Final Report

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Feasibility of a Web-Based System for Police Crash Report Review and Information Recording

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METRIC CONVERSION CHART

SYMBOL	WHEN YOU KNOW	MULTIPLY BY	TO FIND	SYMBOL
		LENGTH		
in	inches	25.400	millimeters	mm
ft	feet	0.305	meters	m
yd	yards	0.914	meters	m
mi	miles	1.610	kilometers	km
mm	millimeters	0.039	inches	in
m	meters	3.280	feet	ft
m	meters	1.090	yards	yd
km	kilometers	0.621	miles	mi
SYMBOL	**WHEN YOU KNOW**	**MULTIPLY BY**	**TO FIND**	**SYMBOL**
		AREA		
in^2	square inches	645.200	square millimeters	mm^2
ft^2	square feet	0.093	square meters	m^2
yd^2	square yard	0.836	square meters	m^2
ac	acres	0.405	hectares	ha
mi^2	square miles	2.590	square kilometers	km^2
mm^2	square millimeters	0.0016	square inches	in^2
m^2	square meters	10.764	square feet	ft^2
m^2	square meters	1.195	square yards	yd^2
ha	hectares	2.470	acres	ac
km^2	square kilometers	0.386	square miles	mi^2
SYMBOL	**WHEN YOU KNOW**	**MULTIPLY BY**	**TO FIND**	**SYMBOL**
		VOLUME		
fl oz	fluid ounces	29.570	milliliters	mL
gal	gallons	3.785	liters	L
ft^3	cubic feet	0.028	cubic meters	m^3
yd^3	cubic yards	0.765	cubic meters	m^3
mL	milliliters	0.034	fluid ounces	fl oz
L	liters	0.264	gallons	gal
m^3	cubic meters	35.314	cubic feet	ft^3
m^3	cubic meters	1.307	cubic yards	yd^3
NOTE: volumes greater than 1,000 L shall be shown in m^3.				

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16. Abstract

Police crash reports include useful additional information that is not available in crash summary records. This information may include police sketches and narratives and is often needed for detailed site-specific safety analysis. In addition, some agencies also routinely review police crash reports to correct miscoded and missing crash types. As a result, safety analysts often spend much of their time reviewing police crash reports on a regular basis. However, reviewing police crash reports and recording review information in Florida has not been an easy process. This project developed a Web-based system to facilitate the process of reviewing police crash reports and recording review results. The system allows projects to be set up for specific study locations and specific review questions. The review questions can be set up for different data entry formats, including dropdown list, checkbox, radio button, and text box. A user-friendly interface is provided to allow the users to review the police crash reports specified in a project, and the review results are saved to their respective crash records in the database, which can then be downloaded to a local drive for further analysis. The system could significantly reduce the current police crash report review processing time.

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EXECUTIVE SUMMARY

Reviewing police crash reports has been an important but time-consuming process. This report describes an effort to develop a Web-based system, called the Police Crash Report Review System (PCRRS), to facilitate the process of reviewing police crash reports and recording review results. The system was an extension of an in-house system that was previously developed by researchers at Florida International University (FIU) for use in research projects. The aim of the system was to significantly reduce the police crash report review processing time.

The extended system includes three component programs serving three different user types: the system administrator, the project managers, and the end users. The system allows the system administrator to manage user accounts for project managers who in turn manage the user accounts for the end users. The project managers can quickly set up the project scope and the target review questions of a project, and assign end user(s) to projects. The end users are provided with a user-friendly interface to review assigned police crash reports and record the review results. As safety analysts are increasingly relying on satellite images from popular commercial maps, the system allows the user to quickly display the crash location on Google Maps, allowing it to be displayed with police crash report side-by-side.

As part of the project, a new user account management system was developed to allow the system administrator to manage project manager accounts and the contact person to be notified if an end user finds any issues or errors in the police crash reports. The latter aims to correct mistakes in police crash reports and helps improve data quality in the long run.

A second new component program developed allows the project managers to set up projects and assign them to the end users who perform the actual police crash report review and data recording. A project includes the following three major components:

1. *Crash period and types of crashes*: The system allows a range of “from” and “to” dates to be specified for the analysis period. The resulting crashes can further be filtered by specific crash characteristics such as crash types, crash severity, lighting conditions, etc.

2. *Project locations*: The system allows the project location(s) to be defined either by specifying linear referenced locations, indicating map locations within a radius, or simply entering the standard crash numbers of pre-identified crashes.

3. *Project review questions*: The system provides a user-friendly interface to allow the project manager to edit the project to add the target review questions to be answered and recorded by the end users. The project manager can set up questions that are made up of a mix of radio buttons, checkboxes, dropdown lists, and comment boxes. The system will automatically set up a database table for the questions for data recording.

After a project is completely set up, the project manager can assign it to the end users, who can then review the police crash reports defined in the project and record the review results. The system can accommodate three classes of end users:

1. Those who review police crash reports and record review results.
2. Those who check on the project progress and quality.
3. Those who need general access to police crash reports with no specific projects.

All of these end user types share a system interface that provides the following three main functions:

1. Review police crash reports and record review results.
2. View and export recorded information.
3. Search for crash records.

As the existing system was developed for only in-house use, the existing end user interface was not designed to be user-friendly or look professional. As part of this project, the existing functions were made user-selectable. For example, instead of having the programmer set up the desired police crash report page layout for specific application, the system was modified to allow the end user to choose to display the pages in a variety of layouts, including display of multiple pages in different page ordering and orientation (i.e., vertically or horizontally), whether to display the Google Maps, and to zoom in and out the pages.

As part of the system development, a beta test was conducted. A total of 15 best testers from various Florida Department of Transportation (FDOT) offices, consulting companies, and universities provided about 140 comments and suggestions. These inputs were summarized and all suggestions that were deemed valid and useful were adopted and implemented, resulting in significant improvements to the system.

In summary, the extended system provides user-friendly interfaces that allow the users to perform the following tasks quickly:

- Select crashes for specific study locations and time periods by querying the Crash Analysis Reporting (CAR) database.
- Set up police crash report review questions for review result recording.
- Display multiple police crash report pages in different layouts.
- Display police crash reports and study locations on Google Maps side-by-side.
- Record police crash report review results that are linked directly to crash records.
- Report potential errors in police crash reports.

The system currently runs on a server at FIU and accesses some sample crash records and police crash reports. The next step is to deploy the system to a FDOT server and allow it to access the CAR and police crash report databases directly. It is also proposed that video tutorials with multiple sessions be developed to help the users get started and use the system effectively.

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LIST OF ACRONYMS/ABBREVIATIONS

CAR	Crash Analysis Reporting
FDOT	Florida Department of Transportation
FIU	Florida International University
PCRRS	Police Crash Report Review System
GIS	Geographic Information System
SQL	Structured Query Language
TIFF	Tagged Image File Format

CHAPTER 1
INTRODUCTION

1.1 Project Background

Reviewing police crash reports is an important part of the daily work of traffic safety analysts. There are multiple reasons why police crash report review is needed. First and foremost, police crash reports provide additional useful information that is usually not available in crash summary records. In other words, crash summary records alone often do not provide sufficient information for detailed site-specific analysis. Safety analysts must usually also study the police sketches and narratives in order to gain better insights into crash causations.

Second, police crash report data are often inaccurate, especially for some variables critical to safety analysis. For example, police officers are known to assign incorrect crash types in police crash reports. This is not unexpected as police officers may not be trained to be familiar with the different crash types that safety professionals take for granted. For example, the difference between an angle and a left-turn crash is not often clear to police officers. Another reason is also because certain types of crashes are by nature more difficult to categorize. For example, it may not be clear to an officer whether two opposing left-turn vehicles sideswiping each other should be coded as a left-turn or a sideswipe crash.

Another related issue is that a significant number of crashes in Florida were found to have been coded as the “Others” crash type. This is likely because the police officers were unable to determine a crash type for those crashes. A large number of such crashes with essentially unknown crash types could distort the crash patterns needed to identify safety problems. As a result, the Florida Department of Transportation (FDOT) District 6 Office, for example, has found it necessary to review those police crash reports that were coded with the “Others” crash type and to replace it with a specific crash type.

Recognizing the importance of having the most complete and accurate information, FDOT often requires police crash report review as part of its safety studies. Scanned electronic police crash reports stored as graphic files in the Tagged Image File Format (TIFF) are available for download from FDOT’s Hummingbird system. To review police crash reports, the user first identifies the crash records in the Crash Analysis Reporting (CAR) System. The unique crash numbers for all identified crashes are then entered into the Hummingbird system in order to retrieve the respective police crash report files. Each police crash report typically contains four to five pages, but may include multiple sets of pages if a police crash report was updated or if more detailed information is provided.

To review each downloaded police crash report, the analyst must first open the file, page through multiple pages to find the needed information, and then record the review results in an Excel or a Word file. The process is extremely cumbersome, time-consuming, and prone to errors, especially when there are many police crash reports to review.

As part of several projects conducted by researchers at Florida International University (FIU) for the FDOT Research Center, thousands of police crash reports needed to be reviewed. The researchers decided to develop an ad hoc Web-based system to facilitate the tasks of reviewing the police crash reports and recording the review results. The system included the ability to:

- Search for crash records based on crash number and locations (district, county, roadway ID).
- Retrieve and view police crash reports.
- Display crash location on Google Maps.
- Navigate to different police crash reports quickly.
- Record police crash report review information.
- Export recorded information along with the corresponding crash records to an Excel file.

The system was found to greatly reduce the required processing time and could be made available to other users of the police crash reports. However, as the system was developed for in-house use, it did not provide the tools needed for the general users to customize for specific projects for which specific data items are to be collected for specific study locations, nor did the system provide any help facilities needed for the general users. In other words, the system was not designed for use by general users and a programmer was needed to manually set up the system for each specific project.

1.2 Project Objective

The objective of this project is to extend the existing in-house system such that it can be applied by the general users to customize the application for specific projects without the need of a programmer. The extended system, named Police Crash Report Review System (PCRRS), allows the users to access the system to set up data for specific projects and review the police crash reports and record review results.

1.3 Report Organization

The next chapter of this report documents the process of developing the system. The description of the process also provides a good overview of the system structure and the component programs. The detailed operations of the system are, however, provided as part of the User's Guide included in Appendix A. The third and final chapter provides a summary of the system and the system development. It also proposes the next steps in the system development. Appendices B to D document the materials used in the beta test of the system and the results and outcomes from the beta test.

CHAPTER 2
SYSTEM DEVELOPMENT PROCESS

This chapter documents the process of converting the existing police review system developed for in-house use to one that is suitable for independent use by general users. The process includes seven steps as detailed below.

2.1 Define User Types and Roles

To modify the system for general and independent use, three types of users are first defined: the system administrator, the project managers, and the end users. The hierarchy of these user types is that the system administrator manages the project managers, who in turn manage the end users. The project managers can set up different projects which consist of crashes at specific project locations, plus specific review questions targeting specific review information. Each project is then assigned by its project manager to one or more end users who review the police crash reports and answer the target review questions.

To support these three user types, three separate component programs for each of the three user types must be developed and are described in the next three sections, respectively. It is noted that the existing system includes only the component program for the end users. In other words, the component programs for the system administrator and the project manager user types must be developed from scratch as part of this project.

2.2 Develop User Account Management Component

A new user account management system was developed to allow the system administrator to manage the user accounts (i.e., add, edit, and delete) for project managers and the contact person to be notified if an end user finds any issues or errors in the police crash reports. The latter has been designed to help correct mistakes in police crash reports and help improve data quality in the long run. For each user account set up by the administrator, the system allows the system administrator to keep track of the user's first name, last name, organization, email, username, and password.

2.3 Develop Project Manager Component

A new component was developed to allow the project managers to set up projects and assign them to the end users who perform the actual police crash report review and data recording. A project can include three major components: (1) crash period and types of crashes, (2) project locations, and (3) project review questions. These are further described below. In the existing system, the functions were hard-coded within the program by a programmer.

2.3.1 Specify Crash Period and Types of Crashes

The system allows a range of "from" and "to" dates to be specified for the analysis period. The resulting crashes can further be filtered by specific crash characteristics such as crash types, crash severity, lighting conditions, etc.

2.3.2 Specify Project Locations

The system allows the project location(s) to be specified in three different ways to meet the different user input needs:

1. *By specifying linear referenced locations*: This option was designed using a multi-line text box that allows the project manager to enter multiple linear-referenced locations based on a combination of county, section, subsection, and begin and end mileposts.

2. *By indicating map locations within a radius*: This option was included to allow the project manager to open Google Maps and point to a map location with a desired buffer radius. A set of buffer sizes in feet is listed for user selection. However, the user can type in any other number. The system will then search the geocoded crash database for all crashes in the buffer area for inclusion in the project.

3. *By entering crash numbers*: This option was included to allow the project managers who have pre-identified a potential set of crashes to include in a project. This option is equivalent to using the existing process with the aforementioned Hummingbird system, in which the user pre-identifies the crashes and then enters the crash numbers in the system to retrieve the corresponding police crash reports.

2.3.3 Set Up Project Review Questions

Once a project is defined and saved, the next step is to set up the project review questions for which the end user(s) can record their review results. The system was designed to allow the project manager to edit the project to add the target review questions to be answered and recorded by the end users. The system provides a user-friendly interface that works similar to setting up survey questions in a typical online survey program such as *SurveyMonkey*. The project manager can set up questions that are made up of a mix of radio buttons, checkboxes, dropdown lists, and comment boxes. The system will automatically set up a database table for the questions for data recording.

2.3.4 Assign Projects to End Users

After a project is completely set up, the project manager can assign it to the end users. The system allows the project manager to add or delete any end user. Similar to the account for project managers themselves, the project manager can keep track of the user's name, organization, email, and login credentials (i.e., username and password) of each end user account. The project manager can assign one or more projects to an end user. The project manager can also assign no projects for end users who simply need to access police crash reports for no specific projects. The project manager can further choose whether to allow an end user to record data. This option is provided to allow the project manager to define a special class of "inspector" users who can check on a project for the purposes of monitoring and quality control.

2.4 Improve End User Interface Component

After a project is set up, the end user(s) assigned to the project can review the police crash reports and record their review results. There are generally three classes of end users: (1) those who review police crash reports and record review results, (2) those who check on the project progress and quality, and (3) those who need general access to police crash reports with no specific projects. All of these end user types share a system interface that provides the following three main functions:

1. Review police crash reports and record review results.
2. View and export recorded information.
3. Search for crash records.

As the existing system was developed for only in-house use, its attractiveness and ease of use were not priorities. As part of this project, the existing functions were made user-selectable. For example, instead of having the programmer set up the desired police crash report page layout for specific application, the system was modified to allow the end user to choose to display the pages in a variety of layouts, including display of multiple pages in different page ordering and orientation (i.e., vertically or horizontally), whether to display the Google Maps, and to zoom in and out the pages.

2.5 Develop User's Guide

A complete User's Guide describing the working of the system functionalities was developed as part of this project and is included in Appendix A of this report.

2.6 Conduct Beta Test

After the tasks described in Sections 2.1 to 2.6 were completed, a beta test involving participants from different FDOT offices, consultants, and universities was conducted. The beta test packet that was sent to the beta testers is included in Appendix B. The test packet included an invitation letter complete with test instructions, a list of locations for which data were available for the test, two beta test report forms listing the target test questions, and the draft user's guide (of which the final revised version is provided in Appendix A).

A total of about 140 comments were received from 15 beta testers. The development team reviewed each comment and verified all the problems reported. The feasibility and appropriateness of each suggested change and potential improvement to the system was also assessed. Based on the nature of the comments, they were grouped and summarized in the following five tables:

1. *System Errors*: Including all system errors reported by the testers.
2. *Interface Improvements*: Including comments related to design of the user interface and the improvements proposed to be implemented as part of this project.
3. *Functional Improvements*: Including comments related to the capabilities of the system and the improvements proposed to be implemented as part of this project.

4. *Questions Answering and Explanations*: Including comments that seek clarifications and explanations for suggested improvements that are deemed not suitable or feasible for the current system.
5. *Miscellaneous Other Comments*: Including all other comments that do not fit in any of the above categories.

The summary tables, as listed in Appendix C, also include the response from the development team to each comment. These tables were shared with all the beta testers.

2.7 Revise System

The system was revised to address all the comments. All system errors summarized in Table C-1 were corrected or fixed. The status of the system revisions made to address the interface and functional improvements are summarized in Tables D-1 and D-2, respectively. The revised system was submitted to the FDOT project manager for review and verification.

CHAPTER 3
SUMMARY AND NEXT STEPS

Reviewing police crash reports has been an important but time-consuming process. This project developed a Web-based system to facilitate the process of reviewing police crash reports and recording review results. The system includes three component programs serving three different user types: the system administrator, the project managers, and the end users. The system allows the system administrator to manage user accounts for project managers who in turn manage the user accounts for the end users. The project managers can quickly set up the project scope and the target review questions of a project, and assign end user(s) to projects. The end users are provided with a user-friendly interface to review assigned police crash reports and record the review results. The use of system could significantly reduce the current police crash report review processing time.

As part of the system development, a beta test was conducted. A total of 15 beta testers from FDOT offices, consulting companies, and universities provided about 140 comments and suggestions. These inputs were summarized and all suggestions that were deemed valid and useful were adopted and implemented, resulting in significant improvements to the system.

The system currently runs on a server at FIU and accesses some sample crash records and police crash reports. The system is ready to be deployed to a FDOT server and be made to access the CAR and police crash report databases directly. It will require that the FIU development team work with the FDOT's IT personnel to adapt the system for direct data access to these databases. It is also proposed that video tutorials with multiple sessions be developed to help the users get started and use the system effectively. While the system is believed to be user-friendly and it comes with a detailed user's guide, many users could benefit from video tutorials that demonstrate the step-by-step application of the system.

APPENDIX A:

POLICE CRASH REPORT REVIEW SYSTEM (PCRRS) USER'S GUIDE

User's Guide

PCRRS

POLICE CRASH REPORT REVIEW SYSTEM

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1. INTRODUCTION

This guide provides detailed guidance on how to use the various component programs of the Police Crash Report Review System (PCRRS). It assumes that the user is familiar with the general operation of a web browser.

1.1. What is PCRRS?

PCRRS is a Web-based system developed to facilitate the tasks of reviewing police crash reports and recording the review results. The system provides user-friendly interfaces that allow the users to perform the following tasks quickly:

- ✓ Select crashes for specific study locations and time periods by querying the Crash Analysis Reporting (CAR) database.
- ✓ Set up police crash report review questions for review result recording.
- ✓ Display multiple police crash report pages in different layouts.
- ✓ Display police crash reports and study locations on Google Maps side-by-side.
- ✓ Record police crash report review results that are linked directly to crash records.
- ✓ Report potential errors in police crash reports.

The system is designed for desktop environment, including tablet PCs, and is compatible with all commonly used browsers, including Internet Explorer, Google Chrome, Firefox, and Safari. The system is accessible to, but not optimized for, mobile devices such as smart phones.

1.2. Why PCRRS?

The long-form version of police crash reports includes useful information that is not available in CAR. This information, which includes police sketch and crash description, is needed for detailed site-specific safety analysis. In addition, some district offices also routinely review police crash reports for miscoded crash types and locations, while others try to identify the actual crash types for crashes coded by police officers as the “Other” crash type. As a result, district safety analysts and their consultants spend significant time on a regular basis to review police crash reports.

Police crash reports are currently stored as graphic files in the Tagged Image File Format (TIFF). Each police crash report file typically consists of a minimum of four pages, but may include multiple sets if a police crash report was updated or if more detailed discussion is provided. The police crash report files can be downloaded from the Department’s Hummingbird system. To do so, the user first identifies the related crashes in CAR and then enters the corresponding crash numbers in the Hummingbird system. The corresponding files are then retrieved from the host server and saved to a folder in a local drive.

To review a police crash report, the user first locates the file in the folder where all the downloaded files were saved to, open the file, review specific report pages, and, finally, record the review results in an Excel or a Word file. This manual process is cumbersome, time-consuming, and prone to errors, especially when many police crash reports are involved. PCRRS is designed to facilitate this entire process.

