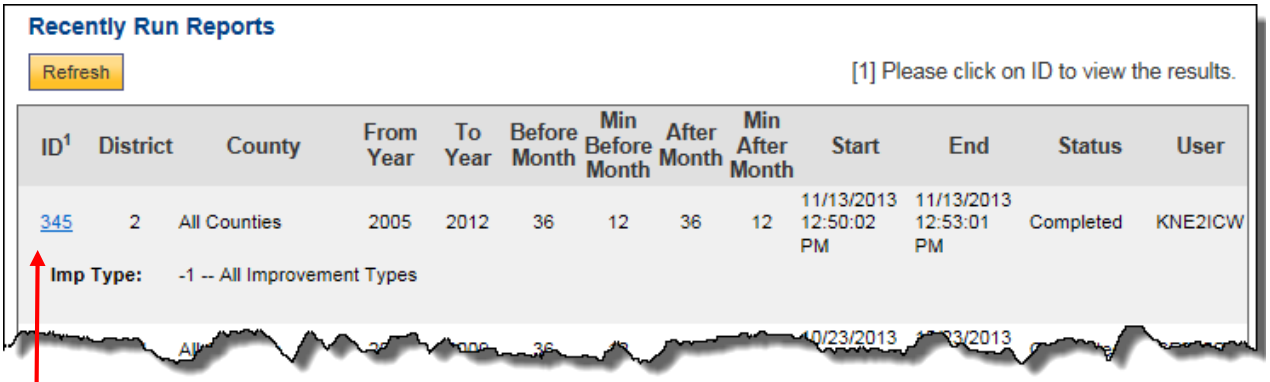


Here, the user can monitor the status of the user's analysis request by checking the Status column and using the Refresh button occasionally to refresh the list. Initially the status is set to "Running".

As the user can see in the screenshot below, the first row listed in the **Recently Run Reports** list now shows the job is Running for the example used above.



After the analysis is finished the Status will change to Completed. As seen in the screenshot below, the first row listed in the **Recently Run Reports** list now shows the job is completed for the example.



Click the number under the ID column for the analysis the user submitted to view the results. See the first column from the cutaway screenshot just above.

The following figure shows a part of the resulting Project List report. We use the example report to illustrate and define fields displayed, as well as available navigational menu features. The Projects Summary lists all the projects used in the calculation of CRFs for all improvement types within all counties inside a district.

Note: The navigational menu in the left panel changes once the **Projects Summary** report is open. It displays on a floating bar that remains accessible as the user scroll within the result rows. Below, we discuss each feature in detail, along with examples of expected results.

By clicking the 

button, the user will return to the Historical Projects: Perform Before-and-After Evaluations page.

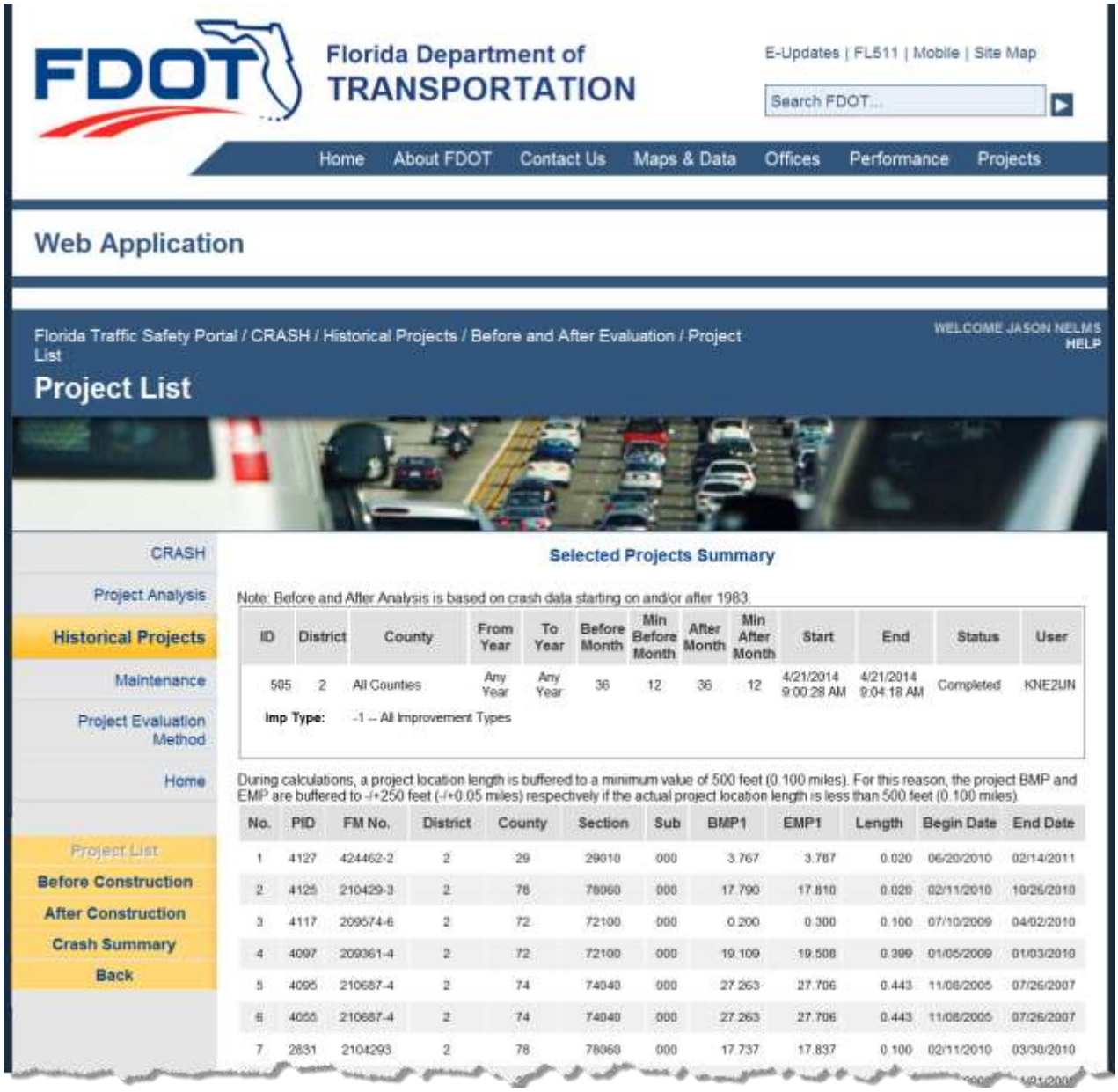


Figure 39 Sample of Selected Projects Summary Report

The top section of the results displays the job information, including the parameter filters selected, status of the job and the User ID of the person who submitted the analysis.

Note: Before and After Analysis is based on crash data starting on and/or after 1983.

ID	District	County	From Year	To Year	Before Month	Min Before Month	After Month	Min After Month	Start	End	Status	User
505	2	All Counties	Any Year	Any Year	36	12	36	12	4/21/2014 9:00:28 AM	4/21/2014 9:04:18 AM	Completed	KNE2IJN

Imp Type: -1 -- All Improvement Types

Please note that before-and-after analyses are based on crash data starting in 1983.

The following are fields present within the project summary table:

- **No.:** This column contains a sequential number from 1-nn, where *nn* represents the total number of projects returned in the Projects Summary report which matched the selection parameter criteria submitted.
- **PID:** Contains the unique Project ID number.
- **FM No.:** Contains the Financial Management project number from the Work Program system.
- **District:** Contains the DOT Managing District Number.
- **County:** Contains the DOT code for County, first two digits of the 8-digit roadway identifier.
- **Section:** Contains the Linear reference section for the road within County, 3rd-5th digits of the roadway identifier.
- **Sub:** Contains the subsection of the primary section, which is the last 3 digits of the 8-digit roadway identifier.
- **BMP1:** Contains the Begin Milepost for the first location. During the calculations, BMP is buffered to minus 250 feet (-0.05 miles) if the location length is less than 500 feet (0.100 miles).
- **EMP1**: Contains the End Milepost for the first location. During the calculations, EMP is buffered to plus 250 feet (+0.05 miles) if the location length is less than 500 feet (0.100

miles).

- **Length**: Contains the Total Length calculated as the sum of all location lengths. During the calculations, length is the buffered length if any location length is less than 500 feet (0.100 miles).
- **Begin Date:** Contains the Construction Begin Date.
- **End Date**: Contains the Construction End Date.

3.8.5.5.1 Before Construction

To access the Before Construction period subpage, click the 

button on the Selected Projects Summary page.

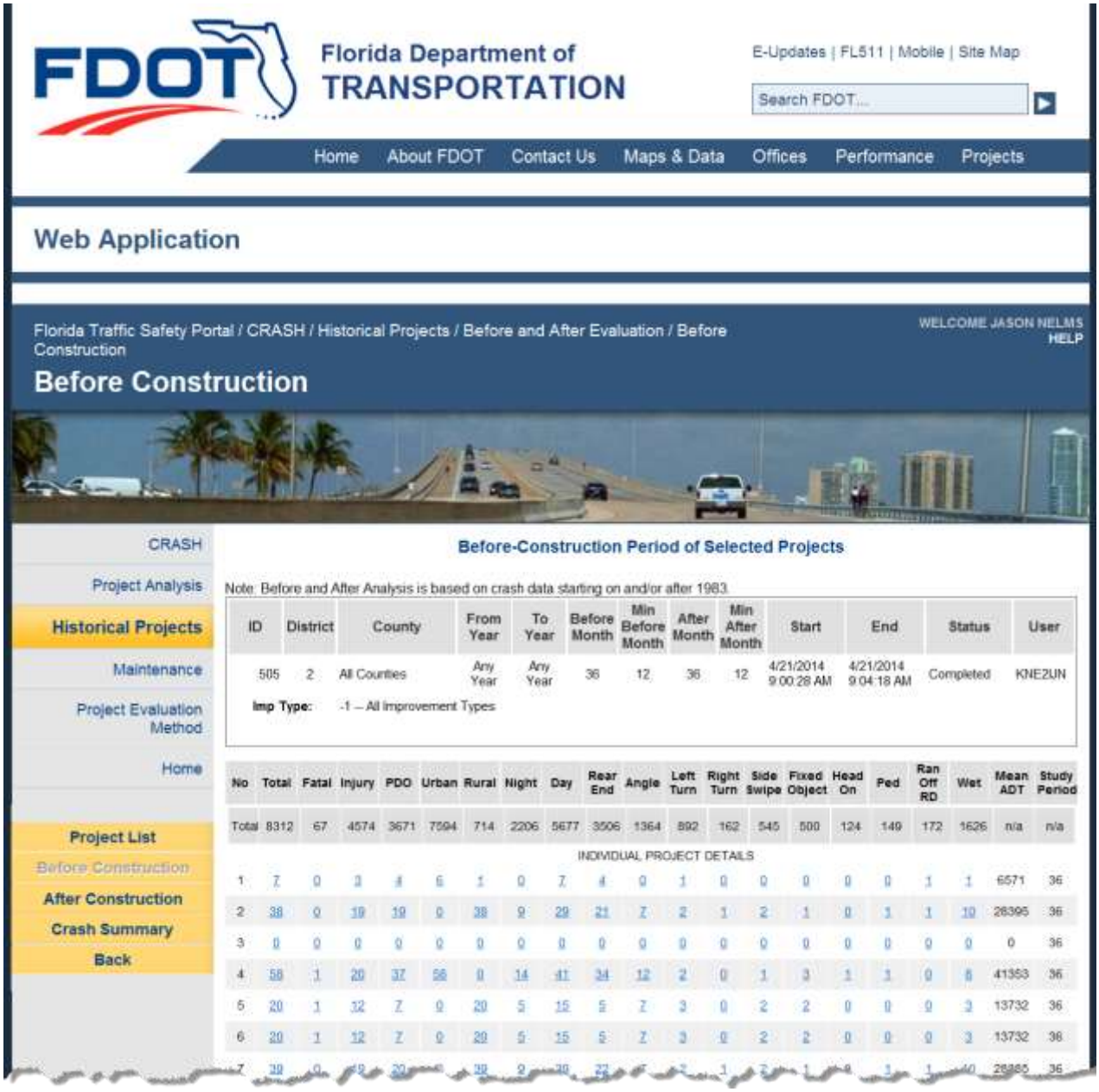


Figure 40 Historical Projects - Before Construction Period of Selected Projects

The Before Construction period subpage provides crash statistics associated within the period of time before each project. The subpage includes the following fields:

- **No**: Project sequence number – generated when the report is created, representing the 1-*nn* number of projects which met the selection criteria.

- **Total**: The total number of crashes which occurred at this location prior to construction for this project. The Total equals the sum of the Fatal, Injury and PDO crash counts displayed on the project row.
- **Fatal**: The total number of Fatal crashes (i.e., those with Injury Severity Code = 5) which occurred at this location prior to construction for this project.
- **Injury**: The total number of crashes resulting in Injury (i.e., those with Injury Severity Code = 2, 3 or 4) which occurred at this location prior to construction for this project
- **PDO**: The total number of crashes resulting in Property Damage Only (PDO) which occurred at this location prior to construction for this project
- **Urban**: The total number of crashes at the location of this project which were designated as being on an Urban roadway.
- **Rural**: The total number of crashes at the location of this project which were designated as being on a Rural roadway.
- **Night**: The total number of crashes at the location of this project which were designated as occurring during the night time.
- **Day**: The total number of crashes at the location of this project which were designated as occurring during the day time.
- **Rear End**: The total number of crashes at the location of this project which were designated as having a Crash Type of “Rear End”.
- **Angle**: The total number of crashes at the location of this project which were designated as having a Crash Type of “Angle”.
- **Left Turn**: The total number of crashes at the location of this project which were designated as having a Crash Type of “Left Turn”.
- **Right Turn**: The total number of crashes at the location of this project which were designated as having a Crash Type of “Right Turn”.

- **Side Swipe**: The total number of crashes at the location of this project which were designated as having a Crash Type of "Side Swipe".
- **Fixed Object**: The total number of crashes at the location of this project which were designated as having a Crash Type of "Fixed Object".
- **Head On**: The total number of crashes at the location of this project which were designated as having a Crash Type of "Head On".
- **Ped**: Abbreviation for *Pedestrian*. Contains the total number of crashes at the location of this project which were designated as having a Crash Type of "Pedestrian".
- **Ran-Off-RD**: The total number of crashes at the location of this project which were designated as having a Crash Type of "Ran-off-road".
- **Wet**: The total number of crashes at the location of this project which were designated as having wet surface conditions.
- **Mean ADT**: Contains the mean average daily traffic (ADT) at the project's location. This is a ***calculated*** value based on the following equation:

$$\boldsymbol{Mean\ ADT} = \frac{(\boldsymbol{Sum\ of\ Mean\ ADT\ from\ each\ Crash\ used\ in\ the\ Project\ Analysis})}{\boldsymbol{Total\ Number\ of\ Crashes}}$$

- **Study Period**: This is a ***calculated*** value based on the number of months between the earliest Crash Date and the latest Crash Date of the crashes used in the analysis for this project. Contains the number of months in the study period at this location.

3.8.5.5.2 After Construction

To access the After Construction period subpage, click the 

button on the Selected Projects Summary page.

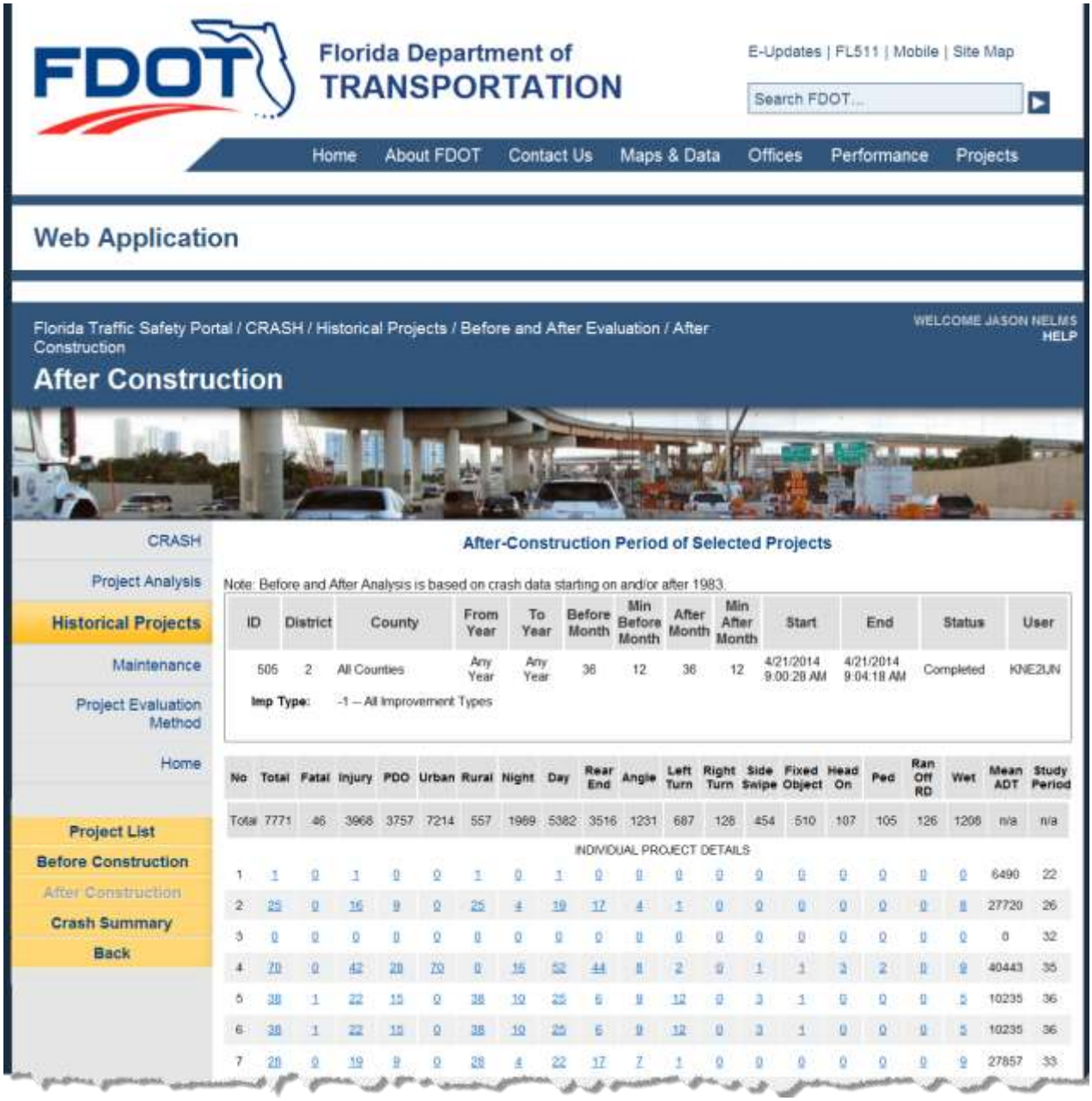


Figure 41 Historical Projects - After Construction Evaluation Results Sample

Note: the Project List button re-activates, and if clicked, returns the user to the Selected Projects Summary results page. Clicking on the Back button on this page returns the user to the Historical Projects: Perform Before-and-After Evaluations Query

Filters page.

The After Construction period subpage provides crash statistics associated within the period of time after each project. The fields included in the subpage are identical to those within the Before Construction subpage (see Section 3.8.5.6.1).

3.8.5.5.3 Crash Summary

To access the Crash Summary subpage, click the 

button on the Selected Projects Summary page.

The Crash Summary shows the crash summary statistics for all projects, including crashes, crash rates, crash reduction factors, Poisson test statistics, and statistical significance at a 95% level of confidence.

