Electronic Construction Collaboration System – Phase III

Final Report
December 2011

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16. Abstract

This phase of the electronic collaboration project involved two major efforts: 1) implementation of AEC Sync (formerly known as Attolist), a web-based project management system (WPMS), on the Broadway Viaduct Bridge Project and the Iowa Falls Arch Bridge Project and 2) development of a web-based project management system for bridge and highway construction projects with less than $10 million in contract value.

During the previous phase of this project (fiscal year 2010), the research team helped with the implementation process for AEC Sync and collected feedback from the Broadway Viaduct project team members before the start of the project. During the 2011 fiscal year, the research team collected the post-project surveys from the Broadway Viaduct project members and compared them to the pre-project survey results.

The results of the AEC Sync implementation on the Broadway project were positive. The project members were satisfied with the performance of the AEC Sync software and how it facilitated document management and its transparency. In addition, the research team distributed, collected, and analyzed the pre-project surveys for the Iowa Falls Arch Bridge Project. The implementation of AEC Sync for the Iowa Falls Arch Bridge Project appears to also be positive, based on the pre-project surveys.

The fourth phase of this electronic collaboration project involves the identification and implementation of a WPMS solution for smaller bridge and highway projects. The workflow for the shop drawing approval process for sign truss projects was documented and used to identify possible WPMS solutions. After testing and evaluating several WPMS solutions, Microsoft SharePoint Foundation's site pages were selected to be pilot-tested on sign truss projects. Due to the limitation on the SharePoint license that the Iowa Department of Transportation (DOT) has, a file transfer protocol (FTP) site will be developed alongside this site to allow contractors to upload shop drawings to the Iowa DOT. The SharePoint site pages are expected to be ready for implementation during the 2012 calendar year.

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ELECTRONIC CONSTRUCTION COLLABORATION SYSTEM – PHASE III

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EXECUTIVE SUMMARY

Due to complexities in bridge projects, the Iowa Department of Transportation (DOT) identified and decided to implement a web-based project management system (WPMS) as part of their construction administration system. Throughout the previous phases of this project, the research team, alongside DOT staff, identified and tested solutions for various bridge projects.

For the first project phase, the solution selected was an in-house website developed for document sharing. From this implementation, a solution that had email notification capabilities was identified as more desirable. For this reason, the second phase of the research consisted of the implementation of a solution that had this feature. This solution included Google Groups along with a file transfer protocol (FTP) site. At the end of this research phase, the conclusion was that a more automated solution could be more beneficial.

This phase of the project involved two major efforts: 1) complete the implementation of AEC Sync (formerly known as Attolist) on the Broadway Viaduct Bridge Project and the Iowa Falls Arch Bridge Project and 2) development of a WPMS solution for projects under $10 million.

AEC Sync was provided for the Iowa DOT in a Software as a Service agreement, allowing the Iowa DOT to rapidly implement the solution with modest efforts. During the 2010 fiscal year, the research team was able to help with the implementation process for the solution. The research team also collected feedback from the Broadway Viaduct project team members before the start of the project and implementation of the solution.

This past 2011 fiscal year, the research team collected the post-project surveys from the Broadway Viaduct project members and compared them to the pre-project survey results. The results of the AEC Sync implementation in the Broadway project were positive. The project members were satisfied with the performance of AEC Sync and how it facilitated document management and transparency. In addition, the research team distributed, collected, and analyzed the pre-project surveys for the Iowa Falls Arch Bridge Project. The implementation of AEC Sync for the Iowa Falls Arch Bridge Project also appears to be positive, based on the pre-project surveys.

The second major effort for this project involves the identification and implementation of a WPMS solution for smaller bridge and highway projects. Sign truss projects were the type selected for pilot-testing and implementation. The workflow for the shop drawing approval process for this type of project was documented and used to identify possible WPMS solutions. After testing and evaluating several WPMS solutions, Microsoft Foundation's SharePoint site pages were selected to be pilot-tested on sign truss projects.

Due to the limitations on the SharePoint license that did not allow external users, a file transfer protocol (FTP) site was recommended to be developed alongside the SharePoint site to allow contractors to upload shop drawings to the Iowa DOT. Since that recommendation was made, the licensing agreement has been expanded to allow external users and the decision was made not to implement the FTP site. The SharePoint site pages are expected to be ready for implementation during calendar year 2012.

INTRODUCTION

Problem Statement

Bridge construction projects are becoming more complex in terms of the project team composition, design aspects, and construction processes. Project teams are becoming more diverse in terms of their location (not centrally located) and team member compositions. Design aspects are becoming more complex due to code requirements and emphasis on the aesthetics of the bridge. Finally, new construction methods, such as lean and rapid accelerated bridge construction, are becoming more common within the industry.

In 2008 the Iowa Department of Transportation (DOT) was entering a phase of complex bridge construction, beginning with the I-80 and US 34 bridges over the Missouri River and the I-74 bridge over the Mississippi River. Because of this, the Iowa DOT contracted with the researchers to identify a web-based project management system (WPMS) that could ease the document management of shop drawings and requests for information (RFIs) for these projects.

For the previous two phases of this research project, the team sought to find a WPMS solution that met the needs and requirements for large and complex bridge projects. The results of the implementation of WPMS solutions for these types of projects have proven to be positive.

Researchers recommended to the Iowa DOT that a similar solution could also benefit smaller bridge projects (less than $10 million). It is expected that WPMS solutions will increase efficiency, specifically for the shop drawing approval process and the RFI transmittals for smaller highway projects. For this reason, the Iowa DOT considered and allowed the research team to find a WPMS solution that eased the shop drawing approval process for projects under $10 million.

Research Objectives

For the third year of the project, the research team continued monitoring and evaluating the AEC Sync projects and began the evaluation, identification, and testing of WPMS solutions for small highway/bridge projects.

Researchers continued on the implementation of AEC Sync (formerly known as Attolist), the WPMS selected for the third project phase, on the Broadway Bridge Project in Council Bluffs and the Iowa Falls Arch Bridge Project. The researchers also evaluated the performance of AEC Sync for both projects. The post-project surveys were distributed to the Broadway Bridge project members, while the pre-project surveys were distributed to the Iowa Falls Arch Bridge project members.

For the smaller highway and bridge projects, the researchers, with the help of Iowa DOT staff, selected sign truss projects as test project types for WPMS implementation. The workflow for sign truss projects was documented and used to identify and select tools to develop a WPMS

solution that met the needs of the Iowa DOT. Mock-up versions of web-based collaboration solutions were created using existing web applications accessible to the Iowa DOT.

AEC SYNC IMPLEMENTATION

Overview

Work on the AEC Sync implementation continued during the 2011 fiscal year. The post-project surveys were distributed to the Broadway Bridge Project team members. These results were compared to the pre-project surveys to provide how the WPMS implementation affected the project team's performance and opinions of the system. In addition, the pre-project surveys for the Iowa Falls Arch Bridge were distributed among project team members, collected, and analyzed.

Broadway Viaduct Bridge Post-Project Survey Analysis

Survey Population

The survey was sent to 39 project team members and 14 project members responded, representing a 36 percent response rate. From those 14 responses, three mentioned that their involvement with AEC Sync (Attolist) was not significant. These three members did not complete the survey questionnaire. The survey responses, then, corresponds to 11 team members, or 28 percent.

From the survey respondents, 64 percent correspond to Iowa DOT staff and employees, nine percent were consultants to the project, and 27 percent identified themselves as contractors. (Some subcontractors classified themselves as contractors.) There were no responses from suppliers.

Survey Responses and Analysis

The post-project survey feedback turned out to be positive when it comes to making the project member's job easier, the overall cost of document management, transparency of document management, and project information. The results also portrayed that the WPMS made the RFI process much easier than anticipated, as well as the submittal process. The project members also thought the computer and internet requirements were reasonable. The survey results compared to the pre-project survey results can be found in Appendix A.

An interesting aspect found when comparing the post-project surveys to the pre-project surveys was that the actual usage of AEC Sync per month was lower than anticipated. As seen in Figure 1, the anticipated use for AEC Sync was from 10 to 20 times a month, when the actual usage of AEC Sync was of less than 10 times a month.

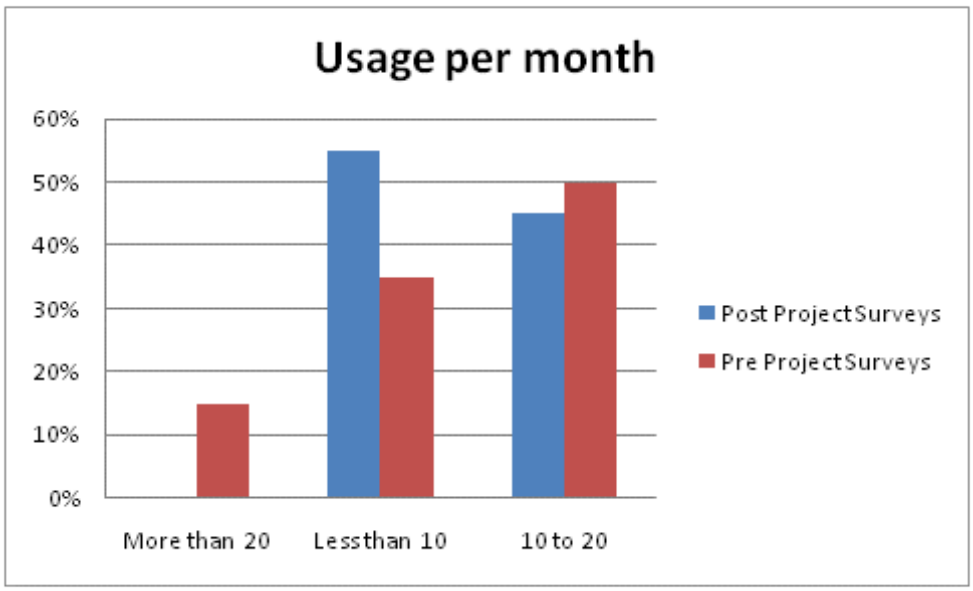

Figure 1. Survey results – usage per month

None of the project members used the project's WPMS more than 20 times a month, compared to an anticipated member usage of 15 percent in the pre-project surveys.

As shown in Figure 2, the distribution of size for recommended future WPMS project implementation changed compared to the pre-project surveys. The reason for this change can be due to the fact that having some knowledge about the system, additional implementation opportunities are easier to identify.

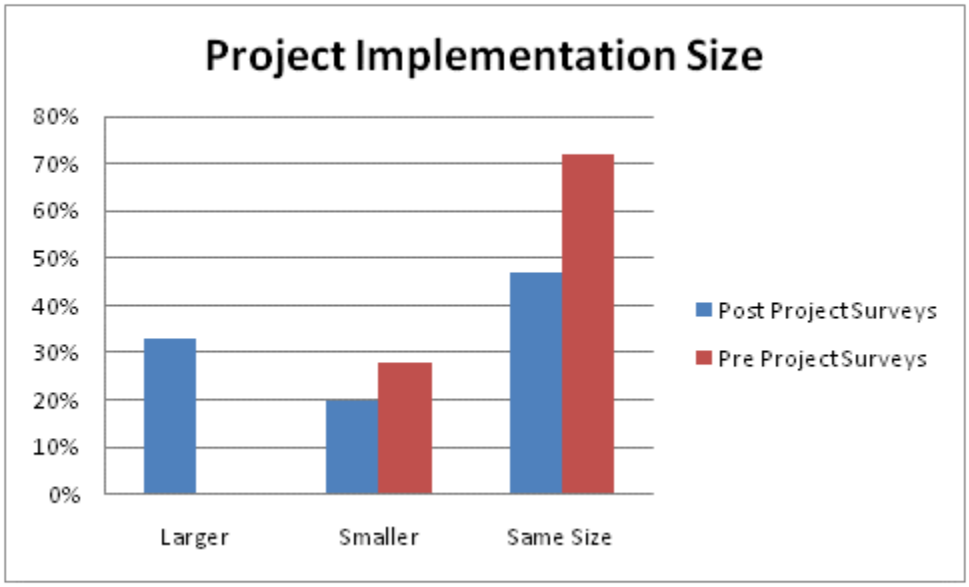

Figure 2. Survey results – project implementation size

One last observation found by the researchers is that only around 10 percent of the respondents considered that learning how to operate and work with the system was *not* worth the benefits (see Figure 3). Around 20 percent felt neutral about learning the system. However, if combined, one third of the population did not feel it was completely worth the benefits of learning the system.

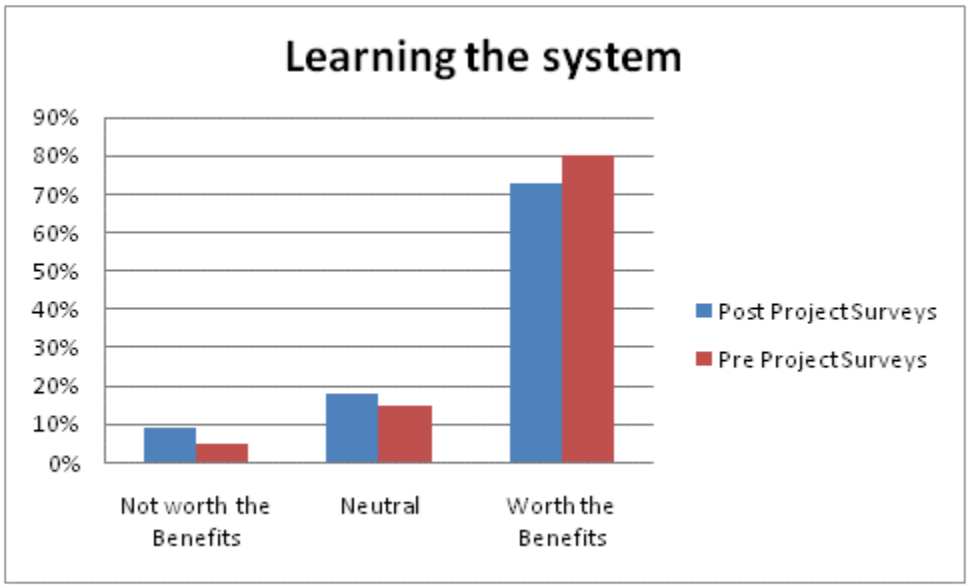

Figure 3. Survey results – learning the WPMS

A similar result was found when the project team members were asked about the effect of AEC Sync to the bridge project management (see Figure 4).

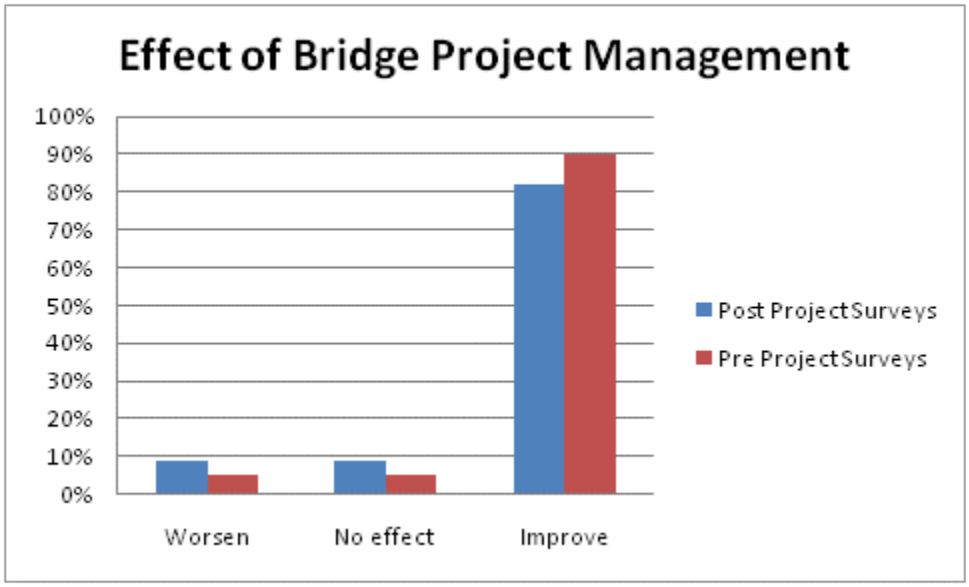

Figure 4. Survey results – effect of bridge project management

Given these results, the researchers recommend that the Iowa DOT inform other project members about the benefits of the WPMS solution on bridge projects during the early stages/the preconstruction phase.

Iowa Falls Arch Bridge Pre-Project Surveys

Survey Population

The surveys were sent to 35 project team members and 18 project members responded, representing a 51.4 percent response rate. From those 18 responses, two mentioned that their involvement with AEC Sync (Attolist) was not significant. These two members did not complete the survey questionnaire. The survey responses, then, correspond to 16 respondents, representing 45.7 percent of the initial population of people who were sent the surveys.

From the survey respondents, 50 percent correspond to Iowa DOT staff and employees, 35 percent to subcontractors or suppliers, and 19 percent to project consultants. There were no responses from the prime contractor.

Survey Responses and Analysis

The responses concerning the implementation of a WPMS for the Iowa Falls Arch Bridge project were positive. The respondents stated that the computer and internet requirements are reasonable (71 percent) or they were neutral about it (29 percent). And, 81 percent agreed that the use of a WPMS will make the submittal process much easier compared to the traditional methods. 75 percent of the respondents stated that the RFI process will become easier by implementing a WPMS. 88 percent stated that relevant project information will become more available to project team members. And, 94 percent of responders agreed that, based on their knowledge and past experiences with a WPMS, a system like this can improve the project management on other Iowa DOT projects. For the detailed graphs see Appendix B.