1.3. User Types and Roles

The PCRRS system is password-protected and is accessible to authorized users only. The system includes the following three user types:

1. System administrator
2. Project managers
3. End users

The hierarchy of these user types is that the system administrator manages the project managers, who in turn manage the end users. The project managers can set up different projects which consist of crashes at specific project locations, plus specific review questions targeting specific review information. After a project is set up, it is assigned by the project manager to one or more end users who review the police crash reports and answer the target review questions. The end users can also report potential errors they encountered in the police crash reports to help improve the quality of police crash reports.

Figure 1 shows the common system login screen for all three user types. The system will automatically recognize the specific user account type and direct the login to the specific system interface.

Figure 1: PCRRS Login Screen

2. SYSTEM ADMINISTRATOR INTERFACE

The **System Administrator** interface allows the system administrator or a designated person to create and manage project manager accounts and to specify the contact persons or agencies for reporting potential errors found in police crash reports. Accordingly, the interface includes the following two main pages to implement each of the two functions:

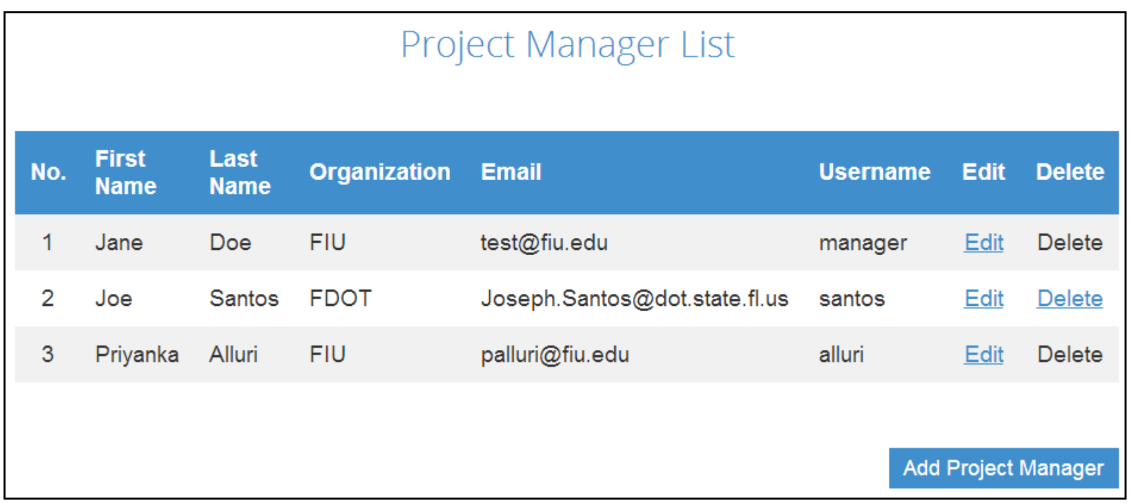
1. Project Manager
2. Error Report Notification

2.1. Setting Up and Managing Project Manager Accounts

Project manager accounts are set up and managed in the **Project Manager** screen. As shown in Figure 2, the screen includes the following information for each project manager:

- *Number:* Unique sequence of numbers
- *First Name:* Project manager's first name
- *Last Name:* Project manager's last name
- *Organization:* Project manager's organization
- *Email:* Project manager's email ID

The system administrator can click the **Add Project Manager** button to add a new project manager account and then proceed to enter the above information when prompted. An existing account can be modified or deleted by clicking the **Edit** or **Delete** action button, respectively.


Project Manager List

No.	First Name	Last Name	Organization	Email	Username	Edit	Delete
1	Jane	Doe	FIU	test@fiu.edu	manager	Edit	Delete
2	Joe	Santos	FDOT	Joseph.Santos@dot.state.fl.us	santos	Edit	Delete
3	Priyanka	Alluri	FIU	palluri@fiu.edu	alluri	Edit	Delete

Add Project Manager

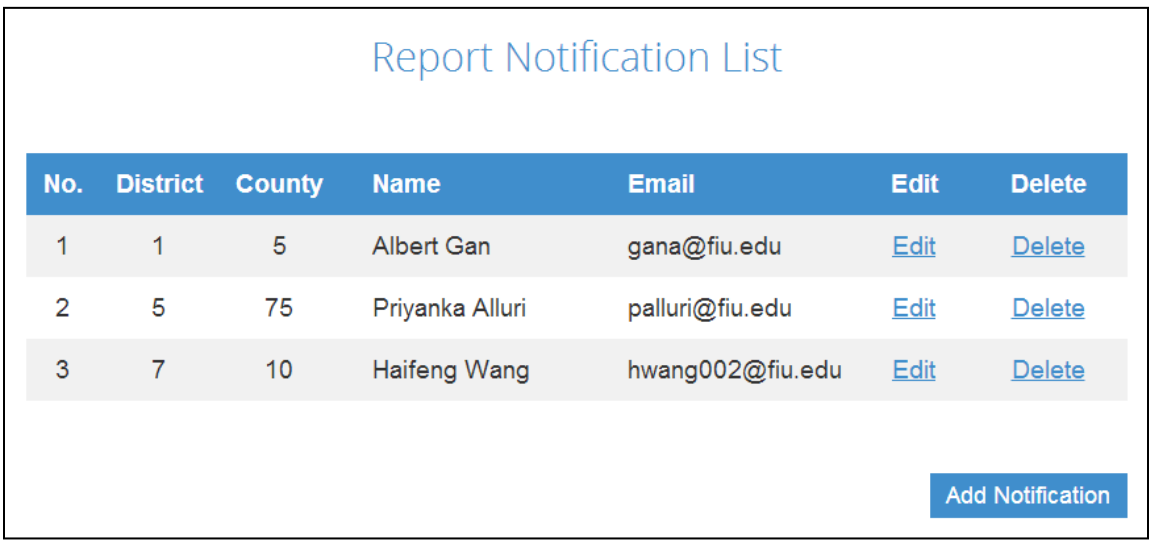
Figure 2: Screen for Editing Project Manager Accounts

2.2. Setting Up and Managing Contacts for Error Report Notification

In the **Report Notification** screen, the system administrator can assign the point of contact for reporting potential problems encountered by the end users during their police crash report review. The screen includes the following information about each contact person (see Figure 3):

- *Number:* Unique sequence of numbers
- *District:* District number that the person is in charge of.
- *County:* County number that the person is in charge of.
- *Name:* Name of the person to whom the automatically generated report will be sent to (i.e., person in charge).
- *Email:* Email ID of the person to whom the automatically generated report will be sent to (i.e., person in charge).

The system administrator can add a person to whom reports are sent to by clicking the **Add Notification** button. The system administrator can also click **Edit** or **Delete** to modify or delete an account, respectively. The contact list is sorted by district number and then by county number.


Report Notification List

No.	District	County	Name	Email	Edit	Delete
1	1	5	Albert Gan	gana@fiu.edu	Edit	Delete
2	5	75	Priyanka Alluri	palluri@fiu.edu	Edit	Delete
3	7	10	Haifeng Wang	hwang002@fiu.edu	Edit	Delete

Add Notification

Figure 3: Screen for Editing Contacts for Error Report Notification

3. PROJECT MANAGER INTERFACE

The main role of a project manager is to set up projects and assign them to the end users who will perform the actual police crash report review and data recording. Accordingly, the **Project Manager** interface includes the following two main screens:

1. Projects: to set up projects, which includes specifying the crashes for which the police crash reports are to be reviewed, and setting up the target questions for which review results are to be recorded by the end users.
2. Users: to assign projects to the end users who review the police crash reports.

After logging into the Project Manager interfaces, the system will first open to the **Instructions** screen shown in Figure 4. The screen provides brief two-step instructions to help the project manager get started. Step 1 of the instructions is related to the **Projects** page, which is to set up projects. Step 2 is related to the **Users** screen, which is to assign projects to end users. These steps are detailed in the subsections below.

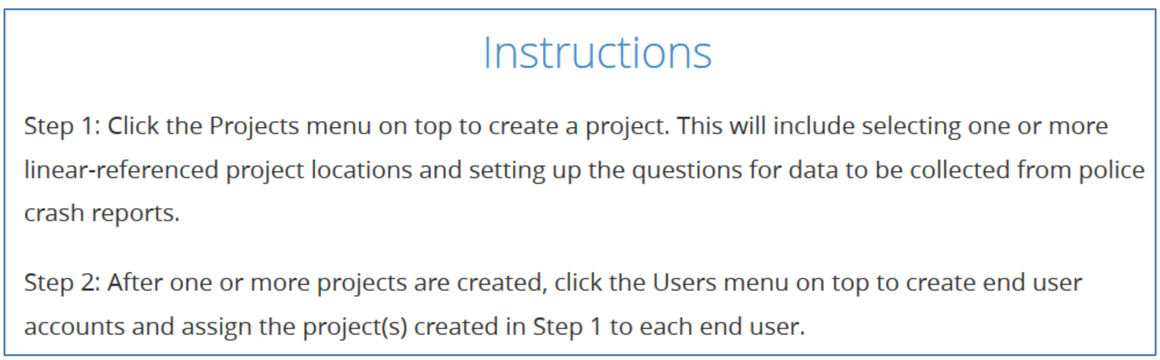


Figure 4: Instructions Screen

3.1. Setting Up a Project

The **Projects** screen is where a project manager can set up a new project or edit an existing project. A project can include two major components: (1) the specific crashes for which the police crash reports are to be reviewed, and (2) the review questions targeting the specific information to be recorded. Only the first component is required.

As shown in Figure 5, a project manager can add a new project by first clicking the **Add Project** button. Once a project is added, the project manager can proceed to specify the crashes to include and the target review questions. A project can be deleted by clicking **Delete**.

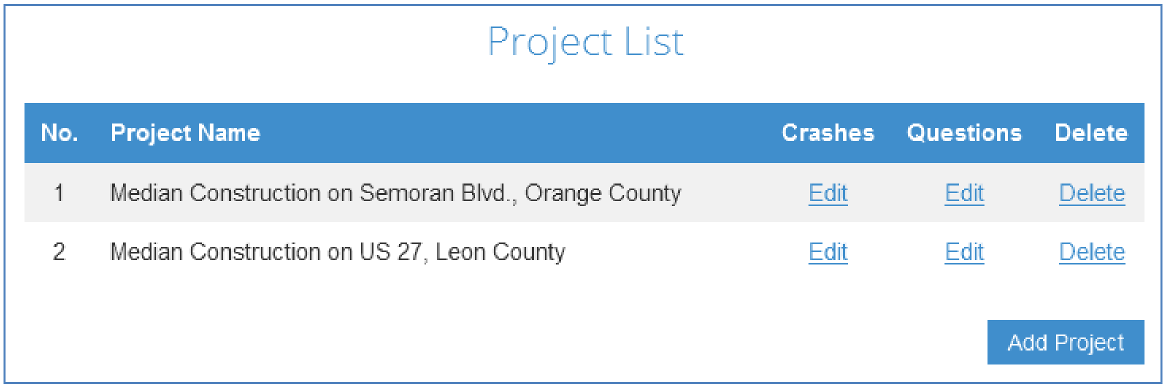


Figure 5: Screen for Editing Projects

3.1.1. Specifying Project Crashes

The crashes to be included in a project are specified by clicking **Edit** under the **Crashes** column on the **Project List** screen (see Figure 5). This will open the screen shown in Figure 6. In this screen, the specific crashes to be included in a project are defined by the project location(s) and the crash analysis period. The crashes can further be filtered by specific crash types and crash severity. As shown in Figure 6, a project name is first entered to identify the specific project. A range of from and to dates can then be specified for the analysis period.

Next on the screen is to select the study location(s) from which crashes are to be included in the project. The following three options are provided to select the crash locations:

4. *By specifying roadway segment IDs*: This option is designed using a text box that allows the project manager to enter multiple locations using a combination of county, section, subsection, begin and end mileposts. Only one location can be specified on a single row in the text box. The following examples describe the types of location entry that the system can accept:

    - 87: this includes all crashes (subject to other filters) on all roadways in Miami-Dade County.
    - 87100: this includes all crashes on roadway section 100 in Miami-Dade County.
    - 87100010: this includes all crashes on roadway subsection 010 of section 100 in Miami-Dade County.
    - 87100010, 1.234, 2.456: this includes all crashes on roadway ID 87100010 between mileposts 1.234 and 2.456.

    As many of these locations can be specified for a project and the system will parse each location entry accordingly.

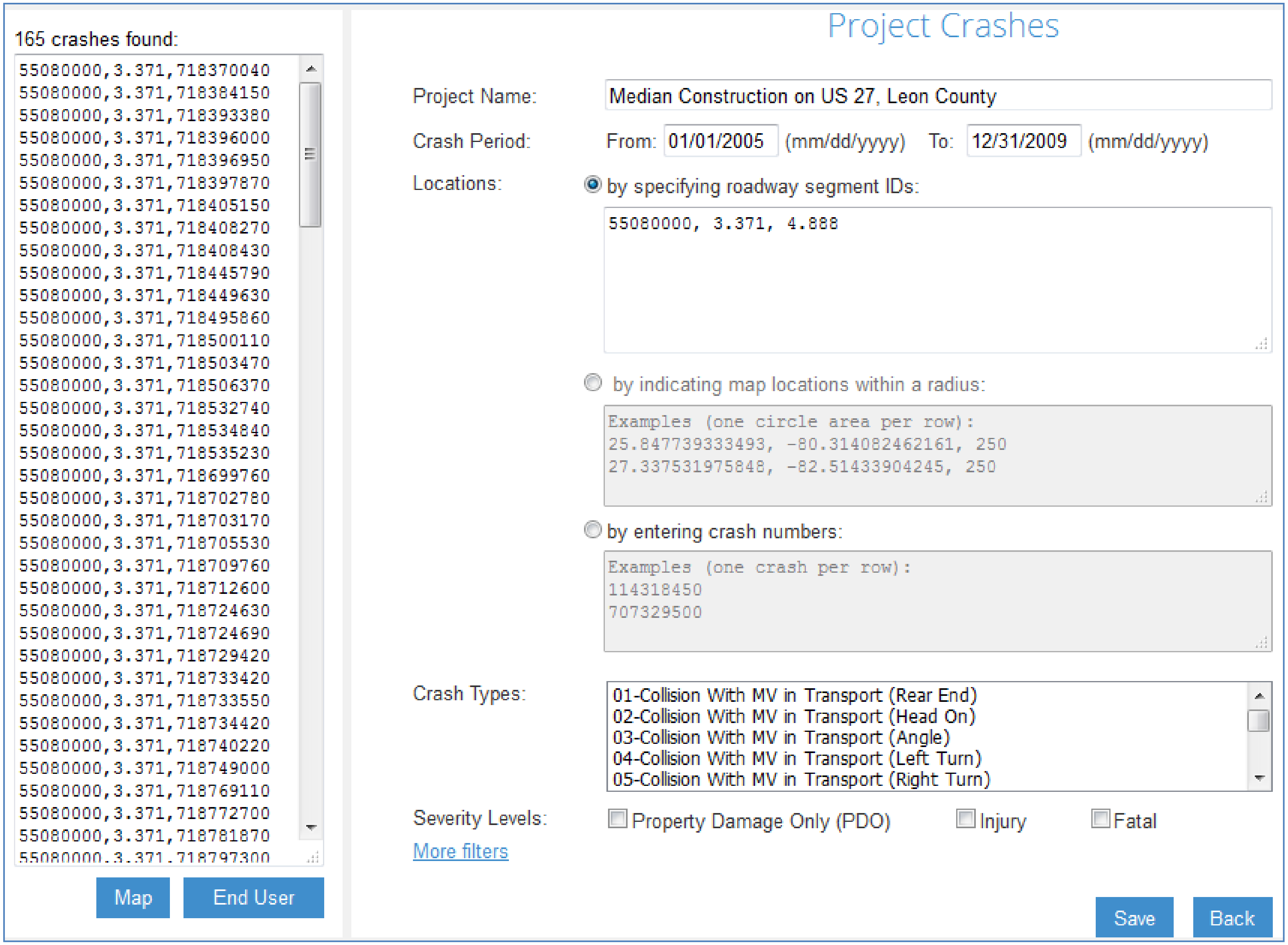


Figure 6: Screen for Specifying Crashes

5. *By indicating map locations within a radius*: This option allows the project manager to specify one or more crash locations by clicking on the Google Maps. When this option is selected, the option description will turn into a link, which can be clicked to open the Google Maps screen shown in Figure 7. To select a location:

   a. Select a desired buffer radius from the **Radius** dropdown list. A set of buffer sizes ranging from 50 to 1,000 feet can be selected from the list. By default, a 250-ft buffer radius is selected. Alternatively, any desired radius can be entered directly in the box.
   b. Click on the map at a desired location. As can be seen in Figure 7, a red circle based on the selected radius will appear on the screen. All crashes that fall within the circle will be included (subject to other filters).
   c. Click **Save** to save the location.

   This process can be repeated to select as many crash locations as needed. After all the desired locations are selected, click **Exit** to close the screen. The system will list all the saved latitude/longitude locations and their corresponding buffer sizes in the text box. The text box can be manually edited as needed. The project manager can also return to the map to add more locations.

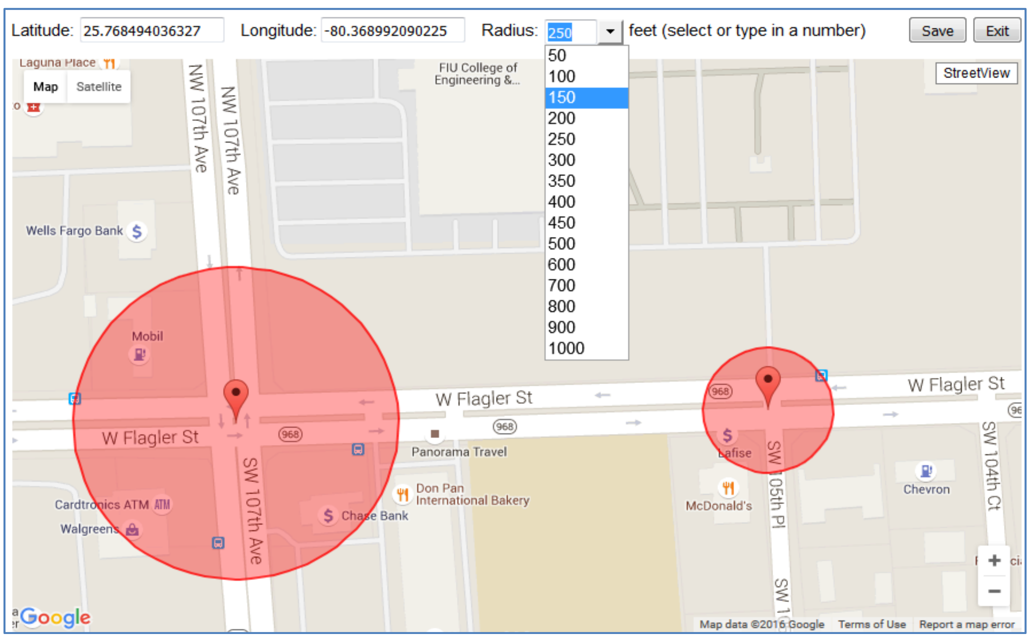


Figure 7: Example Screen for Selecting Crash Locations on Google Maps

6. *By entering crash numbers*: This option is provided for project managers who have pre-identified a potential set of crashes to include in a project. This option is equivalent to using the existing process via the Department's Hummingbird system, in which the project manager pre-identifies the crashes and then enters the corresponding crash numbers in the system to retrieve the corresponding police crash reports. Since the specific crashes are known in this case, there is no need to specify the crash analysis period.

After the project locations are selected, the project manager can choose to select specific crash types and crash severity levels by holding down the **<Ctrl>** key and clicking the crash types/severity levels. The project manager can also click the **More Filters** link to reveal additional filters available to further limit the types of crashes to include. Note that when no list items are selected for a filter, the system interprets it to mean that the filter is not used, thus, does not affect the crash selection.

Once all the entries are completed, the selection can be saved by clicking the **Save** button. The crash numbers of all crashes matching all the input conditions will be listed on the left panel of the screen (see Figure 6). The resulting total number of crashes is indicated at the bottom of the panel. Clicking the **Map** button below the panel will display the selected crash locations on a popup Google Maps. Clicking the **End User Mode** button next to the **Map** button allows the project manager to switch to the End User interface (see Section 4 for details) to view the selected police crash reports. Because this switch will end the current Project Manager session, the project manager will be asked to confirm whether to proceed with the interface switch.