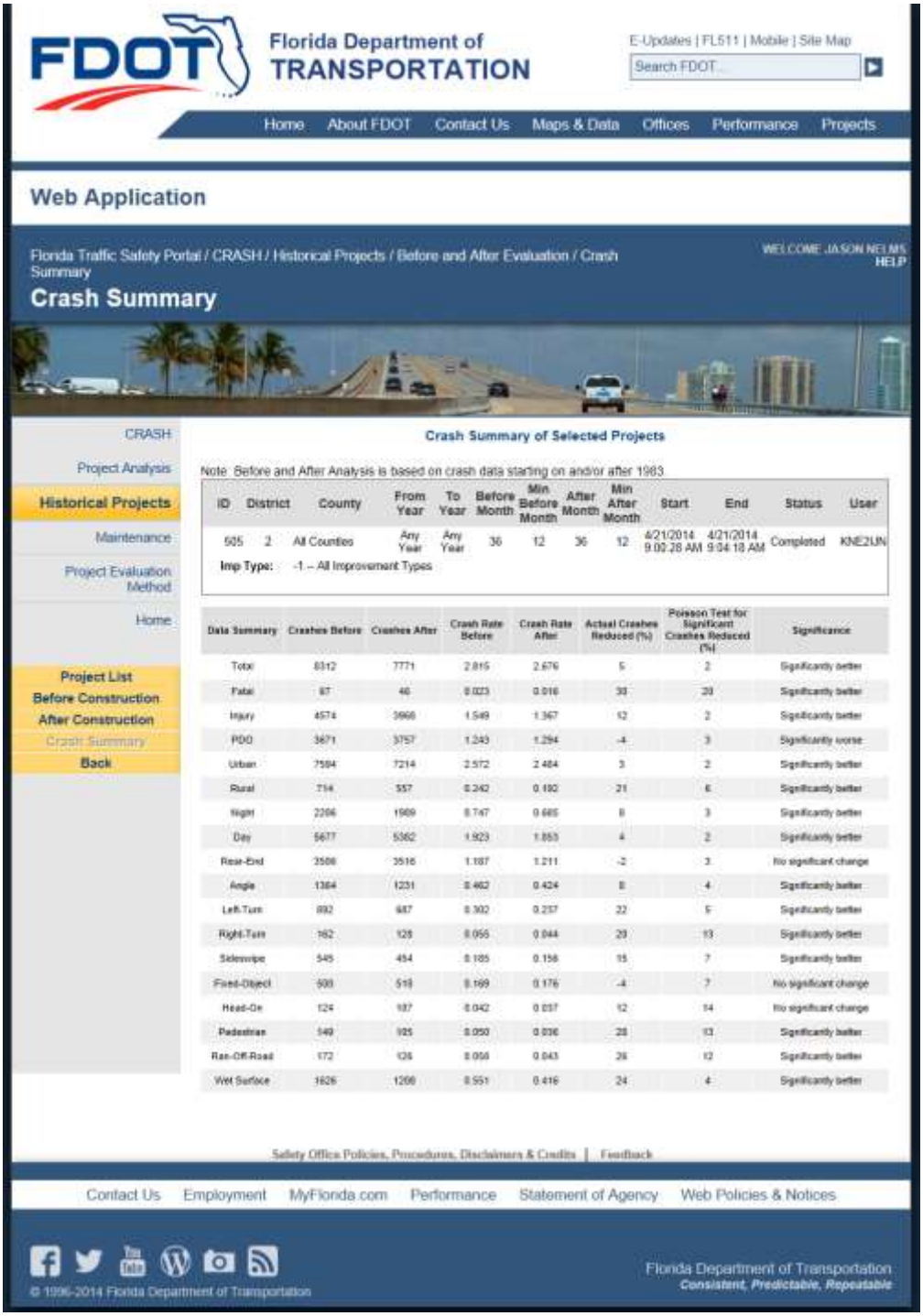


Figure 42 Historical Projects – Crash Summary of Selected Projects

3.8.5.5.3.1 Crash Summary – Fields Displayed

The Crash Summary page includes the following fields:

- **Data Summary**: Data for each Crash Variable to display the crash counts for that variable, with the overall Total Crash count statistics listed on the first row.
- **Crashes Before**: For the listed crash variable, the Crash Counts *before* project implementation, for the listed Crash Variable.
- **Crashes After**: For the listed crash variable, the Crash Counts *after* project implementation.
- **Crash Rate Before**: For the listed crash variable, the Crash Rate *before* project implementation.
- **Crash Rate After**: For the listed crash variable, the Crash Rate *after* project implementation, for the listed Crash Variable.
- **Actual Crashes Reduced (%)**: The Actual Crashes Reduced by the project implementation as a percentage, rounded to the closest full number. It is the calculated using the following formula:

$$\textit{Actual Crashes Reduced} = \left(\frac{(\text{Crash Rate Before} - \text{Crash Rate After})}{\text{Crash Rate Before}}\right) * 100$$

- **Poisson Test for Significant Crashes Reduced (%)**: The test statistic used in determining statistical significance using a Poisson distribution. Calculated using the following formula:

$$\mathbf{R} = \left(\frac{2.326\sqrt{\mathbf{b} - 0.16} - 0.35}{\mathbf{b}}\right) * 100$$

where **R =** Minimum significant percent reduction and **b =** Total number of crashes before project implementation

- **Significance**: Contains one of the following values expressing the statistical Significance of the project improvement: "Significantly better", "No significant change", or "Significantly worse". **Note**: "***" is displayed in this column when Actual Crashes Reduced (%) column on this row contains a value of zero.

3.8.5.5.3.2 Crash Summary - Formulas

The following subsection includes formulas used in the analysis whose results display in the Crash Summary screen

The Crash Summary statistics for before and after crash rates as calculated using the following formula:

For intersections or "spots":

$$\text{Crash Rate}\left(\frac{\text{Crashes}}{\text{MV}}\right) = \frac{(\text{Number of Crashes}) \times 1,000,000}{(\text{Number of Days}) \times \text{AADT}}$$

Note: For an intersection or "spot" improvement, the intersection influence area, typically taken as the ±0.05 miles from the center of an intersection (i.e., 0.1 miles), is treated as the project section length.

For sections:

$$\text{Crash Rate}\left(\frac{\text{Crashes}}{\text{MVM}}\right) = \frac{(\text{Number of Crashes}) \times 1,000,000}{(\text{Number of Days}) \times \text{AADT} \times \text{Section Length in Miles}}$$

To calculate the percent of **Actual Crashes Reduced**:

$$\text{Percent Crashes Reduced} = \frac{[(\text{Crash Rate Before}) - (\text{Crash Rate After})]}{\text{Crash Rate Before}} \times 100$$

The final two columns list the **Poisson Test for Significant Crashes Reduced (%)** and, correspondingly, the statistical **Significance** for those percentages. The formula for the Poisson Test is applied as follows:

$$R = \left(\frac{2.326\sqrt{b - 0.16} - 0.35}{b} \right) \times 100$$

where

R = Percent reduction, and

b = Number of crashes before project implementation.

An example calculation for two improvement projects is summarized in the tables below:

Before Statistics

Project #	1	2	Total
Total Crashes	332	160	492
Project Length	2.3	1.9	
Mean AADT	15,836	13,523	
Study Period	3	3	
Exposure	39.822	28.135	67.957

After Statistics

Project #	1	2	Total
Total Crashes	174	113	287
Project Length	2.3	1.9	
Mean AADT	15,638	15,630	
Study Period	3	3	
Exposure	39.384	32.518	71.902

Every crash record contains a corresponding AADT, therefore an approximation of the mean AADT cans be calculated as:

$$\frac{\sum(AADT)}{\text{Number of Crashes}}$$

For the given example:

$$\frac{14,935 + 14,935 \ldots + 16,040 + 17,794}{332} = 15,836$$

Exposure is then calculated as:

$$\frac{\text{Project Length} \times \text{Mean AADT} \times \text{Years} \times 365 \text{ Days}}{1,000,000}$$

For the given example:

$$\frac{2.3 \times 15,836 \times 3 \times 365}{1,000,000} = 39.822$$

Similarly, all before-and-after exposures can be calculated. It can thus be seen that exposure measurement is a proportional value.

The proportionate crash rates can then be calculated by:

$$\frac{\text{Total Number of Crashes}}{\text{Exposure}}$$

For the given example:

$$\text{Crash Rate Before} = \frac{492}{67.957} = 7.240$$
$$\text{Crash Rate After} = \frac{287}{71.902} = 3.992$$

The CRF for *all* crash types can then be calculated as:

$$\text{CRF} = \frac{\text{Crash Rate Before} - \text{Crash Rate After}}{\text{Crash Rate Before}} 100\%$$

For the given example:

$$\text{CRF} = \frac{7.240 - 3.992}{7.240} 100\% = 45\%$$

3.8.6 Maintenance

The Maintenance functional component is used by authorized users to perform the following functions:

- ***View Crash Reduction Factors***: Generate the list of current Florida Crash Reduction Factors (CRFs) and to view detailed summary statistics associated with the calculation of each CRF.

- ***Project Discrepancy Report***: Identify projects with critical data that is missing or incomplete so it can be corrected.

- ***Project Aging Report***: Identify projects which have not been updated as time has progressed. The purpose of the Aging Report is to identify projects that are aging and not moving to the next phase.

Note: CRASH Maintenance functionality and features are the same whether the user Account has "**Edit**" permissions granted or not.

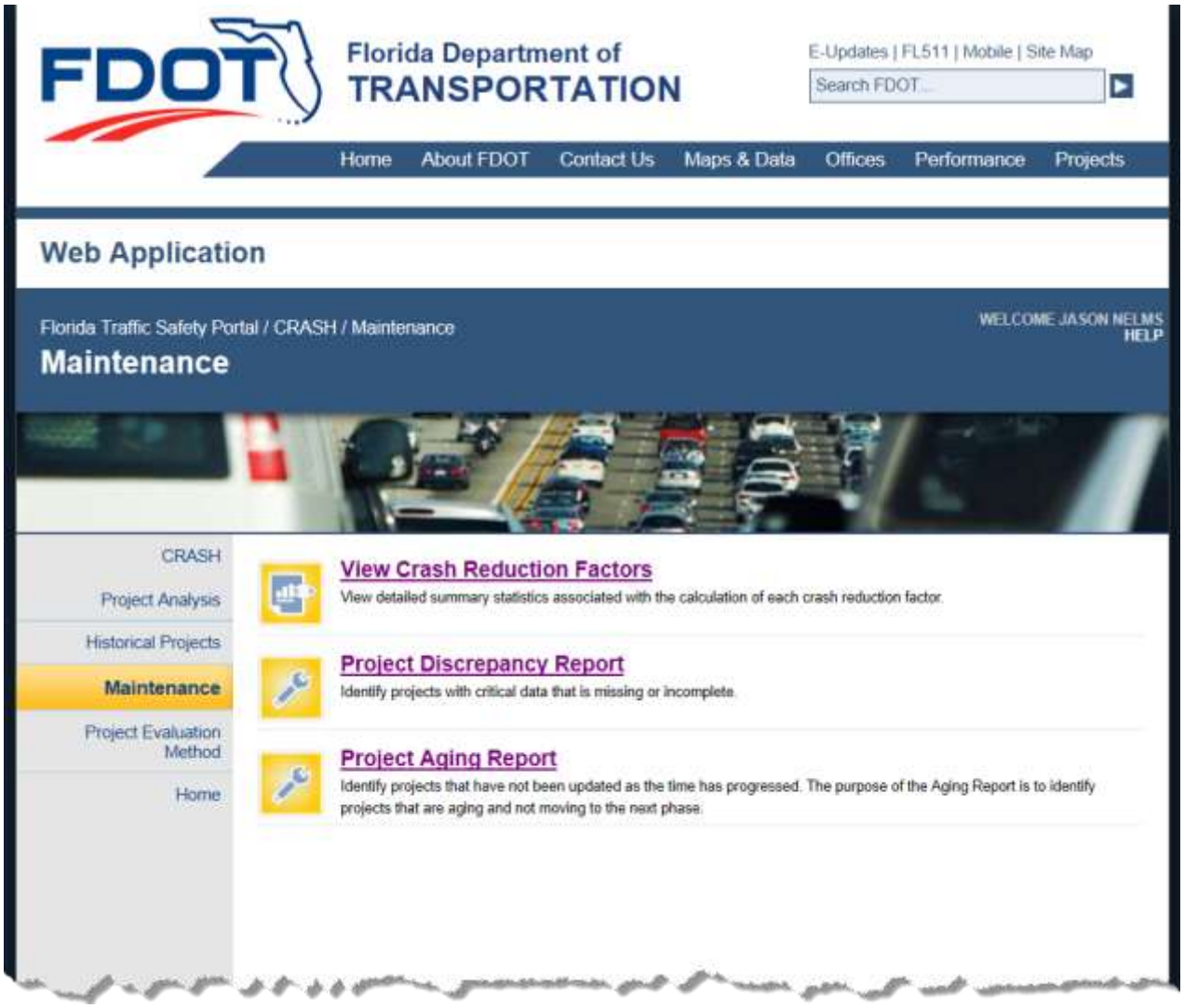


Figure 43 Maintenance Submenu

3.8.6.1 View Crash Reduction Factors

The following figure shows the View Crash Reduction Factors main page:

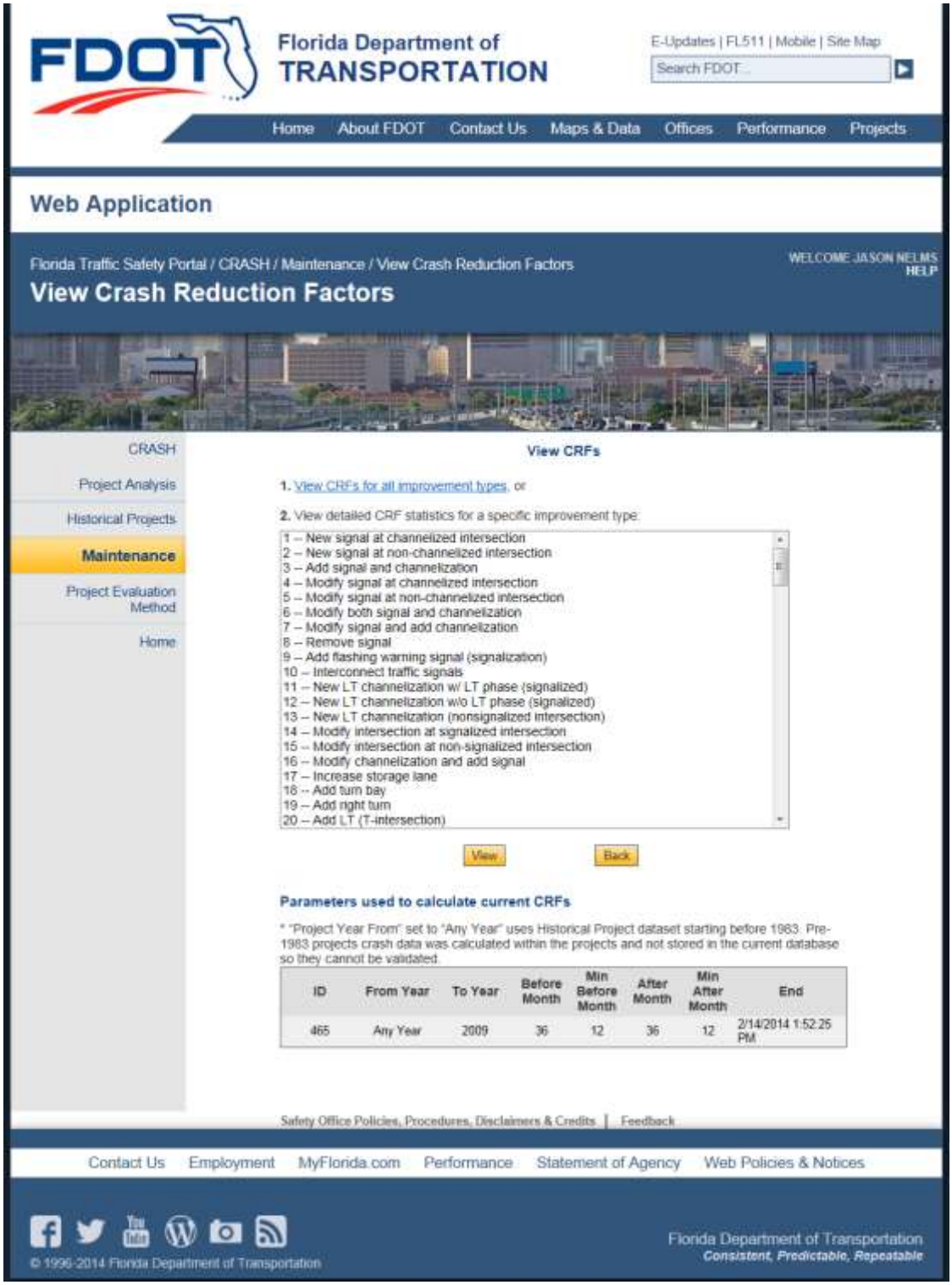
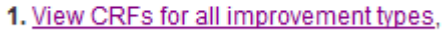


Figure 44 Maintenance Submenu

3.8.6.1.1 View CRFs for All Improvement Types

Clicking on 

exports all up-to-date CRFs from Florida into an Excel spreadsheet, displays the file name and gives the user the option to save or open the file or to cancel the export process in a floating action bar at the bottom of the active list page (see below).

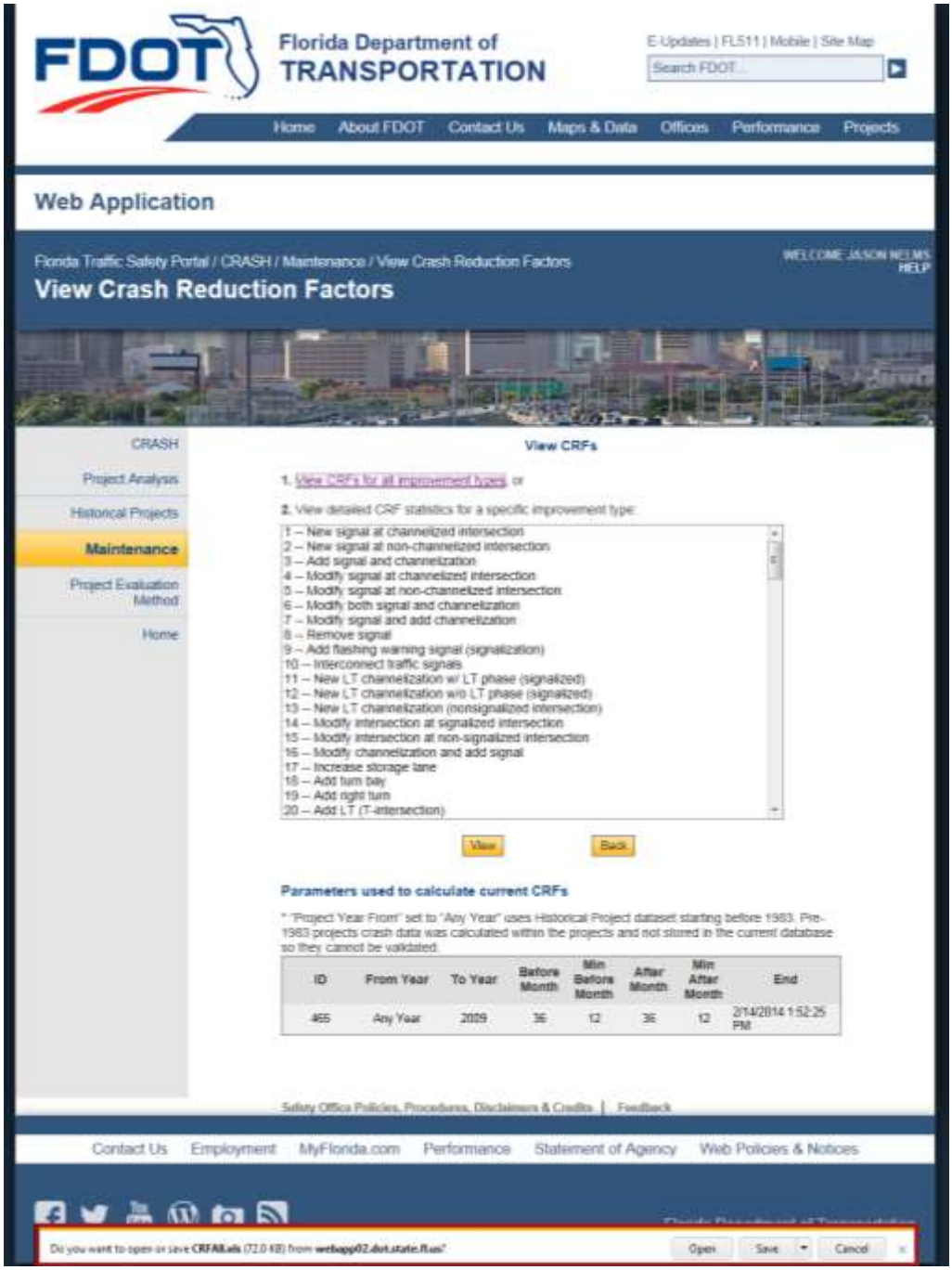
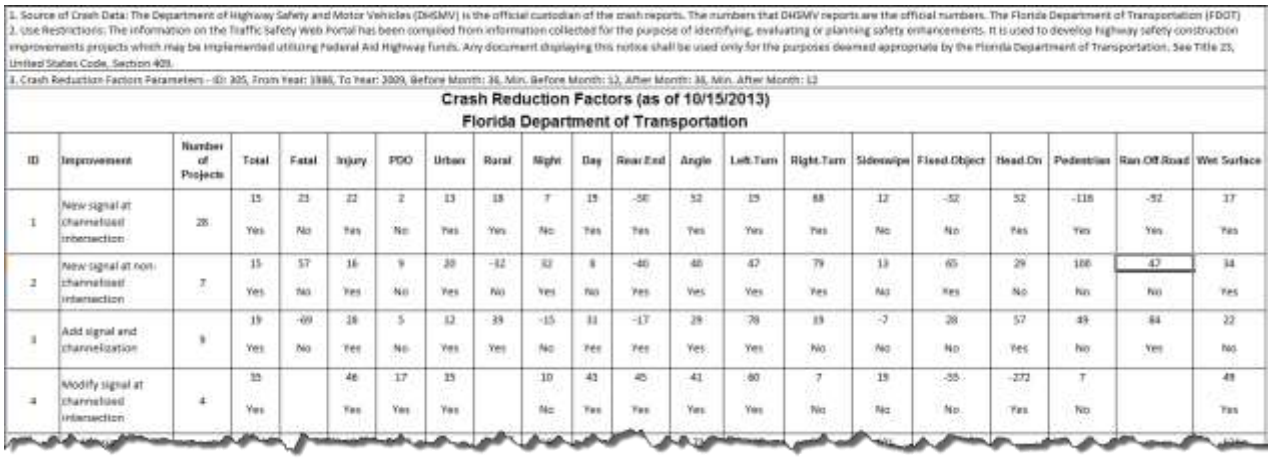


Figure 45 CRFs for All Improvement Types – Export Functionality

If the user choose to **Open** or **Save**, the user may receive the popup message below. Respond with **Yes** to continue to download the Excel file or choose **No** to stop the download function. Choosing **Help** will open an Excel Help window explaining the message.