Concerning the use of the WPMS on the project, 75 percent of the respondents said they would most likely use it less than 10 times per month, while 25 percent were expecting to access the WPMS from 10 to 20 times per month.

The graphs in Figures 5 and 6 correspond to the results concerning the user benefits of using a WPMS, such as AEC Sync, specifically on the Iowa Falls Arch Bridge Project.

As shown, around half of the respondents agreed that a WPMS will indeed have a positive impact on their work. While, 38 percent stated that the implementation of a WPMS will not have an effect in their jobs. Also, 38 percent responded that it was neutral for them to learn the use of the WPMS.

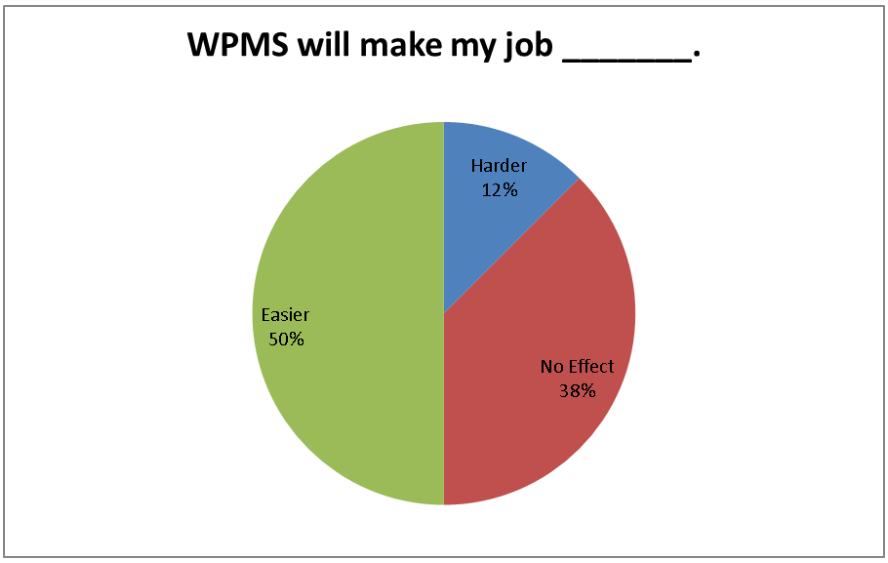

Figure 5. Survey results – project role

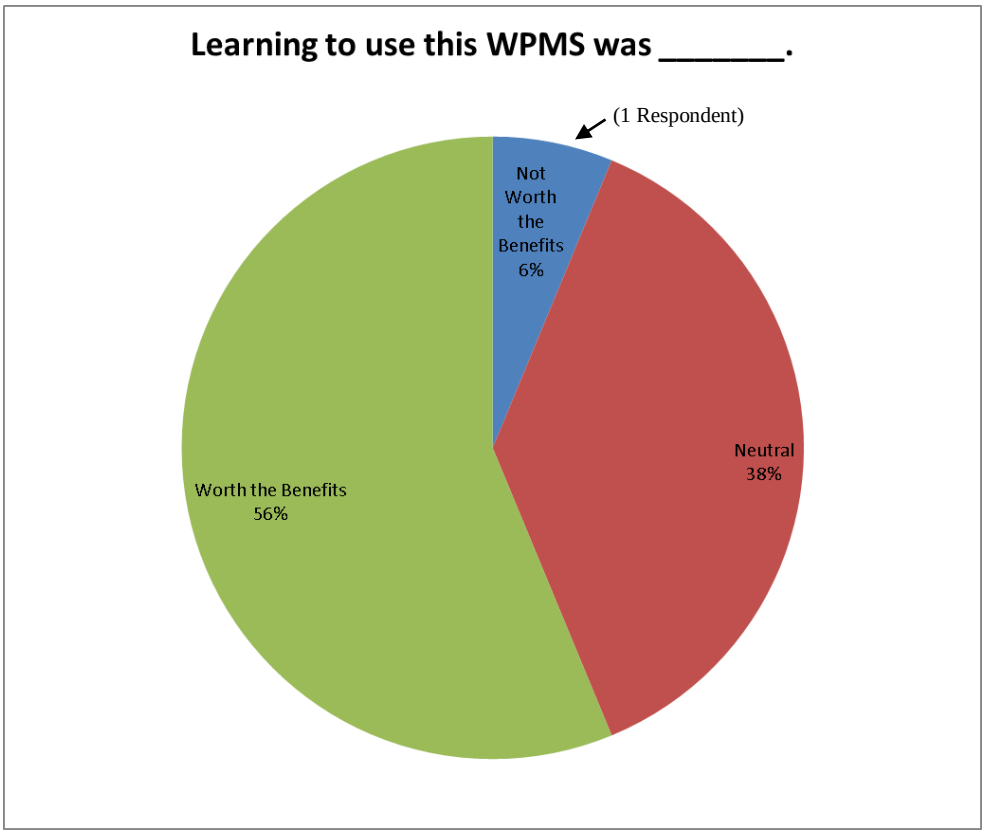

Figure 6. Survey results – ease of learning WPMS

The Iowa DOT decided to continue the implementation of AEC Sync, even though many respondents expected no change in their effort and/or were neutral with regard to ease of learning. This was because half or more of the users were positive and because improve arching and tracking of documents was expected.

The project participants were also asked about expected outcomes for project document management. As shown in Figure 7, 69 percent agreed there will be an increase in document management transparency, while 31 percent responded there would not be any effect.

The results are positive and promising given the implementation and use of AEC Sync is expected to increase the trust of team members when it comes to document management.

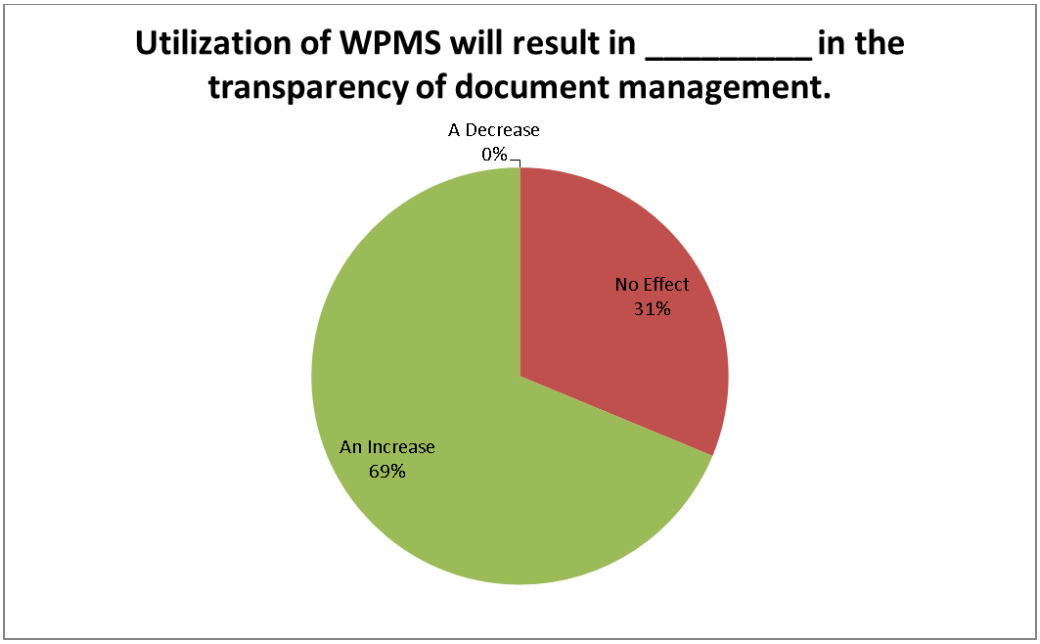

Figure 7. Survey results – transparency of document management

A similar result was found when the survey participants were asked about how the implementation of AEC Sync could affect the accountability of the project participants: 63 percent responded there would be an increase in the accountability of the project participants, while 37 percent said there was not going to be any effect (see Figure 8).

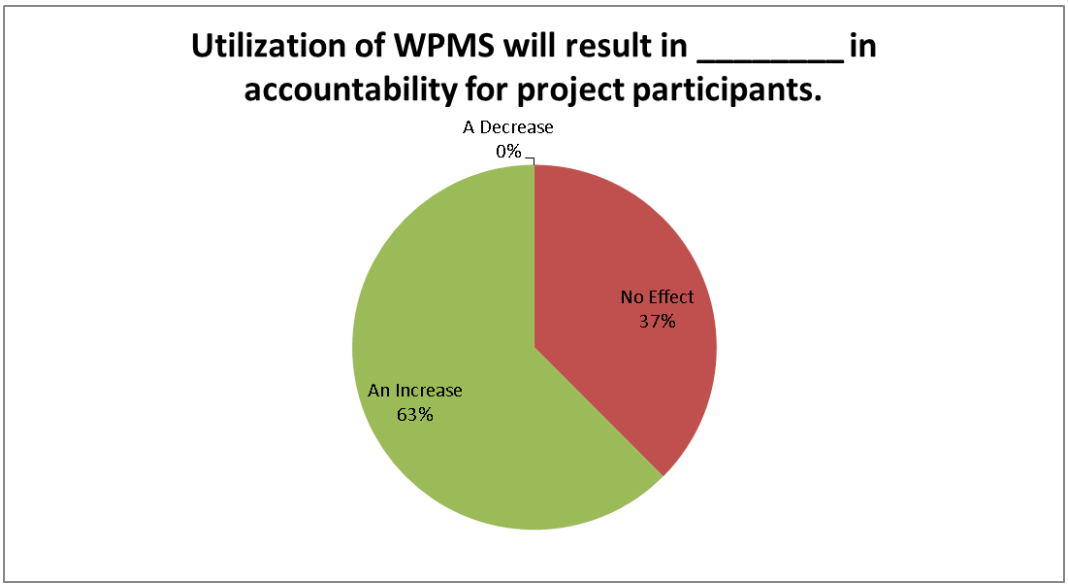

Figure 8. Survey results – accountability of project participants

When asked about the implementation of a similar WPMS on other Iowa DOT projects, and specifically the size of the project, the responses were distributed equally by the three options given, as can be seen in Figure 9. This response might encourage the Iowa DOT to also consider implementing WPMS solutions for different-sized projects.

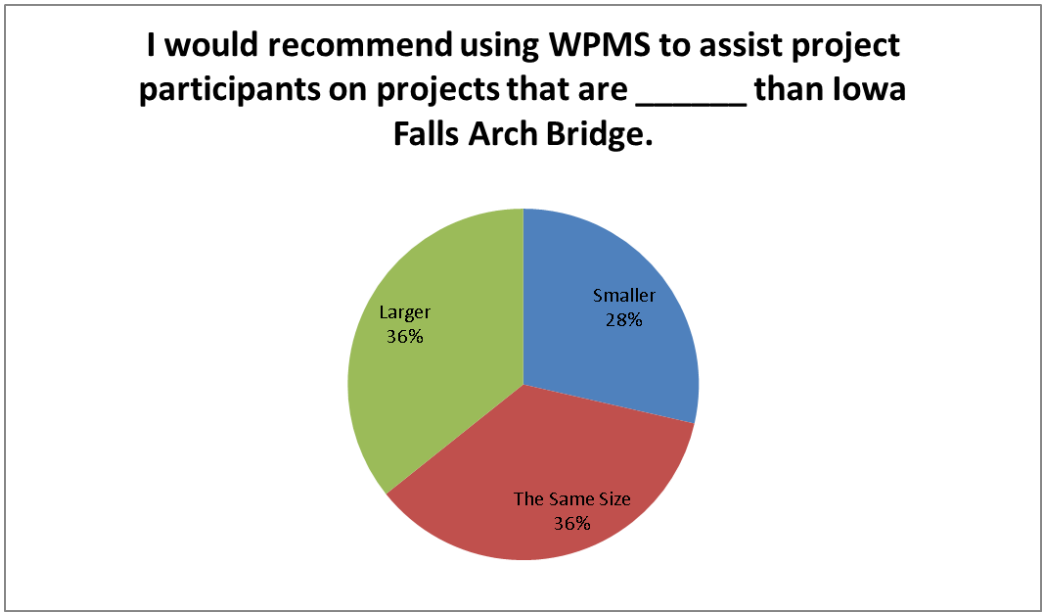

Figure 9. Survey results – future implementation

Surveys

The completed surveys for both the Broadway Viaduct Bridge Project and the Iowa Falls Arch Bridge Project can be found in Appendix F and G, respectively. These surveys include the responses to the questions previously analyzed, as well as additional comments from the users and survey respondents.

One comment from the respondents that the researchers would like to identify and quote regarding the implementation of AEC Sync on the Broadway Bridge Project is:"It is too easy to send the documents, so many times there were more people notified of an issue, RFI, or a submittal than the document may have concerned. Because of this, some people would not respond because it did not need their approval or concern them, but the RFI would not be completed and answered until everyone that was notified had given a response."

Given this thoughtful response, the researchers recommended that care should be taken to only send documents for review to those who are actually required to review the document. If the document is brought to a stakeholder's attention for information only and not approval, it should be submitted to that stakeholder in a way that does not require response before the document can be returned to the submitter.

WPMS FOR HIGHWAY PROJECTS UNDER $10 MILLION

Overview

The project team recommended that the Iowa DOT consider the implementation of WPMS solutions for smaller bridge projects. The technical advisory committee (TAC) chair person recommended that the research team and TAC identify a WPMS solution for sign truss projects.

The reason for selecting this type of project was primarily because they are typically projects under $10 million with short durations and a complex shop drawing approval process. The shop drawing approval process involves five offices and departments from the Iowa DOT and may include a large number of suppliers. Therefore, the research team sought to identify a WPMS solution for these types of projects.

Sign Truss Workflow

Researchers met with representatives from the Traffic and Safety Division and Bridges and Structures Division to establish the workflow for sign truss projects. There are two critical aspects considered to document the workflow. These are the abilities to understand the multi-step approval process and the typical interactions that involve some collaborative efforts, which come into play, for this type of project.

After meeting with the Iowa DOT engineers involved in sign truss projects, the desired workflow was established, as presented in Figure 10.

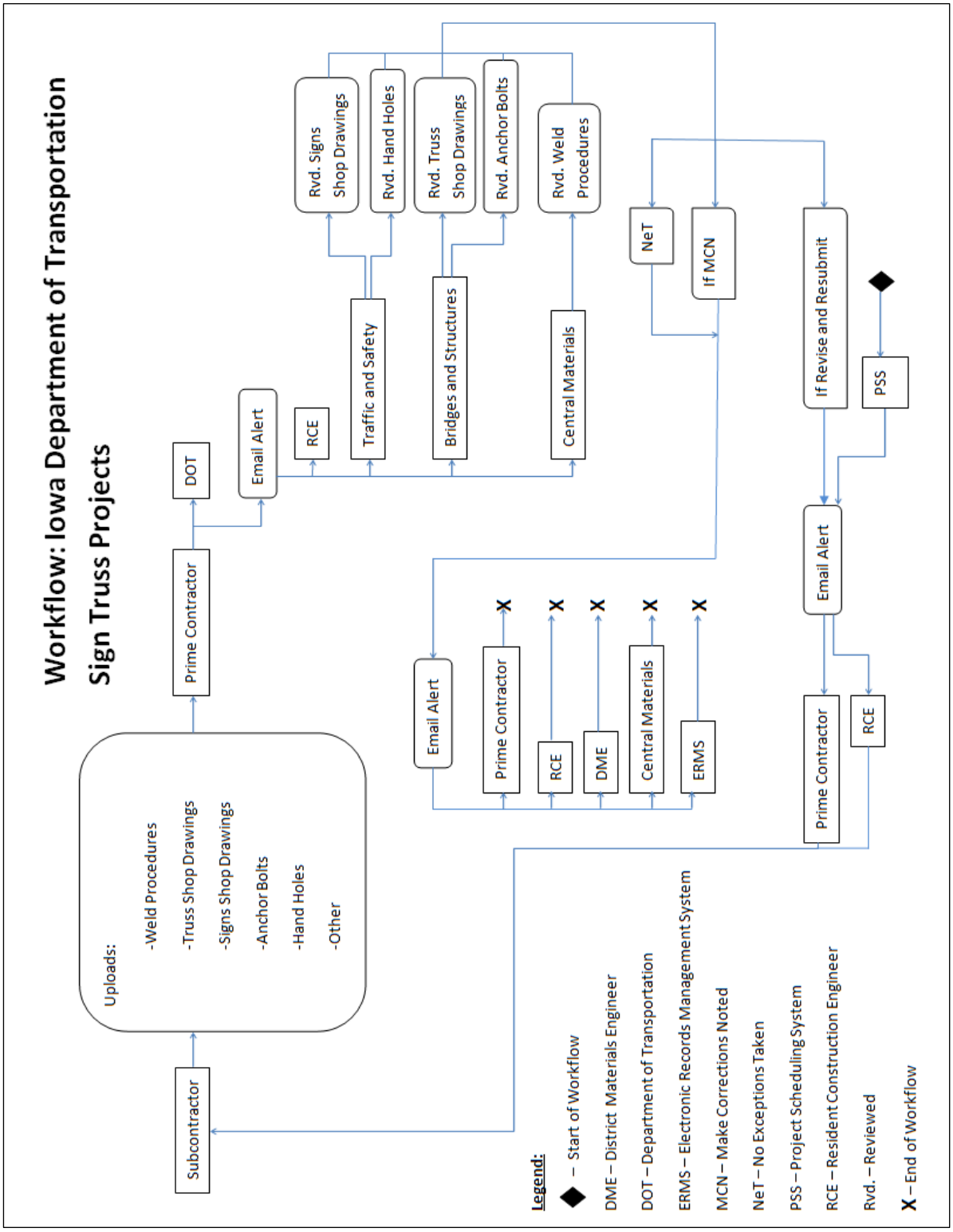

Figure 10. Workflow for sign truss projects

The workflow begins when the subcontractor sends the shop drawings to the prime contractor. The prime contractor then sends the documents for approval to the Iowa DOT. The divisions within the DOT that are responsible for the document review and approval receive an email notification announcing that a document is waiting for their approval.