3.1.2. Setting up Project Review Questions

Similar to for project crashes, project review questions can be specified by clicking **Edit** under the **Questions** column on the **Project List** screen (see Figure 5). This will open the **Project Question Tab** page shown in Figure 8. It allows the project manager to add tab(s) in which review questions are to be listed for recording. Multiple tabs are needed when a project involves many review questions. To define a tab, the project manager simply enters a name for the tab in the text box provided and then clicks **Add**.

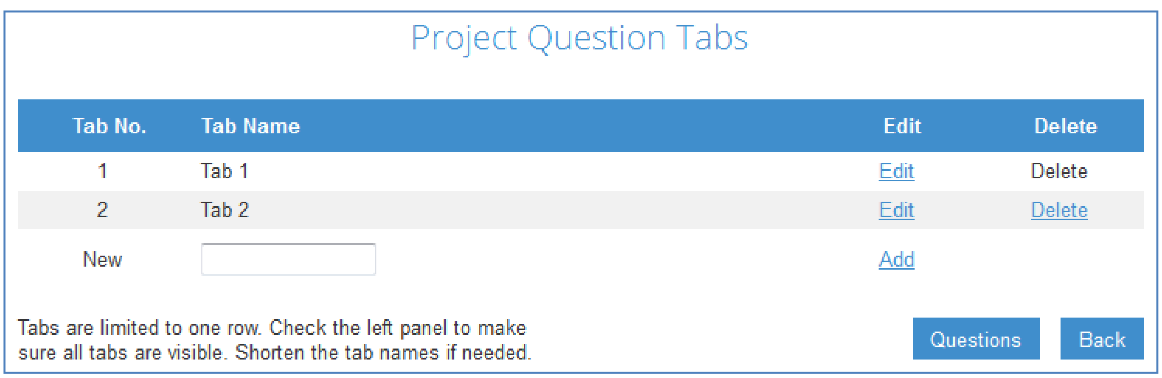


Figure 8: Screen for Editing Project Question Tabs

After the tab(s) are added, the review questions can be added to the tab(s) by clicking the **Questions** button. This will open the **Project Questions** screen shown in Figure 9. On this page, the project manager can set up different questions using a mix of radio buttons, checkboxes, dropdown lists, and comment boxes. The system will automatically set up a database table for the questions to record data.

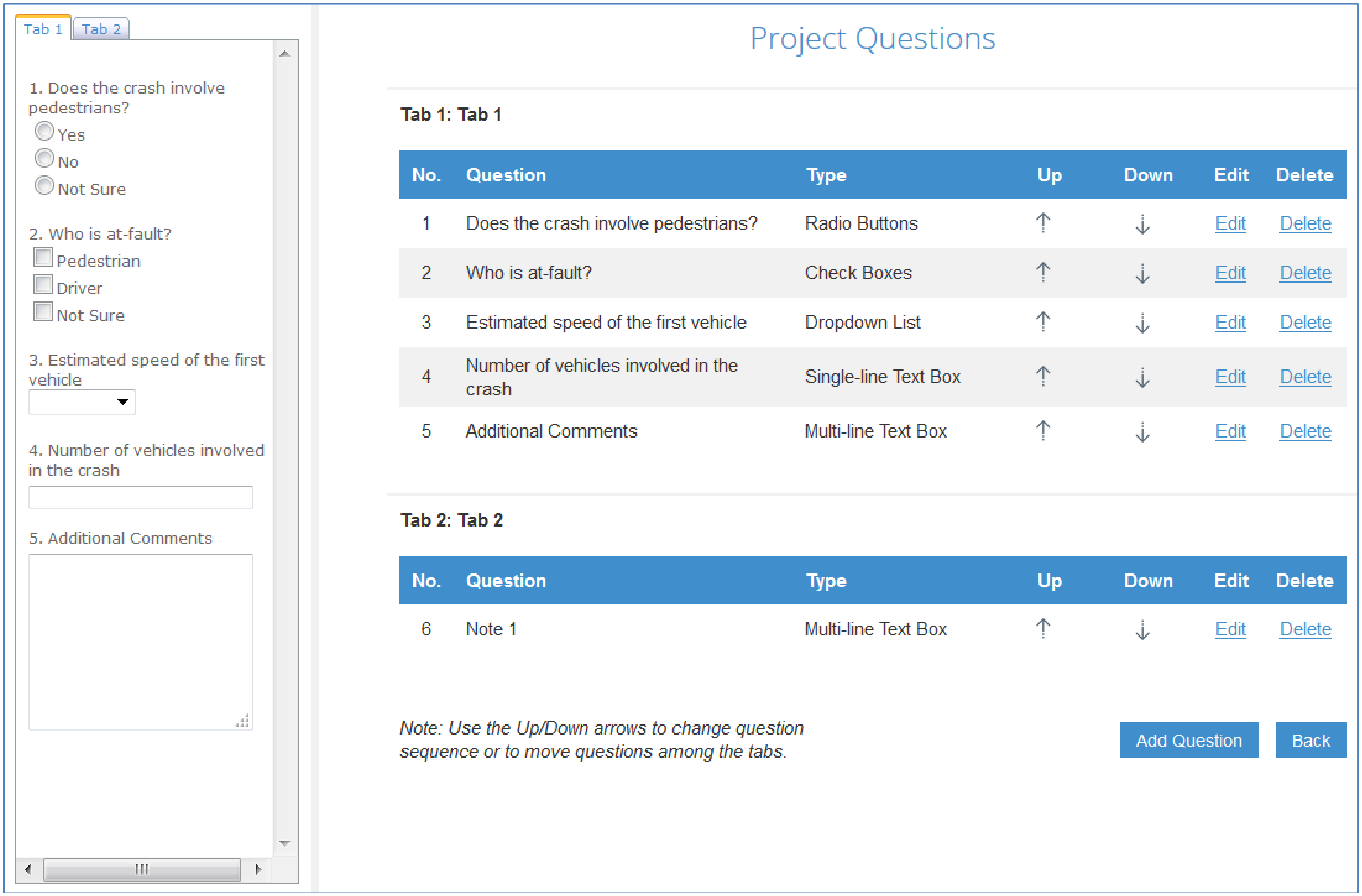


Figure 9: Screen for Editing Project Questions

To add a question:

1. Click the **Add Question** button (see Figure 9). This will open a data entry area as shown in Figure 10, which allows the question description and the question format to be specified. An existing question can be modified or deleted by clicking the **Edit** or **Delete** links, respectively, on the question list.

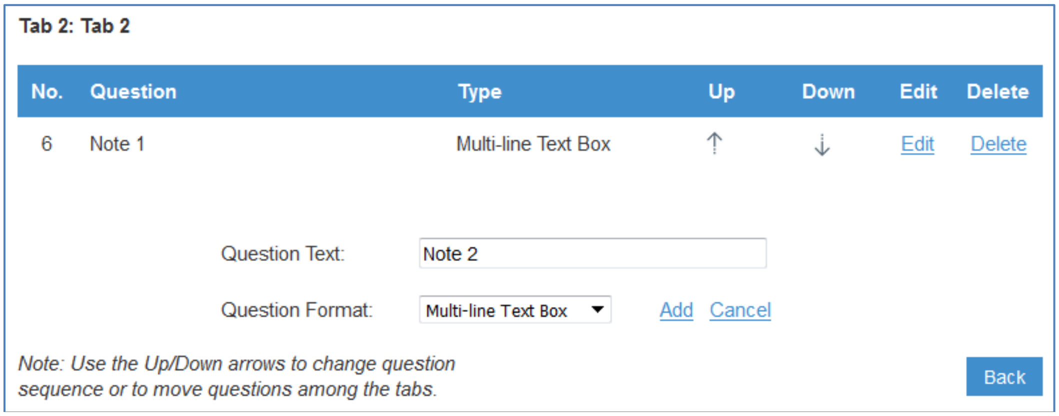


Figure 10: Screen for Adding Project Questions

2. Click **Add** to add the question to the question list and open the screen shown in Figure 11, which allows the user to further specify whether the question must be answered and to add the answer choices for questions of the radio button, checkbox, and dropdown list types. An existing choice can be modified or deleted by clicking the **Edit** or **Delete** action links, respectively, on the answer choice list.

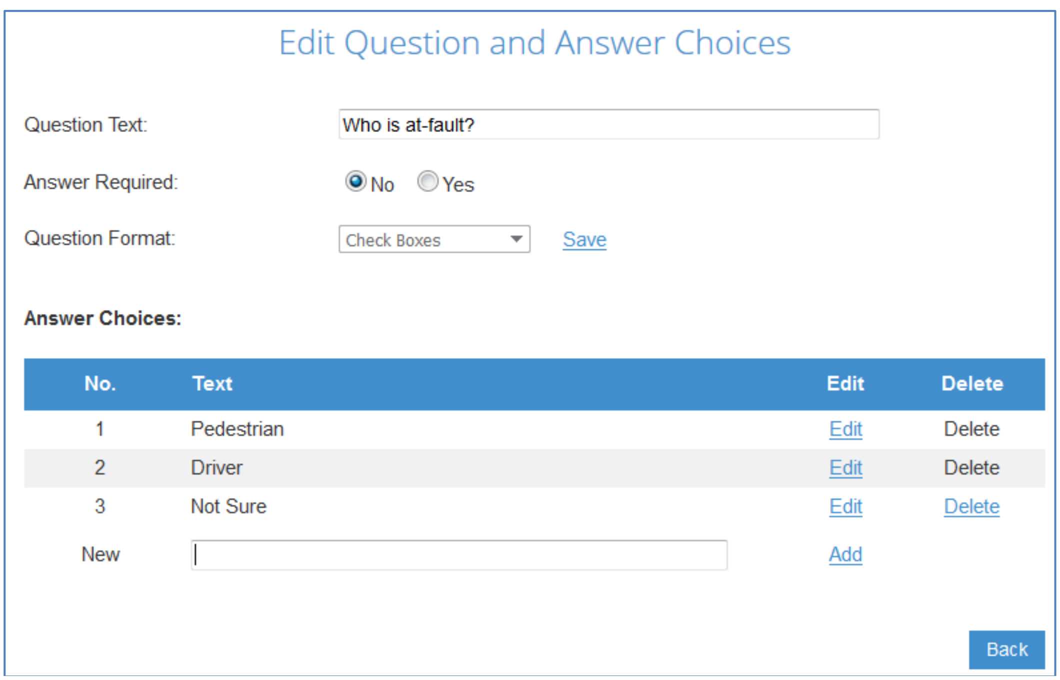


Figure 11: Screen for Editing Project Questions and Answer Choices

Note: The project manager should preview the question/choice display on the left panel of the screen to make sure the entire question set is fully visible. The order of the questions in which they appear can be changed using the **Up/Down** arrows. The same arrows can also be used to move the questions across different tabs.

3.2. Assigning Projects to End Users

After a project is completely set up, it can be assigned to one or more end users. This is done by clicking the **Users** menu on the banner, which opens the **End Users** listing shown in Figure 12. On this screen, a new end user can be added by clicking the **Add User** button. Each user account keeps track of the user's name, organization, email, username, and password.

End User List

No.	First Name	Last Name	Organization	Email	Edit	Delete
1	Albert	Gan	Florida International University	gana@fiu.edu	Edit	Delete
2	John	Doe	Florida International University	hwang002@fiu.edu	Edit	Delete
3	Jane	Doe	Florida Department of Transportation	jane.doe@dot.state.fl.us	Edit	Delete

Add User

Figure 12: Screen for Editing End User Accounts

As shown in Figure 13, one or more projects can be assigned to an end user. This is done by simply clicking on the list of projects in the **Projects** list box. If more than one project is to be assigned, hold down the **<Ctrl>** key while clicking on the list. All assigned project(s) will be highlighted.

The project manager can also assign no projects to an end user who simply needs to access police crash reports for no specific projects. By checking or unchecking the **Allowed to record data** checkbox, the project manager can further choose whether to allow an end user to record data. This option is provided to allow the project manager to define a special class of "inspector" users who can check on a project for the purposes of monitoring and quality control.

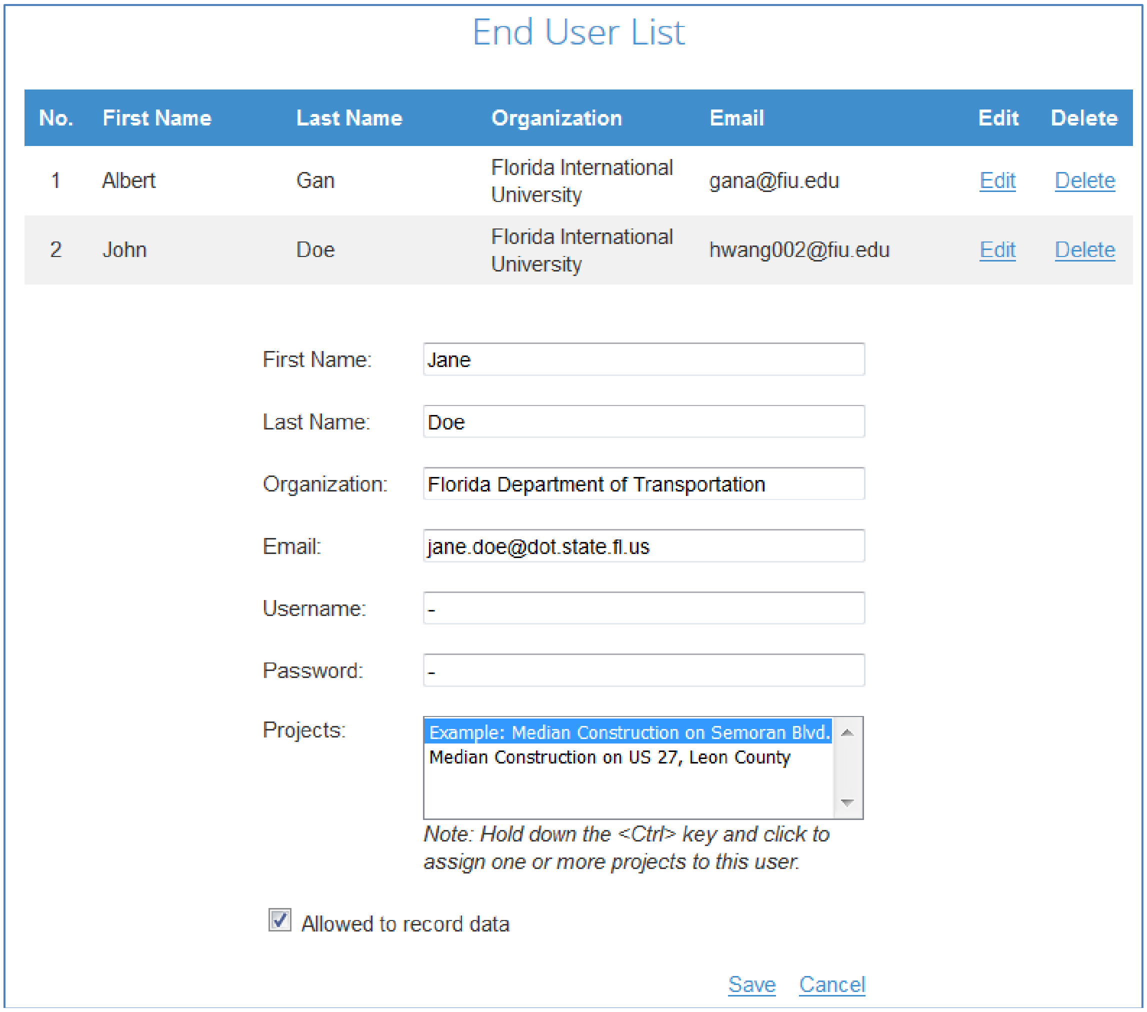


Figure 13: Screen for Assigning Project(s) to End User

4. END USER INTERFACE

The **End User** interface of the system allows the end users to review police crash reports and record review results. There are generally three classes of end users:

1. Those who review police crash reports and record review results.
2. Those who check on the project progress and quality.
3. Those who need general access to police crash reports with no specific projects.

All three user types share an interface that provides the following three main functions:

1. Review police crash reports and record review results.
2. View and export recorded information.
3. Search for crash records.

4.1. Reviewing Police crash Reports and Recording Review Results

Figure 14 shows the default main end user interface for police crash report review and data recording. The screen is divided into the following four areas: the banner area, the ribbon area, the left panel, and the right panel.

4.1.1. Banner Area

The banner area includes a menu that allows the user to navigate to each of the three stated functional areas. It also includes selections for three display functions:

1. The **Page** dropdown list (see Figure 14) can be used to display police crash report pages in different page sequence and layouts. First, the user can choose to always start from a specific page of a police crash report. For example, the user can choose to start from page 4 which includes the police sketch. This allows the user who only needs to review the police sketch to not have to page through the first three pages to get to page 4. Second, the user can select the number of pages to display across the screen. Users with a wide screen monitor or multiple monitors could choose to display several pages side-by-side. Figure 15 shows an example that displays four pages side-by-side.

2. The **Map/No Map** toggle icon can be used to show/hide the Google Maps. Figure 16 shows an example that combines the **Map** and **Page** options to display the Google Maps and the police sketch side-by-side. As can be seen, the map highlights the location of the current police crash report in blue and the locations of the other police crash reports within the same project in yellow. The map also shows that the location pins can be clicked to popup an Infobox that lists the key crash information. If a location has multiple crashes, the Infobox will list the information for all crashes sequentially.