The Excel file opens in a separate window with more detailed information than is shown on the query results list. In the Excel summary table, the table title displays the date of the most recent improvement project. The user can manage the file using all the normal Excel functionality to make any desired edits to the file.

Below is an example of the Crash Reduction Factors report exported to the Excel spreadsheet.



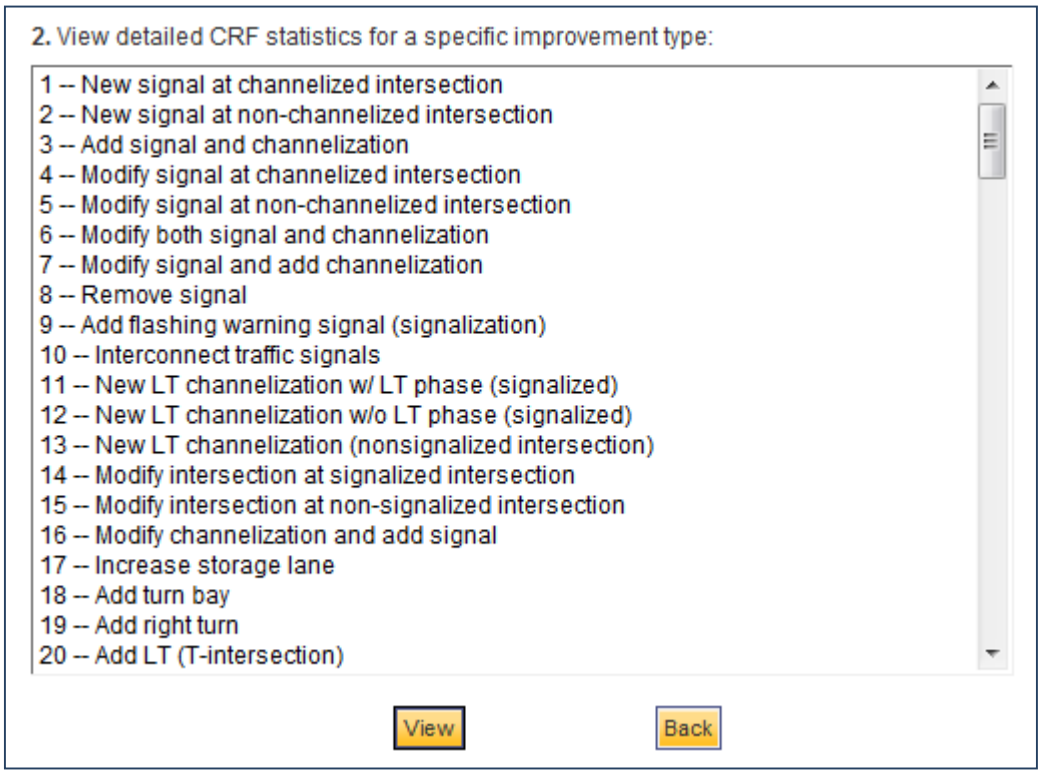
1. Source of Crash Data: The Department of Highway Safety and Motor Vehicles (DHSMV) is the official custodian of the crash reports. The numbers that DHSMV reports are the official numbers. The Florida Department of Transportation (FDOT)
2. Use Restrictions: The information on the Traffic Safety Web Portal has been compiled from information collected for the purpose of identifying, evaluating or planning safety enhancements. It is used to develop highway safety construction improvements projects which may be implemented utilizing Federal Aid Highway funds. Any document displaying this notice shall be used only for the purposes deemed appropriate by the Florida Department of Transportation. See Title 23, United States Code, Section 409.
3. Crash Reduction Factors Parameters - ID: 305, From Year: 1986, To Year: 2009, Before Month: 36, Min. Before Month: 12, After Month: 36, Min. After Month: 12

Crash Reduction Factors (as of 10/15/2013)
Florida Department of Transportation

ID	Improvement	Number of Projects	Total	Fatal	Injury	PDO	Urban	Rural	Night	Day	Rear End	Angle	Left Turn	Right Turn	Sideswipe	Fixed Object	Head On	Pedestrian	Ran Off Road	Wet Surface
1	New signal at channelized intersection	28	15 Yes	23 No	22 Yes	2 No	13 Yes	18 Yes	7 No	19 Yes	-50 Yes	52 Yes	19 Yes	68 Yes	12 No	-52 No	52 Yes	-116 Yes	-52 Yes	17 Yes
2	New signal at non-channelized intersection	7	15 Yes	57 No	16 Yes	9 No	20 Yes	-12 No	32 Yes	8 No	-40 Yes	48 Yes	47 Yes	79 Yes	13 No	65 Yes	29 No	100 No	42 No	34 Yes
3	Add signal and channelization	9	19 Yes	-69 No	28 Yes	5 No	32 Yes	39 Yes	-15 No	31 Yes	-17 Yes	29 Yes	28 Yes	19 No	-7 No	28 No	57 Yes	49 No	84 Yes	22 No
4	Modify signal at channelized intersection	4	35 Yes		46 Yes	17 Yes	35 Yes		10 No	43 Yes	45 Yes	41 Yes	60 Yes	7 No	19 No	-55 No	-272 Yes	7 No		48 Yes

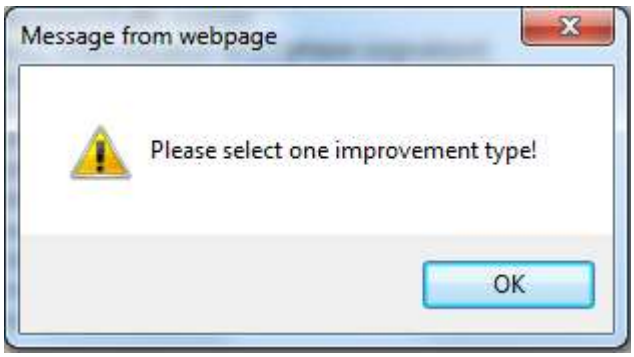
3.8.6.1.2 View Detailed CRF Statistics for a Specific Improvement Type

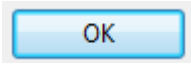
To view the detailed calculations of a specific improvement type, select an improvement type from the list of available improvement types (shown below) and click on the View button.



Note: Selecting 

without selecting a specific Improvement Type from the dropdown list the user will be presented with the following message dialog box:



Click the 

button or the 
button to close the message window.

The output for a specific improvement type includes summary statistics presented within four tables, each of which can be accessed using the CRF Project List Submenu (see below).

- ***CRF Detail: Project Summary*** - Lists all projects used in the calculation of CRFs for a specific improvement type.
- ***CRF Detail: Before-Construction Period*** - Shows the crash statistics associated with the Before-Construction period of each project, including crashes, mean AADT, study period, and total exposure associated with each improvement project. Reached by clicking the Before Construction button in the CRF Project List Submenu (see below).
- ***CRF Detail: After Construction Period*** - The After-Construction Period table is similar to the Before Construction Period table, but includes data for projects after the construction periods. Reached by clicking the After Construction button in the CRF Project List Submenu (see below).
- ***CRF Detail Crash Summary*** – Shows the crash summary statistics for all projects, including crashes, crash rates, crash reduction factors, Poisson test statistics, and whether the Poisson test is significant. Reached by clicking the Crash Summary button in the CRF Project List Submenu (see below).

Note: Clicking the Back button in the CRF Project List Submenu returns the user to the View Crash Reduction Factors Page.

Note: Clicking the Project List button in the CRF Project List Submenu within a page other than the CRF Detail: Project Summary report returns the user to the Project List Subpage.

Parameters used to calculate current CRFs

* "Project Year From" set to "Any Year" uses Historical Project dataset starting before 1983. Pre-1983 projects crash data was calculated within the projects and not stored in the current database so they cannot be validated.

ID	From Year	To Year	Before Month	Min Before Month	After Month	Min After Month	End
305	1986	2009	36	12	36	12	10/15/2013 11:56:19 PM

The Parameters used to calculate current CRFs subsection displays a set of parameters which are mamanged by the system administrator. Parameters displayed are as follows:

- **ID**: The Job ID of the last job run to calculate the current set of Crash Reduction Factors (CRFs).
- **From Year**: The Project End Construction "From" year used in the latest calculation process.
- **To Year**: The Project End Construction "To" year used in the latest calculation process.
- **Before Month**: The Number of Months Before Construction parameter used in the latest calculation process.
- **Min Before Month**: The Minimum Number of Months Before Construction parameter used in the latest calculation process.
- **After Month**: The Number of Months After Construction parameter used in the latest calculation process.
- **Min After Month**: The Minimum Number of Months After Construction parameter used in the latest calculation process.
- **End**: The date and time the latest Update Crash Reduction Factors job was run.

3.8.6.1.2.1 CRF Project List Submenu

The CRF Project List Submenu is shown in the Figure below. It appears on the screen at any point in which the user is browsing data for a specific CRF.

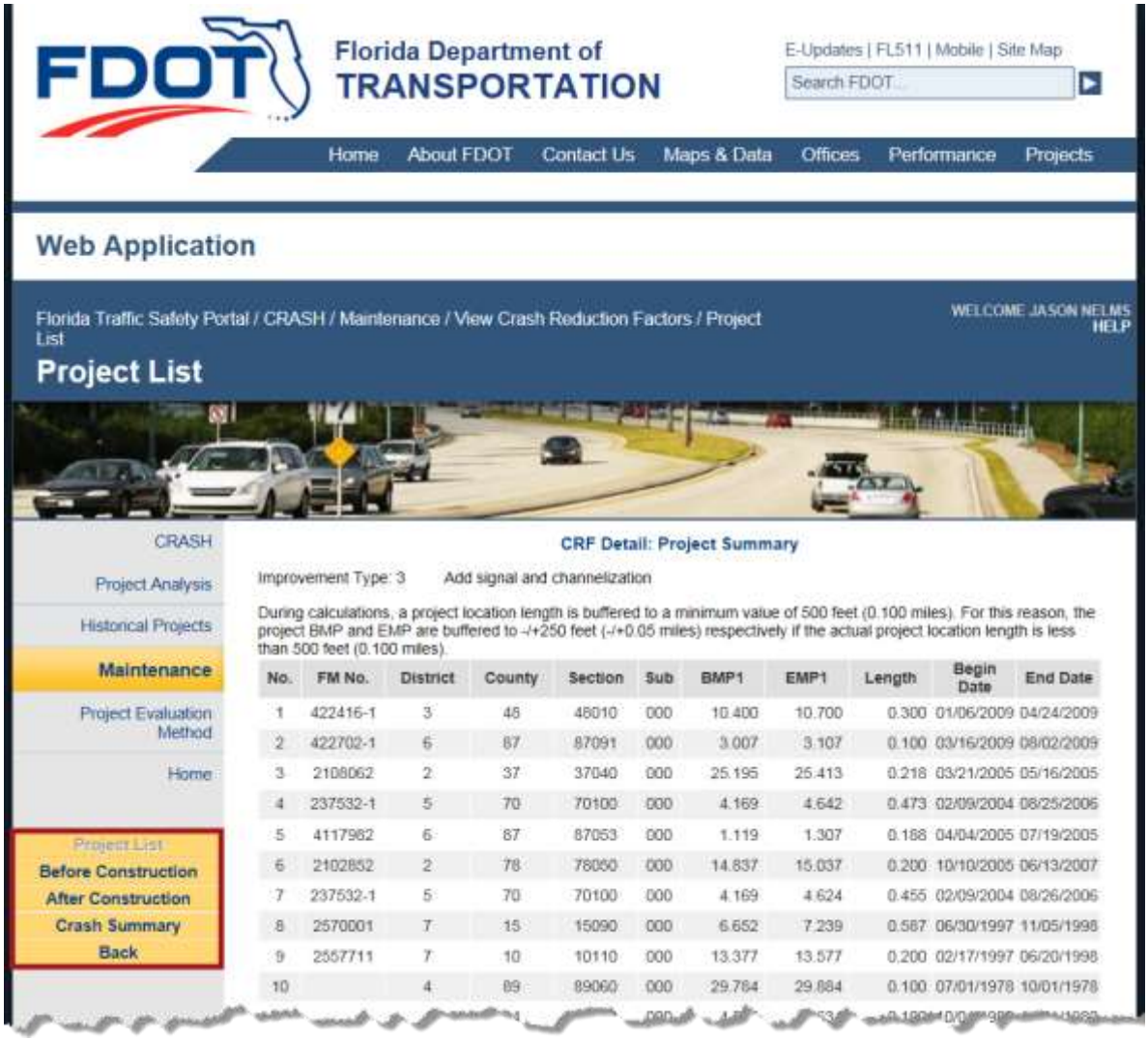


Figure 46 CRFs Project List Submenu

The following are actions associated with the CRF Project List Submenu:

- Clicking the **Before Construction** button from this report subpage's menu returns the user to the CRF Detail: Before Construction Period subpage (see below).

- Clicking the 

button from this report subpage's menu returns the user to the CRF Detail: After Construction Period subpage (see below).

- Clicking the 

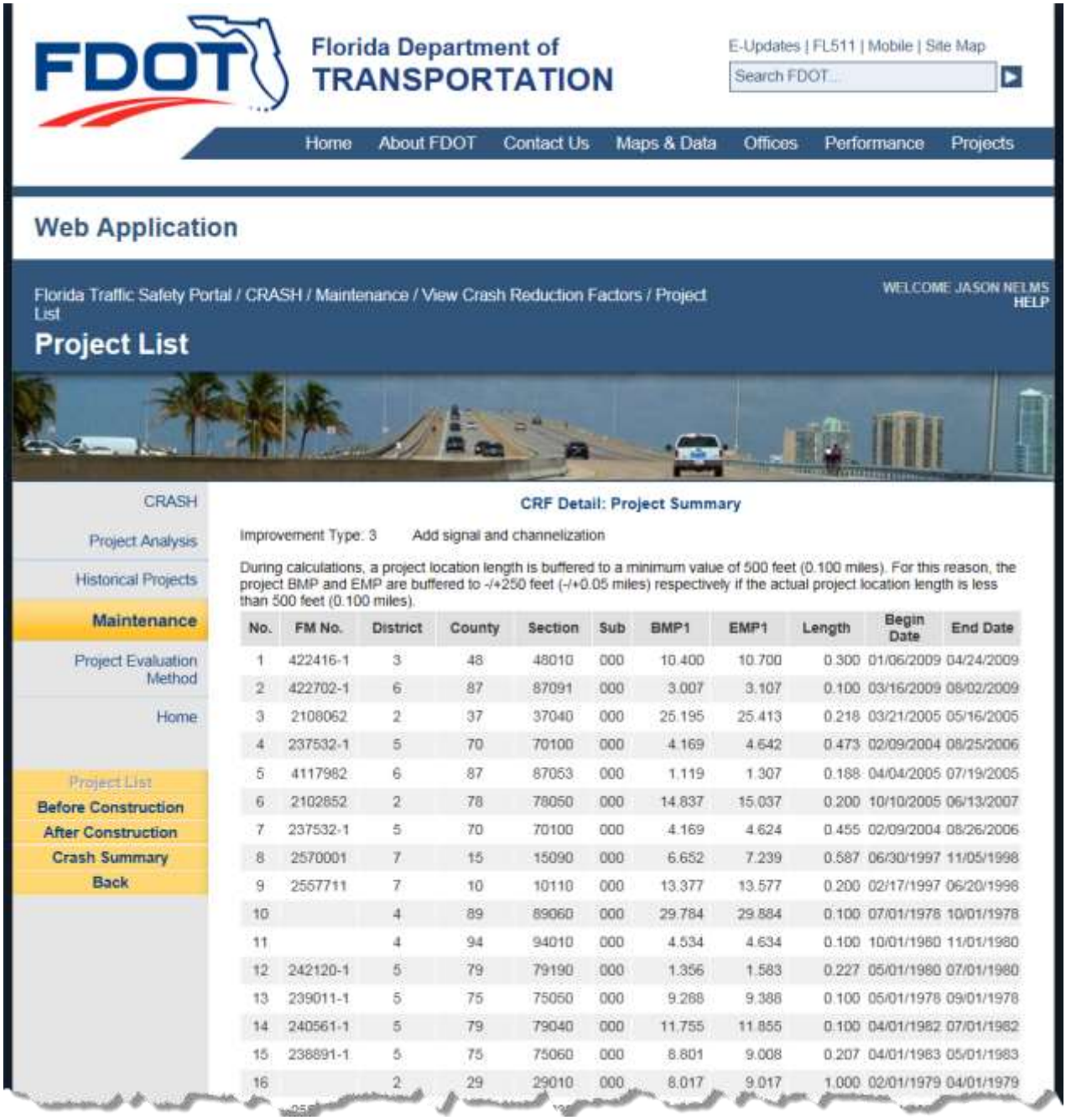
button from this report subpage's menu returns the user to the CRF Detail: Project Summary subpage shown previously in this document.

- Clicking the 

button on the submenu, returns the user to the CRF Detail: Crash Summary report (see below) for the selected improvement type.

3.8.6.1.2.2 CRF Detail: Project Summary

The CRF Detail: Project Summary report (see below) is presented showing the list of Projects completed which utilized the selected Improvement Type.



No.	FM No.	District	County	Section	Sub	BMP1	EMP1	Length	Begin Date	End Date
1	422416-1	3	48	48010	000	10.400	10.700	0.300	01/06/2009	04/24/2009
2	422702-1	6	87	87091	000	3.007	3.107	0.100	03/16/2009	08/02/2009
3	2108062	2	37	37040	000	25.195	25.413	0.218	03/21/2005	05/16/2005
4	237532-1	5	70	70100	000	4.169	4.642	0.473	02/09/2004	08/25/2006
5	4117982	6	87	87053	000	1.119	1.307	0.188	04/04/2005	07/19/2005
6	2102852	2	78	78050	000	14.837	15.037	0.200	10/10/2005	06/13/2007
7	237532-1	5	70	70100	000	4.169	4.624	0.455	02/09/2004	08/26/2006
8	2570001	7	15	15090	000	6.652	7.239	0.587	06/30/1997	11/05/1998
9	2557711	7	10	10110	000	13.377	13.577	0.200	02/17/1997	06/20/1996
10		4	89	89060	000	29.784	29.884	0.100	07/01/1978	10/01/1978
11		4	94	94010	000	4.534	4.634	0.100	10/01/1980	11/01/1980
12	242120-1	5	79	79190	000	1.356	1.583	0.227	05/01/1980	07/01/1980
13	239011-1	5	75	75050	000	9.288	9.388	0.100	05/01/1978	09/01/1978
14	240561-1	5	79	79040	000	11.755	11.855	0.100	04/01/1982	07/01/1982
15	238891-1	5	75	75060	000	8.801	9.008	0.207	04/01/1983	05/01/1983
16		2	29	29010	000	8.017	9.017	1.000	02/01/1979	04/01/1979

Figure 47 Project List - CRF Detail: Project Summary

The following are fields contained within the CRF Detail: Project Summary page:

- **No.**: The Project sequence number – generated when the report is created, representing the 1-*nn* number of projects which included "Improvement Type: 3 – Add signal and

channelization”**,** for this example.