The documents, if the review results are approved as No Exceptions Taken or Make Corrections Noted, do not need to be resubmitted by the contractor to the Iowa DOT. The reviewed and possibly marked up documents are sent to the Prime Contractor, Resident Construction Engineer, District Materials Engineer, Central Materials, and the Electronic Records Management System. On the other hand, if the document is classified as Revise and Resubmit, a notification is sent to the Prime Contractor and the workflow repeats from the beginning.

WPMS Solutions

Using the established workflow, several WPMS solutions were identified and studied. A list of these solutions, along with their corresponding internet addresses, are included in Table 1.

Table 1. Solutions considered (and internet addresses)

Solution	Web Address
AEC Sync	http://http://www.aecsync.com/
Google	http://www.google.com/
Huddle	http://www.huddle.com/
Microsoft SharePoint Server 2007	Depends on internal server
Sosius	http://sosius.com/
TeamWork Live	http://www.teamworklive.com/
TeamWork Project Management	http://www.teamworkpm.net/

The evaluation criteria used to measure each of the solutions consisted of the following:

- Project capacity
- Storage capacity
- Document tracking history
- Accessibility
- Notification
- Approval option
- Price
- Capacity to replicate the workflow and requirements provided by the Iowa DOT

Table 2 was developed to compare the various alternatives and to select the ones for further research and study.

Table 2. WPMS solutions considered for small highway projects

	Huddle	Google Applications	TeamWork Live	TeamWork Project Management	Sosius	Microsoft SharePoint
Project Capacity	25 Projects	Unlimited	Unlimited	35 Projects	Unlimited	Depends on server space
Member Capacity	Unlimited	Unlimited	25	Unlimited	Unlimited	Unlimited- Approved by Adm.
Managers	1	Unlimited	1	1	1	1
Storage Capacity (Group)	25 Gb	100 Mb	50 GB	10 Gb	25 Gb	Depends on server space
Storage Capacity (Personal)	NA	NA	NA	NA	250 Mb	NA
Document Tracking History	Yes	No	Yes	Yes	Yes	Yes
Ease of Accessability to the Site	Yes	No	Yes	Yes	No	Yes
Document Approval Option	Yes	No	Yes	No	No	Yes
Email Notification	Yes	Only for folder created	Yes	Yes	Yes	Yes
Calendar Option	Yes	Yes	Yes	Yes	No	Yes
Price	$200/month	Free	$149/month	$49/month	$100/month	Depends on License
Capacity to Reproduce DOT Workflow	Yes	No	Yes	Yes	No	Yes

From these, Huddle and Microsoft SharePoint Foundation were selected for additional research. Huddle proved to be a useful solution because it could reproduce the Iowa DOT workflow and had the capacity to send email notifications (a feature that was important for the Iowa DOT).

A workflow was developed to compare the performance of Huddle with the Sign Truss Workflow. This can be seen in Appendix C. Because this solution did not allow personalized customization for individual projects, the decision was made to continue this current project phase with SharePoint pages. SharePoint operates by creating customized project pages specific to the project needs and workflows, which is useful when it comes to implementing this solution on other projects.

Selected Solution

The original WPMS solution selected by the TAC for small projects (under $10 million) combined two different components: a file transfer protocol (FTP) site and Microsoft SharePoint pages. The reason for planning to implement two different components was because the SharePoint license that the Iowa DOT acquired did not allow external users (such as contractors) to log-in or access the system.

Because of this, the FTP site was selected as the portal for contractors to upload the documents, while SharePoint would have been an Iowa DOT internal WPMS. The FTP site would have allowed document storage with log-in constraints and control.

The Microsoft SharePoint server is a web content management system that allows the creation of various workflows for document management. It also facilitates the transmittal process by keeping track of the different versions, sending out email notifications, and providing the option to check out documents for revisions.

Even though the first pilot projects using this solution won't have all of the features expected, the expected final workflow, which combines the application and use of the FTP site and SharePoint, is shown in Appendix D.

When a project is started, the engineer in charge of document management will access a web page were the basic project information is put in. The required information includes the project number, bid items, expected shop drawings, and other information. After all of the information is entered, a SharePoint site and FTP site, based on the project, will be created automatically.

The workflow in Appendix D can be established after these actions. The workflow starts when the contractor uploads the document for review to the FTP site. The document will be sorted in the corresponding FTP folder and forwarded to the SharePoint project page. When the documents are placed in SharePoint, the engineers at the Iowa DOT receive an email notification telling them that a document has been received for review. After the document is reviewed, it will be sent to the FTP site, where it can be accessed by the contractor.

A snapshot was developed by Iowa DOT staff to show how a SharePoint project page is organized compared to a user-front Iowa DOT webpage (used also for project document management on the Jackson 108 Bridge Project). These screenshots are reprinted in Appendix E.

Before the FTP site could be developed, the Iowa DOT acquired an external license for SharePoint and made the decision to design the system so that contractors would directly upload to SharePoint, eliminating the need for the FTP site. Details of this development will be described in the forthcoming Phase IV report for this project.

SUMMARY

For this third year of the Electronic Collaboration Research Project, the research team continued working with the Phase II projects: the Broadway Viaduct and Iowa Falls Arch Bridge Projects AEC Sync implementation.

The post-project surveys for the Broadway Viaduct project were distributed. They were analyzed and compared to the pre-project surveys distributed the past fiscal year. The results of the surveys were positive. The implementation of AEC Sync was able to make the document collaboration and management easier for all parties involved in the project.

To achieve even better results, the researchers recommend that the Iowa DOT explain during the pre-construction phase how all parties involved in the project can benefit from using a WPMS. This recommendation is based on the fact that the survey topics with the lower marks were the ones regarding the benefits and effects of these systems relating to project management.

The pre-project surveys for the Iowa Falls Arch Bridge were also distributed to the project team members. They were analyzed and will be used for comparison with the post-project survey results.

In addition, the research team began to identify a WPMS solution for small (less than $10 million) highway projects. The workflow for sign truss projects was established and used as a baseline to identify possible solutions for these types of projects.

After considering and testing several possible solutions, Microsoft SharePoint pages was selected as the WPMS for implementation. As of this writing, a SharePoint page for the sign truss projects is under development by Iowa DOT staff and is expected to be implemented in 2012.

FUTURE RESEARCH

For the next fiscal year, the research team will finish analyzing the evaluation of the AEC Sync solution for the Iowa Falls Arch Bridge Project. The post-projects surveys for this project will be distributed, collected, analyzed, and compared to the pre-project surveys.

The research team will also continue with the Small Highway Projects WPMS implementation. The SharePoint page is expected to be ready for implementation in calendar year 2012. The research team, with the help from the TAC, will evaluate the implementation of the SharePoint solution on sign truss projects.