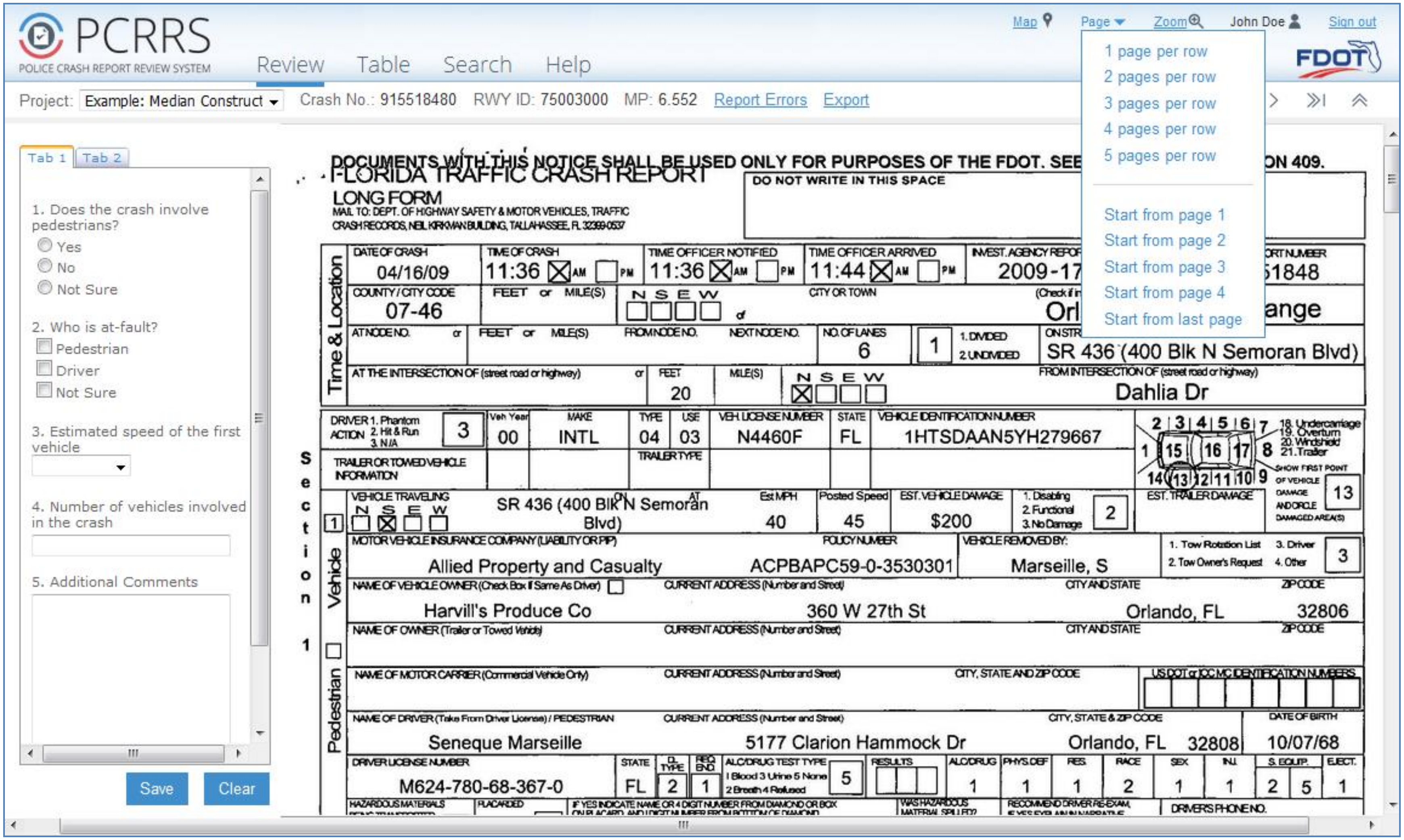


Figure 14: Main Screen for Police Crash Report Review and Information Recording

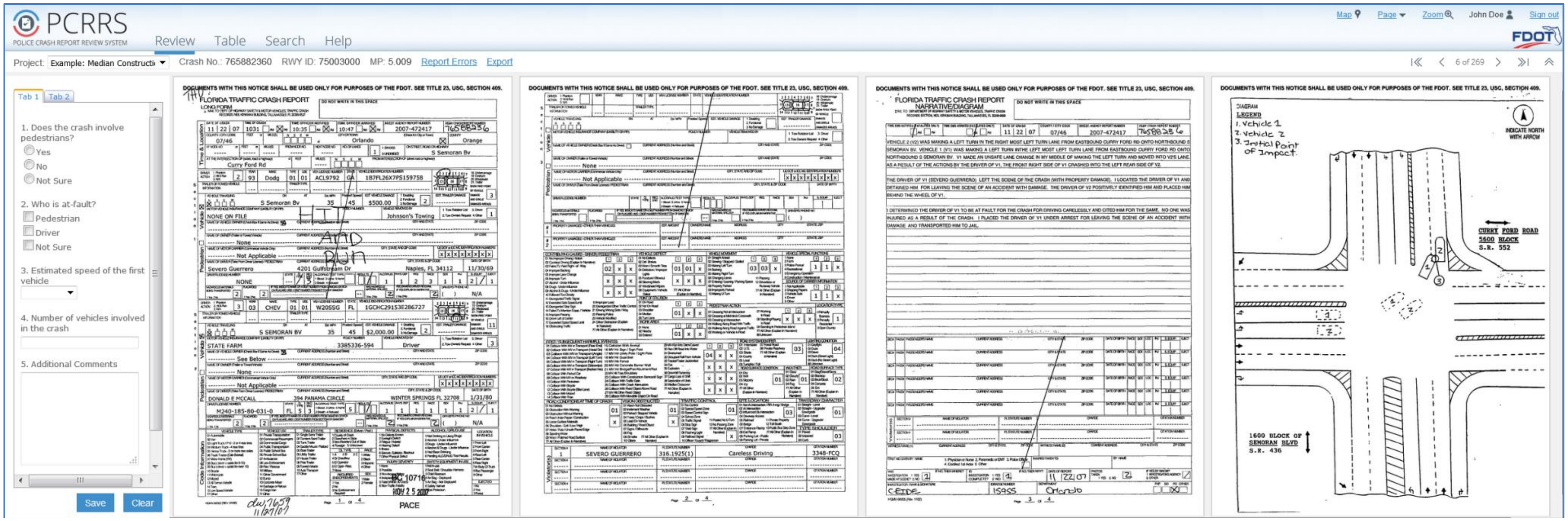


Figure 15: Example Screen Showing Side-by-Side Display of Four Police Crash Report Pages

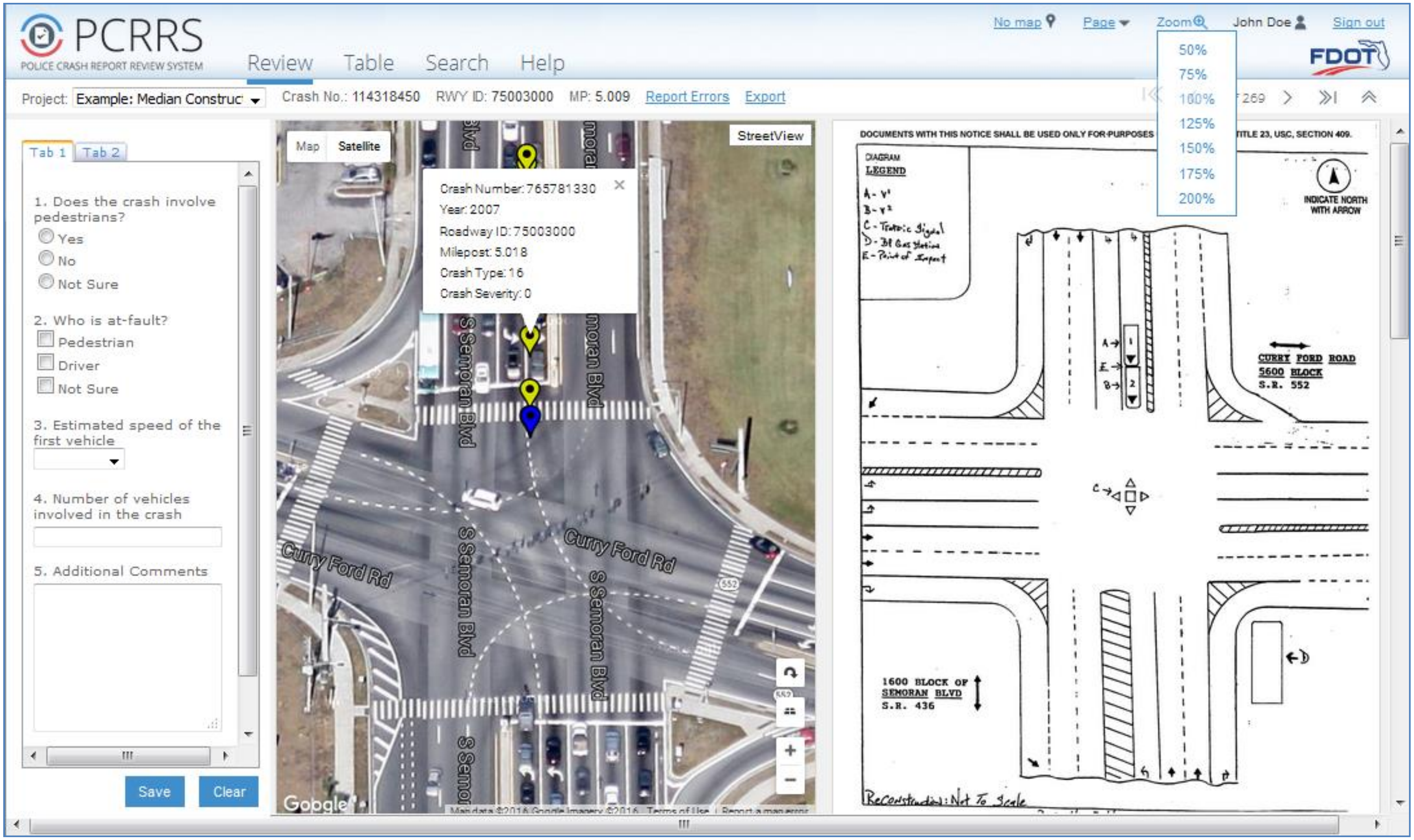


Figure 16: Example Showing Display of Google Maps and Police Sketch Side-by-Side

3. The **Zoom** dropdown list can be used to shrink or enlarge the size of the Google Maps and the police crash report pages. The user can select from a range of 50% to 200% zoom levels (see Figure 16).

4.1.2. Ribbon Area

The ribbon area includes the following functions:

1. A **Project** dropdown list that allows the user to select a project that is either assigned by a project manager or defined by the end user in the **Search** screen (refer to the final section of this Guide for detail). A project defined by the end user can be deleted by clicking the icon next to the project name. The icon only appears when a user-defined project is selected. A project assigned by a project manager can only be removed from the project list by the project manager.

2. A set of identifiers to identify the current police crash report on display. It includes the unique crash number, the standard roadway ID, and the milepost.

3. A **Report Errors** link that allows the user to report issues and/or inconsistencies in a police crash report. A dialogue box will appear to allow the user to describe the problem and then submit it to a person designated by the system administrator depending on the jurisdiction the crash location falls under.

4. An **Export** link that allows the user to export the current police crash report to the user's local drive as either a PDF or a TIFF file.

5. A set of icons for navigating to different police crash reports. In addition to the **First** , **Previous** , **Next** , and **Last** standard navigation buttons, a special button is included to allow the user to jump directly to the next record that needs to be reviewed. This allows the user to continue the review from where he/she had left off in the previous review session.

4.1.3. Left and Right Panels

The two panels should be self-explanatory. In short, the left panel of the screen allows the user to record data observed from the review of each police crash report displayed on the right panel.

4.2. Viewing and Exporting Recorded Results

The **Table** menu opens a screen that allows the user to view and export the recorded review results. As shown in Figure 17, the table lists all the crashes with their crash record identifiers and the recorded review results. On this screen, the user can:

1. Click the **Export** button to export the table to an Excel file. Two choices are provided in front of the button to allow the user to choose to export either all crash records or only those that have been reviewed and with recorded review data.

2. Check the **Description** checkbox to insert the code descriptions for the code numbers. When checked, a separate column listing the code descriptions is inserted next to each code column, allowing the user to quickly see what each code number represents (see Figure 18).

3. Click a variable name on the table header to sort the table in ascending or descending order.

4. Click a crash number to go directly to a specific police crash report to review. This capability seems trivial but is highly useful because a user often needs to go back to re-review police crash reports that have been noted for re-review. It also facilitates inspection of select police crash reports by project managers for quality control purposes.

PCRRS
POLICE CRASH REPORT REVIEW SYSTEM   Review   Table   Search   Help   John Doe   Sign out   FDOT

Project: Example: Median Construction on Semoran Blvd., Orange County   Description   All records   Processed records only   Export

No.	Crash Number	Year	Roadway ID	Milepost	Crash Type	Severity	Site Location	Road Surface Condition	Light Condition	Weather Condition	Alcohol Involved	Does the crash involve pedestrians?	Who is at-fault?	Estimated speed of the first vehicle
1	114318450	2009	75003000	5.009	1	0						Yes	Driver	40 mph
2	762588550	2007	75003000	5.009	77	0	2	4	1	1	0	Yes	Pedestrian	40 mph
3	762588590	2007	75003000	5.009	77	0	2	4	1	1	0	No	Driver	45 mph
4	763037920	2007	75003000	5.009	1	0	2	4	1	1	1			
5	765764010	2007	75003000	5.009	6	0	2	4	1	1	0			

Figure 17: Tabulated Crash Records Showing Recorded Results

PCRRS
POLICE CRASH REPORT REVIEW SYSTEM   Review   Table   Search   Help   John Doe   Sign out   FDOT

Project: Example: Median Construction on Semoran Blvd., Orange County   Description   All records   Processed records only   Export

No.	Crash Number	Year	Roadway ID	Milepost	Crash Type	Crash Type Desc	Severity	Severity Desc	Site Location	Site Location Desc	Road Surface Condition	Road Surface Condition Desc	Light Condition	Light Condition Desc	Weather Condition
1	114318450	2009	75003000	5.009	1	Collision With MV in Transport (Rear End)	0	No injuries							
2	762588550	2007	75003000	5.009	77	All Other (Explain in Narrative)	0	No injuries	2	At Intersection	4	Dark (Street Light)	1	Clear	1
3	762588590	2007	75003000	5.009	77	All Other (Explain in Narrative)	0	No injuries	2	At Intersection	4	Dark (Street Light)	1	Clear	1

Figure 18: Tabulated Crash Records Showing Code Description

4.3. Searching Crash Records

A project manager can also grant system access to a class of general users who need to access police crash reports for no specific projects. These users can click the **Search** menu in the banner area to access the screen shown in Figure 19. As can be seen, the screen is similar to the **Project Crashes** screen in Figure 6. With this search function, the user can set up any user-defined project for any desired location(s). To do this, the user:

1. Enter a project name and, optionally, the project period.

2. Select project locations by entering linear-referenced locations, by indicating the locations using Google Maps, or simply by entering the known crash numbers.

3. Filter the crashes by crash type and severity by selecting in the appropriate list boxes. Click the **More Filters/Less Filters** toggle link to reveal/hide more filters.

4. Identify the resulting crashes by clicking the **Search** button. The search results (crash numbers) are listed on the left panel and the crash locations can be displayed on Google Maps by clicking the **Map** button.

5. Save the project under a user-specified project name by clicking the **Save** button. After a project is saved, the system will automatically open the project in the **Review** page. The saved project will be listed on the project dropdown list, available for selection by the user.

Note: User-defined projects will not allow recording of review results because review questions must be set up by project managers. Unlike assigned projects, which can only be removed by the project managers who assigned the projects, user-defined projects can be deleted by the user by clicking next to the project list on the **Review** screen.

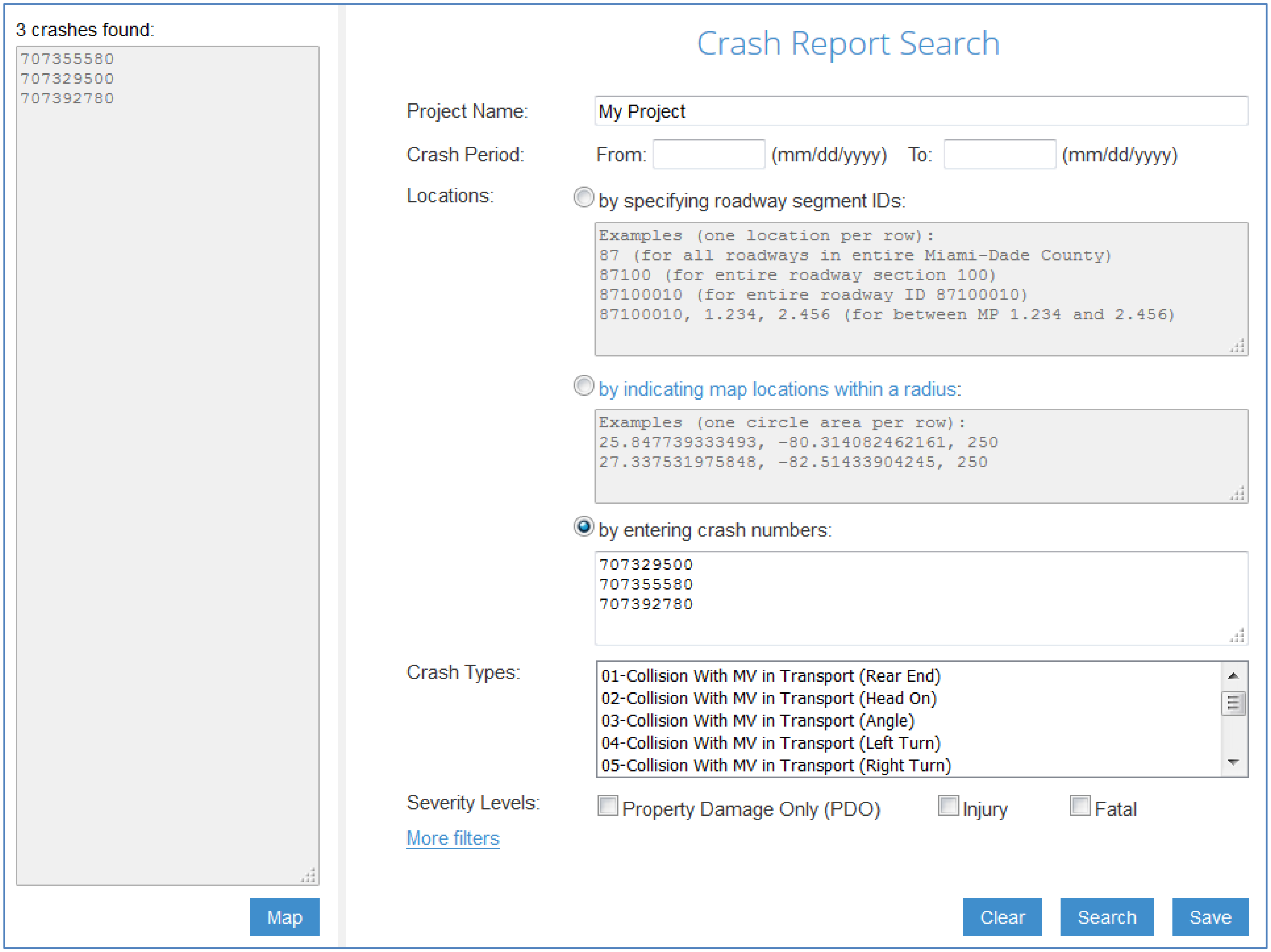


Figure 19: Screen for Searching for Crash Records

APPENDIX B:

BETA TEST PACKET

B-1: Beta Test Invitation Letter and Test Instructions

Dear xxxxx:

On behalf of Mr. Joe Santos, I am sending you this email to request your assistance in helping to beta test a web-based system that we have developed to facilitate the review of police crash reports and record review results. The system includes three types of users:

1. The System Administrator who assigns accounts to the Project Managers.
2. The Project Managers who set up projects and assign them to the End Users.
3. The End Users who do the actual crash report review and record the review results.

The attached User's Guide documents how the system works. The system can be accessed from this URL: http://xxxxx/pcrrs/login.aspx.

We would appreciate if you and your consultants who work with crash reports can help test the Project Manager and the End User components of the system. We have created four Project Manager accounts that you can assign to four testers. The usernames are "xxxxx", "xxxxx", "xxxxx", and "xxxxx". The password is "xxxxx" (lower case only) for all accounts. Please let us know if you need additional accounts. Note that the End User accounts are created by the Project Managers after logging into their accounts.

Also attached are two documents:

1. A beta test report form for reporting the test results (please use one form for each tester).
2. A list of crash report locations available for this test.

We would really appreciate if you could provide your test results to us by xxxxx. I will be available to answer any questions from your testers either by email (gana@fiu.edu) or by phone (305-348-3116). Thank you very much for your kind assistance!

Albert Gan, Ph.D., Professor
Lehman Center for Transportation Research
Florida International University
(305) 348-3116
gana@fiu.edu

B-2: Crash Reports Available for Beta Test

For the purpose of this test, the system includes crash reports for only the locations listed in the table below and from years 2003-2010 only:

Roadway ID	Begin MP	End MP
58010000	16.053	16.313
93130000	0.000	0.290
94010000	10.784	11.694
36004000	0.803	1.117
2030000	13.688	13.940
10030000	0.000	0.295
10030000	0.415	0.900
10030000	2.360	2.840
17040000	0.619	4.203
48070000	5.667	6.191
55002000	9.714	10.662
55060000	3.547	4.566
55080000	3.371	4.888
75003000	5.009	7.426
75010000	3.418	4.775
87030000	18.057	19.261
87090000	10.412	11.680
72014000	1.454	1.842

B-3: Beta Test Report Forms

Tester Name:		Tester Assigned Username:	
Tester Title:		Tester Agency:	
Tester Email:		Tester Phone:	
Web Browser Used:		Browser Version:	

Part I: Project Manager Component To get started, login to http://xxxxx/pcrrs/login.aspx using your assigned “xxxxx” user account, password is “xxxxx” (all lower case)
1. What difficulties did you encounter, if any, in setting up a new project via the “Projects” menu? Note: a complete project includes the project title, the project time period, the project location(s), plus the project questions for which data are to be collected from the review of crash reports. *Please refer to the “Available Crash Reports” document for the list of locations for which crashes are available for this test.*
Please enter your response here. Your response is of course not limited to this initial space provided. Please use as much space as needed to provide us with as much detail as possible. Thank you.
2. What difficulties did you encounter, if any, in creating the end users account(s) and assigning the project(s) via the “Users” menu?
3. Did you encounter any software errors? Please describe the errors and include relevant screen captures that display the errors.
4. Did you find any part of the interface confusing and why? Please include your suggestions for improvement.