- **FM No.:** The Financial Management project number from the Work Program System.
- **District:** The DOT Managing District identifier.
- **County:** The DOT code for County, first two digits of the 8-digit roadway identifier.
- **Section:** The Linear reference section for the road within County, 3rd-5th digits of the roadway identifier.
- **Sub:** The subsection of the primary section, which is the last 3 digits of the 8-digit roadway identifier.
- **BMP1:** The Begin Milepost for the first location. During the calculations, BMP is buffered to minus 250 feet (-0.05 miles) if the location length is less than 500 feet (0.100 miles).
- **EMP1:** The End Milepost for the first location. During the calculations, EMP is buffered to plus 250 feet (+0.05 miles) if the location length is less than 500 feet (0.100 miles).
- **Length:** The Total Length calculated as the sum of all location lengths. During the calculations, length is the buffered length if any location length is less than 500 feet (0.100 miles).
- **Begin Date:** The Construction Begin Date.
- **End Date:** The Construction End Date.

3.8.6.1.2.3 CRF Detail: Before Construction Period

The Before Construction Period table contains the crash statistics associated with the before-construction period of each project, including crashes, mean AADT, study period, and total exposure associated with each improvement project. The report contains the same projects present in the CRF Detail: Project Summary report from which the user navigated.

The CRF Detail: Before Construction Period report contains a series of columns pertaining to a specific improvement type. In addition to a header row, the report contains summary data for each column therein (see the highlighted areas in the figure below).

CRF Detail: Before-Construction Period

Improvement Type: 3 Add signal and channelization

No	Total	Fatal	Injury	PDO	Urban	Rural	Night	Day	Rear End	Angle	Left Turn	Right Turn	Side Swipe	Fixed Object	Head On	Ped	Ran-Off-RD	Wet	Mean ADT	Study Period	Exposure
1	68	0	31	37	68	0	11	57	32	22	4	1	3	1	1	1	0	6	36265	36	11.91
2	17	0	4	13	0	17	5	11	4	7	1	0	1	2	1	0	0	2	8476	36	0.93
3	15	0	8	7	15	0	0	15	5	4	2	0	1	1	0	1	0	2	12233	36	2.92
4	16	0	11	5	0	16	10	6	3	3	1	0	2	0	0	0	5	3	13475	36	6.98
5	77	0	48	29	77	0	17	59	32	13	15	3	5	0	1	0	0	8	55591	36	11.44
13	27	3	13	11	0	27	0	20	9	7	5	1	1	0	1	0	2	6	14290	3	3.13
14	54	0	22	32	54	0	4	41	6	21	11	4	6	3	0	0	1	14	15461	3	3.39
15	100	0	29	71	100	0	5	76	51	8	22	4	3	5	3	0	0	6	25971	3	8.73
16	161	1	57	103	104	57	10	116	30	27	42	13	21	7	0	5	6	40	15902	3	19.15
17	55	0	27	28	17	38	2	43	4	30	10	6	1	1	0	0	1	8	9660	3	2.12
Total	822	7	391	424	552	270	123	601	222	215	169	41	60	23	11	9	23	128	n/a	n/a	118.90

Figure 48 CRF Detail: Before-Construction Period Heading Fields

The following are fields included in the CRF Detail: Before-Construction Period report:

- **No**: The Project Sequence Number – generated when the report is created, representing the 1-*nn* number of projects which included in the selected improvement type.
- **Total**: The total number of crashes which occurred at a location prior to construction for this project. The Total equals the sum of the Fatal, Injury and PDO crash counts displayed on the project row.
- **Fatal**: The total number of Fatal crashes (i.e., those with Injury Severity Code = "5") which occurred at a location prior to construction for this project.

- **Injury**: The total number of crashes resulting in Injury (those with Injury Severity Code = 2, 3 or 4) which occurred at a location prior to construction for this project
- **PDO**: The total number of crashes resulting in Property Damage Only (PDO) which occurred at a location prior to construction for this project
- **Urban**: The total number of crashes at the location of a project which were designated as being on an *urban* roadway.
- **Rural**: The total number of crashes at the location of a project which were designated as being on a *rural* roadway.
- **Night**: The total number of crashes at the location of a project which were designated as occurring during the night time.
- **Day**: The total number of crashes at the location of a project which were designated as occurring during the day time.
- **Rear End**: The total number of crashes at the location of a project which were designated as having a Crash Type of *Rear End*.
- **Angle**: The total number of crashes at the location of a project which were designated as having a Crash Type of *Angle*.
- **Left Turn**: The total number of crashes at the location of a project which were designated as having a Crash Type of *Left Turn*.
- **Right Turn**: The total number of crashes at the location of a project which were designated as having a Crash Type of *Right Turn*.
- **Side Swipe**: The total number of crashes at the location of a project which were designated as having a Crash Type of *Side Swipe*.
- **Fixed Object**: The total number of crashes at the location of a project which were designated as having a Crash Type of *Fixed Object*.

- **Head On**: The total number of crashes at the location of a project which were designated as having a Crash Type of *Head On*.
- **Ped**: Abbreviation for *Pedestrian*. Contains the total number of crashes at the location of a project which were designated as having a Crash Type of Pedestrian.
- **Ran-Off-RD**: The total number of crashes at the location of a project which were designated as having a Crash Type of Ran-off-road.
- **Wet**: The total number of crashes at the location of this project which were designated as having wet surface conditions.
- **Mean ADT**: The mean average daily traffic (ADT) at the project's location. This is a ***calculated*** value based on the following equation:

$$\boldsymbol{Mean\ ADT = \frac{(Sum\ of\ Mean\ ADT\ from\ each\ Crash\ used\ in\ the\ Project\ Analysis)}{Total\ Number\ of\ Crashes}}$$

- **Study Period**: This is a ***calculated*** value based on the number of months between the earliest Crash Date and the latest Crash Date of the crashes used in the analysis for this project. Contains the number of months in the study period at this location.
- **Exposure**: This is a ***calculated*** value based on the following equation:

$$\boldsymbol{Exposure = \frac{(Project\ Section\ Lenght\ in\ Miles * Years * 365\ Days * Mean\ ADT)}{1,000,000}}$$

Clicking the hyperlink associated with any value contained within the CRF Detail: Before Construction Report will export a Crash Report – which contains all crashes included in the linked total – into Excel.

Figure 49 Export function - CRF Detail: Before Construction Period

At this point, the user can choose to save or open the file, or to cancel the export process using a

floating action bar at the bottom of the active list page (see the highlighted area in the figure above).

Choosing **Open** or **Save** may lead to the following message:

Choose **Yes** to continue to download the Excel file or **No** to stop the download. Choosing **Help** will open an Excel Help window explaining the message.

3.8.6.1.2.4 CRF Detail: After Construction Period

Clicking on the 

button on the submenu opens the CRF Detail: After-Construction Period report (see below). As with the CRF Detail: Before-Construction Period report, this report contains several hyperlinks that facilitate detailed data exports.

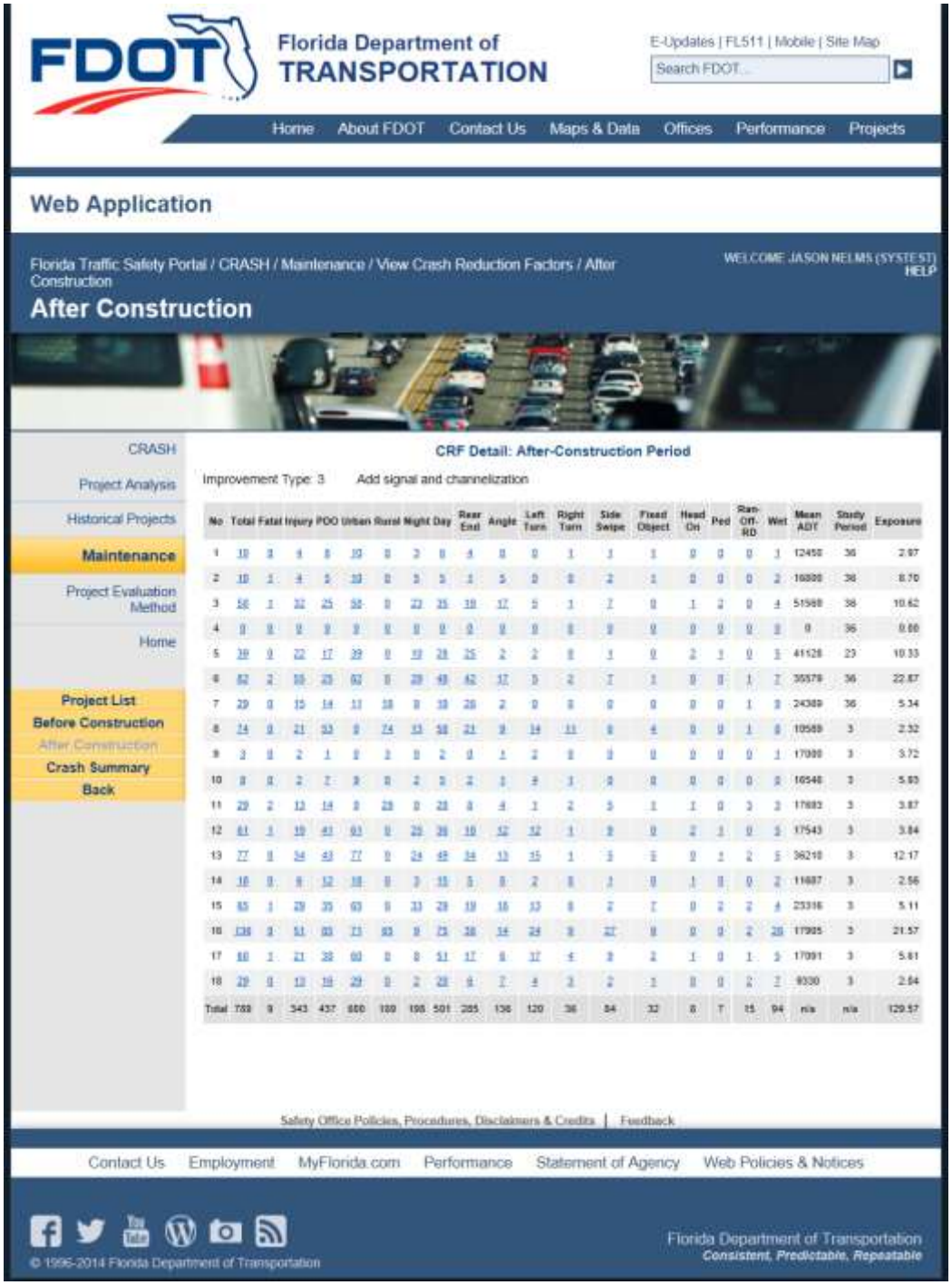


Figure 50 CRF Detail: After-Construction Period

The CRF Detail: After-Construction Period report includes the same data fields as the CRF Details: Before-Construction report. However, the CRF Details: After-Construction Report

includes data pertaining to crashes following the project's construction period.

Note: The CRF Detail: After-Construction Period report has the export to Excel functionality available as defined above for the CRF Detail: Before-Construction Period report. Please refer to The Crash Report section below for operational functionality instructions and examples of the data fields that are exported.

3.8.6.1.2.5 The Crash Report

The Crash Report can be accessed from both the Before Construction and After Construction areas of the Maintenance section. Once the report download has finished, it will open automatically in Excel. The file contains the following fields:

- Year
- Crash Report Number
- Crash Date
- Hour of Crash
- Weekday
- District
- County
- Roadway ID
- Milepost
- Nearest Node to Crash
- Distance to Node (mile)
- State Route
- Site Location
- Road Side
- Accident Lane Number
- Alcohol Involved
- First Harmful Event
- Second Harmful Event
- Road Surface
- Lighing

- Weather
- Road Condition
- Traffic Control
- Traffic Char
- Fatality Flag
- Injury Severity
- Number of Fatalities
- Number of Injuries
- Total Persons
- Total Drivers
- Vehicle Fields for each ***vehicle***:
    - Type
    - Total Occupants
    - Movement
    - Direction
    - Impact Point
    - Driver Contributing Cause
    - Driver Age
    - User
    - Estimated Speed
    - Posted Speed
    - Driver Alcohol/Drug
    - Residence
    - Safe Equip
    - Physical Defects
    - Race
    - Sex
- Lane County
- AADT
- RCI Urban Area Code (pre-2002)
- Roadway Category
- Rural or Urban

3.8.6.1.2.6 CRF Detail: Crash Summary

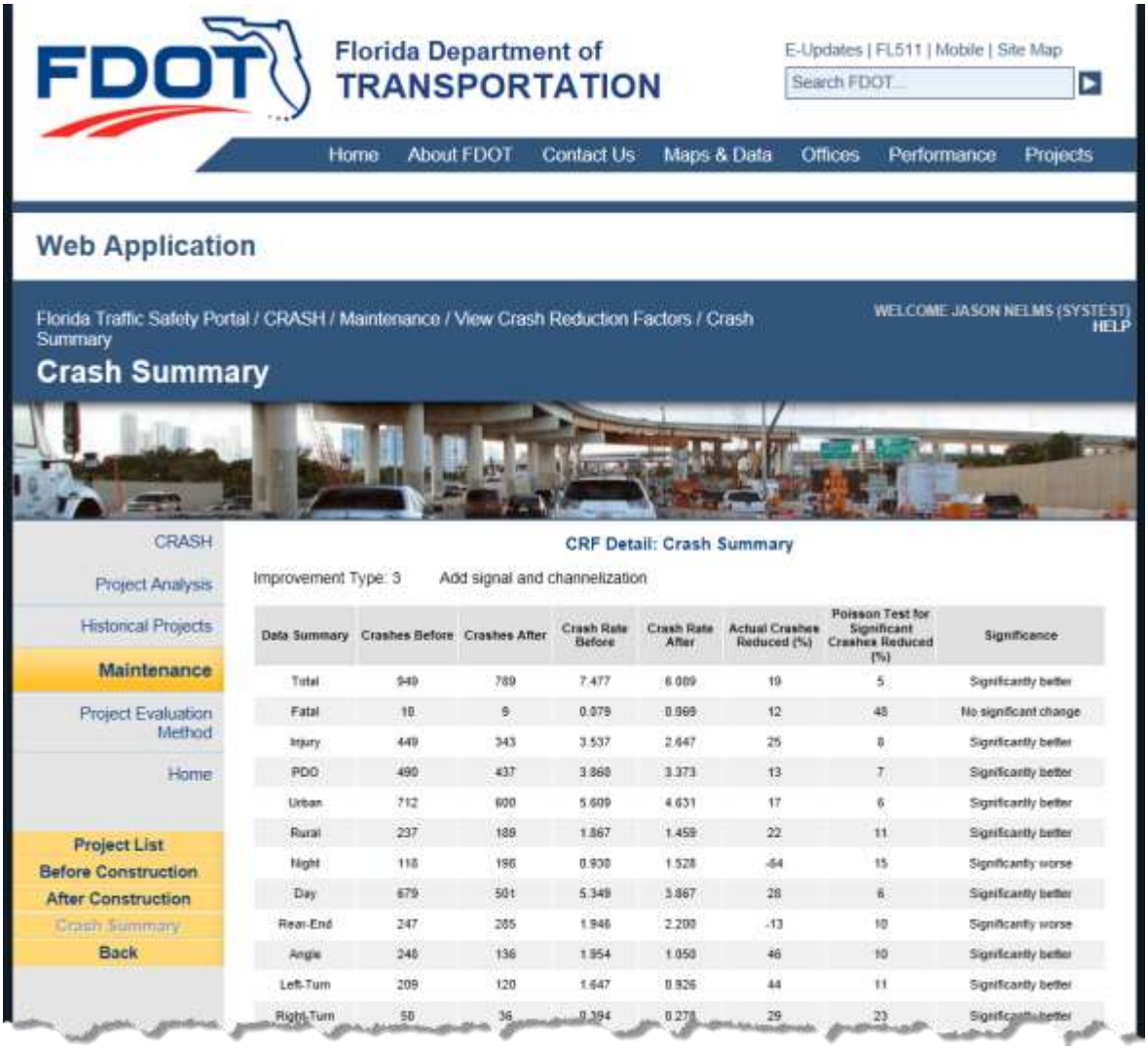


Figure 51 CRF Detail: After-Construction Period

- **Data Summary**: Contains a data row for each Crash Variable to display the crash counts for that variable, with the overall Total Crash count statistics listed on the first row.
- **Crashes Before**: For the listed crash variable, Crash Counts *before* project implementation.
- **Crashes After**: For the listed crash variable, Crash Counts *after* project implementation.

- **Crash Rate Before**: For the listed variable, the Crash Rate *before* project implementation.
- **Crash Rate After**: For the listed variable, the Crash Rate *after* project implementation.
- **Actual Crashes Reduced (%)**: The Actual Crashes Reduced by the project implementation as a percentage, rounded to the closest whole number. The field is the calculated based on the following formula:

$$Actual\ Crashes\ Reduced = \left(\frac{(\text{Crash Rate Before} - \text{Crash Rate After})}{\text{Crash Rate Before}}\right) * 100$$

- **Poisson Test for Significant Crashes Reduced (%)**: The result of the following formula

$$R = \left(\frac{2.326\sqrt{b - 0.16 - 0.35}}{b}\right) * 100$$

where

R = Minimum significant percent reduction

b = Total number of crashes before project implementation

- **Significance**: Contains one of the following values expressing the statistical Significance of the project improvement: “Significantly better”, “No significant change”, or “Significantly Worse”.

From the CRF Detail: Crash Summary report, clicking the Project List button from this report subpage’s menu returns the user to the CRF Detail: Project Summary subpage shown previously in this document.

Clicking the Back button on this submenu, returns the user to the View Crash Reduction Factors webpage shown above.

3.8.6.2 Project Discrepancy Report

Clicking the Project Discrepancy Report link takes the user to the Project Discrepancy Report. The Project Discrepancy Report is used to identify projects with critical data that is missing or incomplete. When opened, the report displays results based on existing default settings for each of the following fields:

- **Project Type**: Select a radio button to limit the report by Project Type of Crash Based) or Non-Crash Based. Defaults to "Crash Based".
- **Project Status**: Use the dropdown arrow to choose a specific Project Status. Hovering over the  symbol displays the following tooltip pertaining to each **Project Status** value:
    - "Select a project status code.
        - **All Projects**: All available projects (default).
        - **Analysis**: The project is still in the analysis stage and may or may not be implemented.
        - **Construction**: The project is being constructed, but the construction has not been completed.
        - **Completed**: The project has been completed and the construction periods have been entered."
- **CRASH Project ID**: Enter a specific CRASH Project ID and click anywhere outside of that box to view a single row of data specific to that Project ID. No default value.
- **District**: Use the dropdown arrow to select a DOT District 1-8. If the user's account is restricted to editing or viewing a single District, this query will default to that district only and become disabled. Defaults to "All Districts".
- **County**: Use the dropdown to select a desired county. Defaults to "All Counties" when District is set to "All Districts" but allows the user to select a County from the dropdown list of ***all counties within the State of Florida***. If a specific District has been selected, the County dropdown still defaults to "All Counties". However, the County dropdown becomes

limited to ***only the counties for the selected District*.**

- **Submit Year From/To**: Defaults to "Any Year" in both the **From** and **To** year fields. This is the recommended setting to use to ensure projects that are ***missing*** a Submit Date are identified. However, if the user wish to work on a smaller date range, the user can select a year from the dropdown list from 1983 through the most current year for which project data is available. The **From** year selected must be less than or equal to the **To** year and the system enforces this rule by limiting the user's **To** year dropdown selections to an appropriate set of years equal to or greater than the **From** year selected.