APPENDIX A. BROADWAY VIADUCT BRIDGE PRE-PROJECT AND POST-PROJECT SURVEY ANALYSIS

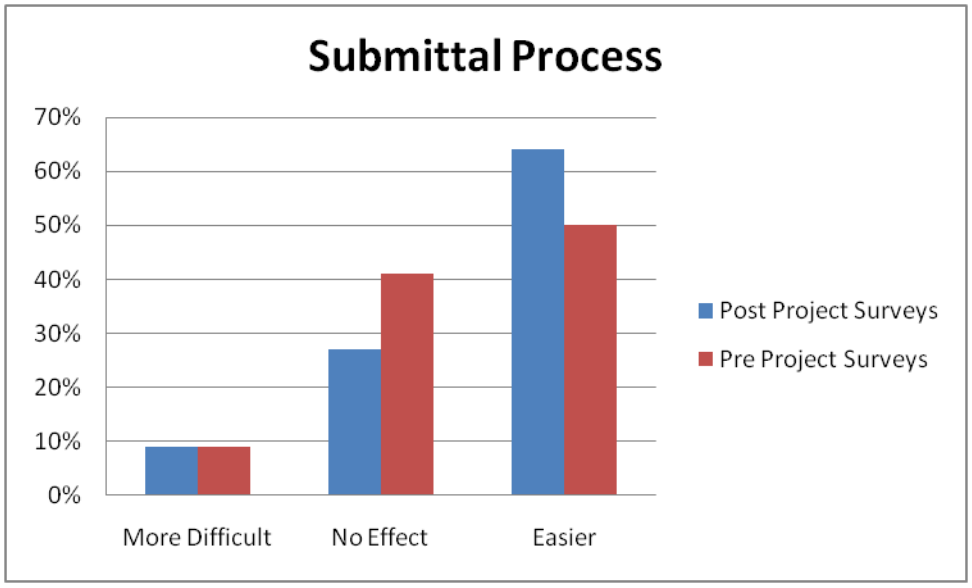

Figure A.1. Survey results comparison – submittal process

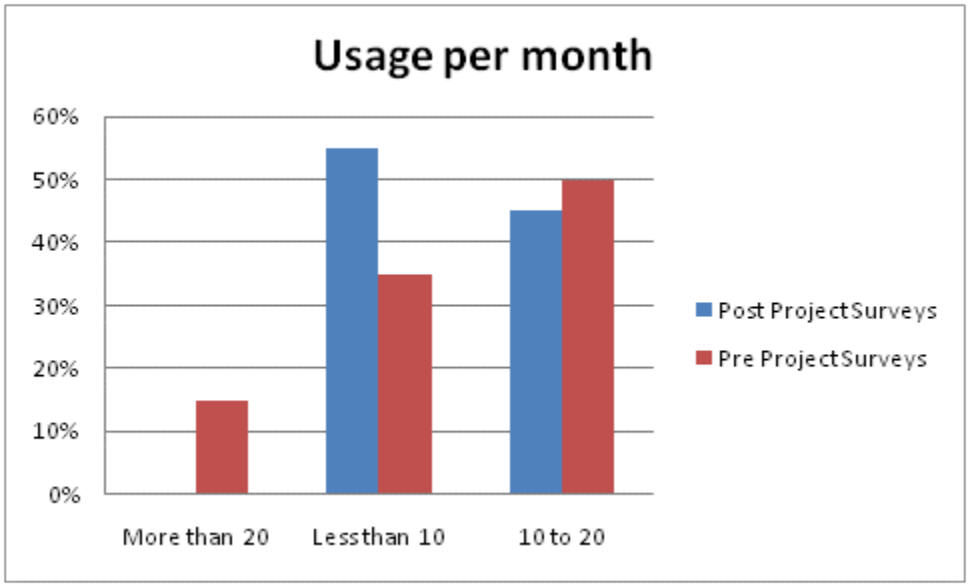

Figure A.2. Survey results comparison – usage per month

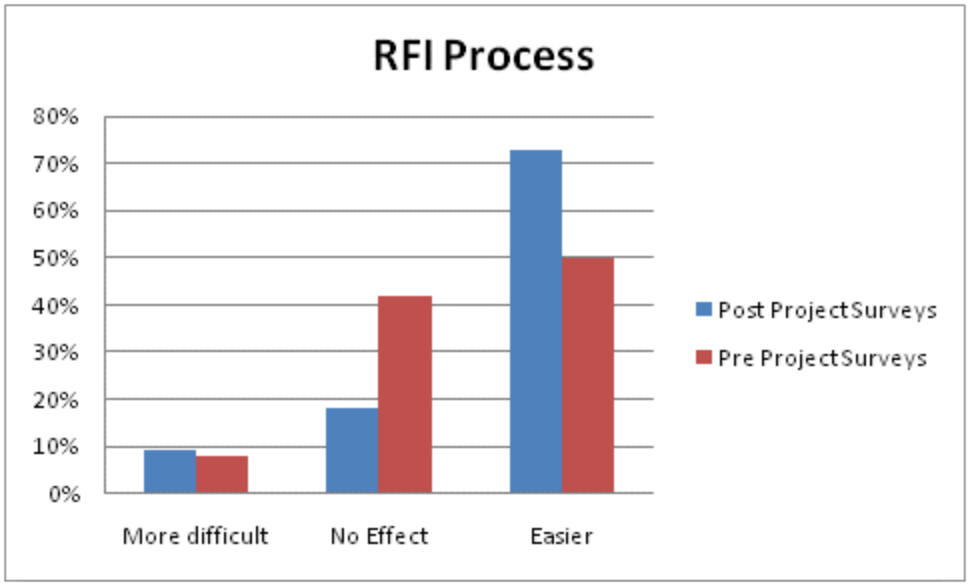

Figure A.3. Survey results comparison – RFI process

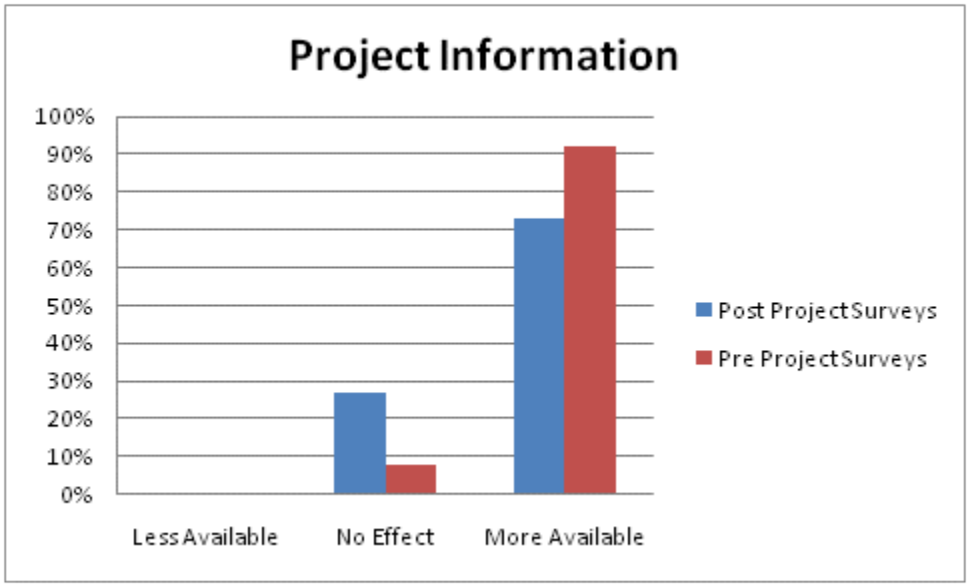

Figure A.4. Survey results comparison – project information

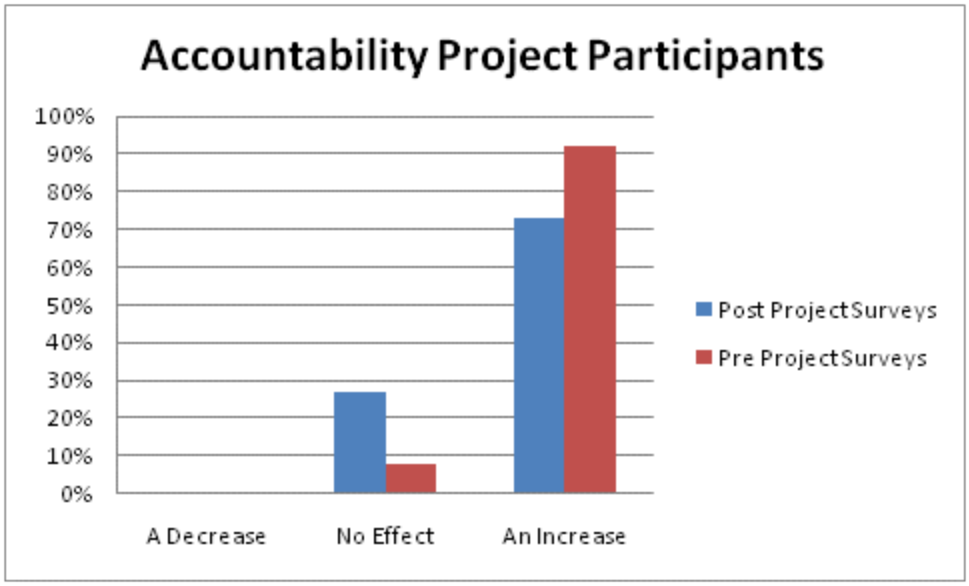

Figure A.5. Survey results comparison – accountability of project participants

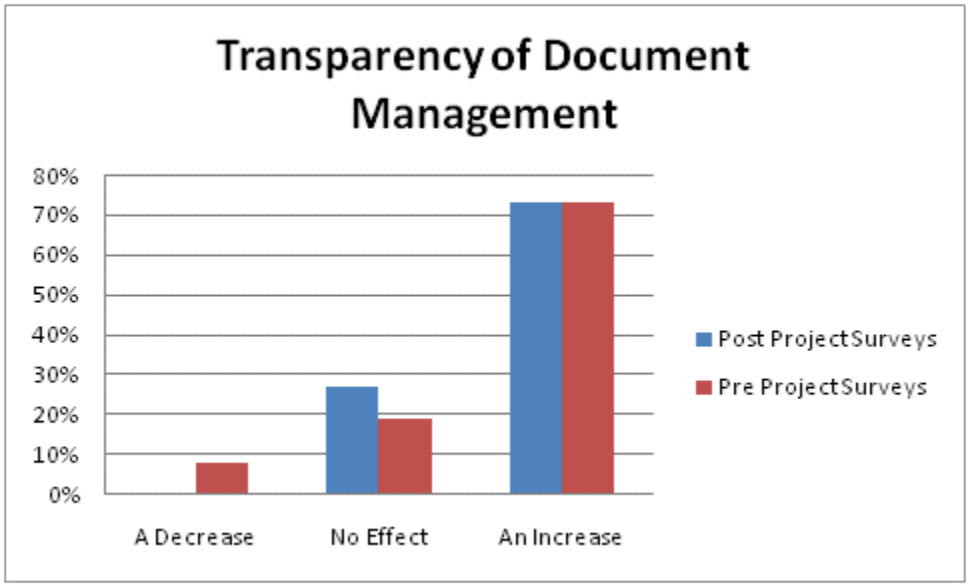

Figure A.6. Survey results comparison – transparency of document management

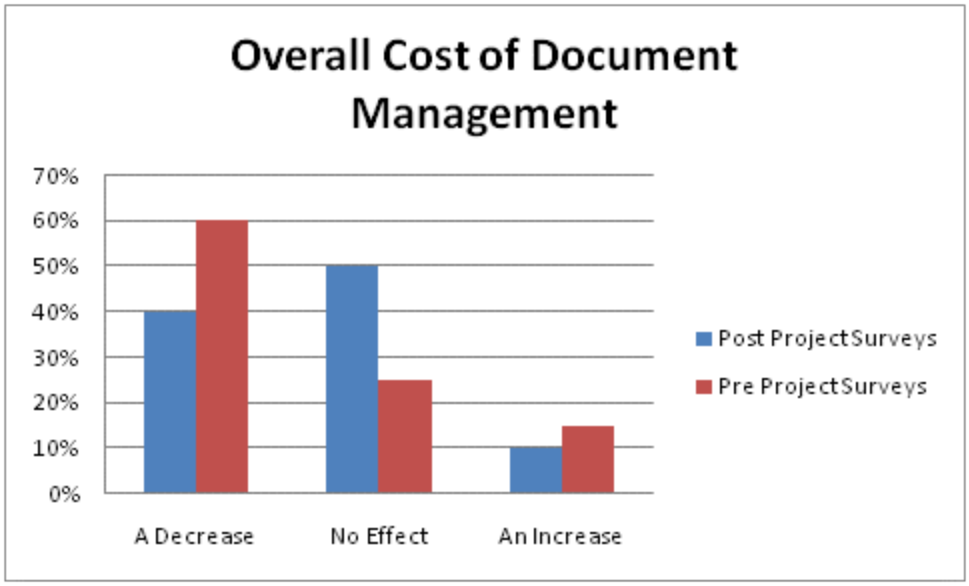

Figure A.7. Survey results comparison – overall cost of document management

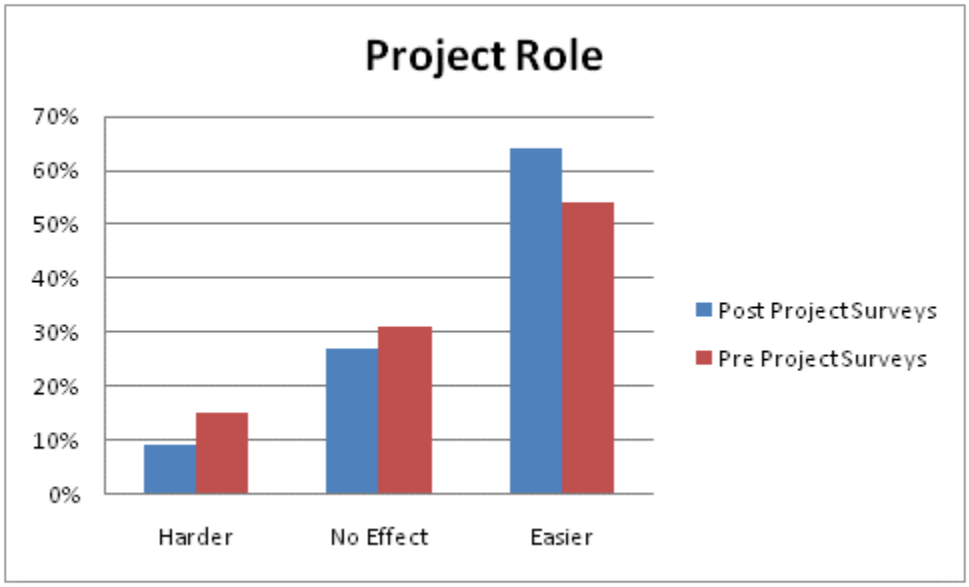

Figure A.8. Survey results comparison – effect on project role

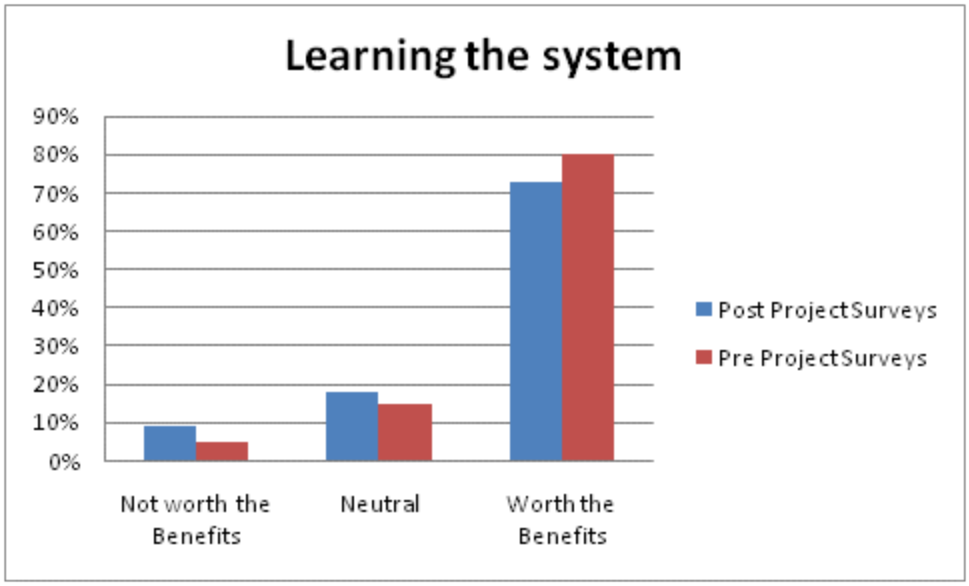

Figure A.9. Survey results comparison – learning the system

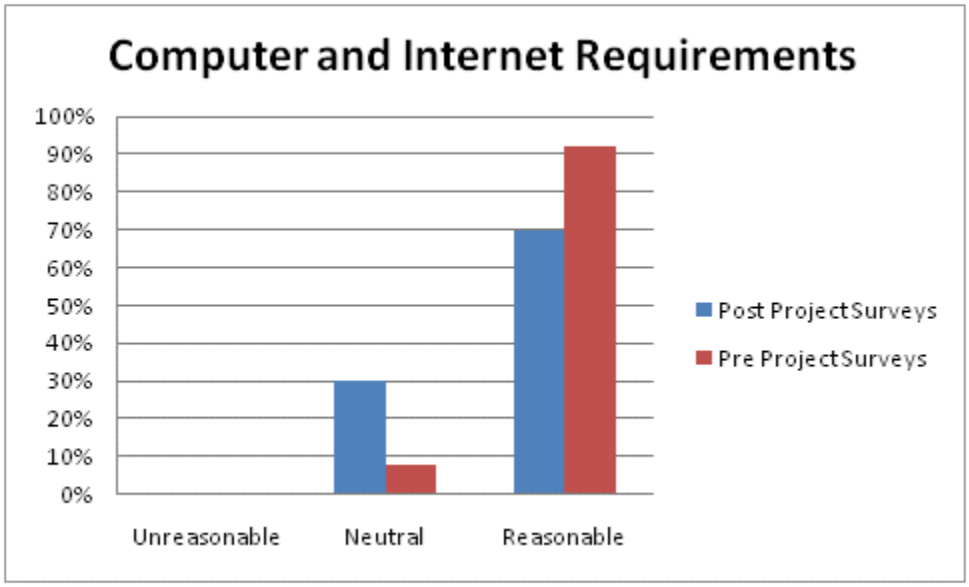

Figure A.10 Survey results comparison – computer and internet requirements

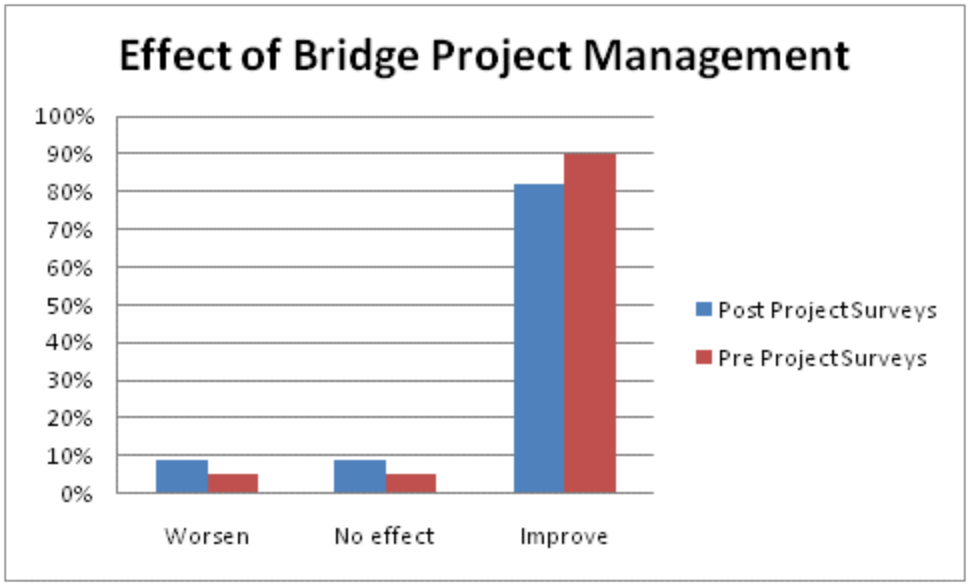

Figure A.11. Survey results comparison – effect of bridge project management

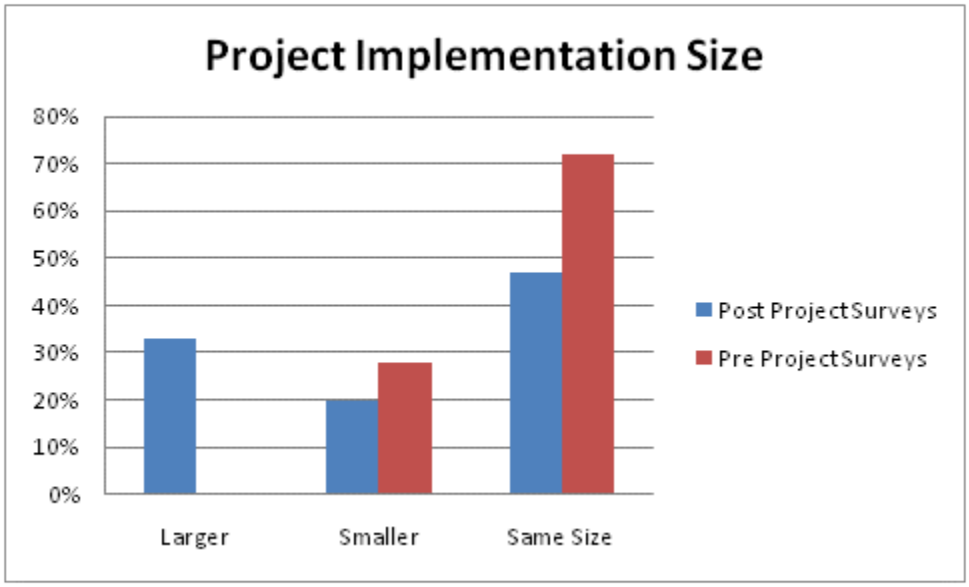

Figure A.12. Survey results comparison – project implementation size

APPENDIX B. IOWA FALLS ARCH BRIDGE PRE-PROJECT SURVEY ANALYSIS

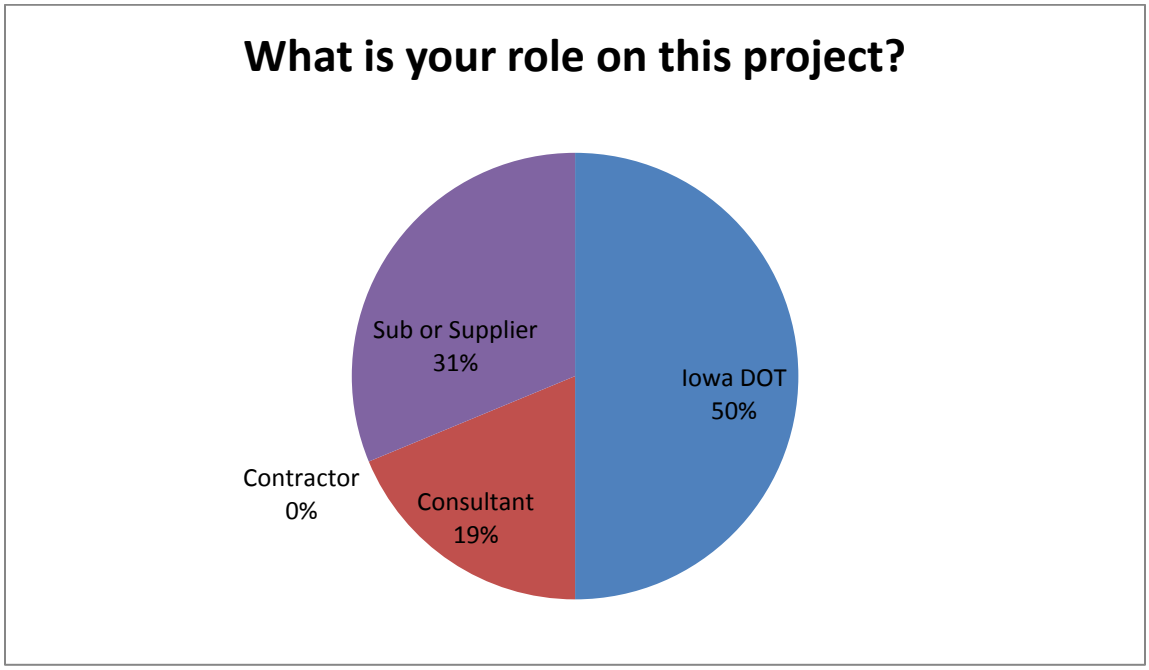

Figure B.1. Survey results – project role

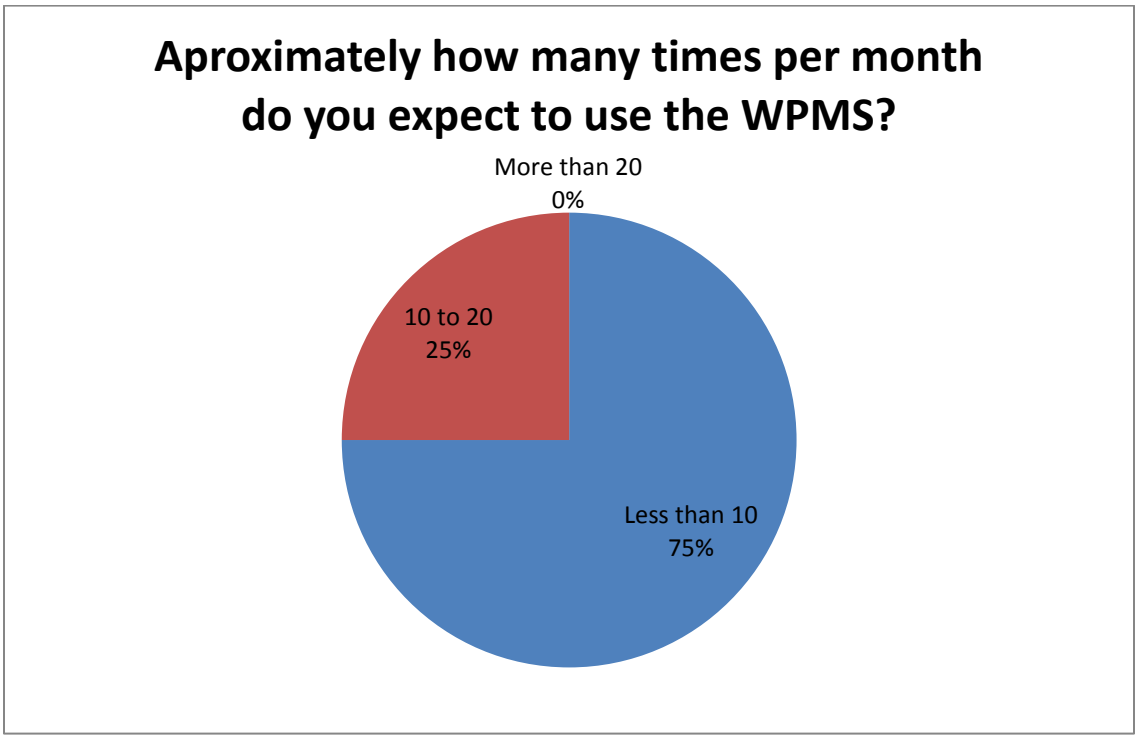

Figure B.2. Survey results – expected WPMS usage

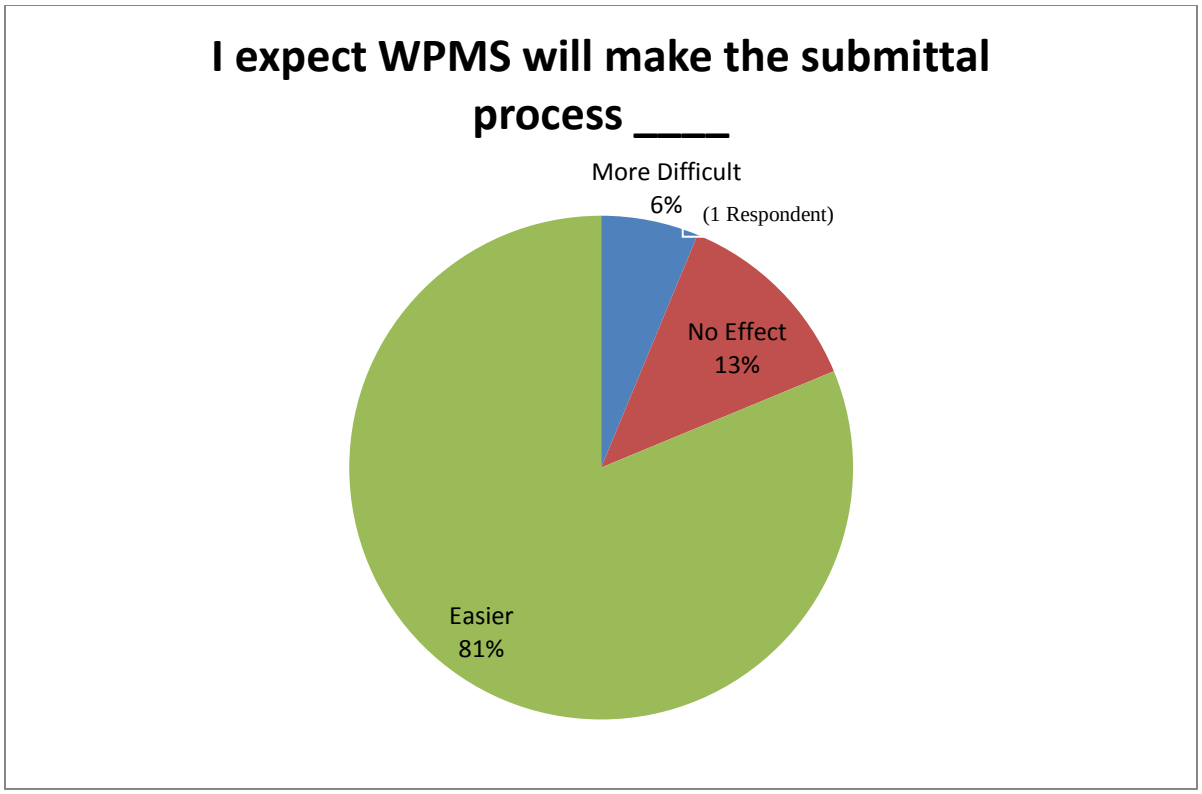

Figure B.3. Survey results – submittal process

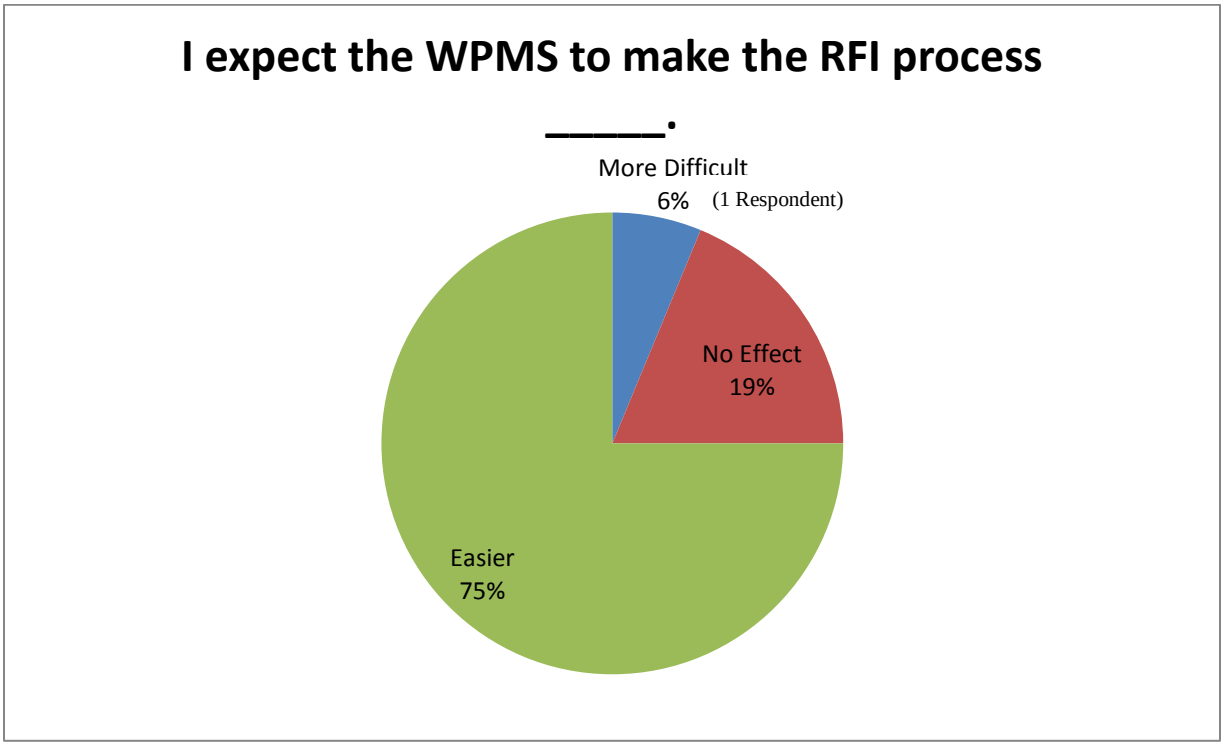

Figure B.4. Survey results – RFI process

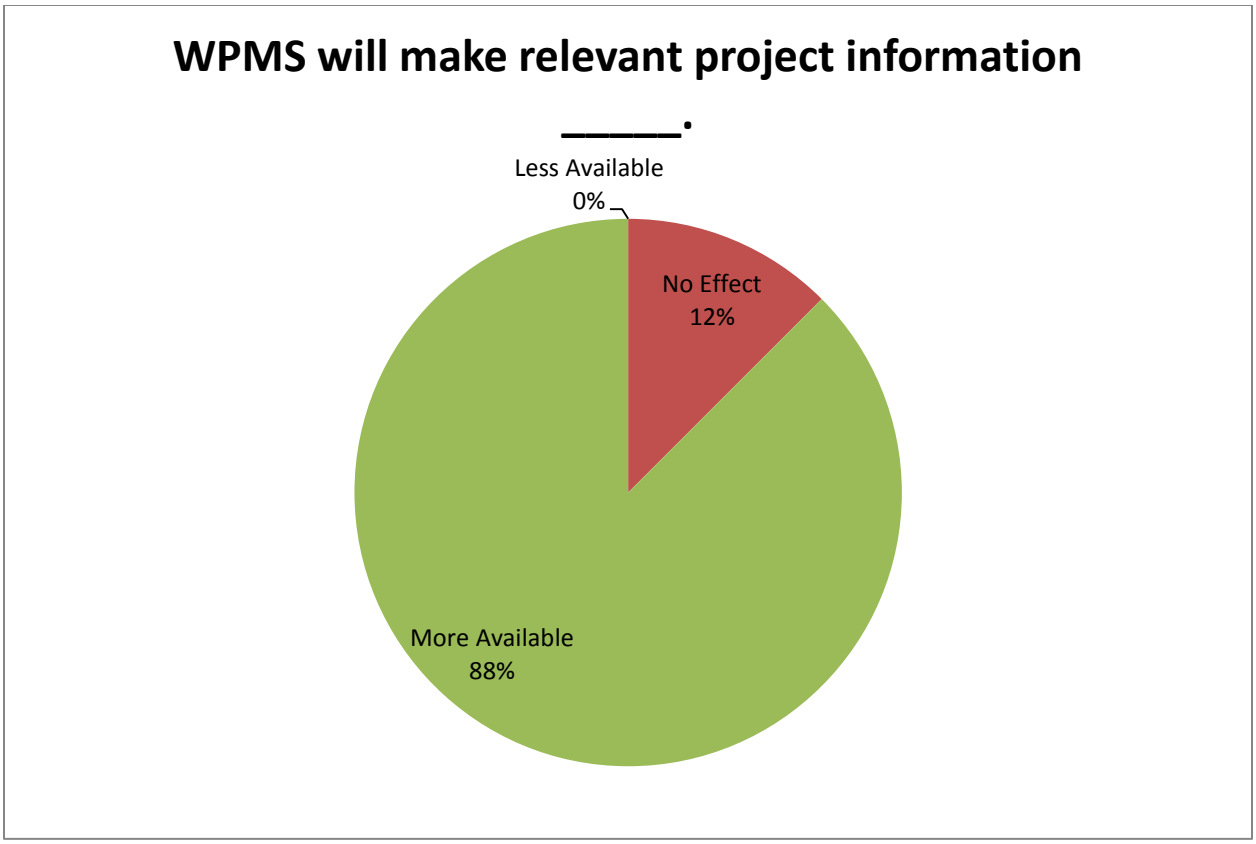

Figure B.5. Survey results – project information

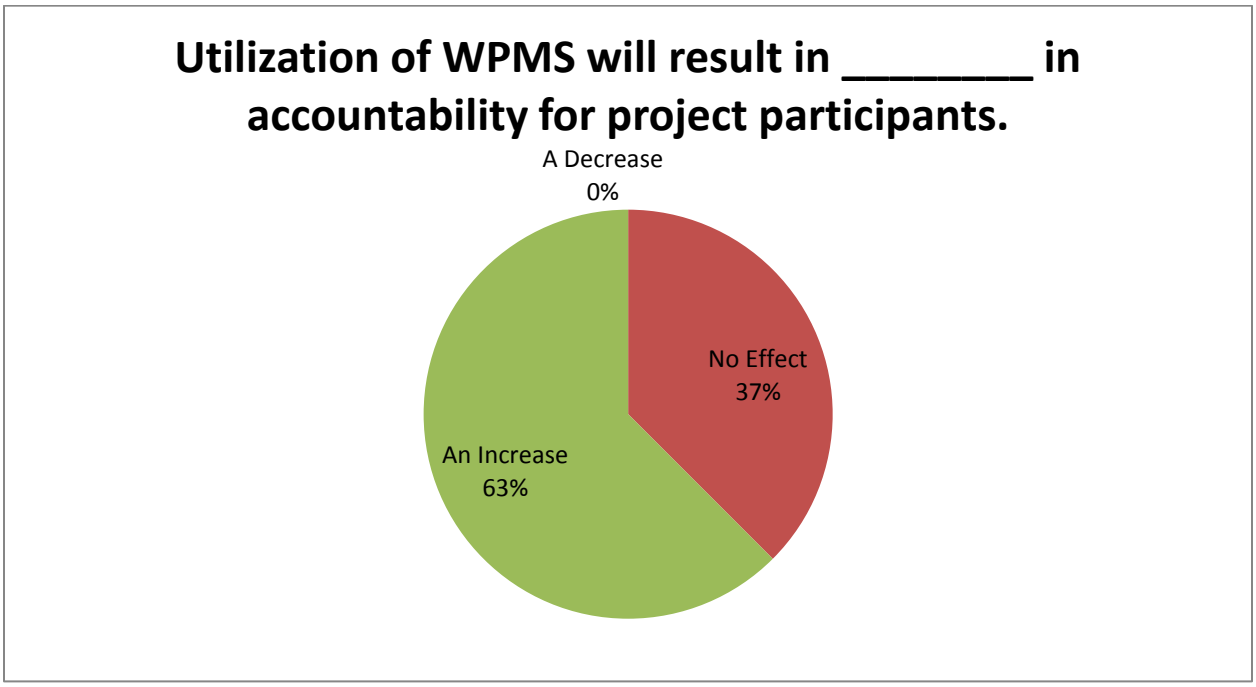

Figure B.6. Survey results – accountability of project participants

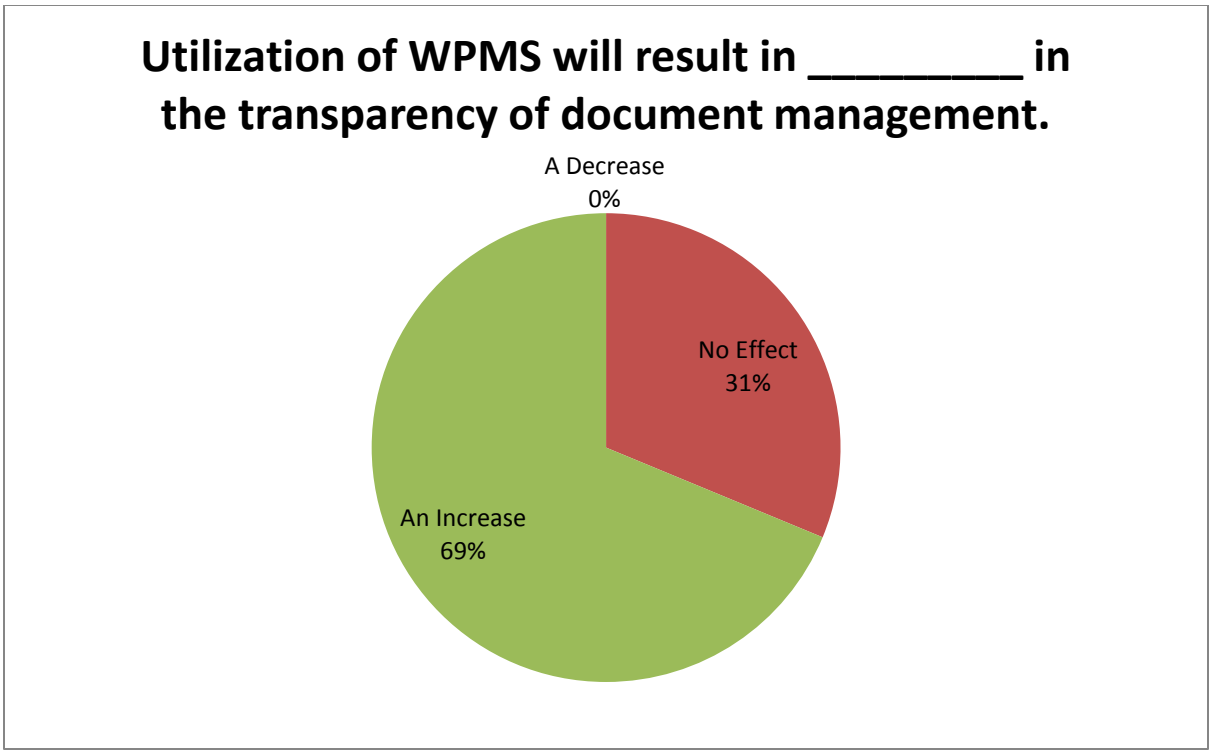

Figure B.7. Survey results – transparency of document management

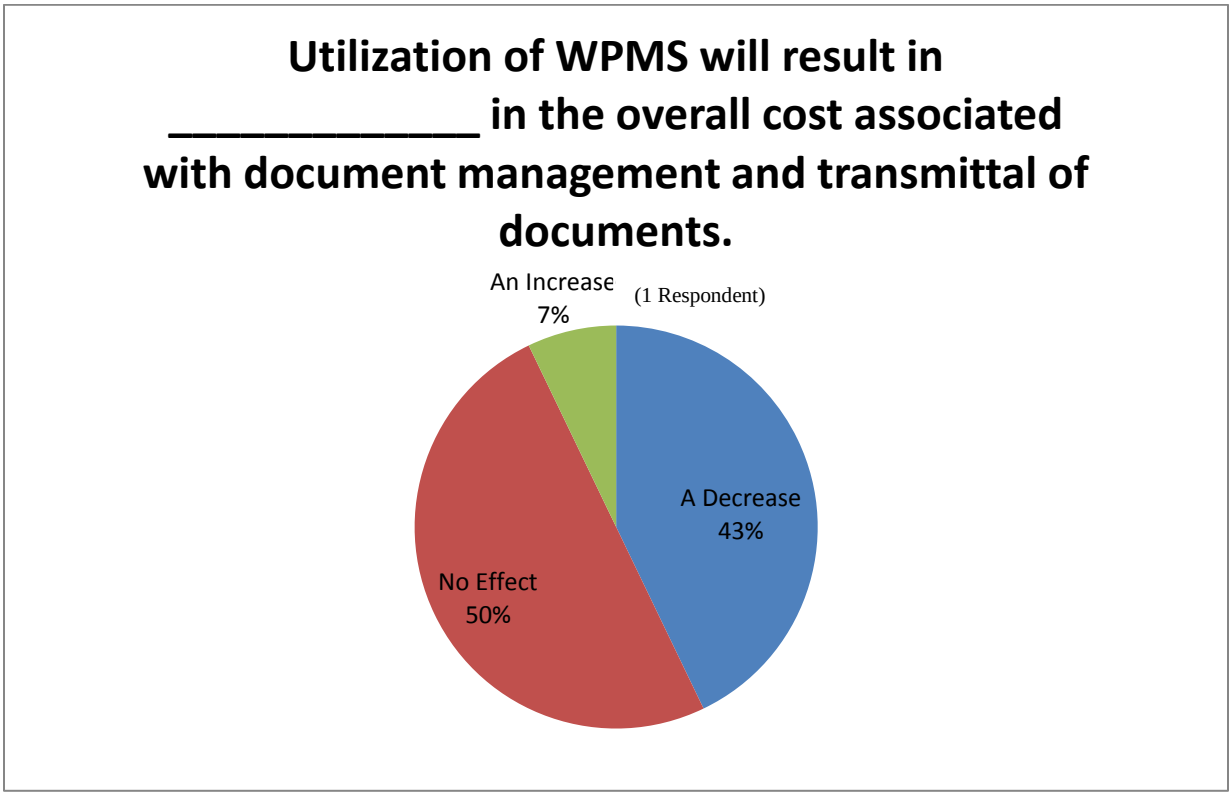

Figure B.8. Survey results – effect in document management cost

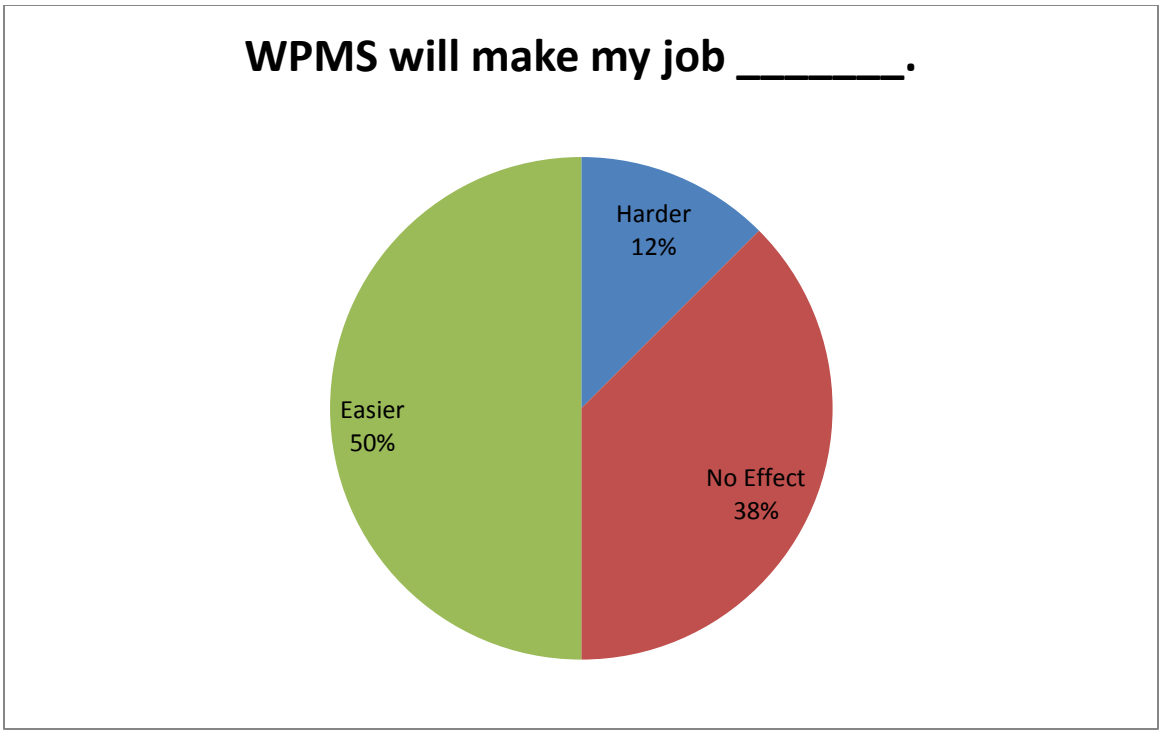

Figure B.9. Survey results – effect on project role