5. What other software capabilities and improvements do you think would be helpful to include?
Part II: End User Component To get started, login to http://xxxxx/pcrrs/login.aspx using the username and password of the "End User" account you created.
6. Were you able to use the username and password of the end user account you created during Part I of your test to log in to the End User interface? Note: if not, to continue with your test, you can use this general account we have created for testing purpose, i.e., username = "xxxxx" and password = "xxxxx")
7. If you were using the end user account you created, were you able to see the project questions for the project you created during Part 1 of your test?
8. If you were using the end user account you created, were you able to see the crash reports for the project?
9. Using the "Page options" link on top, were you able to display the crash report pages in the page layout you want?

10. Were you able to review some crash reports and record your review results?
11. Were you able to export the crash records with your review results?
12. Using the “Search” menu, were you able to create a project and view the crash reports successfully? *Please refer to the “Available Crash Reports” document for the list of locations for which crashes are available for this test.*
13. Did you encounter any software errors? Please describe the errors and include relevant screen captures that display the errors.
14. Did you find any part of the interface confusing and why? Please include your suggestions for improvement.
15. What other software capabilities and improvements do you think would be helpful?

16. Please include any other comments and suggestions below.

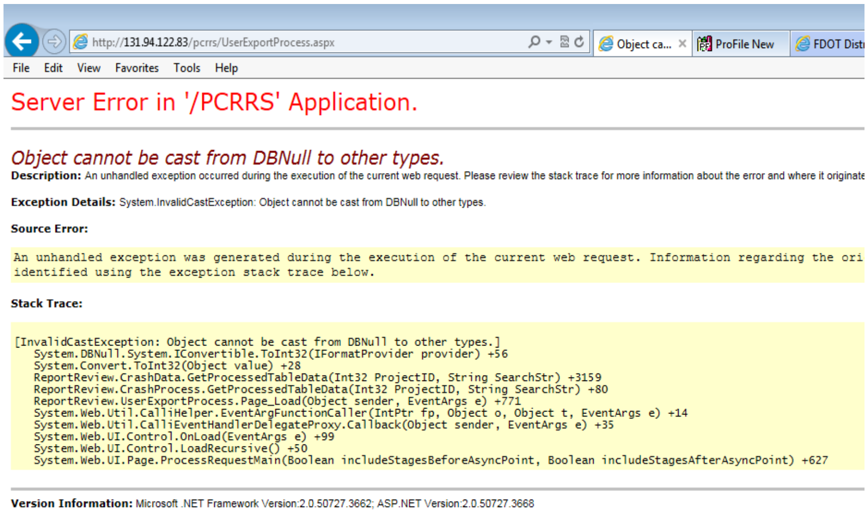
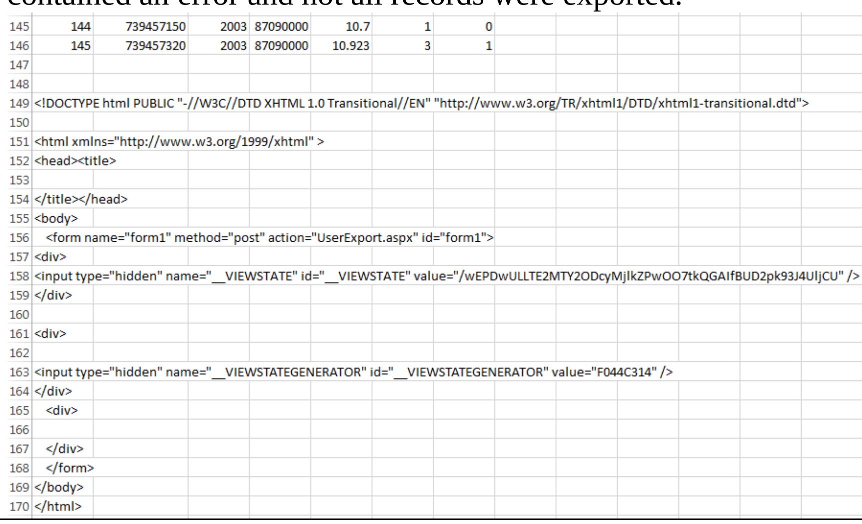
Thank you for your report!

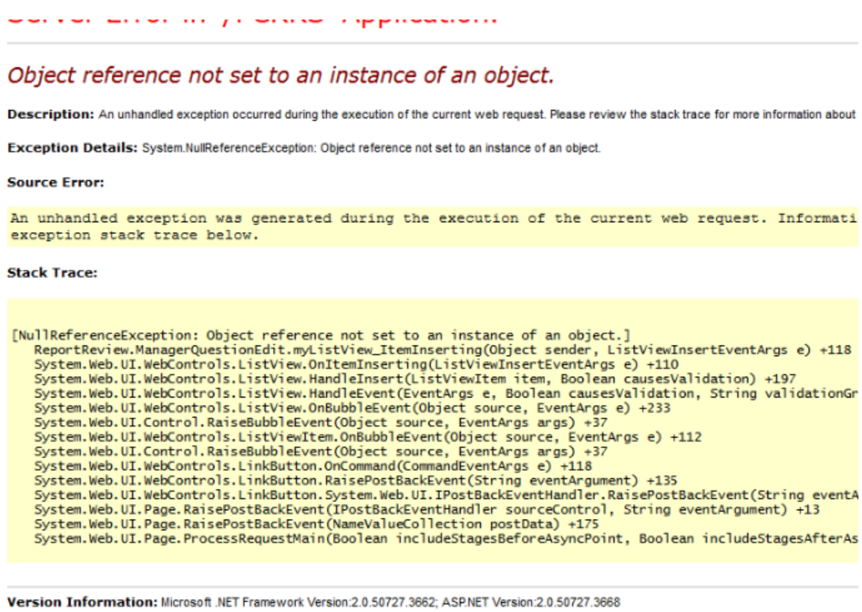
APPENDIX C:

SUMMARY OF BETA TEST RESULTS AND RESPONSE

Table C-1: System Errors

<table>
<tr><th>No</th><th>Tester</th><th>Comment</th><th>Response</th></tr>
<tr><td>1-1</td><td>Misleidys Leon</td><td>When trying to export records that have been reviewed by selecting “Processed records only” and I get the error below. If you export all records, the system works.


http://131.94.122.83/pcrrs/UserExportProcess.aspx
Object ca... ProFile New FDOT Distr
File Edit View Favorites Tools Help
Server Error in '/PCRRS' Application.
Object cannot be cast from DBNull to other types.
Description: An unhandled exception occurred during the execution of the current web request. Please review the stack trace for more information about the error and where it originate
Exception Details: System.InvalidCastException: Object cannot be cast from DBNull to other types.
Source Error:
An unhandled exception was generated during the execution of the current web request. Information regarding the ori
identified using the exception stack trace below.
Stack Trace:
[InvalidCastException: Object cannot be cast from DBNull to other types.]
System.DBNull.System.IConvertible.ToInt32(IFormatProvider provider) +56
System.Convert.ToInt32(Object value) +28
ReportReview.CrashData.GetProcessedTableData(Int32 ProjectID, String SearchStr) +3159
ReportReview.CrashProcess.GetProcessedTableData(Int32 ProjectID, String SearchStr) +80
ReportReview.UserExportProcess.Page_Load(Object sender, EventArgs e) +771
System.Web.Util.CalliHelper.EventArgFunctionCaller(IntPtr fp, Object o, Object t, EventArgs e) +14
System.Web.Util.CalliEventHandlerDelegateProxy.Callback(Object sender, EventArgs e) +35
System.Web.UI.Control.OnLoad(EventArgs e) +99
System.Web.UI.Control.LoadRecursive() +50
System.Web.UI.Page.ProcessRequestMain(Boolean includeStagesBeforeAsyncPoint, Boolean includeStagesAfterAsyncPoint) +627
Version Information: Microsoft .NET Framework Version:2.0.50727.3662; ASP.NET Version:2.0.50727.3668</td><td rowspan="2">Both problems were a result of unexpected missing crash type numbers in some records. The system will be modified to take care of missing crash type numbers and also for other variables to be added, as suggested by multiple testers.</td></tr>
<tr><td>1-2</td><td>Denis A. Denis</td><td>The Exported excel file of All Records of the new Search I created contained an error and not all records were exported.

145 144 739457150 2003 87090000 10.7 1 0
146 145 739457320 2003 87090000 10.923 3 1
147
148
149 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
150
151 <html xmlns="http://www.w3.org/1999/xhtml" >
152 <head><title>
153
154 </title></head>
155 <body>
156 <form name="form1" method="post" action="UserExport.aspx" id="form1">
157 <div>
158 <input type="hidden" name="__VIEWSTATE" id="__VIEWSTATE" value="/wEPDwULLTE2MTY2ODcyMjlkZPwOO7tkQGAIfBUD2pk93J4UljCU" />
159 </div>
160
161 <div>
162
163 <input type="hidden" name="__VIEWSTATEGENERATOR" id="__VIEWSTATEGENERATOR" value="F044C314" />
164 </div>
165 <div>
166
167 </div>
168 </form>
169 </body>
170 </html></td></tr>
<tr><td>1-3</td><td>Achilleas Kourtellis</td><td>The notify option did not work since I guess it was not set up? When tried to send a notification I got an error that email was not sent. This was for the project I set up in the manager section. I understand that the notification set up occurs at the administrator level.</td><td>Notification email was not set up for this test account, which caused the error. We added a master email to make sure the problem will not occur.</td></tr>
<tr><td>1-4</td><td>Achilleas Kourtellis</td><td>When setting up the question types and trying to add the options, an error occurred (attached) that did not allow for any type of input for all types except the text type. I tried radio buttons, dropdown</td><td>It is not clear why the problem occurred. We are not able to duplicate</td></tr>
</table>

<table>
<tr><td></td><td></td><td>list, and check boxes and I got the same error message. So I could not test the questions input in the end user account. The example project that was set did work.

</td><td>the problem using the tester account and we assume it was just a temporary problem, especially since no other testers reported having experienced the same problem.</td></tr>
<tr><td>1-5</td><td>John Battle</td><td>Clicked on the “First record with no saved data” button in Firefox and Internet Explorer…

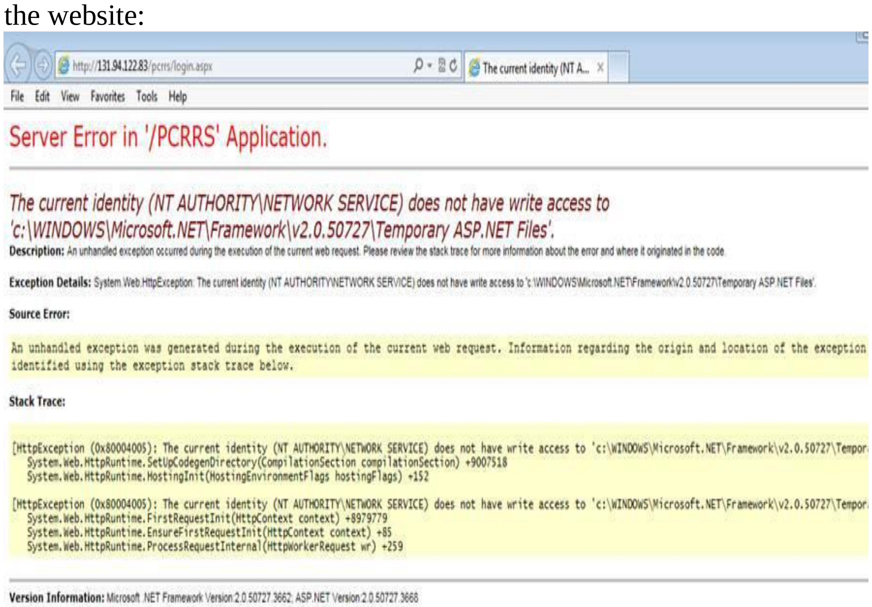
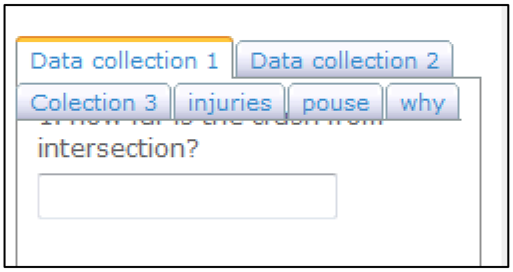
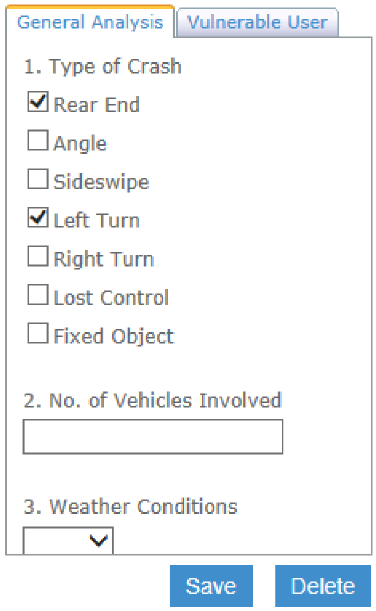
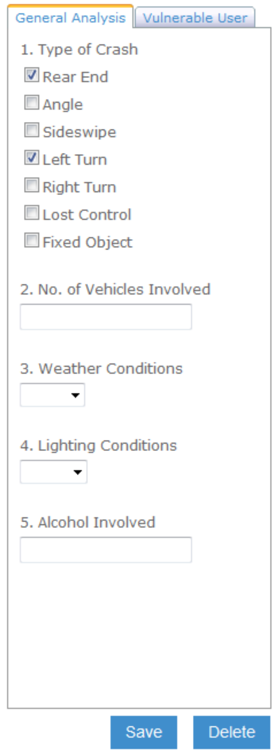
Server Error in '/PCRRS' Application…</td><td>The error was introduced later due to other changes and was not caught. The problem has been fixed.</td></tr>
<tr><td>1-6</td><td>Jeff Scott</td><td>In the “Review” section of the User Interface, it took me a while to realize that you have to click the icon next to the words “No Map” in order for the map to appear. I thought I was supposed to click the “No Map” word because it is underlined like a link.</td><td>The problem only occurred in IE and has been fixed.</td></tr>
<tr><td>1-7</td><td>Jennifer Borges</td><td>I also tried logging in another day and I received the following error from the website:

</td><td>For unknown reason the server was stuck on that day (also reported by another tester). The server was rebooted and the error was resolved.</td></tr>
</table>

Table C-2: Interface Improvements

No	Tester	Comment	Response
2-1	Achilleas Kourtellis	I added 6 tables and the second line of tabs was covering the 1st question so I could not see it. This happened in both accounts (manager an end user). Pic below. 	We will fix the overlap problem. We note that the main purpose of using tabs is not to categorize the questions, although it can be. We suggest that the user use the general default names, i.e., “Tab 1”, “Tab 2”, etc., thus most users are expected to need only one row of tabs. Because there is limited viewing space for questions display and when there are more questions than the limited space can accommodate, tabs are used to avoid having to scroll up and down questions display area, which is both slower and inconvenient than using tabs. Multiple tabs are needed only when one tab cannot accommodate all the questions.
2-2	Rupert Giroux	I was not able to see all of the project questions. I could only see the first 3 questions of one tab and I could not scroll to see all of the questions for that tab. Additionally, if the tab names were large enough I could not see all of the questions and the tabs overlapped each other.	As pointed out in our previous response, tabs are used to avoid the need to use scroll bar, which is more cumbersome to use during data collection when speed of data collection is critical.

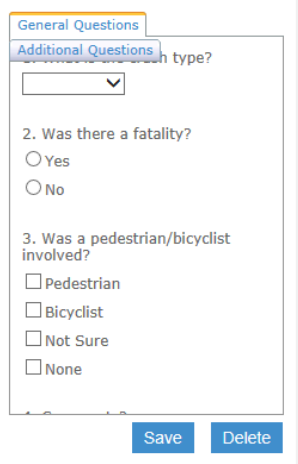
<table>
<tr>
<td>2-3</td>
<td>John Battle</td>
<td>Unable to see entire question box in Internet Explorer (left). Can see all of them in Firefox (right).

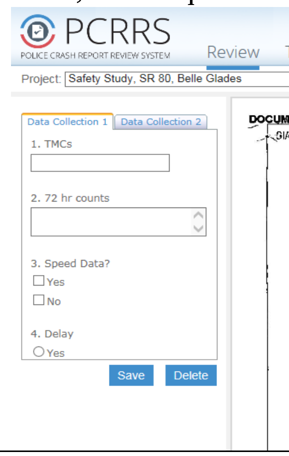
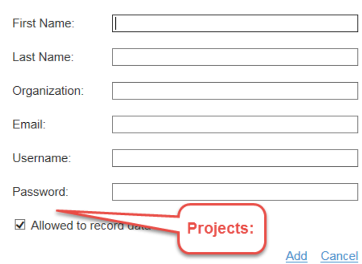



</td>
<td rowspan="2">The problem occurs for two reasons: (1) different browsers interpret the code differently, and (2) the questions are longer than the space available, which depends on the screen resolution used by the end user.

In Case 1, we will fix our stylesheet to make sure that it is interpreted consistently across all major browsers (i.e., IE, Firefox, Chrome, and Safari).

In the second case, the user will have more control than the system. When setting up the questions, the project manager should make sure all questions can be displayed in full by previewing the question display on the left panel. When a question has many options, it is advisable that a dropdown list be used over radio buttons (for single selection). However, the above may still not guarantee that all text will be visible as it also depends on the end user’s screen resolution. We will add the scroll bar just in case this should occur, so that all questions will be visible and accessible.</td>
</tr>
<tr>
<td>2-4</td>
<td>Denis A. Denis</td>
<td>I could only see the first 3 questions. It seems that the questions field needs to be larger or a vertical scroll bar provided. When more than one Question Tab is used, and they do not fit next to each other, they are placed one under the other, and they cover up the first question from view.


</td>
</tr>
</table>

2-5	Suresh Allu	When signed/login as an End User, all the questions that were created for a project were not displayed in Tab 1. Six sample questions were created, but only 3 questions were completely visible. Please see Figure 1 in this document. 	
2-6	Shaun Davis	The option to add a user to a project should be present when the user account is being created.	The current design is to first create an end user account and then assign project(s) to a second and separate step. We will add the project list as suggested so project(s) can be assigned when an account is being created. Good suggestion!
2-7	Denis A. Denis	I would like to see the Projects field when creating a new user, instead of having to create the new user and then clicking on Edit to see the Projects field to assign projects. 	
2-8	Thobias Sando	Suggest removing the background shading of the list items on each screen, because it appears as though the top item is highlighted when only two items are in the list. Either shade all, or shade none.	Alternate row shading is commonly done to help the user read across the same row. We believe there is value to this feature. To avoid the visual problem as described, we will modify such that the shading starts from the second row instead of the first.
2-9	Thobias Sando	Although the Up/Down arrows seem intuitive on the Project Questions screen, at first glance it is unclear what the intent is. Suggest adding a statement on the Project Questions screen to "Use the Up/Down arrows to change question sequence".	Instructions will be added as suggested.
2-10	Jourdyn Hunsaker	Adding the end users is very simple, but assigning projects is more difficult. After creating the user profile, I saw the list of projects I created populate under the name. I thought that meant the user was added to those projects. I did not realize that I had to click on the individual projects to add someone until I tried logging in with the end user log-in and could not see any of the projects. It would be helpful to add simple instructions to this page.	Projects are listed and are not assigned until they are clicked and highlighted by the user. We agree that this may not be intuitive to the user. We will add appropriate instructions as suggested.
2-11	Jourdyn Hunsaker	Adding questions was not very intuitive. I am familiar with creating surveys in Survey Monkey	Unlike the Survey Monkey and Google Doc survey tools, we have to

		and Google Doc surveys, and a similar interface may be more user friendly.	deal with the limited space for this application. The space is limited because we need for the questions to be visible without having to scrolling down the screen. Having to scroll up and down will slow down the data recording process. To avoid this, tabs are used, which create one extra layer during the process of setting up the questions. Having said this, we are making one change (as suggested by tester Denis A. Denis), which is to allow the selection options of a question to be defined the same time a question is created. This reduces one drill-down step in the process.
2-12	Denis A. Denis	It would be helpful to have the Crash Period date fields preset to date format so that it is not needed to type the / between day, month, and year. This is already done when accessing it from the End User Account.	This format was omitted advertently in the Project Manager component. It has been added.
2-13	Jeff Scott	Using the "Search" menu, were you able to create a project and view the crash reports successfully? Yes. But the date input method for the Search mode is a little different than the one under the Project Manager interface. Not a big deal but it was annoying that one required the "/" and the other did not.	
2-14	Jennifer Borges	There no is scroll bar on the "Searched Crash #s" column.	We found that IE grays out the space bar and does not allow the mouse roller to scroll the list, when the list box is disabled/deactivated. We disabled the list box in order to indicate that the listed crash numbers are not meant to be clicked. We will investigate the IE problem and will likely simply enable the list box.
2-15	Suresh Allu	The scrolling system for the crash numbers could be improved (e.g. adding a scroll bar, scrolling with the mouse wheel).	
2-16	Jourdyn Hunsaker	When I was in the Project Manager component, when I clicked the "Help" tab, the user manual would open in a new tab. In the End User interface, it would open in the same tab, not a new one. I think it would be more helpful to have it open in a new tab.	The system now opens the Help file on a new window for all components.