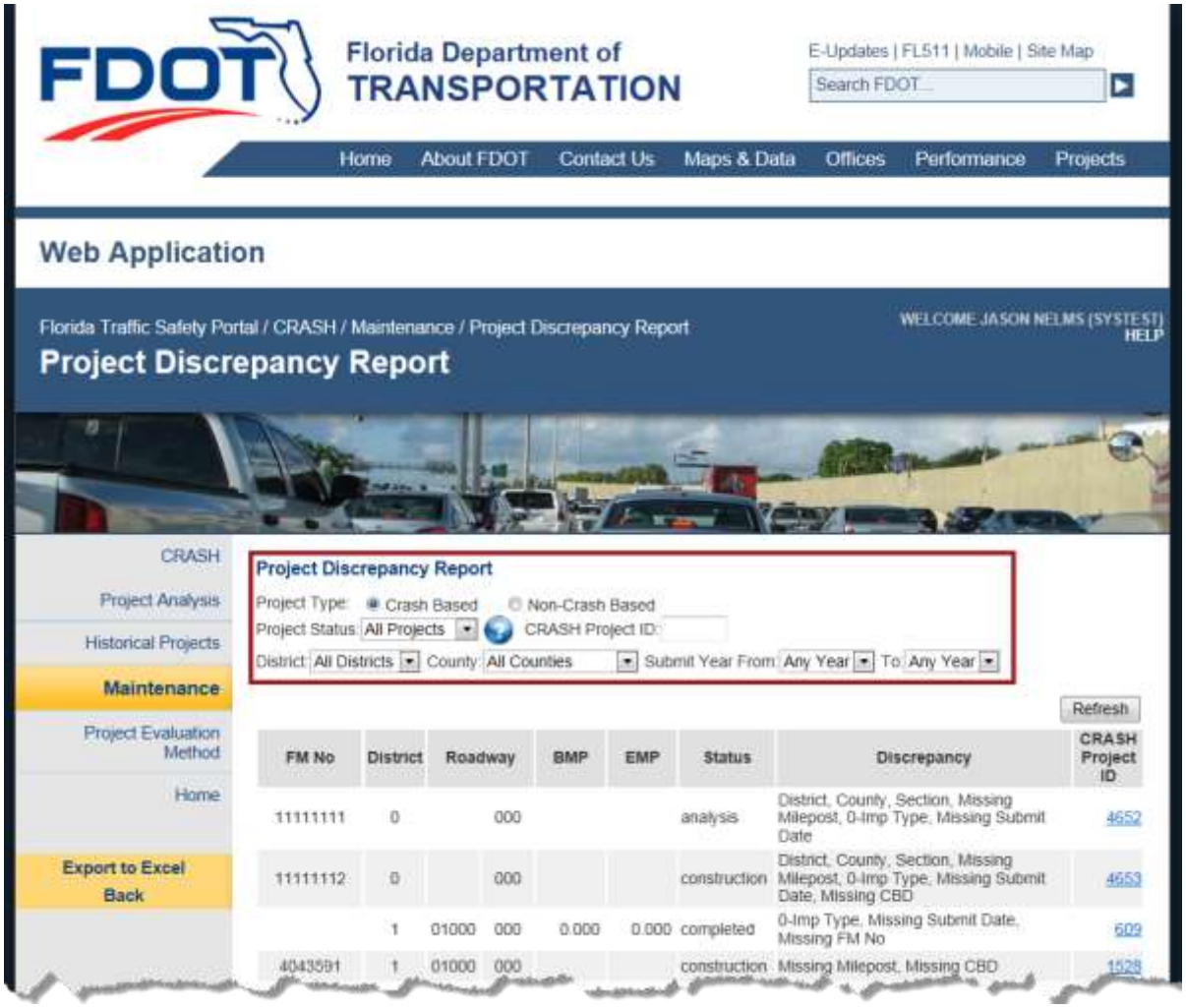


Figure 52 CRASH Maintenance - Project Discrepancy Report Sample

The Project Discrepancy Report contains the following data fields:

- **FM No**: The current FM No for the project. It should contain the Financial Management (FM) project number from the Work Program system.
- **District**: The DOT Managing District for the project.
- **Roadway**: The Roadway's Section and Subsection identifiers. The Roadway's Section portion may be blank, but Subsection portion will always contain at least "000" since that is the default value saved when a new project is started.

- **BMP**: The Beginning Milepoint for the project, refers to the inventoried length of the roadway identifier.

- **EMP**: The Ending Milepoint for the project, refers to the inventoried length of the roadway identifier.

- **Status**: The current Project Status code.

  Note: The value in this status field will sometimes determine which Discrepancy edits are made for missing data on a project (refer to the explanations in the Discrepancy field below). The valid Project Status values are:

  - **Analysis** – The project is still in the analysis stage and may or may not be implemented.

  - **Construction**: The project is being constructed, but the construction has not been completed.

  - **Completed**: The project has been completed and the construction periods (Construction Begin Date and Construction End Date) have been entered.

- **Discrepancy**: Contains the Discrepancy Description(s). One or more discrepancies will be displayed, separated by commas. The Project Status value drives whether a discrepancy description is checked for a project. The figure below shows each Discrepancy Description the system checks, its meaning, and a ✔ under the Project Status values for which it applies.

- **CRASH Project ID**: Displays the CRASH Project ID as a hyperlink. By clicking on a hyperlink the user is transferred to the CRASH → Project Analysis → Edit Project webpage (i.e., the Safety Benefit-Cost Analysis Form in edit mode), where she may enter the missing information. When changes are complete, click on the 

button to save the user's changes.

The following table includes a list of possible discrepancies that the user can resolve from the Project Discrepancy Report:

Discrepancy Description	Discrepancy Meaning	Discrepancy Checked when Project Status is:		
		Analysis	Construction	Completed
District	District is missing	✓	✓	✓
County	The DOT County is missing	✓	✓	✓
Section	Section portion of the Roadway column is missing -- it should contain the Linear reference section for the road within County (first two digits) and 3rd-5th digits of the Roadway Identifier	✓	✓	✓
SubSection	SubSection portion of the Roadway is missing.	✓	✓	✓
Missing Milepost	Beginning Milepost (BMP) and/or Ending Milepost (EMP) are missing	✓	✓	✓
Neg Length	The length of a project location is negative	✓	✓	✓
Missing Imp Type	Primary Improvement Type is empty	✓	✓	✓
0 - Imp Type	Primary Improvement Type not yet Assigned	✓	✓	✓
Missing Submit Date	Submit Date is missing in the Benefit-Cost Analysis form	✓	✓	✓
Missing FM No	Financial Management project number from the Work Program system is missing in the Benefit-Cost Analysis form		✓	✓
Missing CBD	Construction Begin Date (CBD) is missing		✓	
Missing CBD/CED	Construction Begin Date (CBD) or Construction End Date (CED) is missing			✓

Figure 53 Available Project Discrepancy Values

3.8.6.2.1.1 Resolving a Project Discrepancy

Upon clicking the CRASH Project ID link, the user is transferred to the Safety Project Benefit-Cost Analysis form in Edit mode.

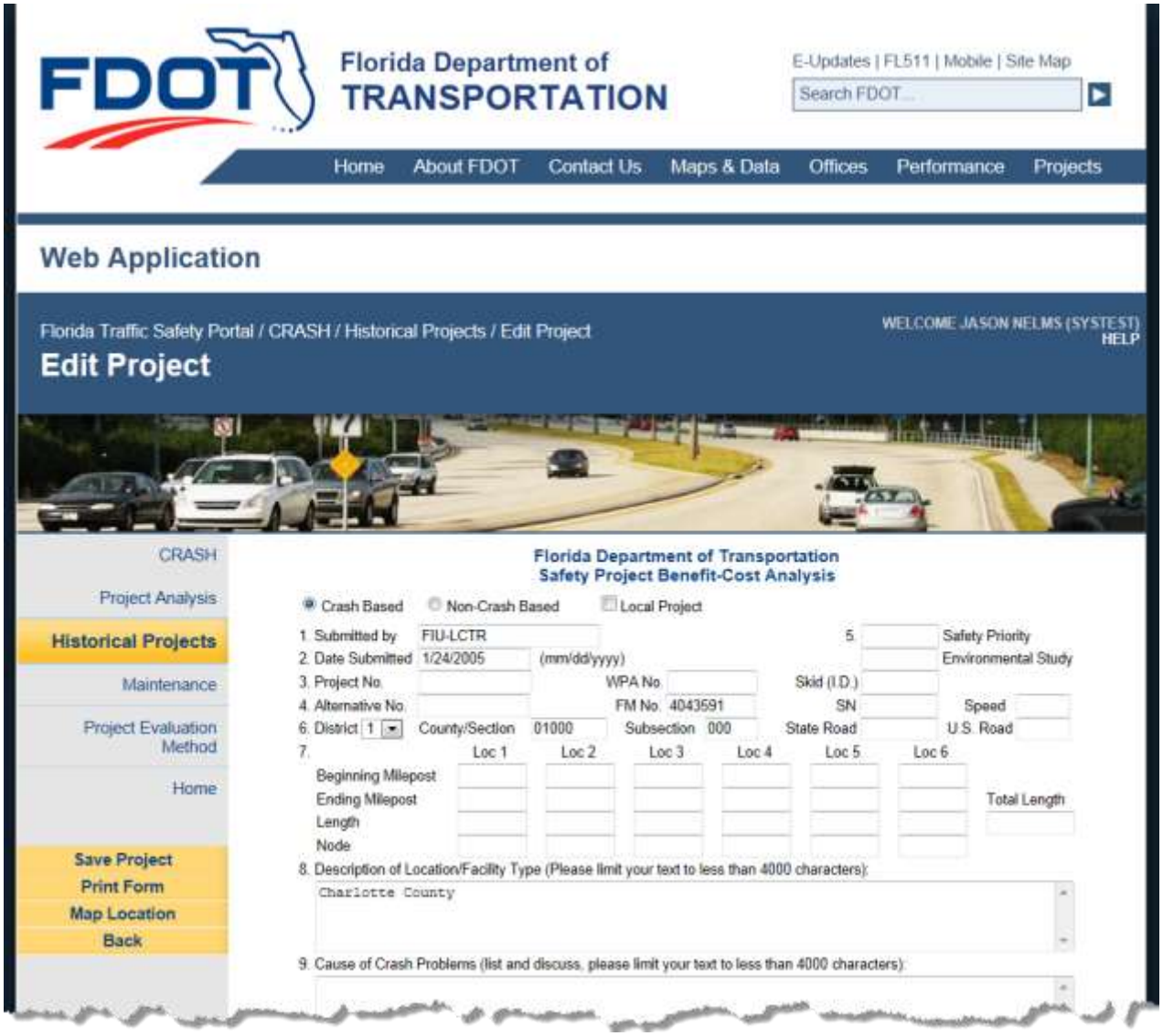
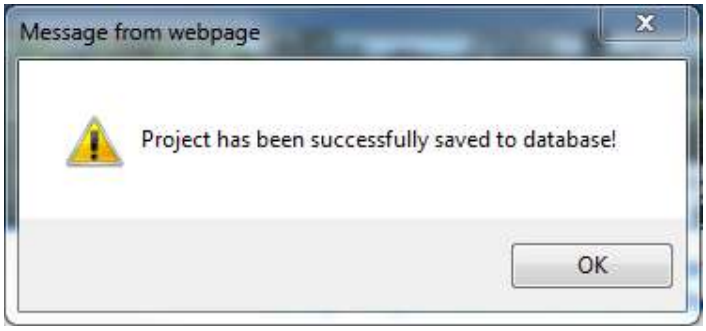


Figure 54 Safety Project Benefit Cost Analysis Form (Edit Mode)

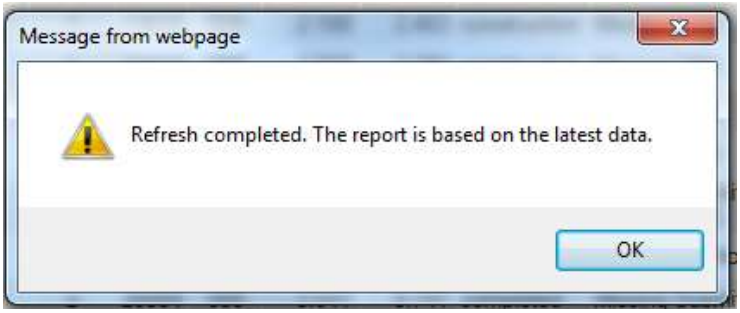
Within the Benefit-Cost Analysis form, the user will now enter any missing data which has caused a discrepancy. Once finished, clicking the Save Project saves the project and displays the following pop-up message:



Click the OK button or the button to close the message window.

Once the project has been saved, the user can return to the Project Discrepancy Report by clicking the Back button.

Upon returning to the Project Discrepancies Report, the user can click the Refresh button (shown just above the CRASH Project ID column heading) to refresh the query results. When the table finishes refreshing, the user will receive the following prompt.



Click the OK button or the button to close the message window.

3.8.6.2.2 Exporting the Project Discrepancy Report to Excel

Clicking the Export to Excel button on the Project Discrepancy Report begins the export process for the Project Discrepancy Report.

If the user choose to open or save, the user may receive the following message, respond with **Yes** to continue to download the Excel file. Or choose **No** to stop the download function. Choosing **Help** will open an Excel Help window explaining the message.

The Excel file will will open in a separate window and contains the same information shown on the query results list. The user can manage the file using all the normal Excel functionality.

The exported Project Discrepancy Report appears in Excel as follows:

1. Source of Crash Data: The Department of Highway Safety and Motor Vehicles (DHSMV) is the official custodian of the crash reports. The numbers that DHSMV reports are the official numbers. The Florida Department of Transportation (FDOT) Safety Office maintains its own database with crash data obtained from DHSMV, and conducts analyses based on this data for internal FDOT purposes.
2. Use Restrictions: The information on the Traffic Safety Web Portal has been compiled from information collected for the purpose of identifying, evaluating or planning safety enhancements. It is used to develop highway safety construction improvements projects which may be implemented utilizing Federal Aid Highway funds. Any document displaying this notice shall be used only for the purposes deemed appropriate by the Florida Department of Transportation. See Title 23, United States Code, Section 409.

Project Type: Crash Based, Project Status: All Projects, District: All, County: All Counties, From: Any Year, To: Any Year, PID:

Project Discrepancy Report - 11/7/2013 11:06:54 AM

FM No	District	Roadway		BMP	EMP	Status	Discrepancy	PID
proposed	1	03175	000	0.000	27.948	analysis	0-Imp Type	6937
431340-1	1	06030	000	6.869	7.069	construction	Missing CBD	5400
done	1	09040	000	1.180	10.117	construction	Missing CBD	2154
423434	1	12005	000	5.086	5.486	construction	Missing CBD	2714
430864-1	1	12005	000	0.921	1.421	construction	Missing CBD	3477
420236-1	1	12005	000	2.611	2.773	completed	0-Imp Type	4300
4155721	1	12010	000	12.600	16.817	construction	Missing CBD	1836
430864-1	1	12010	000	20.235	20.792	construction	Missing CBD	3478
430856-1	1	12010	000	20.932	21.151	construction	Missing CBD	3498
430865-1	1	12010	000	22.888	23.173	construction	Missing CBD	3536
432755-1	1	12010	000	5.496	10.390	construction	Missing CBD	4392

Figure 55 Sample Project Discrepancy Report (Excel Format)

3.8.6.3 Project Aging Report

Clicking on the Project Aging Report link within the Maintenance menu, takes the user to the Project Aging Report.

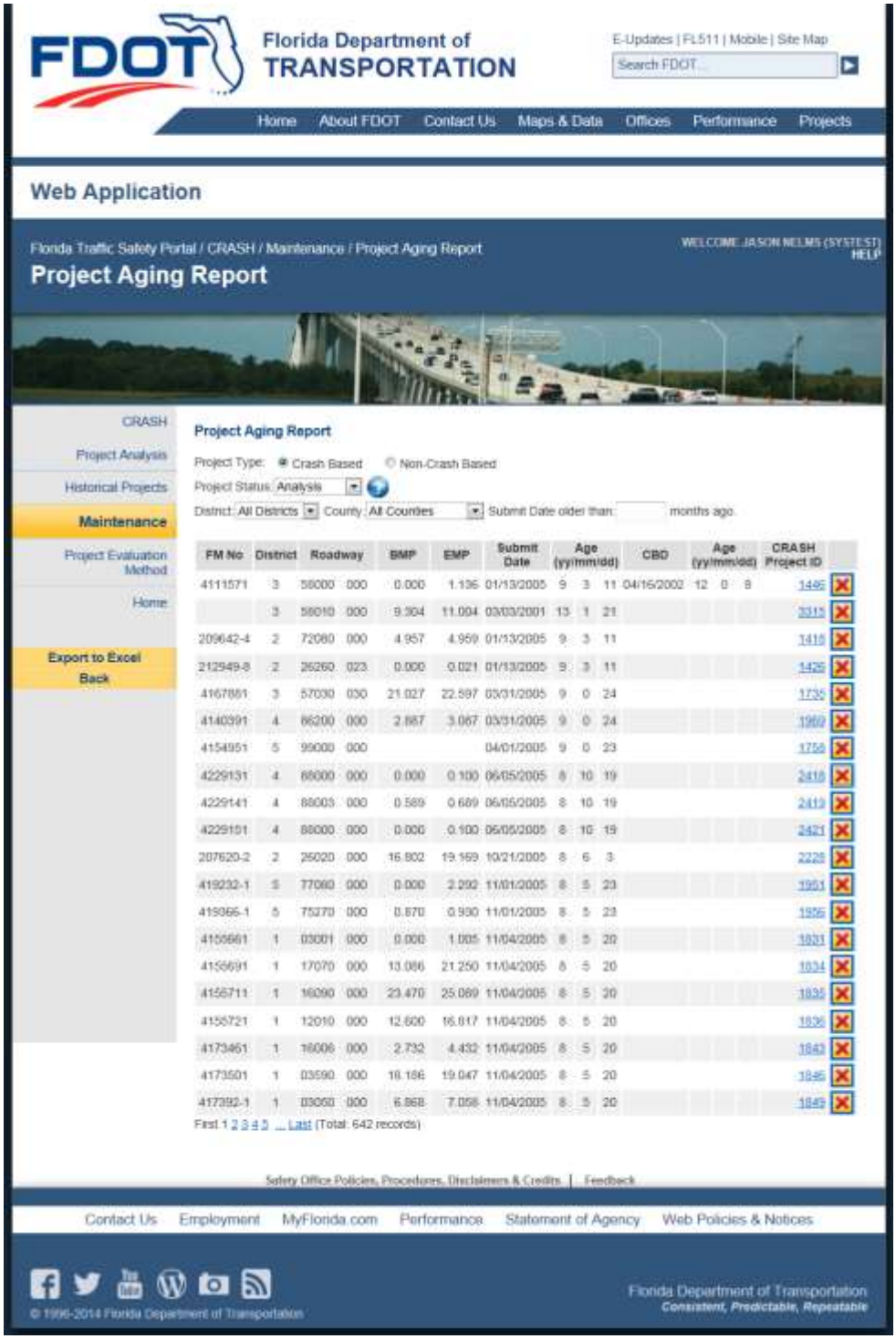


Figure 56 Project Aging Report

The Project Aging Report is used to identify projects that have not been updated over time. It shows all projects with a Project Status of "Analysis" in all districts and for all counties. When opened the report displays results based on existing default settings for each of the following fields:

- **Project Type**: The desired type of project (i.e., "Crash Based" or "Non-Crash Based). Default to "Crash Based".

- **Project Status**: The status of a given project. Defaults to "Analysis". Use the dropdown arrow to choose the "Construction" value if desired. By hovering on the  symbol, the following tooltip is displayed explaining the meaning of all **Project Status** values, though this report is using only two of them:

    - **Analysis**: The project is still in the analysis stage and may or may not be implemented.

    - **Construction**: The project is being constructed, but the construction has not been completed.

- **District**: Use the dropdown arrow to select a DOT District 1-8. If the user's user account is restricted to editing or viewing a single District, this query will default to that district only and cannot be changed. Defaults to "All Districts".