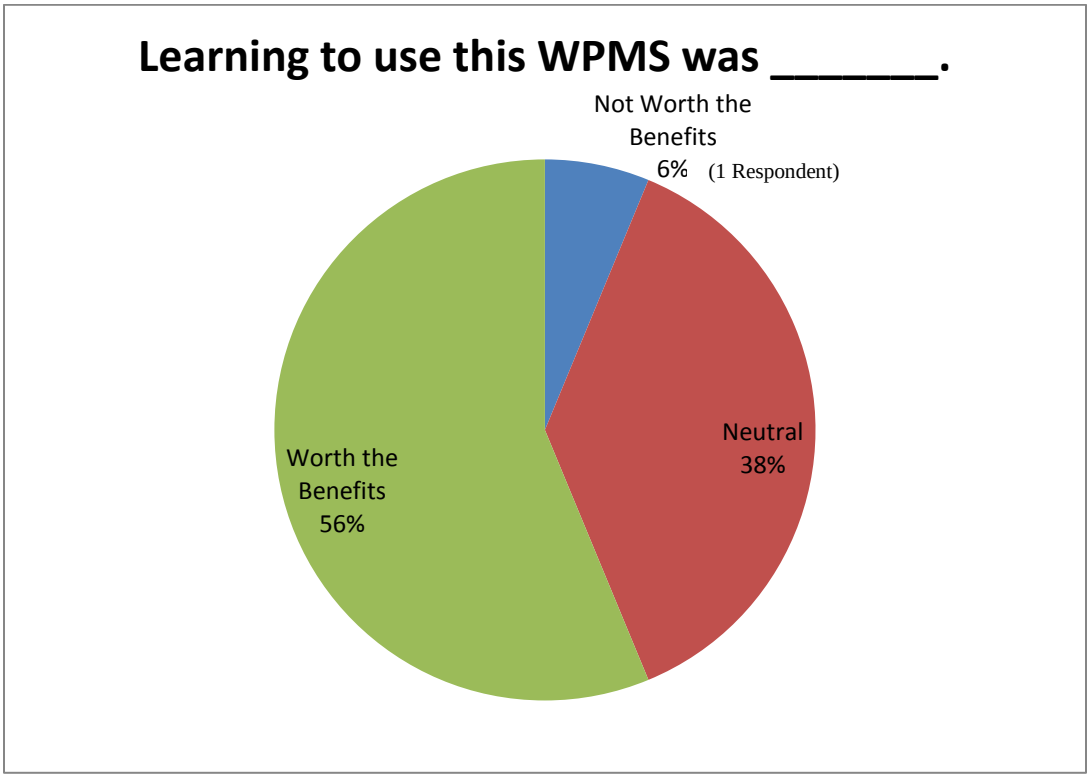

Figure B.10. Survey results – ease of learning the system

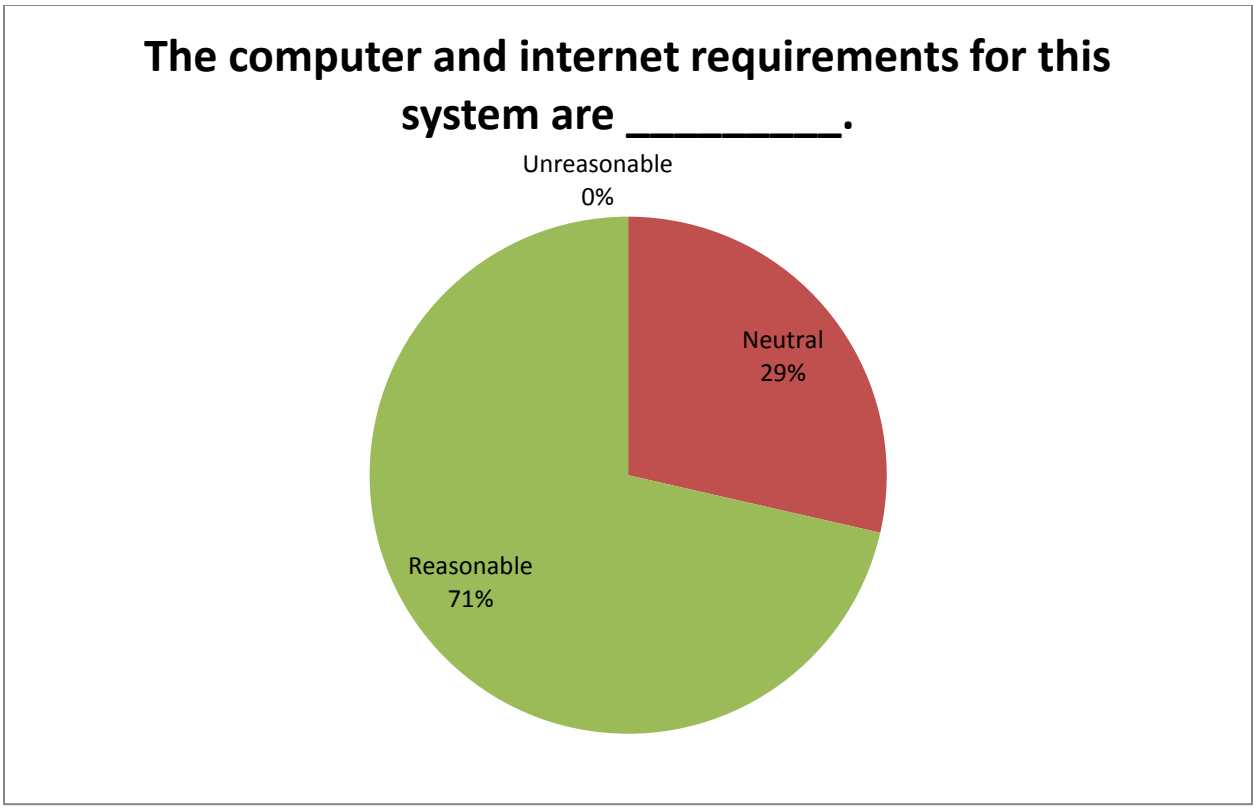

Figure B.11. Survey results – computer/internet requirements

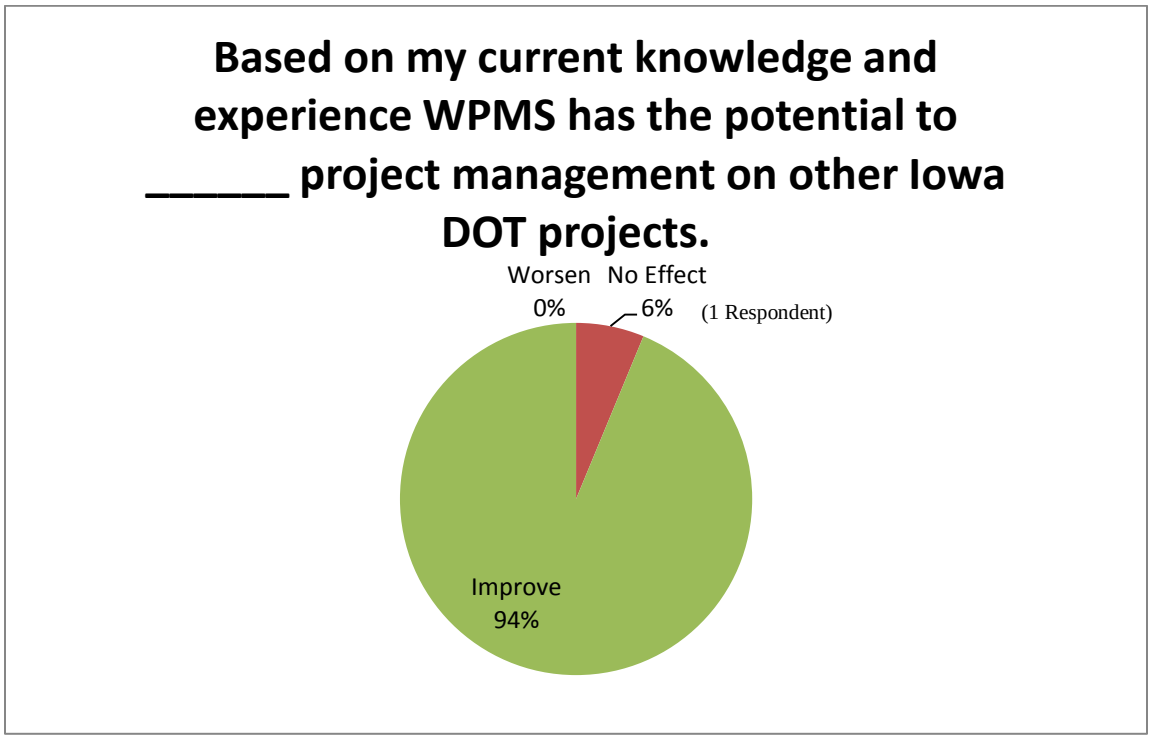

Figure B.12. Survey results – potential effect on other Iowa DOT projects

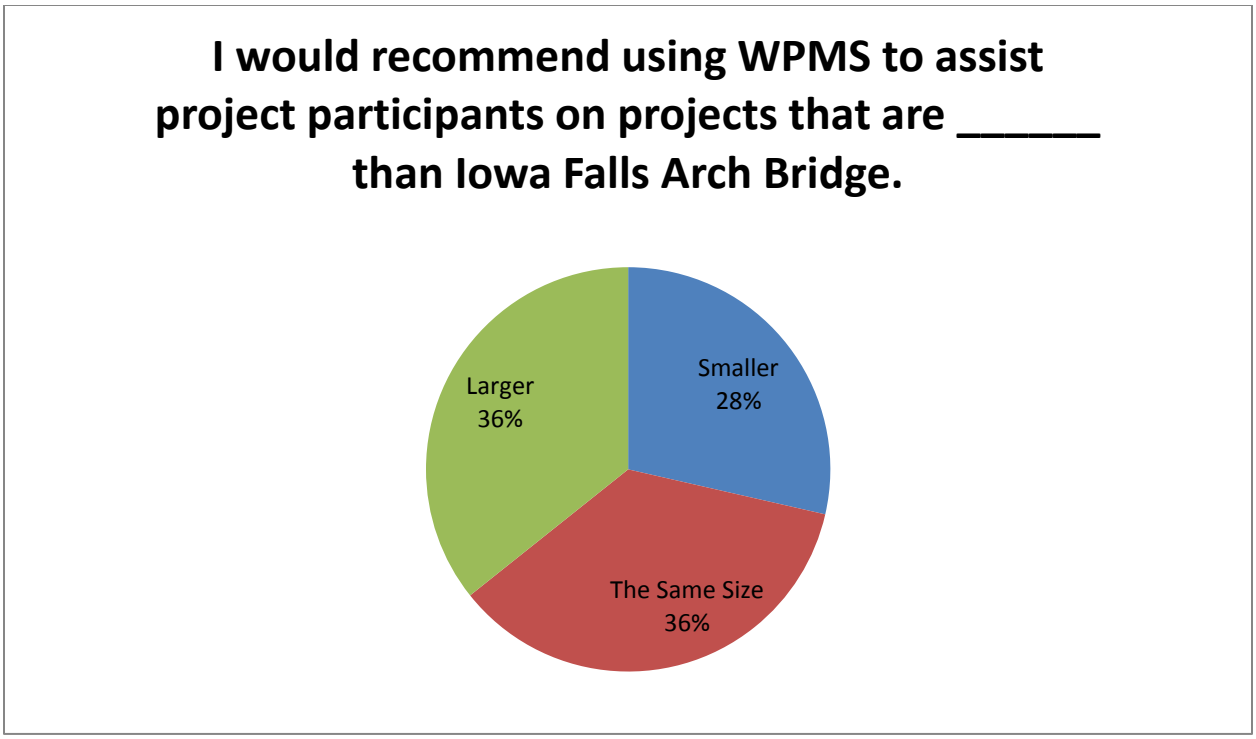

Figure B.13. Survey results – project implementation size for other projects

APPENDIX C. HUDDLE WORKFLOW COMPARED TO ORIGINAL WORKFLOW

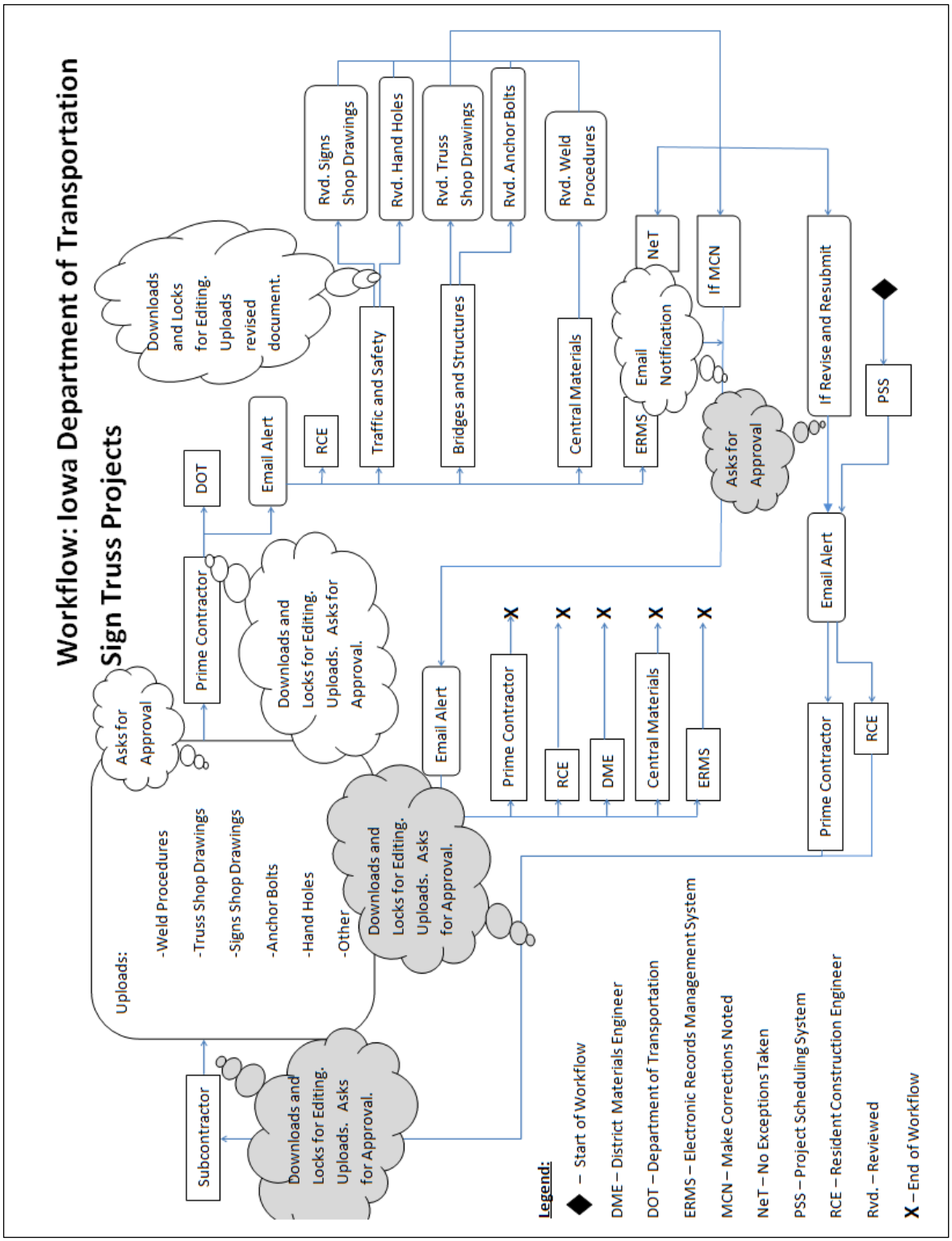

Figure C.1. Huddle workflow for sign truss projects

APPENDIX D. WORKFLOW FOR SHAREPOINT AND FTP IMPLEMENTATION ON SIGN TRUSS PROJECTS

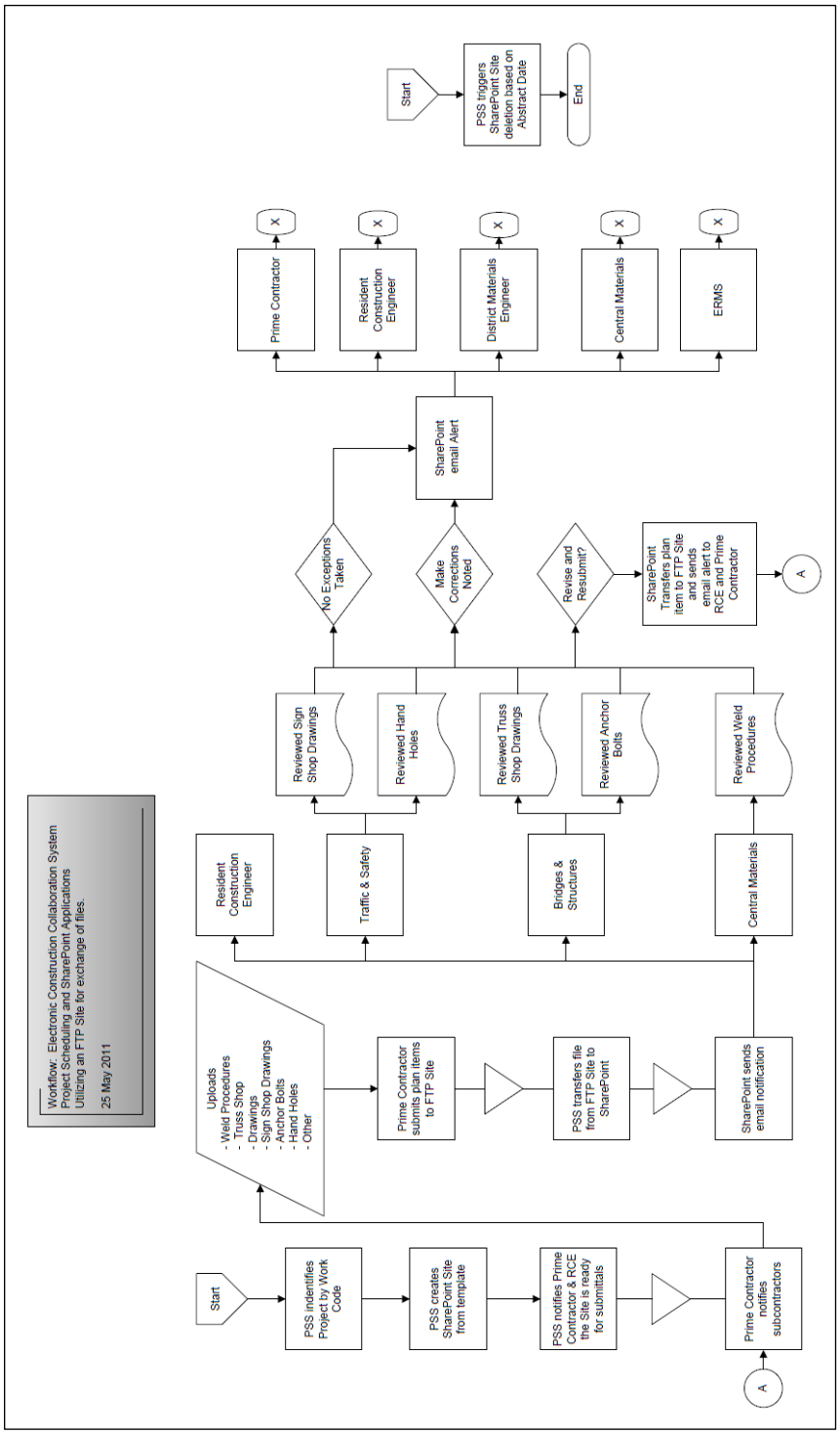

Figure D.1. Workflow for SharePoint and FTP site implementation on sign truss projects (Karla Hocker, Iowa DOT)

APPENDIX E. COMPARISON SCREENSHOTS OF TRADITIONAL WEBSITE USED FOR DOCUMENT SHARING AND MICROSOFT SHAREPOINT PAGE

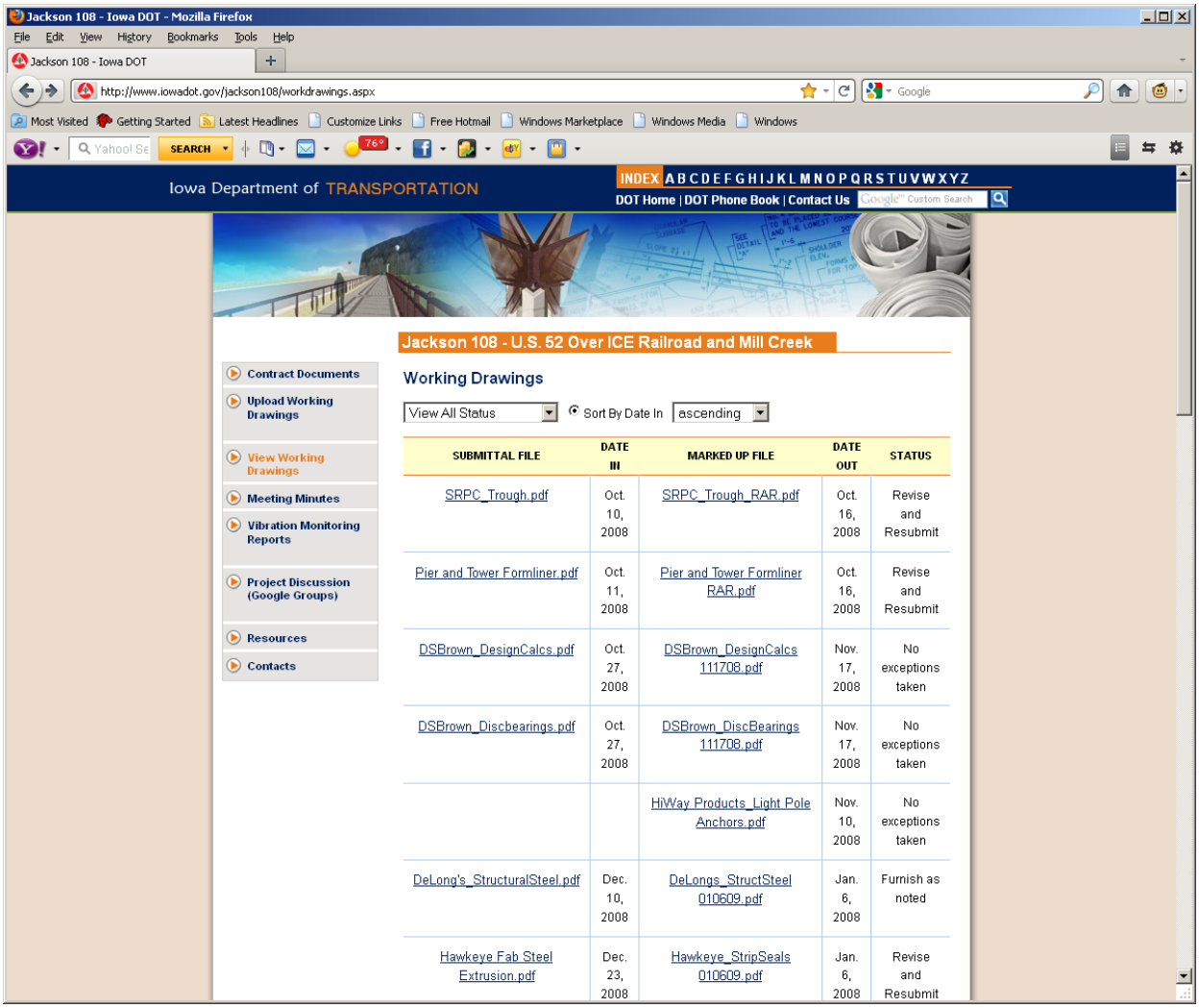

Figure E.1. Screenshot of Jackson 108 Bridge Project document management website (Karla Hocker, Iowa DOT)

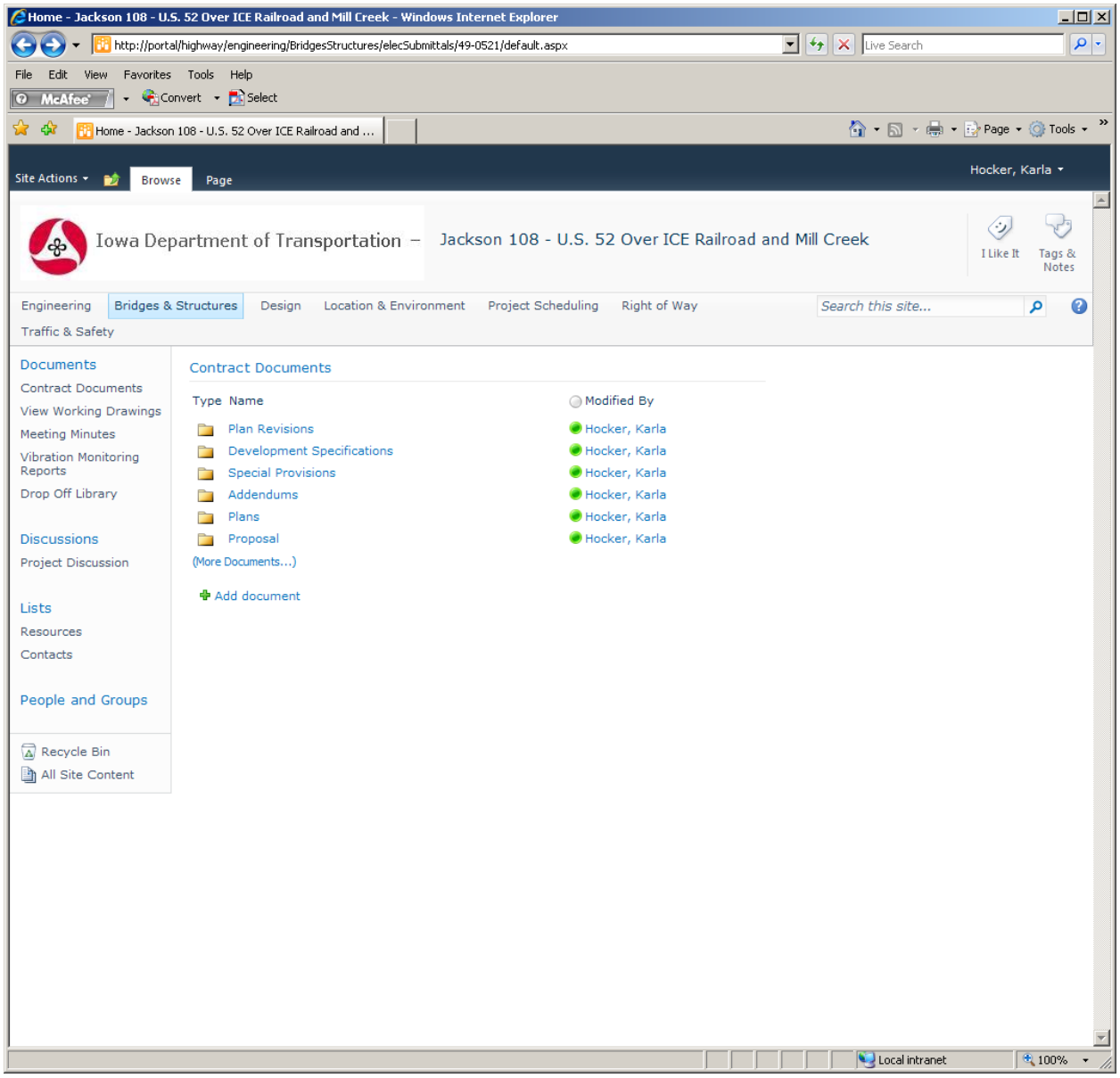

Figure E.2. SharePoint page screenshot for the Jackson 108 Bridge Project (Karla Hocker, Iowa DOT)

APPENDIX F. ANSWERED SURVEYS – BROADWAY BRIDGE

Attolist Pre Project Survey
Broadway Viaduct

Please answer the following questions based on your current experience and knowledge of web-based project management and its use by the Iowa DOT. Your answers are important in helping the Iowa DOT measure the benefits of using web-based project management on bridge construction projects. Upon completion please return this survey to Jose Perez, japerez@iastate.edu. Thank you.

Participant Information:

1. What is/was your role on this project (please circle):
   Iowa DOT Employee Consultant Contractor Supplier
2. Approximately how many times per month did you interface with the web-based project management site?
   Less than 10 10 to 20 More than 20

Project Website Experience:

Based on your knowledge of web-based project management and prior experience with Iowa DOT bridge projects, please respond to the following statements by circling the most appropriate response

1. For my work, web-based project management made the submittal process_____.