Table C-3: Functional Improvements

No	Tester	Comment	Response
3-1	Shaun Davis	Is the radius function just on one roadway, or is it a geographic query, picking up all crashes within that distance? Would all roadways be included in the map function? It's difficult to determine where there are valid crashes using this function.	It currently picks up all crashes within the circle as defined by the radius. We will add the circle border and plot the selected crash locations so the user can see clearly which crashes are selected.
3-2	Jeff Scott	It would also be helpful if the select by map/radius option would show you how big the chosen radius is. For example, draw a 400' circle on the map when you have selected 400' as your radius.	
3-3	Shaun Davis	Provide the ability to make questions required. Users can skip questions without providing a response	Currently the user can skip any questions. We will add a user option during project question setup to indicate if a question must be answered before a record can be saved.
3-4	Achilleas Kourtellis	In the selection of crashes, is there any way to add more variables for selection, i.e. all available variables instead of just the ones included?	Currently it only includes the two most commonly used filters, i.e., crash type and crash severity. We have considered additional filters but did not include them in order to keep the screen simple. Based on popular demand and without complicating the current screen, we will add an "Additional filters >>" link where the user can click to enter another page to apply more filters.
3-5	Jourdyn Hunsaker	The ability to search by crash type and severity level is great, and I think it would be worthwhile to include other search parameters.	
3-6	Kostas Kapetanakis	Add more options to query crashes such as by contributing cause (red light violation, speed, alcohol involvement), Site location (Intersection, driveway, railroad crossings, etc.).	
3-7	Kostas Kapetanakis	I believe adding search filter would help facilitate crash queries and would minimize project manager's involvement.	
3-8	Jourdyn Hunsaker	It would be helpful to have a warning window for when the system is about to automatically log a user out for inactivity. One time I left the window open for too long, and after typing all the information for my crash search, I was redirected to the login page after trying to click "Save," losing all the information I had entered.	The system currently times out after the standard default 20 minutes of inactivity. We will reset it to 2 hours, which should be long enough to cover most breaks including lunches. It is not advisable to set overly long session as we do not want the system to consume server resources unnecessarily.
3-9	Denis A. Denis	The system logged me off once and took me to the login page.	
3-10	Suresh Allu	When multiple roadway section IDs were entered, total crashes on the roadways were included, but do not appear to be separated in the left side column under crash numbers. It is not clear which crash numbers belong to which roadway section.	Currently, the crash numbers are listed from smallest to the largest. We will attach the roadway ID and milepost to each crash number and the list will be sorted by roadway ID and milepost location.
3-	Denis A.	When adding a project question, it would save a	This will be implemented. Great

11	Denis	step if when clicking on Add, after the question is typed, the system takes you directly to Answer Choices, instead of having to click on Edit.	suggestion!

3-12	Jourdyn Hunsaker	Setting up projects is simple and straightforward, but it would be more user-friendly if the all three steps (creating project title, project details/time parameters, and project questions) were completed in one cohesive process, instead of having to click "Back" and "Edit" under each heading after naming the project.	The current design is modular and is structured such that the user will be able to access a specific (distinct) component to make edits. Having all three steps in a sequence will require that the user goes through one step to reach another. We understand the steps may not be intuitive at first glance, but most users should be able to quickly figure out. We will add instructions to the screen to provide additional guidance. Also note that an example project will be automatically included for each new account created.
3-13	Jourdyn Hunsaker	Nothing about the interface was particularly difficult, but the system would be more intuitive if the aspects of project creation (name, crash details/parameters, and questions) were included in one process. Clicking "Back" after completing one step and then clicking "Edit" to begin the next was not very intuitive.	
3-14	Denis A. Denis	When clicking on Add Project, I would rather be taken directly to Project Crashes page and input the Project Name there along with other pertinent information, instead of having to input the Project Name first on the Project List page, and then clicking on Edit under Crashes to continue creating the project.	
3-15	Denis A. Denis	The progression of creating a project and new user could be made smoother without the need to click on Edit every time a new step is done.	
3-16	Jourdyn Hunsaker	Examples in the project question tab may be helpful as well.	This cannot be done without also significantly complicating the interface. As noted in the above response, an example project will be automatically added in every new project manager account.
3-17	Jourdyn Hunsaker	The process of adding questions in general was slightly confusing – I had to consult the user manual in order to correctly do this. It would be helpful when creating one data tab, instead of having to select "Edit" to add questions, either have a prompt that comes up for adding questions or rename the button "Add Questions." On one page, I created two tabs and one time and it was confused to know which questions were getting added to which tab. Once questions were created, however, I was able to use the arrows to move them.	The Edit link for Tabs is needed to edit the tab name. It cannot be replaced with "Add Questions". All questions are added to the first tab by default. The user can then move the excess questions (i.e., cannot be displayed in full in one tab) using the Down button. While we understand that these steps may not be intuitive at first glance, we believe most users will figure out, as in your case, after playing with it for a little while. We will add instructions to the screen.
3-18	Kostas Kapetanakis	Map does not clearly indicate whether there is one or more crashes at a given crash location. Would it be possible to show number of crashes next to the crash symbol?	We will find a workable way to convey this information on the map.
3-	Kostas	Provide an option to search crashes by intersection	We will add Google's Search box to

<table>
<tr><td>19</td><td>Kapetanakis</td><td>name (and associated radius) instead of searching by the section number and milepost.</td><td rowspan="2">allow the user to type in any search text and zoom in.</td></tr>
<tr><td>3-20</td><td>Thobias Sando</td><td>Suggest when setting up a project “by indicating map locations” that a “select county” option be available with the map zooming directly to that county.</td></tr>
<tr><td>3-21</td><td>Suresh Allu</td><td>In selecting the locations using map, the maximum radius is 1,000 feet. Please consider expanding the radius to obtain data for longer study segments.</td><td>The dropdown list includes some select radii up to 1,000 feet. The user can enter any number in the box. We will add a note to inform the user of this feature.</td></tr>
<tr><td>3-22</td><td>Jennifer Borges</td><td>There is no “forgot password” or “forgot username” option.</td><td>We will add the “Forgot my password” option.</td></tr>
<tr><td>3-23</td><td>Shaun Davis</td><td>I created a username ‘john’ with pw ‘fdot’ and authorized him to enter data on the ‘left turn crashes’ project. When I used the credentials, it logged me in as john goodnight. This user had the ability to edit my project ‘right turn crashes’ which I hadn’t authorized him to use. I’m assuming this is because the user ‘john’ was authorized to use my project, but it refers to two different users. This problem could be worse since it seems that a username has to be created for each project. A solution could be to prevent a username from being used which has already been created in the system.</td><td>The system did not check for duplicate username, resulting in the error (as John is a common name). The system will be made to check for unique name and email before allowed to save to avoid this problem.</td></tr>
<tr><td>3-24</td><td>Shaun Davis</td><td>In the export, indicate who (username) provided the information, the date and time they added the record. If possible, provide the ability for the project manager to include certain fields in the export. Translate the codes in crash type and crash severity or provide another code table to translate the codes. Include fields from the shapefiles. Can person level or vehicle level data be included in the export?</td><td rowspan="4">Currently only a minimum number of fields are included in the table/extract mainly to identify crashes. The reason is because by including many fields from the crash database it will take up space and push the review data entered by the user to the right and off the screen, making the more important data more difficult to read. Based on popular demand, we will include an option to toggle to include additional variables. We will also add an option to include the word descriptions in addition to the code numbers.</td></tr>
<tr><td>3-25</td><td>Jourdyn Hunsaker</td><td>Question: Using the “Search” menu, were you able to create a project and view the crash reports successfully? Comment: Yes. However, because questions are not included in this option, I think it would be helpful if the Table/extract included more information (like the FDOT crash database).</td></tr>
<tr><td>3-26</td><td>Jourdyn Hunsaker</td><td>More information from the crash data should automatically populate in the “Table” tab (like when extracting data from the FDOT crash database).</td></tr>
<tr><td>3-27</td><td>Jeff Scott</td><td>For the Table views, don’t use the codes for Crash Type and Severity, go ahead and use the words. It will be easier for the user who does not know that a crash type 5 is off the top of their head. Also,</td></tr>
</table>

		can you have an option to add more fields to the Table view? A list similar to the one used for selecting the Crash Types in the search section would be great with a list of all the available fields.	
3-28	Suresh Allu	When signed/login as an End User, and click “Table” tab from the menu in the Banner Area, the crash types and severity have codes. It would be more user friendly if the Crash Types and the Severity in the Table are decoded (e.g. rear end, angle crashes for crash type; PDO, injury or fatal for severity). It will not be clear for everybody if they don’t know or have the crash code list.	
3-29	Denis A. Denis	Would like to be able to create tables that include additional information found in the police report that we can use to create crash analysis tables, or better yet, have an option to export the crash data directly to the crash analysis spreadsheet that we use.	
3-30	Shaun Davis	Change the text for the ‘delete’ button to ‘clear’ on the questions tab as this seems to be the function that’s being performed. Delete indicates that I’m deleting the record from the database.	Currently, the Delete button deletes the user answers to the questions, but does not delete the record. The button will be changed to Clear as suggested.
3-31	Denis A. Denis	When I access the Map through the link on the left side of the Project Crashes page, and I click on any crash location shown, nothing happens. Should the police report for that crash populate?	The left panel is to show the resulting crashes of a project and the Map function is included only to show the locations of the crashes. When there are crashes listed on the left panel, it indicates that a project has been successfully created and can be assigned to an end user. The project manager can login to the End User account he/she created to view the police crash reports in the End User component, which provides different tools to make it easy to view police crash reports. We note that the system is designed to have the Project Manager component set up projects and the actual review of police crash reports is done in the End User component. We want to avoid duplicating the same functions in each component. Based on popular demand, we will add a link to allow the project manager to jump directly to the End User interface to view the police crash reports.
3-32	Kostas Kapetanakis	Would be better if crash reports are available in Map View.	
3-33	Jeff Scott	I did not encounter any difficulties in setting up new projects. It would be nice if you could view the crash reports while logged in as the project manager in order to get an idea of the types of crashes that fall within the study area.	
3-34	Jennifer Borges	It would be helpful if I could double click on the crashes under “Searched Crash Numbers” and generate the police report.	
3-35	Jennifer Borges	Once the map is generated it would be very useful if you can double click and generate the police report.	

3-36	Jessica Lynn	Was able to create project title just fine. Had issues with adding the location. The examples given in the boxes and in the “Help’ make it out like you must enter all that information in the ‘( )’ but you don’t. (see Ex 1) .	We will try to find a better way to convey the message and add notes and explanations in the User’s Guide.
3-37	Jessica Lynn	Question: Did you find any part of the interface confusing and why? Please include your suggestions for improvement. Comment: Just on how to enter the locations. Be more clear on what is to be entered and what is just the explanation (see Example 1).	
3-38	Jeff Scott	Is it possible to export the crash reports as PDFs? I saw the export function which generates the CSV file but it is also helpful to have the reports as separate files so you can send to someone else or store in a folder on your computer.	We will add the ability to download each police crash report in the PDF format and also in the original TIFF file format. Note that we also decided to export as an Excel file instead of as a CVS file.
3-39	Jourdyn Hunsaker	A method of downloading the crash reports would be helpful. Sometimes we attach them to reports or memos.	
3-40	Suresh Allu	Is it possible to sort the crash data by roadway ID, Year and Milepost? The Table appears to be sorted by crash numbers.	We will add a link to each field name on the table header to allow the user to sort any fields in ascending or descending order.

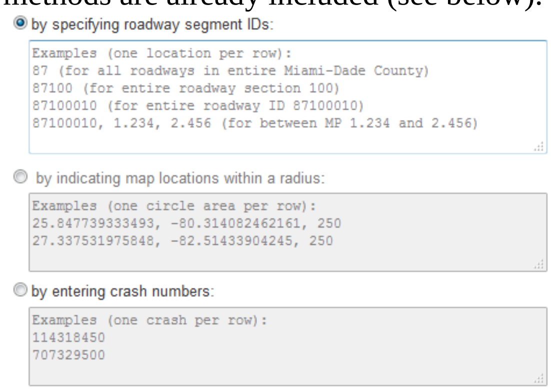
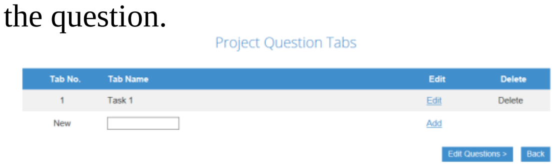
<table>
<tr><td>3-41</td><td>Jourdyn Hunsaker</td><td>It is nice to be able to search crash data from the End User interface, however, an option to add notes as one reads may be helpful.</td><td rowspan="2">We will add a general note field. Note that for more specific data to be collected, the user should use the Project Manager component to set up the project questions. In general, we try not to duplicate the same functions from another component to keep each component as simple as it can be. Users who desire to set up project questions can simply be given a project manager account so that the same user can be a project manager and also the end user.</td></tr>
<tr><td>3-42</td><td>Thobias Sando</td><td>Question: Using the “Search” menu, were you able to create a project and view the crash reports successfully?
Comment: Yes, however, without the option of creating project questions, it seems incomplete. Suggest that end users established by the Project Manager as being “Allowed to record data”, be able to add questions to Projects they are assigned or create themselves.</td></tr>
<tr><td>3-43</td><td>Misleidys Leon</td><td>Consider providing a magnifying glass button with zooming capabilities.</td><td>Currently, due to the browser/web application limitation, the police crash reports can be adjusted using the mouse roller, but it also proportionally adjusts the banner and the left panel, which is undesirable. To allow only the size of the police crash reports to be adjusted, we will add a dropdown list to allow the user to select from a list of predetermined police crash report sizes (both larger and smaller than the 100% default.</td></tr>
<tr><td>3-44</td><td>Julio Alegre</td><td>You may want to show the type of crash in the map and fatalities. Also, there is no legend. The red icon is for the current crash report; however, it may be confused with a fatality.</td><td>Currently it shows the location of the current crash record in red and all other locations in the same project in blue. We will investigate how best to resolve this issue and will revise accordingly.</td></tr>
<tr><td>3-45</td><td>Kostas Kapetanakis</td><td>In the review tab on the top center screen, in order to report an error, the ‘‘notify’’ button could be replaced by the ‘‘report errors’’ button which is more clear. Also, sometimes switching between different projects takes time for the new questions to be appeared.</td><td>We will change as suggested.</td></tr>
<tr><td>3-46</td><td>Denis A. Denis</td><td>When clicking on a crash location from the map view, nothing happens.</td><td rowspan="3">The map currently displays only the crash locations. The satellite image background also allows the user to quickly check the crash site conditions. We will add Google Maps’ infobox so when a crash is clicked, the box will list the key crash variables.</td></tr>
<tr><td>3-47</td><td>Kostas Kapetanakis</td><td>Also, it would be good if some information about the crash was mentioned if you click the crash symbol.
Additionally, some crash statistics should be displayed for specific categories such as crash type, time of day, contributing cause, day of the week, site location, injury severity, etc.</td></tr>
<tr><td>4-48</td><td>Suresh Allu</td><td>The crash locations are shown in the map, but no other information (crash type, time, severity, pavement/ lighting condition etc.) is shown when clicked on the crash.</td></tr>
</table>

3-49	Jourdyn Hunsaker	Yes, the “X pages per row” worked fine. I would suggest for the “Start from page X” option, making “Start from the last page” an option.	We will add this option.
3-50	Jennifer Borges	When adding questions I have no idea what the “question type” drop down menu refers to. I also did not see the questions asked as an end user.	Although we think it is clear just from the list of selection choices of the dropdown list, a better title for “question type” could be “question format”, which we will change to.
3-51	Jennifer Borges	I think in the user guide there should be a better introduction about what this program is about and the users. I think there should be more general information. I found the “Questions” portion to be confusing.	The User’s Guide will be updated to reflect all the changes from this test. We will include more introduction material and add additional details where needed. This beta test gives us a lot of information on where the users may have trouble with.

Table C-4: Question Answering and Explanations

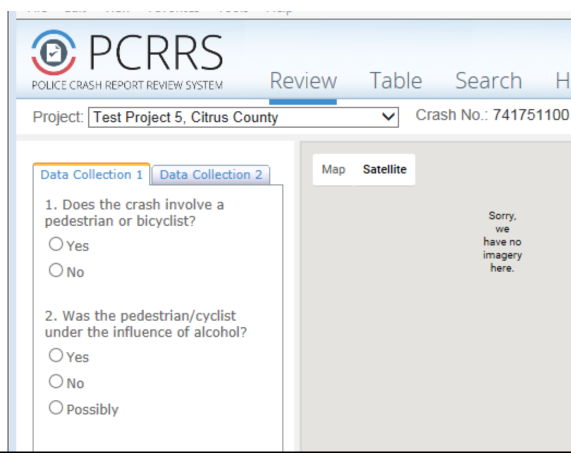
No	Tester	Comment	Response
4-1	Shaun Davis	Can one project have multiple managers? Ex. If Ben and I were supervising the data collection phase of a project, would I be able to see his projects?	The current structure is to have one project manager with multiple end users. To allow multiple project managers for each end user would significantly complicate the interface, making it less straightforward to the users. In the case that multiple project managers are to oversee one project with one or more end users, the simple solution is to use a "general" account that is shared by multiple managers.
4-2	Shaun Davis	Is there a master list of users? Would users need to be added repeatedly, depending on who is managing the project?	There is not a master list of end users to be shared by multiple project managers. Currently, each end user is created by a project manager. We are concerned that adding this capability (i.e., sharing end user) will complicate the system and the interface.
4-3	Shaun Davis	When ordering questions, it may be helpful to have buttons which change the order within a group or move questions to a different tab.	The system already includes the "Up" and "Down" buttons that allow the re-ordering of questions and moving of questions across different tabs.
4-4	Thobias Sando	Suggest placing a "Go to Users" button on the Project List screen to facilitate the setup/edit flow.	This would be redundant since the user can simply click on the Users main menu to jump to the User List screen.
4-5	Thobias Sando	Suggest adding a "Done" or "Return to Project List" button on the End User List screen, to return to the Project List screen after the end users have been established	This would be redundant since the user can simply click on the Project main menu to jump to the Project List screen.
4-6	Thobias Sando	After setting up several Project Question tabs, I was not able to add any questions to tab 2 or 3, but only tab 1. Each question added went to the tab 1 list. I didn't see an option to place the questions under different tabs.	Because the display space depends on the user's screen resolution, the system is not able to pre-determine how many questions (which also depend on the length of each question) should be fitted on each tab. Thus the system always posts questions to the first tab. The user can quickly move any excess questions using the "move up" and "move down" button s next to each question to move the questions across different tabs. The user can determine what are "excess" by clicking the Preview button to see how the question display will look like.
4-7	Suresh Allu	It is not clear how to add questions to the required Tab. All the questions were being added to the first Tab only even though a second tab was created.	
4-8	Jennifer Borges	Under "Project Questions" I created two tabs. When I added and saved questions to Tab 2, the question moved up to Tab2 and Tab 2 appeared blank.	
4-9	Jennifer Borges	Anytime a "Project" or "Tab" is selected you need to click on "Edit" even if you	The Edit link serves to open the page for mainly editing. The user can also use it to

		don’t want to edit it, in order to view it and access it. There should be the option to just click on the title.	view or review the data if he/she does not want to change anything. Currently, it has two Edit links, one for editing crash locations and another for editing review questions. It is not clear what purpose a clickable link for the title would serve.