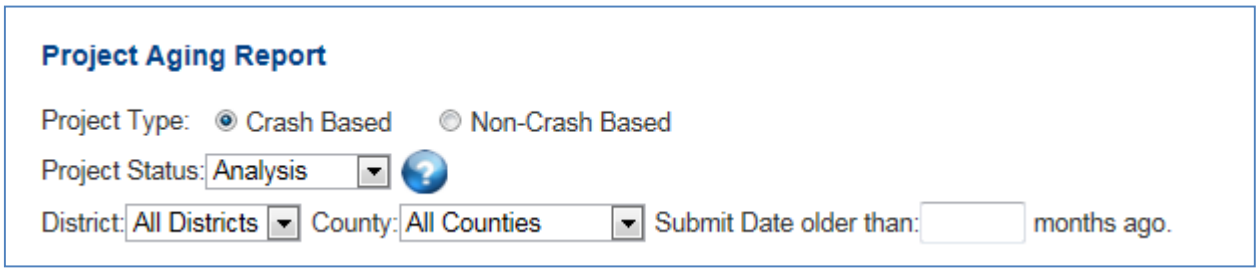
- **County**: Use the dropdown arrow to select a single County, if desired. Defaults to "All Counties" when District is set to "All Districts" or the user may select a specific County from the dropdown list of ***all counties within the State of Florida***. If a specific District is selected the County dropdown still defaults to "All Counties" but the County dropdown list is limited to ***only the counties for the selected District***.

- **Submit Date older than**: Defaults to blank number of "months ago", which will include projects regardless of how long ago they were created/saved initially.

    - If the user wish to review the projects that have been saved, without a Submit Date, the user must leave this field blank. They are listed at the end of the report.

    - If the user wish to work on a list for a smaller timeframe, the user can enter the desired number of months "old" the user want to review.

Use the following form to filter the default list of aging projects by the above criteria:



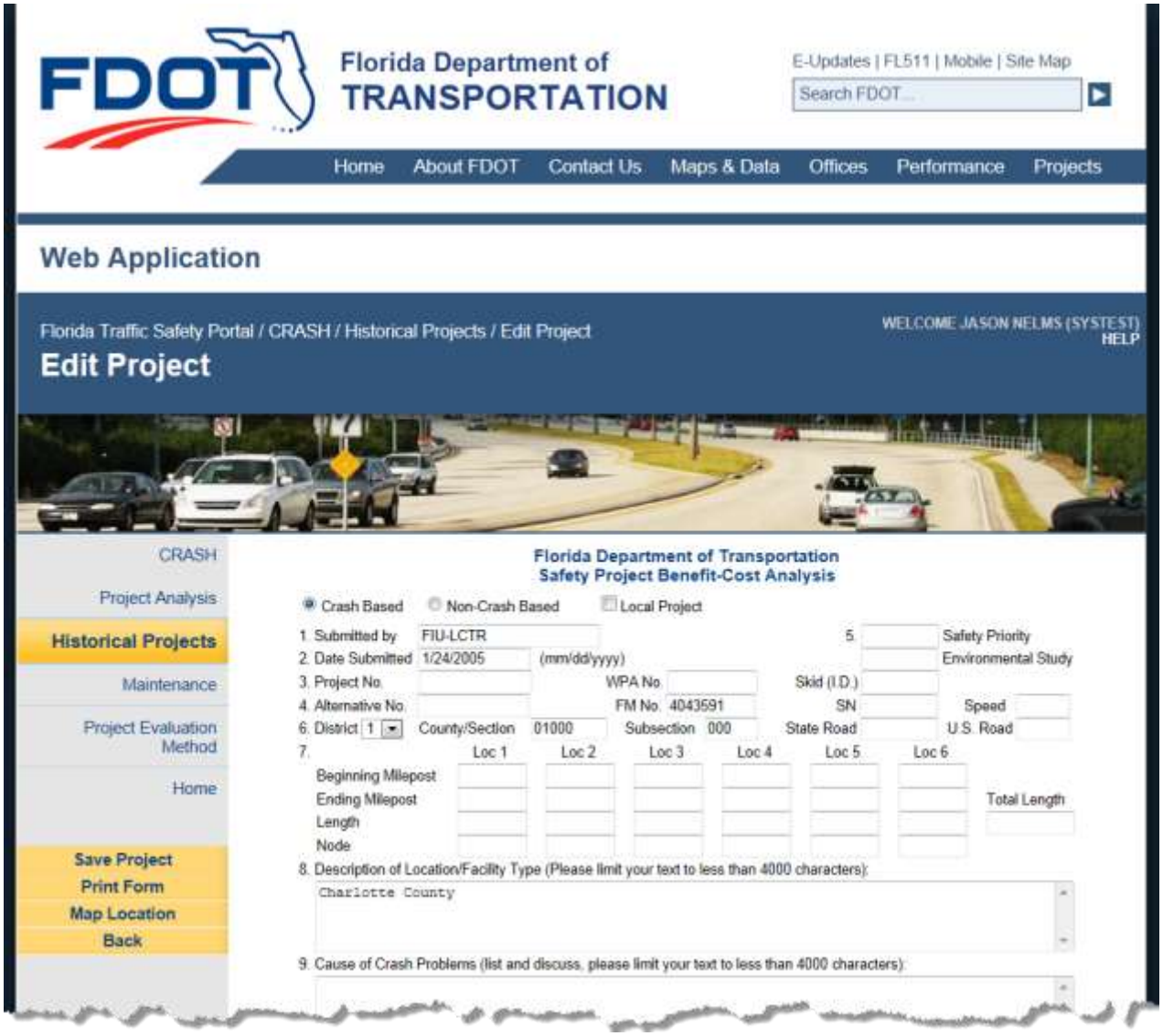
The following are fields present within the Project Aging Report:

- **FM No**: The current FM No for the project. It should contain the Financial Management (FM) project number from the Work Program system.
- **District**: The DOT Managing District for the project.
- **Roadway**: The Roadway's Section and Subsection identifiers. The Roadway's Section portion may be blank, but Subsection portion will always contain at least "000" since that is the default value saved when a new project is started.
- **BMP**: The Beginning Milepoint for the project, refers to the inventoried length of the roadway identifier. **Note**: This information may be missing for older "completed" projects.
- **EMP**: The Ending Milepoint for the project, refers to the inventoried length of the roadway identifier. **Note**: This information may be missing for older "completed" projects.
- **Submit Date**: Displays the Project's Submit Date in mm/dd/yyyy format; or blanks if it is missing.
- **Age (yy/mm/dd)**: The Age in terms of number of years ("**yy**" portion), months ("mm" portion, and days ("dd" portion) by comparing the current system date to the date the Benefit-Cost Analysis form was first saved to the database through the CRASH Project Analysis Start a New Project process .
- **CBD**: Displays the Project's Construction Begin Date in mm/dd/yyyy format; or blanks if it is missing.

- **Age (yy/mm/dd)**: Displays the Age of the Construction Begin Date (CBD), when present. in terms of number of years ("**yy**" portion), months ("mm" portion, and days ("dd" portion) by comparing the current system date to the Construction Begin Date entered into the Benefit-Cost Analysis form CRASH Project Analysis "Start a New Project" or "Edit Improvement Projects" processes . This project appears on this report because it is still in a project Status = Construction with the Construction End Date missing.

- **CRASH Project ID**: Displays the CRASH Project ID as a hyperlink. By clicking on a hyperlink the user is transferred to the CRASH → Project Analysis → Edit Project webpage (i.e., the Safety Benefit-Cost Analysis Form in edit mode), where she may enter the missing information. When changes are complete, click on the 

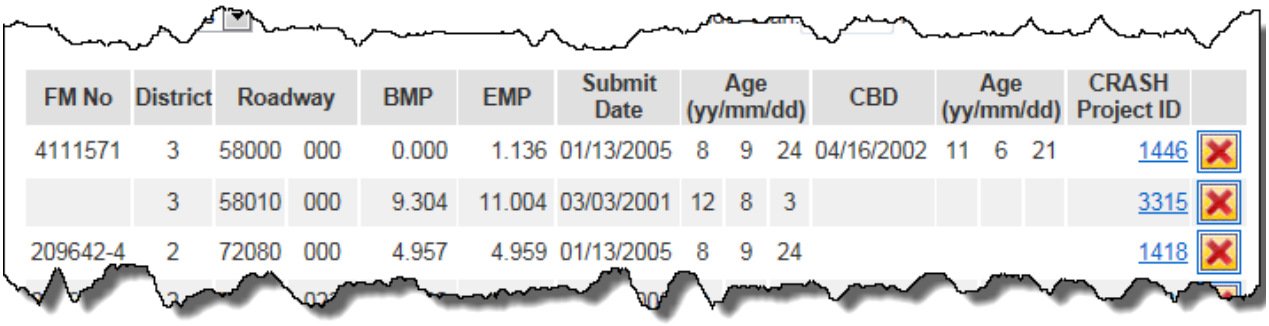
button to save the user's changes.



Note: The user may use the ***browser's Back*** button or the Back button on the **CRASH → Project Analysis → Edit Project** webpage's navigational menu, to return to the **Project Aging Report**.

3.8.6.3.1 Deleting an Aging Project

The Project Aging Report Sample also provides functionality to delete reports (see below).



FM No	District	Roadway	BMP	EMP	Submit Date	Age (yy/mm/dd)	CBD	Age (yy/mm/dd)	CRASH Project ID
4111571	3	58000 000	0.000	1.136	01/13/2005	8 9 24	04/16/2002	11 6 21	1446
	3	58010 000	9.304	11.004	03/03/2001	12 8 3			3315
209642-4	2	72080 000	4.957	4.959	01/13/2005	8 9 24			1418

Use the  icon on a project's data row to delete the project from the database. Clicking the icon transfers the user to the **CRASH → Project Analysis → Delete Project** page (i.e., the Safety Project Benefit-Cost Analysis page in edit mode), where the user may have edit permissions to view the project detail information and delete the project. Click on the 

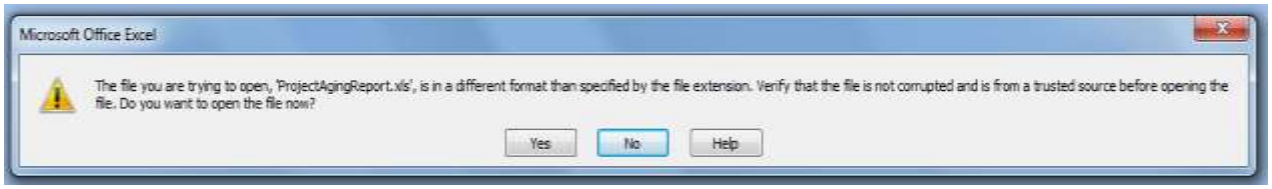
button to delete the project

3.8.6.3.2 Exporting the Project Aging Report to Excel

Clicking 

button to export the data from the Project Aging report to Excel. The system displays the spreadsheet file name and give the user the option to open or save the file, or to cancel the export process in a floating action bar at the bottom of the active list page, see the figure below.

If the user choose to open or save, the user may receive the following message, respond with **Yes** to continue to download the Excel file. Or choose **No** to stop the download function. Choosing **Help** opens an Excel Help window explaining the message:



The Excel file opens in a separate window and contains the same information shown on the query results list. The user can manage the file using all the normal Excel functionality. Below is an excerpt from the Project Aging Report.

1. Source of Crash Data: The Department of Highway Safety and Motor Vehicles (DHSMV) is the official custodian of the crash reports. The numbers that DHSMV reports are the official numbers. The Florida Department of Transportation (FDOT) Safety Office maintains its own database with crash data obtained from DHSMV, and conducts analyses based on this data

2. Use Restrictions: The information on the Traffic Safety Web Portal has been compiled from information collected for the purpose of identifying, evaluating or planning safety enhancements. It is used to develop highway safety construction improvements projects which may be implemented utilizing Federal Aid Highway funds. Any document displaying this notice shall be used only for the purposes deemed appropriate by the Florida Department of Transportation. See Title 23, United States Code, Section 409.

Project Type: Crash Based, Project Status: Analysis, District: All, County: All Counties, Months:

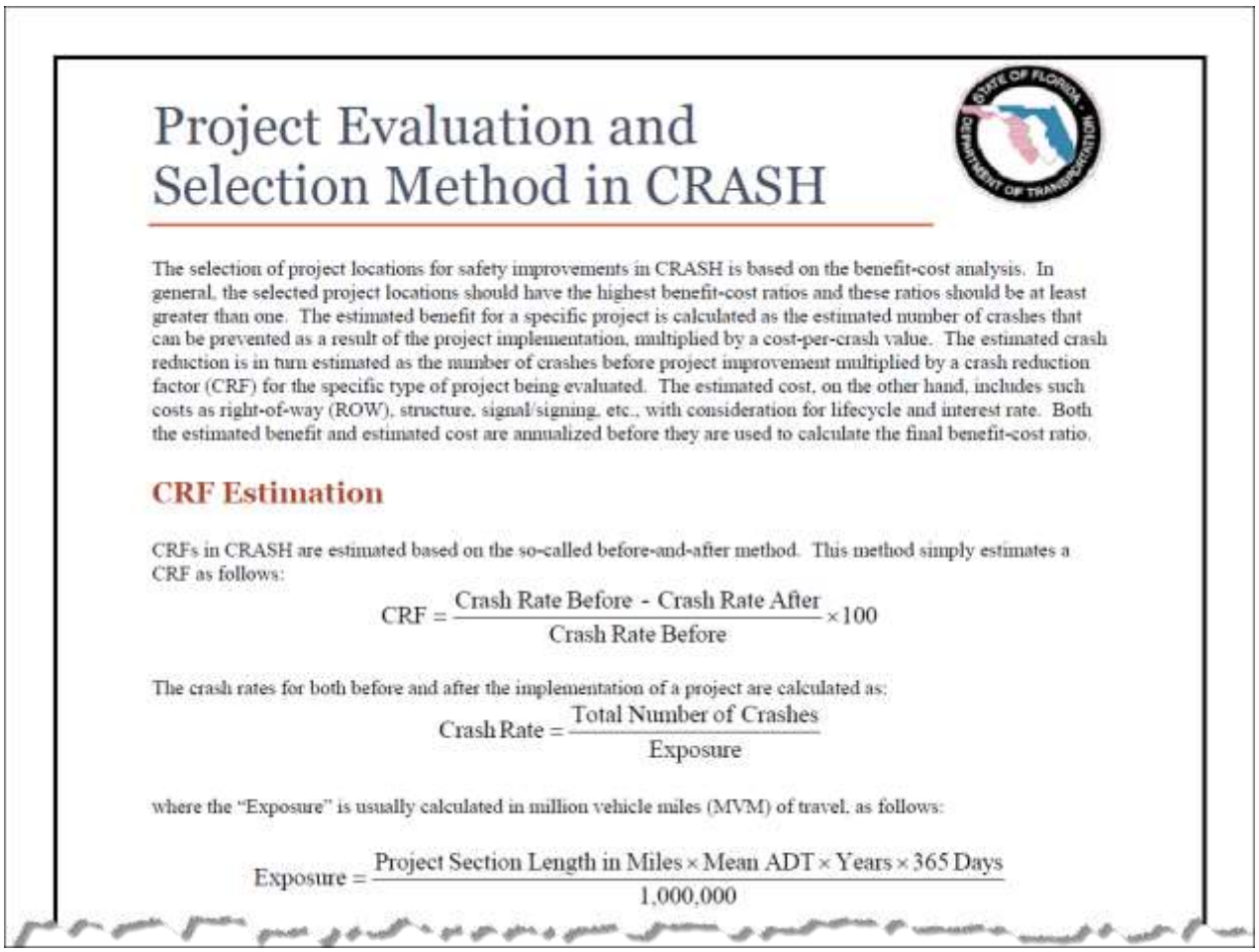
Project Aging Report - 11/7/2013 11:38:01 AM

FM No	District	Roadway		BMP	EMP	Submit Date	Age(yy/mm/dd)			CBD	Age(yy/mm/dd)			PID
4111571	3	58000	000	0.000	1.136	1/13/2005	8	9	25	4/16/2002	11	6	22	1446
TBD	3	58010	000	9.304	11.004	3/3/2001	12	8	4					3315
416378-3	3	48030	000	0.000	5.500	10/27/2003	10	0	11					4137
209642-4	2	72080	000	4.957	4.959	1/13/2005	8	9	25					1418
212949-8	2	26260	023	0.000	0.021	1/13/2005	8	9	25					1426
4167881	3	57030	030	21.027	22.597	3/31/2005	8	7	7					1735
4140391	4	86200	000	2.887	3.087	3/31/2005	8	7	7					1969
415495-1	5	99000	000	0.000	10.000	4/1/2005	8	7	6					1758
4229131	4	88000	000	0.000	0.100	6/5/2005	8	5	2					2418
4229141	4	88003	000	0.589	0.689	6/5/2005	8	5	2					2419

Figure 57 Project Aging Report (Excel Format)

3.8.7 Project Evaluation Method

Click on the Project Evaluation Method button to open the **Project Evaluation and Selection Method in CRASH** document – a PDF detailing the formulas used in the Crash Summary – in a separate window.



Project Evaluation and Selection Method in CRASH

The selection of project locations for safety improvements in CRASH is based on the benefit-cost analysis. In general, the selected project locations should have the highest benefit-cost ratios and these ratios should be at least greater than one. The estimated benefit for a specific project is calculated as the estimated number of crashes that can be prevented as a result of the project implementation, multiplied by a cost-per-crash value. The estimated crash reduction is in turn estimated as the number of crashes before project improvement multiplied by a crash reduction factor (CRF) for the specific type of project being evaluated. The estimated cost, on the other hand, includes such costs as right-of-way (ROW), structure, signal/signing, etc., with consideration for lifecycle and interest rate. Both the estimated benefit and estimated cost are annualized before they are used to calculate the final benefit-cost ratio.

CRF Estimation

CRFs in CRASH are estimated based on the so-called before-and-after method. This method simply estimates a CRF as follows:

$$CRF = \frac{\text{Crash Rate Before - Crash Rate After}}{\text{Crash Rate Before}} \times 100$$

The crash rates for both before and after the implementation of a project are calculated as:

$$\text{Crash Rate} = \frac{\text{Total Number of Crashes}}{\text{Exposure}}$$

where the "Exposure" is usually calculated in million vehicle miles (MVM) of travel, as follows:

$$\text{Exposure} = \frac{\text{Project Section Length in Miles} \times \text{Mean ADT} \times \text{Years} \times 365\ \text{Days}}{1{,}000{,}000}$$

Figure 58 Project Evaluation and Selection Method in CRASH PDF Excerpt

4. SSOGis System

The State Safety Office Geographic Information System (SSOGis) allows access to crash data and road information in map and data grid format. SSOGis is accessible from the Traffic Safety Portal to display map(s) containing information from the ARCA and/or CRASH systems.

4.1 Navigating to SSOGis from CRASH

When a user clicks the Map Location button anywhere it appears within the CRASH system, SSOGis opens and zooms to the selected project (see below), with the Projects tab active.