   More Difficult No Effect **Easier**
2. For my work, web-based project management made the RFI process_____.
   More Difficult No Effect **Easier**
3. For my work, Web-based project management made relevant project information_____.
   Less Available No Effect **More Available**
4. Utilization of Web-based project management resulted in _____ in accountability for project participants.
   A Decrease **No Effect** An Increase
5. Utilization of Web-based project management website resulted in _____in the transparency of document management.
   A Decrease **No Effect** An Increase
6. Utilization of Web-based project management resulted in _____in the overall cost associated with document management and transmittal of documents.
   A Decrease No Effect An Increase
   No information
7. Web-based project management made my job _____.
   Harder No Effect **Easier**
8. Learning to use this web-based project management system was _____.
   Not Worth the Benefits Neutral **Worth the Benefits**

9. The computer and internet requirements for this system were _____.
   Unreasonable Neutral Reasonable
   No information
10. Based on my current knowledge and experience, web-based project management has the potential to _____ project management on other Iowa DOT bridge projects.
    Worsen No Effect **Improve (On Large Projects)**
11. I would recommend using web-based project management to assist project participants on projects that are _____ than Broadway Viaduct.
    Smaller **The Same Size** **Larger**

Please write in answers to the following questions:

What were the primary benefits from using web-based project management?

Quicker after I learned how to use it.

What were your biggest concerns with web-based project management and its use on this project?

No real concerns, but not needed on small projects.

Was there anything you want the system to do that it could not do?

No

What parts of the system did you find to be hard to learn and use?

I only had to use one small part of the overall system, so I cannot provide too much information on this.

Attolist Pre Project Survey
Broadway Viaduct

Please answer the following questions based on your current experience and knowledge of web-based project management and its use by the Iowa DOT. Your answers are important in helping the Iowa DOT measure the benefits of using web-based project management on bridge construction projects. Upon completion please return this survey to Jose Perez, japerez@iastate.edu. Thank you.