4-10	Jourdyn Hunsaker	It may be helpful to have the crash period fields already filled in with the dates of crash data that are available.	We have limited data on our current test server. When the system is deployed on the FDOT server, it would have access to all years of data. We believe the pre-filled dates would not be needed or appropriate as they are not likely to match what the desired input for most users.
4-11	Jourdyn Hunsaker	Renaming the “Back” button to “Save” while creating the projects, search parameters, and questions may be less confusing for users.	Both the Save and Back buttons are needed. The Save button allows the user to save at any time and for multiple times without exiting the screen. The Back button is needed not only to exit the screen, but also to exit without saving when a user does not want to save changes. Combining the two buttons will require that changes be saved in order to leave the screen.
4-12	Jourdyn Hunsaker	For selecting locations, it is very helpful to have examples (like how to search countywide, search an entire roadway section, search a portion of a roadway, etc.).	Examples for location selections for different methods are already included (see below). 
4-13	Jourdyn Hunsaker	On the “Project Question” tab, I clicked the “Delete” button to delete a question I did not want, but the system would not delete the question.  	The Delete button on the Project Question Tabs screen is to delete a tab, not a question. In the screen capture shown, the Delete link is actually disabled because it is for the first tab, which cannot be deleted because it needs to have a minimum of one tab. In retrospect, we will remove the Delete link for the first tab to avoid the confusion (since it is always disabled). Note that to delete a question the user has to be on the Edit Questions screen.
4-14	Denis A. Denis	It may be preferred to have all three Severity Levels preselected; then the user would unselect them if needed.	The default with no options for a filter selected is the same as all options selected. It simply means that the filter will not be applied. This assumption is consistent with the

			standard filter protocol.
4-15	Denis A. Denis	For the Project Questions Tab, I would like that when I type in the Tab Name and click Add, the system takes me directly to Edit Questions page, instead of having to click on Edit Questions.	The system is designed to set up all the tabs a user expects to need (but can add or delete later, as needed). The system cannot jump directly to question setup after a tab is added, not knowing if that is the only or final tab needed.
4-16	Denis A. Denis	It may be helpful to allow Project Manager to review work done by each user they created. For instance, what projects have been worked on, review the answers to questions for each police report, etc.	The project manager can log into any end user account that he/she assigned. This can be done even when the end user is logged in, as the system allows multiple computers to log in to an account at the same time.
4-17	Denis A. Denis	It may be beneficial to be able to search for crashes by specifying location on a map, and distance along the selected road, instead of a radius that may include nearby streets that do not intersect the area of concern.	This can implemented be relatively easily in a GIS system with buffers. However, we are using the Google Maps which has more limited spatial capability. The inclusion of Google Maps is simply to display the crash locations and there is no intention to turn it into a GIS system.
4-18	Jennifer Borges	When adding users, the password is only asked to be input once. There is no “confirm password” section. The password is not private when adding users.	End user passwords are currently assigned by their Project Managers, thus are not private. There is not a need to keep accounts private because the system is not expected to contain private or confidential information. More importantly, the system is designed to allow the project manager to also log in a user account he/she supervises to check on the work progress made by the end user.
4-19	Jennifer Borges	Not sure if it is feasible, but it would be very helpful if a Collision Diagram could be generated based on the crash reports selected or based on the crashes within a selected region.	Generation of collision diagrams is beyond the objective of the system, which is to facilitate police crash report retrieval, review, and information recording.
4-20	Jennifer Borges	It might be beneficial if the map is color coded. Maybe red for fatalities, yellow for injury and green for property damage only when it gets generated on the map feature. It might also be helpful if those crashes involving pedestrian has the proper color coding with a different shape at the end of the mark used to pin the location on the map.	The focus of the system is the police crash reports. The inclusion of the map is simply to display the crash locations and to allow the user to quickly get the crash site conditions from the satellite images. These features can be considered later if the system is to be made more comprehensive and beyond its current focus.
4-21	Kostas Kapetanakis	Suggest using different colors for different crash types in map.	
4-22	Julio Alegre	Colorcode crashes by year and have the type of crash included, as well as fatalities.	
4-	Denis A.	When I click on Map at the top of the page	To display the map and the police crash report

23	Denis	in the Review tab, the map opens, but the police report goes away. I am not able to see the map and police report sketch side by side.	pages side by side, select one of the “x pages per row” option from the “Page options” dropdown list. By default it is one page per row, so all pages are displayed on one column vertically.
4-24	Kostas Kapetanakis	The map button (in Project module) had to be clicked twice for the crash map to appear on the screen.	We are not able to duplicate this problem in different browsers. There could be multiple reasons for the problem. One could be with the pop-up setting of the browser. As the map is displayed on a pop-up window, the user must set the browser to allow pop-ups. The user will have to re-click after allowing pop-ups. It could also have been due to a network delay, or some other problem.
4-25	Julio Alegre	Typical questions and drop menus instead of typing all the questions. Also, once a set of questions is prepared, to be able to copy and paste the questions in another template.	This feature could be beneficial if there are significant overlaps in the wording of the questions. It is not expected to occur often enough to justify adding complexity to the interface.
4-26	Julio Alegre	The only error I got was when setting the Project Crashes. I did not realize that there were only crashes from 1/1/2005 to 12/31/2009, so I kept getting errors. Now, the error did not specified where I have made the mistake so I tried different things. Finally, I saw the example and used the correct Crash Period.	We understand that by “error” the tester was referring to system not returning any crashes based on the search conditions specified. Currently, the system displays a message indicating that the search conditions specified did not return any crashes. The system can only check for input format problems. For this test, the test packet provides a document listing the available data years and crash locations. When the system is deployed to the FDOT server it would have access to all crashes and there would be few chances that the system would return no crashes.
4-27	Julio Alegre	It was not difficult at all. Having the example helped, thus the Location (Roadway ID, MP Begin, MP End) was not expected. Assigning the User was simple; however, the questions were time consuming. It also took me some time to realize the years available and kept getting errors, but once I followed the example, I was good.	
4-28	Julio Alegre	Not difficult or confusing. When an error is made, it would be good to highlight where the error was made and perhaps suggest a fix.	
4-29	Rupert Giroux	The ability to move the pages of the report using a hand tool similar to PDF viewers.	To our best knowledge, this is not possible to implement on HTML pages. The function is included in web document reader/viewer. However, we are not using such a utility in our application as if we do we would be limited to its reader/viewer environment and be unable to implement some other functions we need.

4-30	Shaun Davis	Question: Using the "Page options" link on top, were you able to display the crash report pages in the page layout you want? Result: Start from Page 5 didn't work	A majority of the police crash reports have only four pages. When there are only four pages, Start from Page 5 will be the same as start from Page 1 (i.e., 5 modules 4) according to the current design. This gives the impression that it does not work because the screen stays the same. The "5 pages per row" option does not apply when there are only four pages in a report.
4-31	Jeff Scott	Question: Using the "Page options" link on top, were you able to display the crash report pages in the page layout you want? Result: Yes except that the web page would only show 4 pages per row, not 5 pages per row. It did not matter how far I zoomed out.	
4-32	Shaun Davis	Provide a dropdown list of project names which each user is authorized to use. The search function should return a list of projects matching the criteria. I could search based on one word in the title (crash) and return a project. The project name didn't change to reflect what project was returned.	It does not seem that most users would have so many projects to require a search function for the project list. The downside is that it would complicate the screen. This can be further considered and added later if deemed needed.
4-33	Achilleas Kourtellis	Is it possible to be able to adjust the column width of the table so that if multiple columns are there I can reduce the width in custom size (like in excel?) I understand I can do this in excel after export but it could be useful in the software itself.	This is not a general capability of Web-based applications. Column widths are adjusted by the browser automatically and may also differ from browser to browser.
4-34	Thobias Sando	It would be nice to have a "Save Map" option to save the Google Map image for future reference. Suggest placing it at the top of the screen next to "No Map".	This does not seem to us to be a needed function for most users.
4-35	Jourdyn Hunsaker	When I clicked on "Map," the map would not populate on my screen  	This is likely because the image tiles from the Google Maps servers were not transmitted successfully, likely due to a temporary network problem.
4-36	Jennifer Borges	In general, I found the End User interface confusing. Not sure why I had to create a project. I thought the point of the End User interface is to be presented with a list of Projects that were assigned to me by the project manager, and then I could have the option to select the project I wanted to work on. After, I	Your understanding of the relationship between the Project Manager and the End User interfaces is correct. However, the system allows a third group of end users who are not assigned specific projects but simply want to use the system to access and review

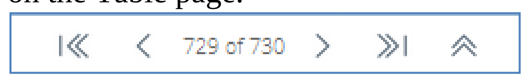
		would have the option and ability to download crash data and answer questions.	police crash reports for any locations they may need.
4-37	Jennifer Borges	All of the crash report numbers are light gray under the column “Searched Crash #” located on the left hand side of the screen. I found this to be confusing because I thought they were inactive. Typically on other websites when things appear light gray they have not been activated for selection.	The crash report numbers in the “Searched Crash Numbers” box are indeed not activated and are non-selectable. They are only for display purpose, which is why they are shown with the light gray background.
4-38	Adalberto Acuna	How do you put on the numbers of vehicles involved, on the ‘table’ data.	The table on the Table page is not editable. Data are recorded on the left panel on the Review page.
4-39	Adalberto Acuna	Question: What other software capabilities and improvements do you think would be helpful? Comment: The option to move to back to prior police report and change corrections.	The system provides the standard four navigational buttons to allow the user to move among the police crash reports (see below). The user can also go access a specific police crash report by clicking on the crash number on the Table page. 
4-40	Adalberto Acuna	Question: What other software capabilities and improvements do you think would be helpful to include? Comment: Are you going to include histogram?	Generation of histograms is beyond the objectives of the system.

Table C-5: Miscellaneous Other Comments

No.	Tester	Comment	Response
5-1	Achilleas Kourtellis	Great tool. Thanks for sharing. I am looking forward to using it in the near future.	Thank you for the comment.
5-2	Achilleas Kourtellis	Very easy after review of the guide in the beginning.	After all the improvements provided in this response are made, we hope that the User's Guide, while provided, would actually not be needed for most users to use the system effectively.
5-3	Adalberto Acuna	I logged-in, it took me into a sample project's hard copy (police report). Observed 4 listing to click on. (Review-Table-Search-Help).	OK.
5-4	Adalberto Acuna	Why once you save on 'Review' tab 1 and tab 2 information and save it takes you to another hard copies hard to identify on 'table'	We need more details to address any potential problem.
5-5	Adalberto Acuna	How do you create a new Project? Beside the one you provide? I like to create a project using this software to manipulate crash data and create a table etc.	The User's Guide provides instructions on the steps to create projects.
5-6	Adalberto Acuna	Question: Did you encounter any software errors? Please describe the errors and include relevant screen captures that display the errors. Comment: No errors. But is like walking into darkness.	We are not sure if it is because the User's Guide is not clear or the tester did not have a chance to review it.
5-7	Adalberto Acuna	Question: Did you find any part of the interface confusing and why? Please include your suggestions for improvement. Comment: It does not look confusing. It looks friendly but is good to have somebody to ask questions about it.	We provided support contact information. We are sorry if the information did not get across.
5-8	Adalberto Acuna	Question: Were you able to use the username and password of the end user account you created during Part I of your test to log in to the End User interface? Comment: Yes. Worked very good	OK.
5-9	Adalberto Acuna	Question: If you were using the end user account you created, were you able to see the project questions for the project you created during Part 1 of your test? Comment: Yes, but when I ended my answers of part I disappeared.	We need more details to be able to address any potential problem.
5-10	Adalberto Acuna	Question: If you were using the end user account you created, were you able to see the crash reports for the project? Comment: No, because I was unable to retrieve any crashes.	We need more details to be able to address the issue.
5-11	Adalberto Acuna	Question: Using the "Page options" link on top, were you able to display the crash report pages in the page layout you want? Comment: Create a workshop to attend and you would get a good feedback.	A training workshop can be conducted, if resource permits, when the system is deployed.

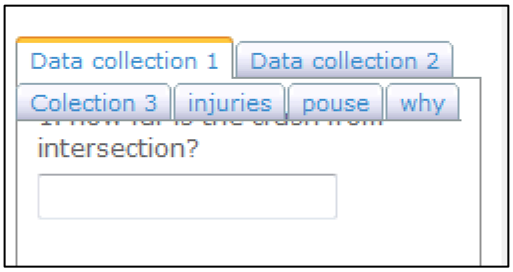
5-12	Adalberto Acuna	Question: Please include any other comments and suggestions below. Comment: As I mentioned, a Workshop would provide you a good feedback. I think Traffic Operations has about 4 to 5 people willing to volunteer for that workshop.	
5-13	Adalberto Acuna	Question: Were you able to review some crash reports and record your review results? Comment: Yes, yours.	OK.
5-14	Adalberto Acuna	Question: Were you able to export the crash records with your review results? Comment: Yes, but no the vehicle speed.	We need more details to be able to address the issue.
5-15	Adalberto Acuna	Question: Using the “Search” menu, were you able to create a project and view the crash reports successfully Comment: Yes but did not work	We need more details to be able to address the issue.
5-16	Adalberto Acuna	Question: Did you find any part of the interface confusing and why? Please include your suggestions for improvement. Comment: Crash report Search, I input Section number and mile post for a short segment without success. I would be good to go to by indicating map locations within a radius: And provide as pinpoint the desired location, you could get all the info of the location Section number, Mile post, altitude and longitude	OK.
5-17	Jennifer Borges	The first time I created my projects they got deleted when I logged out and then logged back in.	We need more details to be able to address the issue.
5-18	Jennifer Borges	The first time I created an End User account I tried to login again but did not see it the second time. Therefore, I created an end user account again and it worked after that.	We need more details to be able to address the issue.
5-19	Rupert Giroux	The map feature for selecting crashes is great.	Thank you for the comment.
5-20	Thobias Sando	I really like this tool, and believe that it will be very beneficial in future crash analysis efforts.	Thank you for the comment.
5-21	Jourdyn Hunsaker	This interface (End User) was much easier to navigate intuitively than the Project Manager interface.	OK.
5-22	Jourdyn Hunsaker	I was able to review some crash reports and record results. I really liked that once I selected “Save” after recording my results, I was automatically taken to the next report.	OK.
5-23	Denis A. Denis	Yes, I was able to use the end user account I created.	OK.
5-24	Denis A. Denis	Question: Did you find any part of the interface confusing and why? Please include your suggestions for improvement. Comment: Simple to use.	OK.
5-25	Misleidys Leon	It is a good program and what I like the most is the Re-review capability. It is really useful as users always have to	Thank you for the comment.

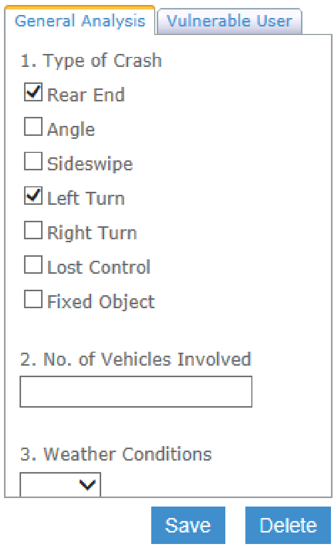
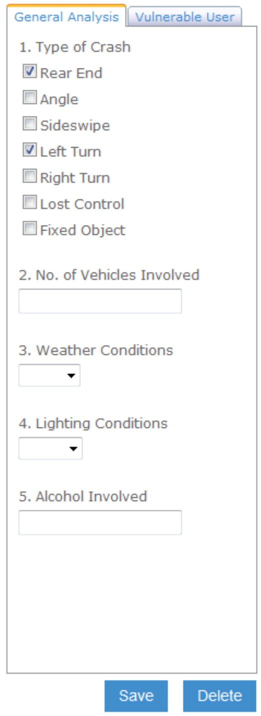
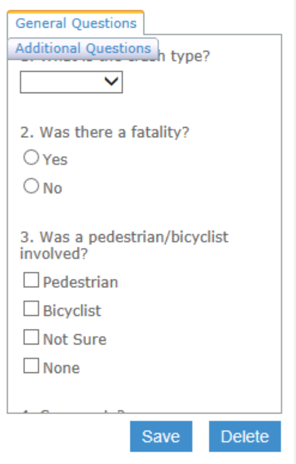
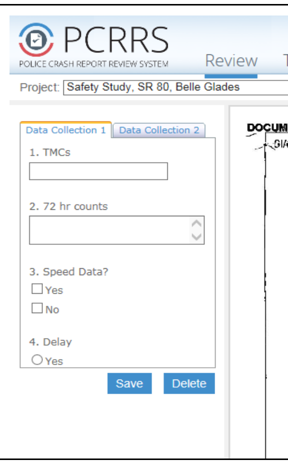
		go back.	
5-26	Jennifer Borges	Yes I was able to create and view the crash reports successfully.	OK.
5-27	John Battle	I like the ability to query the CARs database directly.	The system will query the CARs directly when it is deployed to the FDOT Server.

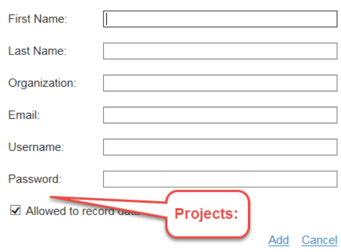
APPENDIX D:

SUMMARY OF BETA TEST SYSTEM REVISIONS

Table D-1: Interface Improvements

No	Tester	Comment	Response	Improvement Status
2-1	Achilleas Kourtellis	I added 6 tables and the second line of tabs was covering the 1st question so I could not see it. This happened in both accounts (manager an end user). Pic below.  	We will fix the overlap problem. We note that the main purpose of using tabs is not to categorize the questions, although it can be. We suggest that the user use the general default names, i.e., “Tab 1”, “Tab 2”, etc., thus most users are expected to need only one row of tabs. Because there is limited viewing space for questions display and when there are more questions than the limited space can accommodate, tabs are used to avoid having to scroll up and down questions display area, which is both slower and inconvenient than using tabs. Multiple tabs are needed only when one tab cannot accommodate all the questions.	The system now limits the tabs to one row. Added automatic preview of tabs in the left panel. Also added the following message: “Note: Tabs are limited to one row. Check the left panel to make sure all tabs are visible. Shorten the tab names if needed."
2-2	Rupert Giroux	I was not able to see all of the project questions. I could only see the first 3 questions of one tab and I could not scroll to see all of the questions for that tab. Additionally, if the tab names were large enough I could not see all of the questions and the tabs overlapped each other.	As pointed out in our previous response, tabs are used to avoid the need to use scroll bar, which is more cumbersome to use during data collection when speed of data collection is critical. The problem occurs for two reasons: (1) different browsers interpret the code differently, and	Redesigned the left panel such that the vertical space always stretches to the bottom of the screen. The vertical bar is automatically activated when
2-3	John Battle	Unable to see entire question box in Internet Explorer (left). Can see all of them in Firefox (right).		

		 	(2) the questions are longer than the space available, which depends on the screen resolution used by the end user. In Case 1, we will fix our stylesheet to make sure that it is interpreted consistently across all major browsers (i.e., IE, Firefox, Chrome, and Safari). In the second case, the user will have more control than the system. When setting up the questions, the project manager should make sure all questions can be displayed in full by previewing the question display on the left panel. When a question has many options, it is advisable that a dropdown list be used over radio buttons (for single selection). However, the above may still not guarantee that all text will be visible as it also depends on the end user's screen resolution. We will add the scroll bar just in case this should occur, so that all questions will be visible and accessible.	the questions display exceed the available space. However, the user should avoid having to scroll as it will slow down data collection. When setting up the questions, the project manager should preview the display of the left panel to make sure that all questions will be visible under the screen resolution that the end user is expected to use.
2-4	Denis A. Denis	I could only see the first 3 questions. It seems that the questions field needs to be larger or a vertical scroll bar provided. When more than one Question Tab is used, and they do not fit next to each other, they are placed one under the other, and they cover up the first question from view. 		
2-5	Suresh Allu	When signed/login as an End User, all the questions that were created for a project were not displayed in Tab 1. Six sample questions were created, but only 3 questions were completely visible. Please see Figure 1 in this document. 		