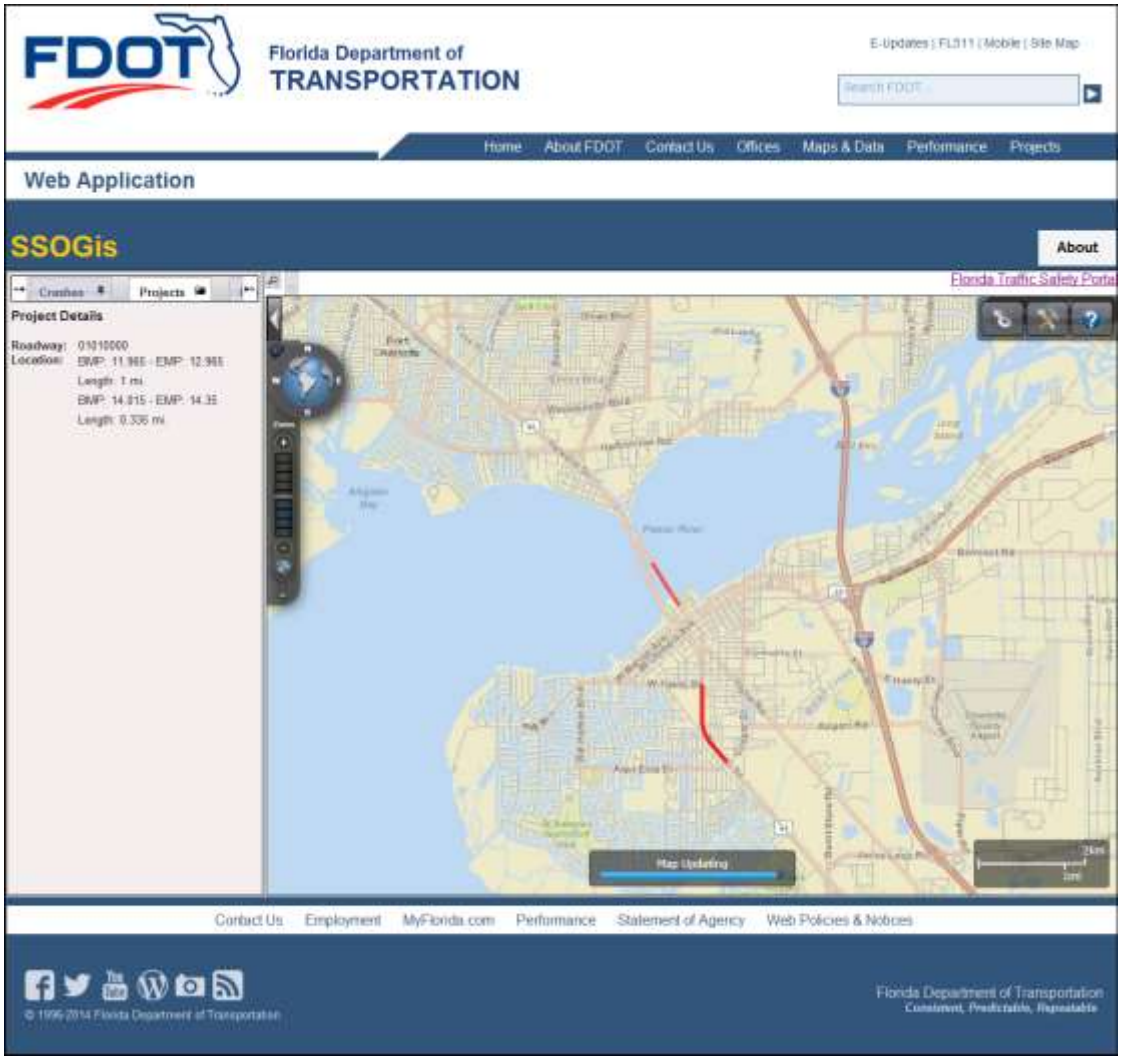


Figure 59 Project Evaluation and Selection Method in CRASH PDF Excerpt

A user who accesses SSOGis from CRASH will have access to all functionality within SSOGis. They will simply begin with the Projects tab activated and displaying information pertaining to the project that the user has requested to map.

SSOGis includes its own Help file (see the  button in figure below) documenting how to use the components, features, tools and functions built into this system. Here, we explore SSOGis system and its functionality at a high level only. Please refer to the SSOGis Help documentation for specific detailed instructions in how to use the system.

Clicking on the Florida Traffic Safety Portal link (Florida Traffic Safety Portal) in the right side of the SSOGis banner opens the portal's Homepage in a separate browser window.

4.2 Components

There are several basic components in the SSOGis system that will be examined in greater detail in this document. They all appear in the figure above and each will be shown in focus below.

4.2.1 Navigation Tool

Allows the user to do the following

Pan: Allows the user to navigate the map(s) using the directional buttons or manually. The user may drag the entire map to a preferred place within the viewer to facilitate and simplify the study of multiple locations. See expanded view of the Panning Tool below.

Zoom In and **Zoom Out**: Respectively narrows or enlarges the field(s) of study. To execute, select the icon and click the desired location to generate a new view. The user may also choose a specific area by holding down the left mouse button and dragging the cursor over the area to highlight that particular field.

Full Extent: Provides a full map(s) view by resizing the map to fit within the given window.

4.2.1.1 Panning Tool Functional Buttons

Figure 60 SSOGis Panning Tool

Note: Clicking and dragging the outer border of the panning tool allows the user to rotate the view of the map.

4.2.2 SSOGis Application Toolbar

The application toolbar displays the tools that are available for the action. Clicking on a button in the toolbar will open the tool. When a tool is already open the toolbar will highlight the user's current tool in use. The figure below shows the toolbar and a legend explaining what each tool button does. Refer to the SSOGis System's Help file for more detailed instructions as to how to use these tools.

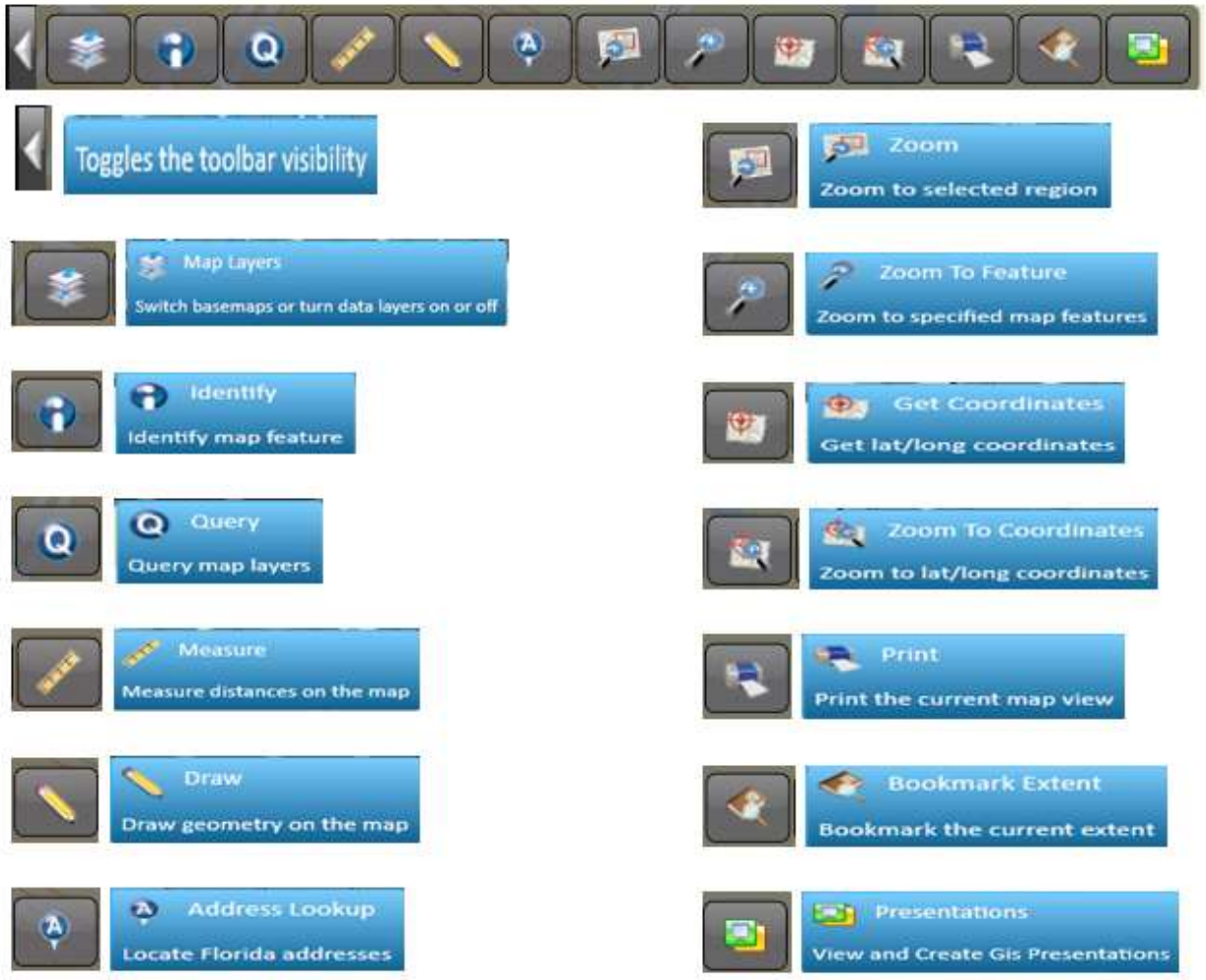


Figure 61 SSOGis Application Toolbar Legend

4.2.2.1 Map Extent Views

The following are examples of map extent views within SSOGis.

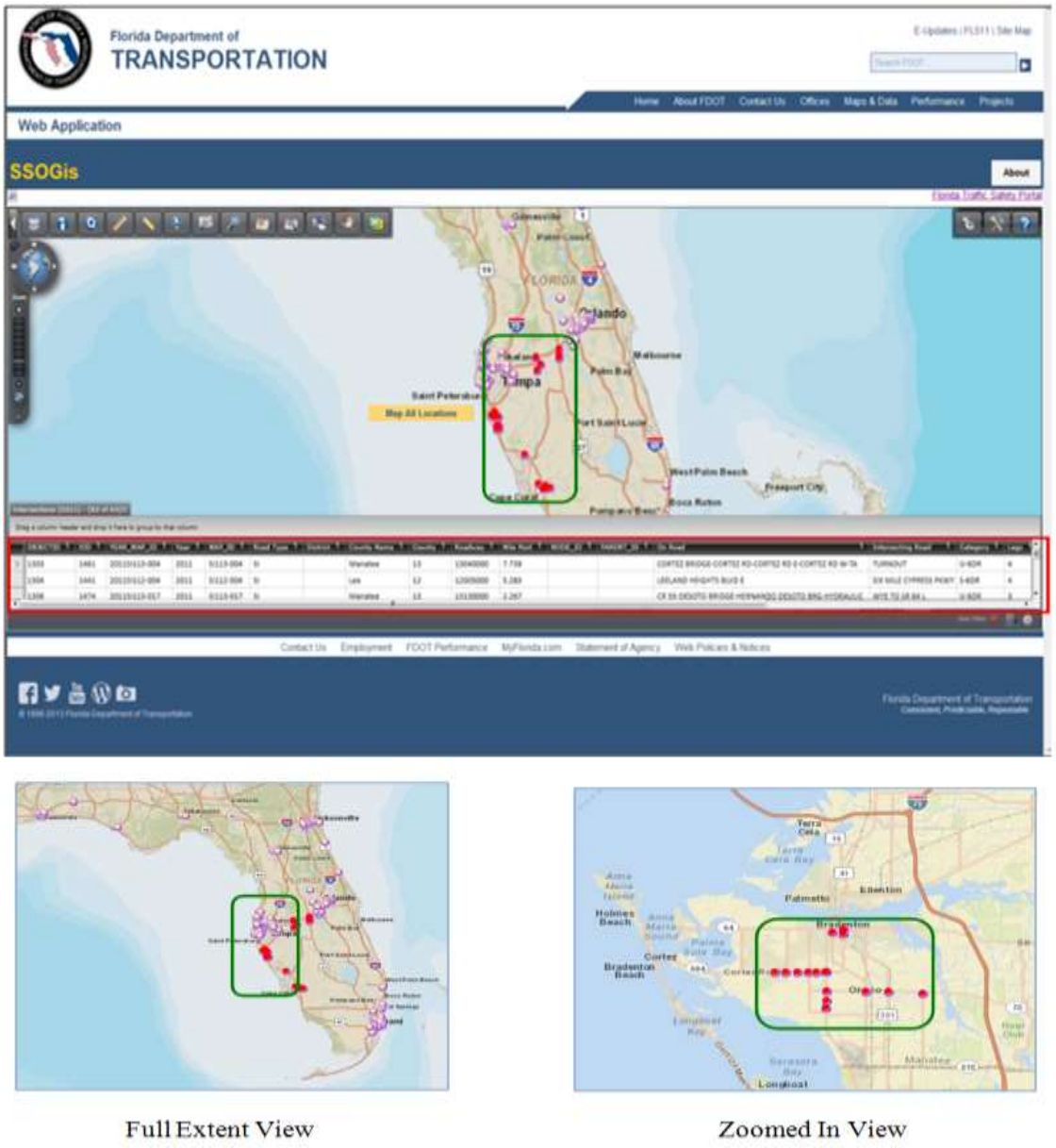


Figure 62 Example of Map All Locations Data Results in SSOGis

4.2.3 MAP

The background for the map that shows the base roads, city boundaries, contours and geographic features, is a static picture provided by the Environmental Systems Research Institute (ESRI) and is not an information layer, therefore it cannot be queried and a legend is not available for it. The other layers, however, are provided by the Florida Department of Transportation, State Safety

Office (SSO) and do have information that can be queried. The roads layer for the current publication is based on TeleAltas version 10.2 and therefore does not always exactly align with the ESRI background. The next map update will be a change to NavTeq 2013 Q1 and should align much more closely with the background. Likewise, older analysis data that are presented on the map may have been generated on a version of the map that is older than or different from the background or from the most current roads layer and may not always align exactly with the newest map or with the background.

The SSOGis Help Viewer contains information related to selecting layers and the legend defining the information found in the layers.

4.2.3.1 SSOGis Help – Layers Tab

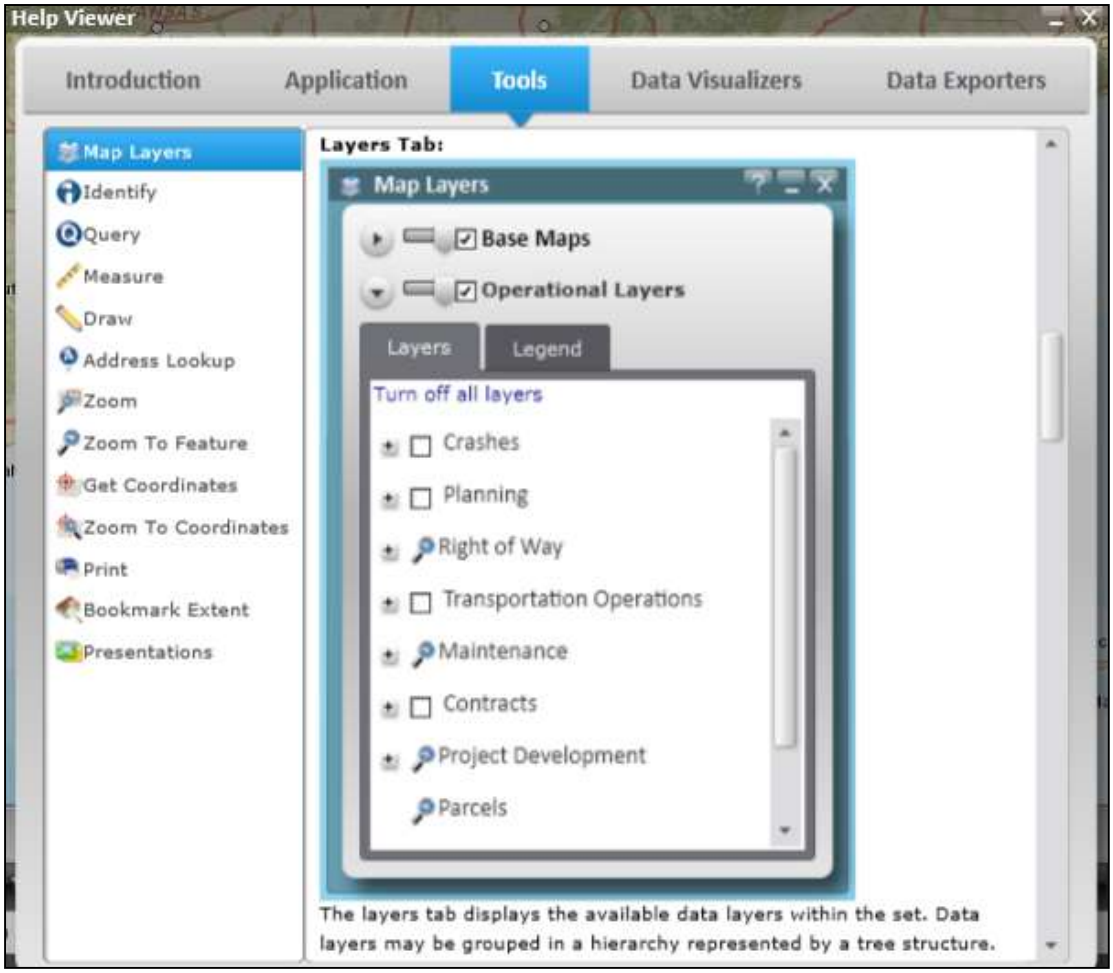


Figure 63 SSOGis Help – Layers Tab

4.2.3.2 SSOGis Help – Legend Tab

Figure 64 SSOGis Help – Legend Tab

4.2.4 DATA

The information connected to the roads layer is extracted from various FDOT databases for Roadway Characteristics Inventory (RCI) and for Crash Analysis and Reporting (CAR and CLAR). The crash information are from the Crash Analysis and Reporting (CAR) database and include only long-form-reported crashes and do not currently include any short-form-reported crashes.

The High Crash Segments and High Crash Intersections are the result of SSO crash rate analysis processes and are not intended to be complete or exhaustive and their inclusion here does not imply any particular ranking or limitation. The information presented on the Florida Traffic Safety Web Portal has been compiled from information collected for the purpose of identifying, evaluating or planning safety enhancements. It is used to develop highway safety construction improvements projects which may be implemented utilizing Federal Aid Highway funds. Any product displaying this notice or provided by the FDOT SSO or derived from the Florida Traffic Safety Web Portal shall be used only for the purposes deemed appropriate by the Florida Department of Transportation. See Title 23, United States Code, Section 409.

Also note that the Florida Department of Highway Safety and Motor Vehicles (DHSMV) is the official custodian of the crash reports. The numbers that they report are the official numbers. The FDOT SSO maintains its own database with Long Form crash data sent to us by DHSMV. However, the existence of multiple databases which are managed differently and different technicians performing data extracts, extract the data, the Safety Office counts are rarely an exact match with the numbers provided by DHSMV.

Data results from a query are represented in a data grid below the map display (see the area in the red rectangle below).

4.2.4.1 Crash Data

SSOGis displays data for on-system and off-system roads in both map and data grid formats.

The figure below shows the results for a query of crashes in Orange County during the year 2011. The crash location shown in the data grid is represented by the  . symbol on the map (see below).

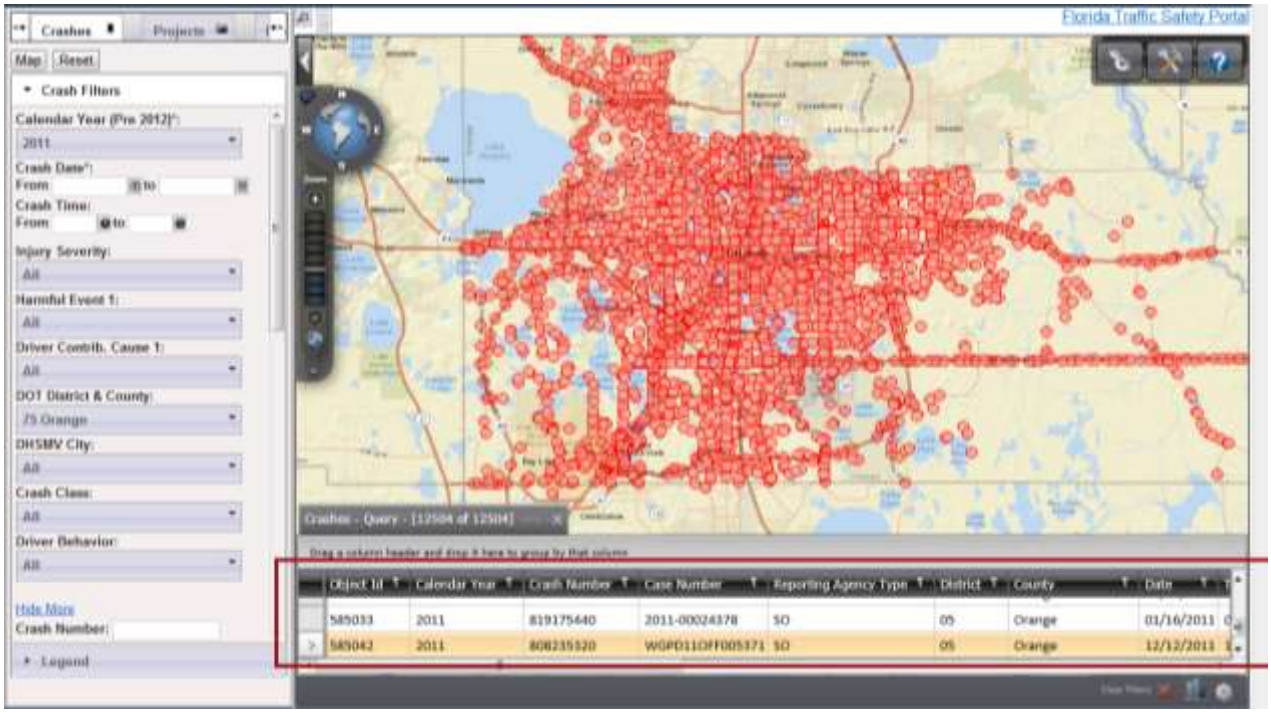


Figure 65 Crash Results View

4.2.4.1.1 Crash Search Parameters

Within SSOGis, users can filter crash data by a number of filters. These filters are further discussed in the SSOGis User Manual.