Participant Information:

1. What is/was your role on this project (please circle):
   Iowa DOT Employee Consultant Contractor Supplier
2. Approximately how many times per month did you interface with the web-based project management site?
   Less than 10 10 to 20 More than 20

Project Website Experience:

Based on your knowledge of web-based project management and prior experience with Iowa DOT bridge projects, please respond to the following statements by circling the most appropriate response

1. For my work, web-based project management made the submittal process_____.
   More Difficult No Effect Easier
2. For my work, web-based project management made the RFI process_____.
   More Difficult No Effect Easier
3. For my work, Web-based project management made relevant project information_____.
   Less Available No Effect More Available
4. Utilization of Web-based project management resulted in _____ in accountability for project participants.
   A Decrease No Effect An Increase
5. Utilization of Web-based project management website resulted in _____in the transparency of document management.
   A Decrease No Effect An Increase
6. Utilization of Web-based project management resulted in _____in the overall cost associated with document management and transmittal of documents.
   A Decrease No Effect An Increase
7. Web-based project management made my job _____.
   Harder No Effect Easier
8. Learning to use this web-based project management system was _____.
   Not Worth the Benefits Neutral Worth the Benefits
9. The computer and internet requirements for this system were _____.
   Unreasonable Neutral Reasonable
10. Based on my current knowledge and experience, web-based project management has the potential to _____ project management on other Iowa DOT bridge projects.
    Worsen No Effect Improve

11. I would recommend using web-based project management to assist project participants on projects that are _____ than Broadway Viaduct.
    Smaller The Same Size Larger

Please write in answers to the following questions:

What were the primary benefits from using web-based project management?