2-6	Shaun Davis	The option to add a user to a project should be present when the user account is being created.	The current design is to first create an end user account and then assign project(s) to a second and separate step. We will add the project list as suggested so project(s) can be assigned when an account is being created. Good suggestion!	Project assignment can now be done when a new user is being created.
2-7	Denis A. Denis	I would like to see the Projects field when creating a new user, instead of having to create the new user and then clicking on Edit to see the Projects field to assign projects. 		
2-8	Thobias Sando	Suggest removing the background shading of the list items on each screen, because it appears as though the top item is highlighted when only two items are in the list. Either shade all, or shade none.	Alternate row shading is commonly done to help the user read across the same row. We believe there is value to this feature. To avoid the visual problem as described, we will modify to have the shading start from the second row instead of the first.	Row shading now starts from the second row.
2-9	Thobias Sando	Although the Up/Down arrows seem intuitive on the Project Questions screen, at first glance it is unclear what the intent is. Suggest adding a statement on the Project Questions screen to "Use the Up/Down arrows to change question sequence".	Instructions will be added as suggested.	Added the following instructional message: "Note: Use the Up/Down arrows to change question sequence or to move questions among the tabs."
2-10	Jourdyn Hunsaker	Adding the end users is very simple, but assigning projects is more difficult. After creating the user profile, I saw the list of projects I created populate under the name. I thought that meant the user was added to those projects. I did not realize that I had to click on the individual projects to add someone until I tried logging in with the end user log-in and could not see any of the projects. It would be helpful to add simple instructions to this page.	Projects are listed and are not assigned until they are clicked and highlighted by the user. We agree that this may not be intuitive to the user. We will add appropriate instructions as suggested.	Added the following instructional message: "Note: Hold down the <Ctrl> key and click to assign one or more projects to this user."
2-11	Jourdyn Hunsaker	Adding questions was not very intuitive. I am familiar with creating surveys in Survey Monkey and Google Doc surveys, and a similar interface may be more user friendly.	Unlike the Survey Monkey and Google Doc survey tools, we have to deal with the limited space for this application. The space is limited because we need for the questions to be visible without having to scrolling down the screen. Having to scroll up and down will slow down the data recording process. To avoid this, tabs are used, which create one extra layer during the process of	Now the system automatically opens the screen for defining answer choices when a new question is added.

<table>
<tr><td></td><td></td><td></td><td>setting up the questions. Having said this, we are making one change (as suggested by tester Denis A. Denis), which is to allow the selection options of a question to be defined the same time a question is created. This reduces one drill-down step in the process.</td><td></td></tr>
<tr><td>2-12</td><td>Denis A. Denis</td><td>It would be helpful to have the Crash Period date fields preset to date format so that it is not needed to type the / between day, month, and year. This is already done when accessing it from the End User Account.</td><td rowspan="2">This format was omitted advertently in the Project Manager component. It has been added.</td><td rowspan="2">Fixed as indicated.</td></tr>
<tr><td>2-13</td><td>Jeff Scott</td><td>Using the “Search” menu, were you able to create a project and view the crash reports successfully? Yes. But the date input method for the Search mode is a little different than the one under the Project Manager interface. Not a big deal but it was annoying that one required the “/” and the other did not.</td></tr>
<tr><td>2-14</td><td>Jennifer Borges</td><td>There no is scroll bar on the “Searched Crash #s” column.</td><td rowspan="2">We found that IE grays out the space bar and does not allow the mouse roller to scroll the list, when the list box is disabled/deactivated. We disabled the list box in order to indicate that the listed crash numbers are not meant to be clicked. We will investigate the IE problem and will likely simply enable the list box.</td><td rowspan="2">We investigated and determined that it was an IE limitation.</td></tr>
<tr><td>2-15</td><td>Suresh Allu</td><td>The scrolling system for the crash numbers could be improved (e.g. adding a scroll bar, scrolling with the mouse wheel).</td></tr>
<tr><td>2-16</td><td>Jourdyn Hunsaker</td><td>When I was in the Project Manager component, when I clicked the “Help” tab, the user manual would open in a new tab. In the End User interface, it would open in the same tab, not a new one. I think it would be more helpful to have it open in a new tab.</td><td>The system now opens the Help file on a new window for all components.</td><td>Fixed as indicated.</td></tr>
</table>

Table D-2: Functional Improvements

No	Tester	Comment	Response	Improvement Status
3-1	Shaun Davis	Is the radius function just on one roadway, or is it a geographic query, picking up all crashes within that distance? Would all roadways be included in the map function? It's difficult to determine where there are valid crashes using this function.	It currently picks up all crashes within the circle as defined by the radius. We will add the circle border and plot the selected crash locations so the user can see clearly which crashes are selected.	A circle corresponding to the selected radius is now displayed. However, it is not feasible to plot the crash locations on the Google Maps given the number of crashes in the database (because to cover all possibilities of user location selections, all crashes must be included in the KML file that is used to display Google locations).
3-2	Jeff Scott	It would also be helpful if the select by map/radius option would show you how big the chosen radius is. For example, draw a 400' circle on the map when you have selected 400' as your radius.		
3-3	Shaun Davis	Provide the ability to make questions required. Users can skip questions without providing a response	Currently the user can skip any questions. We will add a user option during project question setup to indicate if a question must be answered before a record can be saved.	User can now specify if a question must be answered.
3-4	Achilleas Kourtellis	In the selection of crashes, is there any way to add more variables for selection, i.e. all available variables instead of just the ones included?	Currently it only includes the two most commonly used filters, i.e., crash type and crash severity. We have considered additional filters but did not include them in order to keep the screen simple. Based on popular demand and without complicating the current screen, we will add an "Additional filters >>" link where the user can click to enter another page to apply more filters.	Filters are added for five additional common variables. User can click "More filters" to show the additional filters, and "Less filters" to hide the additional filters.
3-5	Jourdyn Hunsaker	The ability to search by crash type and severity level is great, and I think it would be worthwhile to include other search parameters.		
3-6	Kostas Kapetanakis	Add more options to query crashes such as by contributing cause (red light violation, speed, alcohol involvement), Site location (Intersection, driveway, railroad crossings, etc.).		
3-7	Kostas Kapetanakis	I believe adding search filter would help facilitate crash queries and would minimize project manager's involvement.		
3-8	Jourdyn Hunsaker	It would be helpful to have a warning window for when the system is about to automatically log a user out for inactivity. One time I left the window open for too long, and after typing all the information for my crash search, I was redirected to the login page after trying to click "Save," losing all the information I had entered.	The system currently times out after the standard default 20 minutes of inactivity. We will reset it to 2 hours, which should be long enough to cover most breaks including lunches. It is not advisable to set overly long session as we do not want the system to consume server resources	The system has been reset to time out in 2 hours.

3-9	Denis A. Denis	The system logged me off once and took me to the login page.	unnecessarily.	
3-10	Suresh Allu	When multiple roadway section IDs were entered, total crashes on the roadways were included, but do not appear to be separated in the left side column under crash numbers. It is not clear which crash numbers belong to which roadway section.	Currently, the crash numbers are listed from smallest to the largest. We will attach the roadway ID and milepost to each crash number and the list will be sorted by roadway ID and milepost location.	Roadway ID and milepost have been added and the list is sorted by both.
3-11	Denis A. Denis	When adding a project question, it would save a step if when clicking on Add, after the question is typed, the system takes you directly to Answer Choices, instead of having to click on Edit.	This will be implemented. Great suggestion!	The system now takes the user directly to the Answer Choices after a question is added for questions that require choices.
3-12	Jourdyn Hunsaker	Setting up projects is simple and straightforward, but it would be more user-friendly if the all three steps (creating project title, project details/time parameters, and project questions) were completed in one cohesive process, instead of having to click "Back" and "Edit" under each heading after naming the project.	The current design is modular and is structured such that the user will be able to access a specific (distinct) component to make edits. Having all three steps in a sequence will require that the user goes through one step to reach another. We understand the steps may not be intuitive at first glance, but most users should be able to quickly figure out. We will add instructions to the screen to provide additional guidance. Also note that an example project will be automatically included for each new account created.	Went through all screens to reduce number of clicks where possible. Also added short instructions at different places.
3-13	Jourdyn Hunsaker	Nothing about the interface was particularly difficult, but the system would be more intuitive if the aspects of project creation (name, crash details/parameters, and questions) were included in one process. Clicking "Back" after completing one step and then clicking "Edit" to begin the next was not very intuitive.		
3-14	Denis A. Denis	When clicking on Add Project, I would rather be taken directly to Project Crashes page and input the Project Name there along with other pertinent information, instead of having to input the Project Name first on the Project List page, and then clicking on Edit under Crashes to continue creating the project.		
3-15	Denis A. Denis	The progression of creating a project and new user could be made smoother without the need to click on Edit every time a new step is done.		
3-16	Jourdyn Hunsaker	Examples in the project question tab may be helpful as well.	This cannot be done without also significantly complicating the interface. As noted in the above response, an example project will be automatically added in every new project manager account.	See above.
3-17	Jourdyn Hunsaker	The process of adding questions in general was slightly confusing – I had to consult the user manual in order to correctly do this. It would be helpful when creating one data tab, instead of having to select "Edit" to add questions, either have a prompt that comes up for adding questions or rename the button "Add Questions." On one page, I created two	The Edit link for Tabs is needed to edit the tab name. It cannot be replaced with "Add Questions". All questions are added to the first tab by default. The user can then move the excess questions (i.e., cannot be displayed in full in one tab) using the Down button. While we understand	Renamed "Add Questions" to "Questions" and added the following instructional message: "Note: Use the Up/Down arrows to change

		tabs and one time and it was confused to know which questions were getting added to which tab. Once questions were created, however, I was able to use the arrows to move them.	that these steps may not be intuitive at first glance, we believe most users will figure out, as in your case, after playing with it for a little while. We will add instructions to the screen.	question sequence or to move questions among the tabs."
3-18	Kostas Kapetanakis	Map does not clearly indicate whether there is one or more crashes at a given crash location. Would it be possible to show number of crashes next to the crash symbol?	We will find a workable way to convey this information on the map.	The user can now click on a crash location to open an infobox. When a location has multiple crashes, it will list the information for each crash in sequence, allowing the user to find out the number of crashes.
3-19	Kostas Kapetanakis	Provide an option to search crashes by intersection name (and associated radius) instead of searching by the section number and milepost.	We will add Google's Search box to allow the user to type in any search text and zoom in.	Unfortunately, we found that Google's Search function requires registration with Google and the registration incurs a fee that is difficult to justify.
3-20	Thobias Sando	Suggest when setting up a project "by indicating map locations" that a "select county" option be available with the map zooming directly to that county.		
3-21	Suresh Allu	In selecting the locations using map, the maximum radius is 1,000 feet. Please consider expanding the radius to obtain data for longer study segments.	The dropdown list includes some select radii up to 1,000 feet. The user can enter any number in the box. We will add a note to inform the user of this feature.	A note has been added to inform the users that they can enter any numbers.
3-22	Jennifer Borges	There is no "forgot password" or "forgot username" option.	We will add the "Forgot my password" option.	"Forgot my password" has been added.
3-23	Shaun Davis	I created a username 'john' with pw 'fdot' and authorized him to enter data on the 'left turn crashes' project. When I used the credentials, it logged me in as john goodnight. This user had the ability to edit my project 'right turn crashes' which I hadn't authorized him to use. I'm assuming this is because the user 'john' was authorized to use my project, but it refers to two different users. This problem could be worse since it seems that a username has to be created for each project. A solution could be to prevent a username from being used which has already been created in the system.	The system did not check for duplicate username, resulting in the error (as John is a common name). The system will be made to check for unique name and email before allowed to save to avoid this problem.	The system now checks for duplicate username when one is being saved.
3-24	Shaun Davis	In the export, indicate who (username) provided the information, the date and time they added the record. If possible, provide the ability for the project manager to include certain fields in the export. Translate the codes in crash type and crash severity or provide another code table to translate the codes. Include fields from the shapefiles. Can person	Currently, only a minimum number of fields are included in the table/extract mainly to identify crashes. The reason is because by including many fields from the crash database it will take up space and push the review data entered by the user to the right and off the screen,	Added a check box named "Description" on top of the table to allow the user to check to add a description column, or uncheck to

		level or vehicle level data be included in the export?	making the more important data more difficult to read. Based on popular demand, we will include an option to toggle to include additional variables. We will also add an option to include the word descriptions in addition to the code numbers.	remove.
3-25	Jourdyn Hunsaker	Question: Using the “Search” menu, were you able to create a project and view the crash reports successfully? Comment: Yes. However, because questions are not included in this option, I think it would be helpful if the Table/extract included more information (like the FDOT crash database).		
3-26	Jourdyn Hunsaker	More information from the crash data should automatically populate in the “Table” tab (like when extracting data from the FDOT crash database).		
3-27	Jeff Scott	For the Table views, don’t use the codes for Crash Type and Severity, go ahead and use the words. It will be easier for the user who does not know that a crash type 5 is off the top of their head. Also, can you have an option to add more fields to the Table view? A list similar to the one used for selecting the Crash Types in the search section would be great with a list of all the available fields.		
3-28	Suresh Allu	When signed/login as an End User, and click “Table” tab from the menu in the Banner Area, the crash types and severity have codes. It would be more user friendly if the Crash Types and the Severity in the Table are decoded (e.g. rear end, angle crashes for crash type; PDO, injury or fatal for severity). It will not be clear for everybody if they don’t know or have the crash code list.		
3-29	Denis A. Denis	Would like to be able to create tables that include additional information found in the police report that we can use to create crash analysis tables, or better yet, have an option to export the crash data directly to the crash analysis spreadsheet that we use.		
3-30	Shaun Davis	Change the text for the ‘delete’ button to ‘clear’ on the questions tab as this seems to be the function that’s being performed. Delete indicates that I’m deleting the record from the database.	Currently, the Delete button deletes the user answers to the questions, but does not delete the record. The button will be changed to Clear as suggested.	Button renamed to Clear.
3-31	Denis A. Denis	When I access the Map through the link on the left side of the Project Crashes page, and I click on any crash location shown, nothing happens. Should the police report for that crash populate?	The left panel is to show the resulting crashes of a project and the Map function is included only to show the locations of the crashes. When there are crashes listed on the left panel, it indicates that a project has been successfully created and can be assigned to an end user. The project manager can login to the End User account he/she created to view the police crash reports in the End User component, which provides	Added a new button named “End User Mode” to allow the user to go to the End User interface. However, this will require that the current Project Manager session be terminated. A warning message is given to inform the user of this effect
3-32	Kostas Kapetanakis	Would be better if crash reports are available in Map View.		
3-33	Jeff Scott	I did not encounter any difficulties in setting up new projects. It would be nice if you could view the crash reports while logged in as the project manager in order to get an idea of the types of crashes that fall within the study area.		

3-34	Jennifer Borges	It would be helpful if I could double click on the crashes under "Searched Crash Numbers" and generate the police report.	different tools to make it easy to view police crash reports. We note that the system is designed to have the Project Manager component set up projects and the actual review of police crash reports is done in the End User component. We want to avoid duplicating the same functions in each component. Based on popular demand, we will add a link to allow the project manager to jump directly to the End User interface to view the police crash reports.	and allows the user to choose whether to proceed.
3-35	Jennifer Borges	Once the map is generated it would be very useful if you can double click and generate the police report.		
3-36	Jessica Lynn	Was able to create project title just fine. Had issues with adding the location. The examples given in the boxes and in the "Help' make it out like you must enter all that information in the '( )' but you don't. (see Ex 1) .	We will try to find a better way to convey the message and add notes and explanations in the User's Guide.	Reformatted and reworded the related section in the User's Guide to avoid the potential confusion.
3-37	Jessica Lynn	Question: Did you find any part of the interface confusing and why? Please include your suggestions for improvement. Comment: Just on how to enter the locations. Be more clear on what is to be entered and what is just the explanation (see Example 1).		
3-38	Jeff Scott	Is it possible to export the crash reports as PDFs? I saw the export function which generates the CSV file but it is also helpful to have the reports as separate files so you can send to someone else or store in a folder on your computer.	We will add the ability to download each police crash report in the PDF format and also in the original TIFF file format. Note that we also decided to export as an Excel file instead of as a CVS file.	An Export link is added to the Review screen to allow the current police crash report to be exported either as a PDF or TIFF file. In the Table view, the system now exports to an Excel file.
3-39	Jourdyn Hunsaker	A method of downloading the crash reports would be helpful. Sometimes we attach them to reports or memos.		
3-40	Suresh Allu	Is it possible to sort the crash data by roadway ID, Year and Milepost? The Table appears to be sorted by crash numbers.	We will add a link to each field name on the table header to allow the user to sort any fields in ascending or descending order.	Table can now be sorted by clicking on each field name.
3-41	Jourdyn Hunsaker	It is nice to be able to search crash data from the End User interface, however, an option to add notes as one reads may be helpful.	We will add a general note field. Note that for more specific data to be collected, the user should use the Project Manager component to set up the project questions. In general we try not to duplicate the same functions from another component to keep each component as simple as it can be. Users who desire to set up project questions can simply be given a project manager account so that the same user can be a project manager and also the end user.	A note field is now automatically added.
3-42	Thobias Sando	Question: Using the "Search" menu, were you able to create a project and view the crash reports successfully? Comment: Yes, however, without the option of creating project questions, it seems incomplete. Suggest that end users established by the Project Manager as being "Allowed to record data", be able to add questions to Projects they are assigned or create themselves.		
3-43	Misleidys	Consider providing a magnifying glass button	Currently, due to the browser/web	Added a "Zoom"

	Leon	with zooming capabilities.	application limitation, the police crash reports can be adjusted using the mouse roller, but it also proportionally adjusts the banner and the left panel, which is undesirable. To allow only the size of the police crash reports to be adjusted, we will add a dropdown list to allow the user to select from a list of predetermined police crash report sizes (both larger and smaller than the 100% default.	dropdown list to allow the user to shrink or enlarge the police crash report display by 25% each time, from 50% to 200%
3-44	Julio Alegre	You may want to show the type of crash in the map and fatalities. Also, there is no legend. The red icon is for the current crash report; however, it may be confused with a fatality.	Currently, it shows the location of the current crash record in red and all other locations in the same project in blue. We will investigate how best to resolve this issue and will revise accordingly.	The current crash is now shown in blue and the other crashes in yellow.
3-45	Kostas Kapetanakis	In the review tab on the top center screen, in order to report an error, the ‘‘notify’’ button could be replaced by the ‘‘report errors’’ button which is more clear. Also, sometimes switching between different projects takes time for the new questions to be appeared.	We will change as suggested.	Named the “Notify” link to “Report Errors”.
3-46	Denis A. Denis	When clicking on a crash location from the map view, nothing happens.	The map currently displays only the crash locations. The satellite image background also allows the user to quickly check the crash site conditions. We will add Google Maps’ infobox so when a crash is clicked the box will list the key crash variables.	Added Google’s infobox. The user can click on a crash location to display the key variables. When there are multiple crashes at the same location, the infobox will show the information for each crash sequentially in the same box.
3-47	Kostas Kapetanakis	Also, it would be good if some information about the crash was mentioned if you click the crash symbol. Additionally, some crash statistics should be displayed for specific categories such as crash type, time of day, contributing cause, day of the week, site location, injury severity, etc.		
4-48	Suresh Allu	The crash locations are shown in the map, but no other information (crash type, time, severity, pavement/ lighting condition etc.) is shown when clicked on the crash.		
3-49	Jourdyn Hunsaker	Yes, the “X pages per row” worked fine. I would suggest for the “Start from page X” option, making “Start from the last page” an option.	We will add this option.	Added the “Start from the last page” option.
3-50	Jennifer Borges	When adding questions I have no idea what the “question type” drop down menu refers to. I also did not see the questions asked as an end user.	Although we think it is clear just from the list of selection choices of the dropdown list, a better title for “question type” could be “question format”, which we will change to.	Renamed “Question Type” to “Question Format”
3-51	Jennifer Borges	I think in the user guide there should be a better introduction about what this program is about and the users. I think there should be more general information. I found the “Questions” portion to be confusing.	The User’s Guide will be updated to reflect all the changes from this test. We will include more introduction material and add additional details where needed. This beta test gives us a lot of information on where the users may have trouble with.	Updated the User Guide to reflect all the changes resulting from this beta test.