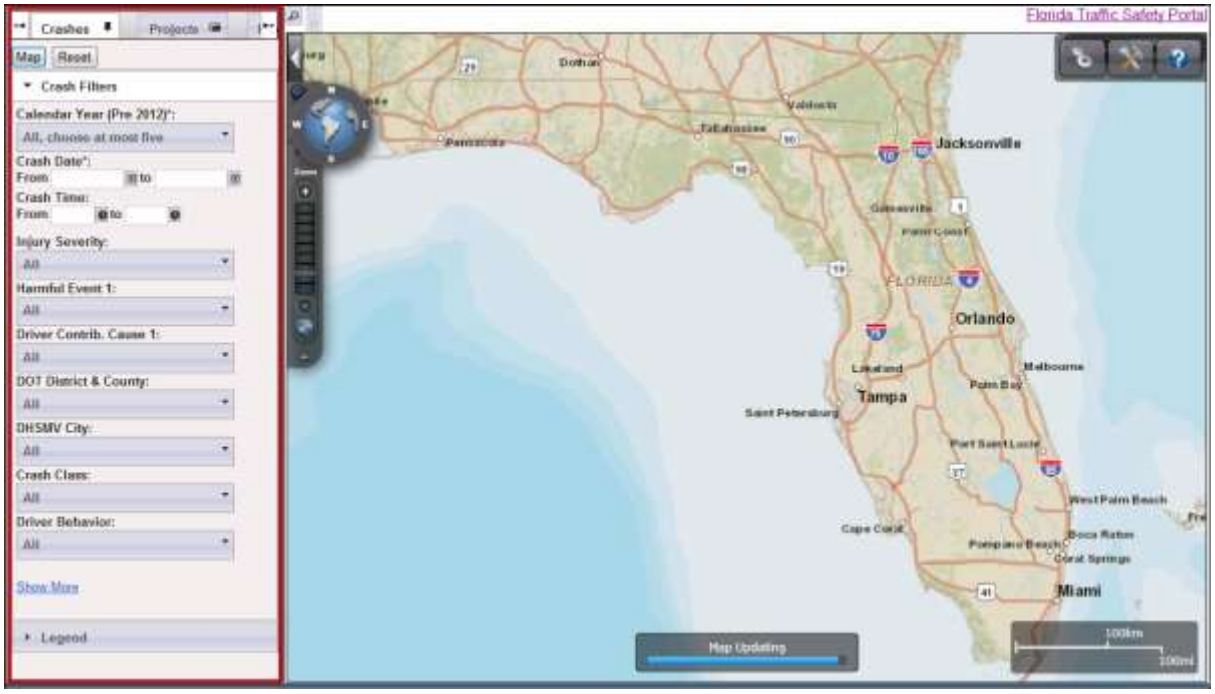


Figure 66 SSOGis Crash Search Parameters

4.2.4.2 Project Data

As mentioned above, users arriving in SSOGis via CRASH see the view for an individual project by default (see below).

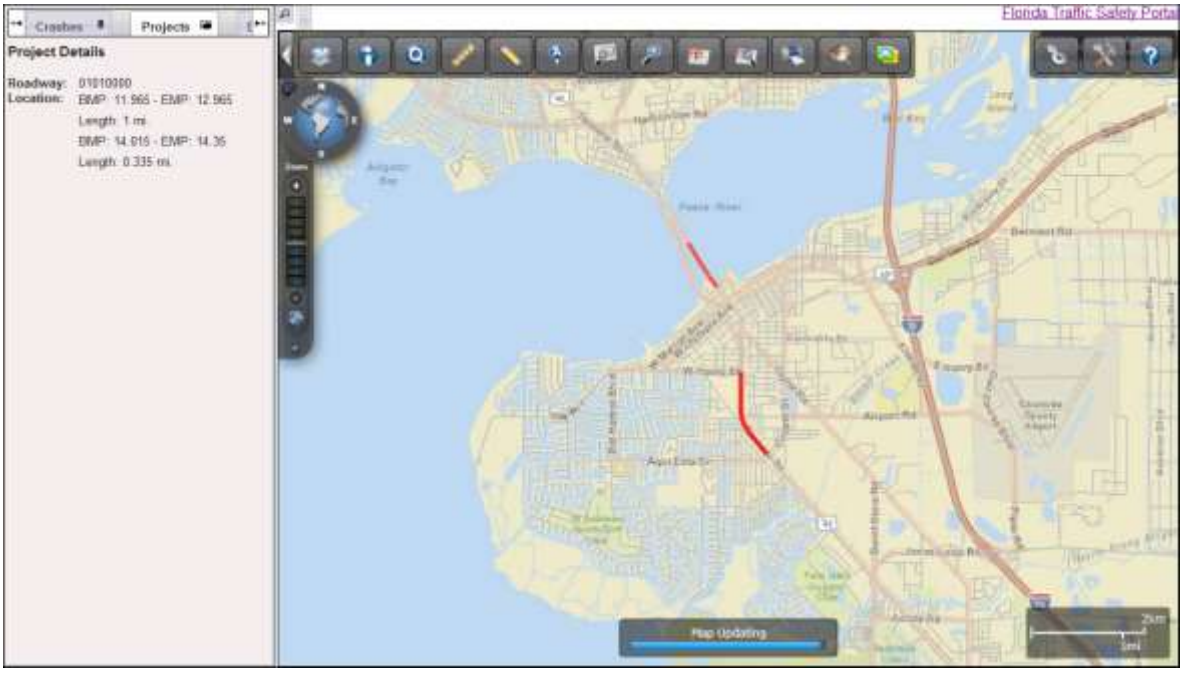


Figure 67 SSOGis Project Data View

5. Provide Feedback About This Guide

Thank you for reviewing the CRASH User Manual. We hope you found it informative and easy to use. We solicit your feedback with suggestions or ideas if we can improve it in any way. You may contact us directly or use the portal's Feedback option, re-capped below for your convenience.

Florida Traffic Safety Portal Administrator

FDOT Safety Office 605 Suwannee Street, M.S. 53

Tallahassee FL 32399-0450

Phone: (850) 414-3100

Fax: (850) 414-4221

Email: co-tsw@dot.state.fl.us

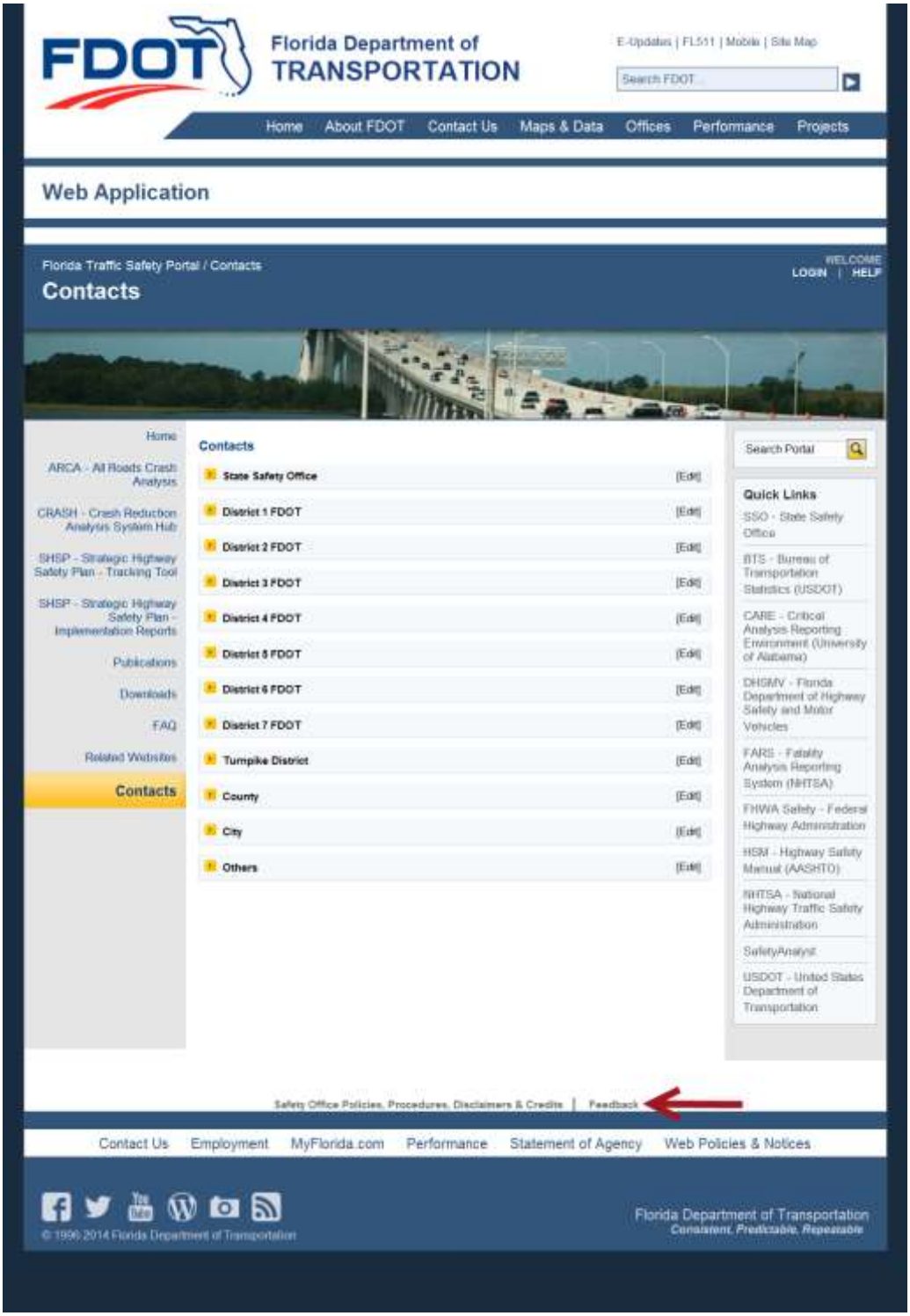


Figure 68 Feedback Link

5.1 Feedback Feature

Located at the bottom of *each* page on the Florida Traffic Safety Portal (*refer to red arrow in the example of the Home page shown in the figure above*.)

5.1.1 Instructions

The Feedback feature provides a means for the user to send feedback to the department by clicking on the link.

a. Once clicked, a form is generated for the user to submit comments and/or questions.

   i. If the user is an internal FDOT user several fields are pre-populated based on the information listed for the user in Active Directory.

   ii. If the user is a non-registered public user using the PRODUCTION Internet URL, all fields shown in the screenshot below will be blank unless entered manually by you.

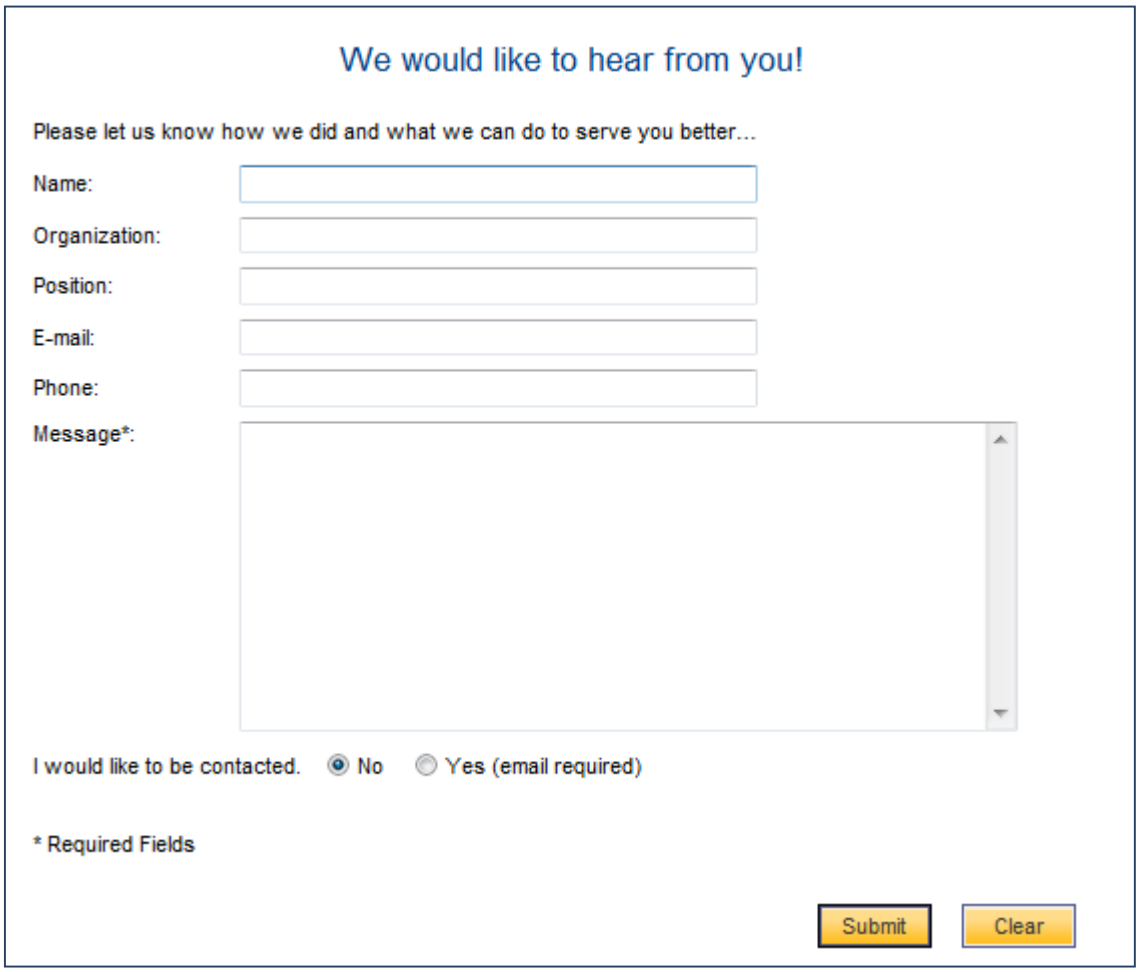
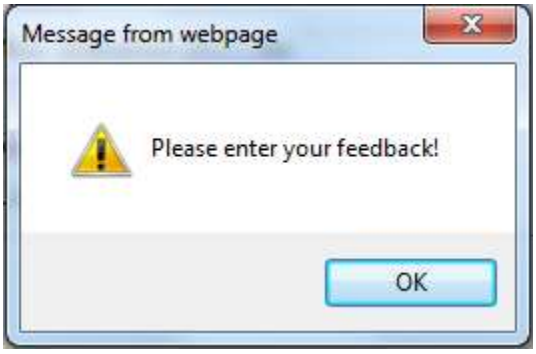


Figure 69 Feedback Form

b. The user must enter comments or questions in the **Message** field before submitting the feedback.

iii. This is a required field.

iv. If not entered before clicking on the Submit button, the following warning message is displayed. Click the OK button or the button to close the message window.



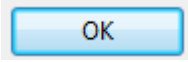
v. Enter feedback in the Message field, click on the 

button.

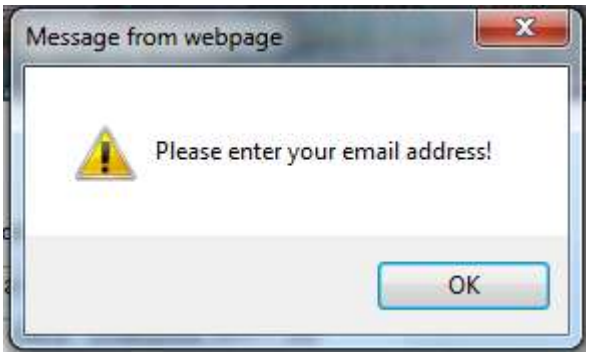
vi. An email is sent to a group email account (co-tsw@dot.state.fl.us).

1. Note – the system will check for email address, as noted below, before sending the feedback email.

c. The system defaults to **"No"** for the **"I would like to be contacted."** statement. If the user wish to be contacted, please select the **"Yes"** radio button and enter the user's email address before submitting the feedback.

vii. If **"Yes"** is selected without information in the **E-mail** field, the following warning message is displayed. Click the 

button or the 
button to close the message window.



viii. Enter the user's email address into the "**E-mail:"** field, click on the 

button and an email is sent to a group email account (co-tsw@dot.state.fl.us).

d. The user can click the 

button to reset the feedback form to its original display state.

e. Use the browser's **Back** arrow button to abandon the Feedback process or when the Feedback process is completed, to return to the previous page in focus.

f. The user may use any of the other navigational links available, if desired

6. Appendix 1: Table of Counties

By County Name			By DOT County Number		
County Name	DOT County Number	DOT Geographic District	DOT County Number	DOT Geographic District	County Name
Alachua	26	02	01	01	Charlotte
Baker	27	02	02	07	Citrus
Bay	46	03	03	01	Collier
Bradford	28	02	04	01	Desoto
Brevard	70	05	05	01	Glades
Broward	86	04	06	01	Hardee
Calhoun	47	03	07	01	Hendry
Charlotte	01	01	08	07	Hernando
Citrus	02	07	09	01	Highlands
Clay	71	02	10	07	Hillsborough
Collier	03	01	11	05	Lake
Columbia	29	02	12	01	Lee
Desoto	04	01	13	01	Manatee
Dixie	30	02	14	07	Pasco
Duval	72	02	15	07	Pinellas
Escambia	48	03	16	01	Polk
Flagler	73	05	17	01	Sarasota
Franklin	49	03	18	05	Sumter
Gadsden	50	03	26	02	Alachua
Gilchrist	31	02	27	02	Baker
Glades	05	01	28	02	Bradford
Gulf	51	03	29	02	Columbia
Hamilton	32	02	30	02	Dixie
Hardee	06	01	31	02	Gilchrist
Hendry	07	01	32	02	Hamilton
Hernando	08	07	33	02	Lafayette
Highlands	09	01	34	02	Levy
Hillsborough	10	07	35	02	Madison
Holmes	52	03	36	05	Marion
Indian River	88	04	37	02	Suwannee
Jackson	53	03	38	02	Taylor
Jefferson	54	03	39	02	Union
Lafayette	33	02	46	03	Bay
Lake	11	05	47	03	Calhoun
Lee	12	01	48	03	Escambia
Leon	55	03	49	03	Franklin
Levy	34	02	50	03	Gadsden
Liberty	56	03	51	03	Gulf
Madison	35	02	52	03	Holmes
Manatee	13	01	53	03	Jackson
Marion	36	05	54	03	Jefferson
Martin	89	04	55	03	Leon
Miami-Dade	87	06	56	03	Liberty
Monroe	90	06	57	03	Okaloosa
Nassau	74	02	58	03	Santa Rosa
Okaloosa	57	03	59	03	Wakulla
Okeechobee	91	01	60	03	Walton
Orange	75	05	61	03	Washington
Osceola	92	05	70	05	Brevard
Palm Beach	93	04	71	02	Clay
Pasco	14	07	72	02	Duval
Pinellas	15	07	73	05	Flagler
Polk	16	01	74	02	Nassau
Putnam	76	02	75	05	Orange
Santa Rosa	58	03	76	02	Putnam
Sarasota	17	01	77	05	Seminole
Seminole	77	05	78	02	St. Johns
St. Johns	78	02	79	05	Volusia
St. Lucie	94	04	86	04	Broward
Sumter	18	05	87	06	Miami-Dade
Suwannee	37	02	88	04	Indian River
Taylor	38	02	89	04	Martin
Union	39	02	90	06	Monroe
Volusia	79	05	91	01	Okeechobee
Wakulla	59	03	92	05	Osceola
Walton	60	03	93	04	Palm Beach
Washington	61	03	94	04	St. Lucie