Speed of document distribution.

Speed of response on reviews of project documents.

Reduced need for paper copies.

What were your biggest concerns with web-based project management and its use on this project?

Learning to use/navigate within the program.

Was there anything you want the system to do that it could not do?

Not at this time.

What parts of the system did you find to be hard to learn and use?

Navigation within project “directories”. It seems like a maze at times.

Attolist Pre Project Survey
Broadway Viaduct

Please answer the following questions based on your current experience and knowledge of web-based project management and its use by the Iowa DOT. Your answers are important in helping the Iowa DOT measure the benefits of using web-based project management on bridge construction projects. Upon completion please return this survey to Jose Perez, japerez@iastate.edu. Thank you.

Participant Information:

1. What is/was your role on this project (please circle):
   Iowa DOT Employee Consultant Contractor Supplier
2. Approximately how many times per month did you interface with the web-based project management site?
   Less than 10 10 to 20 More than 20

Project Website Experience:

Based on your knowledge of web-based project management and prior experience with Iowa DOT bridge projects, please respond to the following statements by circling the most appropriate response

1. For my work, web-based project management made the submittal process_____.
   More Difficult No Effect Easier
2. For my work, web-based project management made the RFI process_____.
   More Difficult No Effect Easier
3. For my work, Web-based project management made relevant project information_____.
   Less Available No Effect More Available
4. Utilization of Web-based project management resulted in _____ in accountability for project participants.
   A Decrease No Effect An Increase
5. Utilization of Web-based project management website resulted in _____in the transparency of document management.
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6. Utilization of Web-based project management resulted in _____in the overall cost associated with document management and transmittal of documents.
   A Decrease No Effect An Increase
7. Web-based project management made my job _____.
   Harder No Effect Easier
8. Learning to use this web-based project management system was _____.
   Not Worth the Benefits Neutral Worth the Benefits
9. The computer and internet requirements for this system were _____.
   Unreasonable Neutral Reasonable
10. Based on my current knowledge and experience, web-based project management has the potential to _____ project management on other Iowa DOT bridge projects.
    Worsen No Effect Improve

11. I would recommend using web-based project management to assist project participants on projects that are _____ than Broadway Viaduct.

    Smaller The Same Size Larger

Please write in answers to the following questions:

What were the primary benefits from using web-based project management?

Easy and fast way to track submittals from contractors and having a one central location for all documents.

What were your biggest concerns with web-based project management and its use on this project?

Getting everyone to use it for submittals and communication all the time and not selectively.

Was there anything you want the system to do that it could not do?

Be able to designate a lead person for each submittal and copy others.

What parts of the system did you find to be hard to learn and use?

With some effort it was not that hard.

Attolist Pre Project Survey
Broadway Viaduct

Please answer the following questions based on your current experience and knowledge of web-based project management and its use by the Iowa DOT. Your answers are important in helping the Iowa DOT measure the benefits of using web-based project management on bridge construction projects. Upon completion please return this survey to Jose Perez, japerez@iastate.edu. Thank you.

Participant Information:

1. What is/was your role on this project (please circle):
   Iowa DOT Employee Consultant Contractor Supplier
2. Approximately how many times per month did you interface with the web-based project management site?
   Less than 10 10 to 20 More than 20

Project Website Experience:

Based on your knowledge of web-based project management and prior experience with Iowa DOT bridge projects, please respond to the following statements by circling the most appropriate response

1. For my work, web-based project management made the submittal process_____.
   More Difficult No Effect Easier
2. For my work, web-based project management made the RFI process_____.
   More Difficult No Effect Easier
3. For my work, Web-based project management made relevant project information_____.
   Less Available No Effect More Available
4. Utilization of Web-based project management resulted in _____ in accountability for project participants.
   A Decrease No Effect An Increase
5. Utilization of Web-based project management website resulted in _____in the transparency of document management.
   A Decrease No Effect An Increase
6. Utilization of Web-based project management resulted in _____in the overall cost associated with document management and transmittal of documents.
   A Decrease No Effect An Increase
7. Web-based project management made my job _____.
   Harder No Effect Easier
8. Learning to use this web-based project management system was _____.
   Not Worth the Benefits Neutral Worth the Benefits
9. The computer and internet requirements for this system were _____.
   Unreasonable Neutral Reasonable
10. Based on my current knowledge and experience, web-based project management has the potential to _____ project management on other Iowa DOT bridge projects.
    Worsen No Effect Improve

11. I would recommend using web-based project management to assist project participants on projects that are _____ than Broadway Viaduct.

    Smaller The Same Size Larger

Please write in answers to the following questions:

What were the primary benefits from using web-based project management?

All documents in one location. Simple system for returning review comments.

What were your biggest concerns with web-based project management and its use on this project?

Sometimes too many reviewers—providing conflicting comments.

Was there anything you want the system to do that it could not do?

System for sorting/searching documents.

What parts of the system did you find to be hard to learn and use?

None

Attolist Pre Project Survey
Broadway Viaduct

Please answer the following questions based on your current experience and knowledge of web-based project management and its use by the Iowa DOT. Your answers are important in helping the Iowa DOT measure the benefits of using web-based project management on bridge construction projects. Upon completion please return this survey to Jose Perez, japerez@iastate.edu. Thank you.

Participant Information:

1. What is/was your role on this project (please circle):
   Iowa DOT Employee Consultant Contractor Supplier
2. Approximately how many times per month did you interface with the web-based project management site?
   Less than 10 10 to 20 More than 20

Project Website Experience:

Based on your knowledge of web-based project management and prior experience with Iowa DOT bridge projects, please respond to the following statements by circling the most appropriate response

1. For my work, web-based project management made the submittal process_____.
   More Difficult No Effect Easier
2. For my work, web-based project management made the RFI process_____.
   More Difficult No Effect Easier
3. For my work, Web-based project management made relevant project information_____.
   Less Available No Effect More Available
4. Utilization of Web-based project management resulted in _____ in accountability for project participants.
   A Decrease No Effect An Increase
5. Utilization of Web-based project management website resulted in _____in the transparency of document management.
   A Decrease No Effect An Increase
6. Utilization of Web-based project management resulted in _____in the overall cost associated with document management and transmittal of documents.
   A Decrease No Effect An Increase
7. Web-based project management made my job _____.
   Harder No Effect Easier
8. Learning to use this web-based project management system was _____.
   Not Worth the Benefits Neutral Worth the Benefits
9. The computer and internet requirements for this system were _____.
   Unreasonable Neutral Reasonable
10. Based on my current knowledge and experience, web-based project management has the potential to _____ project management on other Iowa DOT bridge projects.
    Worsen No Effect Improve

11. I would recommend using web-based project management to assist project participants on projects that are _____ than Broadway Viaduct.
    Smaller The Same Size Larger

Please write in answers to the following questions:

What were the primary benefits from using web-based project management?

Simultaneous communication and feedback. Also reduced response time.

What were your biggest concerns with web-based project management and its use on this project?

Wide variation in users equipment and capabilities in the use.

Was there anything you want the system to do that it could not do?

What parts of the system did you find to be hard to learn and use?

Attolist Pre Project Survey
Broadway Viaduct

Please answer the following questions based on your current experience and knowledge of web-based project management and its use by the Iowa DOT. Your answers are important in helping the Iowa DOT measure the benefits of using web-based project management on bridge construction projects. Upon completion please return this survey to Jose Perez, japerez@iastate.edu. Thank you.

Participant Information:

1. What is/was your role on this project (please circle):

   Iowa DOT Employee Consultant Contractor Supplier

2. Approximately how many times per month did you interface with the web-based project management site?

   Less than 10 10 to 20 More than 20

Project Website Experience:

Based on your knowledge of web-based project management and prior experience with Iowa DOT bridge projects, please respond to the following statements by circling the most appropriate response

1. For my work, web-based project management made the submittal process_____.

   More Difficult No Effect Easier

2. For my work, web-based project management made the RFI process_____.

   More Difficult No Effect Easier

3. For my work, Web-based project management made relevant project information_____.

   Less Available No Effect More Available

4. Utilization of Web-based project management resulted in _____ in accountability for project participants.

   A Decrease No Effect An Increase

5. Utilization of Web-based project management website resulted in _____in the transparency of document management.

   A Decrease | No Effect | An Increase

6. Utilization of Web-based project management resulted in _____in the overall cost associated with document management and transmittal of documents.

   A Decrease | No Effect | An Increase

7. Web-based project management made my job _____.

   Harder | No Effect | Easier

8. Learning to use this web-based project management system was _____.

   Not Worth the Benefits | Neutral | Worth the Benefits

9. The computer and internet requirements for this system were _____.

   Unreasonable | Neutral | Reasonable

10. Based on my current knowledge and experience, web-based project management has the potential to _____ project management on other Iowa DOT bridge projects.

    Worsen | No Effect | Improve

11. I would recommend using web-based project management to assist project participants on projects that are _____ than Broadway Viaduct.

    Smaller | The Same Size | Larger

Please write in answers to the following questions:

What were the primary benefits from using web-based project management?

Document transparency and accountability. I could look at the status of an RFI and submittal and see who was lagging in a response and then contact the RCE to have him check into the status.

What were your biggest concerns with web-based project management and its use on this project?

It is too easy to send the documents, so many times there were more people notified of an issue, RFI, or a submiital than the document may have concerned. Because of this, some people would not respond because it did not need their approval or concern them, but the RFI would not be completed and answered until everyone that was notified had given a response.

It also delayed decisions. Instead of making a decision, the engineer could send an issue out to several others to weigh in, rather than making a phone call and speeding up the decision making process.

Was there anything you want the system to do that it could not do?

No

What parts of the system did you find to be hard to learn and use?

None

Attolist Pre Project Survey
Broadway Viaduct

Please answer the following questions based on your current experience and knowledge of web-based project management and its use by the Iowa DOT. Your answers are important in helping the Iowa DOT measure the benefits of using web-based project management on bridge construction projects. Upon completion please return this survey to Jose Perez, japerez@iastate.edu. Thank you.

Participant Information:

1. What is/was your role on this project (please circle):

   Iowa DOT Employee Consultant Contractor Supplier

2. Approximately how many times per month did you interface with the web-based project management site?

   Less than 10 10 to 20 More than 20

   Lately Fewer during winter

Project Website Experience:

Based on your knowledge of web-based project management and prior experience with Iowa DOT bridge projects, please respond to the following statements by circling the most appropriate response

1. For my work, web-based project management made the submittal process_____.

   More Difficult No Effect Easier

2. For my work, web-based project management made the RFI process_____.

   More Difficult No Effect Easier

3. For my work, Web-based project management made relevant project information_____.

   Less Available No Effect More Available

4. Utilization of Web-based project management resulted in _____ in accountability for project participants.

   A Decrease No Effect An Increase

5. Utilization of Web-based project management website resulted in _____in the transparency of document management.

   A Decrease No Effect An Increase

6. Utilization of Web-based project management resulted in _____in the overall cost associated with document management and transmittal of documents.

   A Decrease No Effect An Increase

7. Web-based project management made my job _____.

   Harder No Effect Easier

8. Learning to use this web-based project management system was _____.

   Not Worth the Benefits Neutral Worth the Benefits

9. The computer and internet requirements for this system were _____.

   Unreasonable Neutral Reasonable

10. Based on my current knowledge and experience, web-based project management has the potential to _____ project management on other Iowa DOT bridge projects.

    Worsen No Effect Improve

11. I would recommend using web-based project management to assist project participants on projects that are _____ than Broadway Viaduct.

    Smaller The Same Size Larger

<u>Please write in answers to the following questions:</u>

What were the primary benefits from using web-based project management?

All the project documents are in one place and readily accessible.

What were your biggest concerns with web-based project management and its use on this project?

- none

Was there anything you want the system to do that it could not do?

— none

What parts of the system did you find to be hard to learn and use?

Initially the system takes time to figure out the navigation.

Attolist Pre Project Survey
Broadway Viaduct

Please answer the following questions based on your current experience and knowledge of web-based project management and its use by the Iowa DOT. Your answers are important in helping the Iowa DOT measure the benefits of using web-based project management on bridge construction projects. Upon completion please return this survey to Jose Perez, japerez@iastate.edu. Thank you.

Participant Information:

1. What is/was your role on this project (please circle):

Iowa DOT Employee Consultant Contractor Supplier

2. Approximately how many times per month did you interface with the web-based project management site?

Less than 10 10 to 20 More than 20

Project Website Experience:

Based on your knowledge of web-based project management and prior experience with Iowa DOT bridge projects, please respond to the following statements by circling the most appropriate response

1. For my work, web-based project management made the submittal process_____.

More Difficult No Effect Easier

2. For my work, web-based project management made the RFI process_____.

More Difficult No Effect Easier

3. For my work, Web-based project management made relevant project information_____.

Less Available No Effect More Available

4. Utilization of Web-based project management resulted in _____ in accountability for project participants.

A Decrease No Effect An Increase

5. Utilization of Web-based project management website resulted in _____in the transparency of document management.

A Decrease | No Effect | An Increase

6. Utilization of Web-based project management resulted in _____in the overall cost associated with document management and transmittal of documents.

A Decrease | No Effect | An Increase

7. Web-based project management made my job _____.

Harder | No Effect | Easier

8. Learning to use this web-based project management system was _____.

Not Worth the Benefits | Neutral | Worth the Benefits

9. The computer and internet requirements for this system were _____.

Unreasonable | Neutral | Reasonable

10. Based on my current knowledge and experience, web-based project management has the potential to _____ project management on other Iowa DOT bridge projects.

Worsen | No Effect | Improve

11. I would recommend using web-based project management to assist project participants on projects that are _____ than Broadway Viaduct

Smaller | The Same Size | Larger

Please write in answers to the following questions:

What were the primary benefits from using web-based project management?

What were your biggest concerns with web-based project management and its use on this project?

Was there anything you want the system to do that it could not do?

What parts of the system did you find to be hard to learn and use?

Attolist Pre Project Survey
Broadway Viaduct

Please answer the following questions based on your current experience and knowledge of web-based project management and its use by the Iowa DOT. Your answers are important in helping the Iowa DOT measure the benefits of using web-based project management on bridge construction projects. Upon completion please return this survey to Jose Perez, japerez@iastate.edu. Thank you.

Participant Information:

1. What is/was your role on this project (please circle):

(Iowa DOT Employee) Consultant Contractor Supplier

2. Approximately how many times per month did you interface with the web-based project management site?

(Less than 10) 10 to 20 More than 20

Project Website Experience:

Based on your knowledge of web-based project management and prior experience with Iowa DOT bridge projects, please respond to the following statements by circling the most appropriate response

1. For my work, web-based project management made the submittal process_____.

More Difficult No Effect (Easier)

2. For my work, web-based project management made the RFI process_____.

More Difficult No Effect (Easier)

3. For my work, Web-based project management made relevant project information_____.

Less Available No Effect (More Available)

4. Utilization of Web-based project management resulted in _____ in accountability for project participants

A Decrease No Effect (An Increase)

5. Utilization of Web-based project management website resulted in _____in the transparency of document management.

A Decrease | No Effect | (An Increase)

6. Utilization of Web-based project management resulted in _____in the overall cost associated with document management and transmittal of documents.

A Decrease | (No Effect) | An Increase

7. Web-based project management made my job _____.

Harder | No Effect | (Easier)

8. Learning to use this web-based project management system was _____.

Not Worth the Benefits | Neutral | (Worth the Benefits)

9. The computer and internet requirements for this system were _____.

Unreasonable | Neutral | (Reasonable)

10. Based on my current knowledge and experience, web-based project management has the potential to _____ project management on other Iowa DOT bridge projects.

Worsen | No Effect | (Improve)

11. I would recommend using web-based project management to assist project participants on projects that are _____ than Broadway Viaduct.

Smaller | (The Same Size) | Larger

<u>Please write in answers to the following questions:</u>

What were the primary benefits from using web-based project management?

HAVING ALL CONTRACT DOCUMENTS IN ONE PLACE

What were your biggest concerns with web-based project management and its use on this project?

SOME QUESTIONS THAT COULD BE ANSWERED QUICKLY WITH A PHONE CALL CAN NOW TAKE DAYS TO GET A RESPONSE.

Was there anything you want the system to do that it could not do?

NO

What parts of the system did you find to be hard to learn and use?

TITLES OF SUBMITTALS NEED TO BE CLEAR AND ORIGINAL OR IT CAN BE DIFFICULT TO FIND THE INFORMATION YOU ARE LOOKING FOR.

Attolist Pre Project Survey
Broadway Viaduct

Please answer the following questions based on your current experience and knowledge of web-based project management and its use by the Iowa DOT. Your answers are important in helping the Iowa DOT measure the benefits of using web-based project management on bridge construction projects. Upon completion please return this survey to Jose Perez, japerez@iastate.edu. Thank you.

Participant Information:

1. What is/was your role on this project (please circle):

   Iowa DOT Employee Consultant (Contractor) Supplier

2. Approximately how many times per month did you interface with the web-based project management site?

   Less than 10 (10 to 20) More than 20

Project Website Experience:

Based on your knowledge of web-based project management and prior experience with Iowa DOT bridge projects, please respond to the following statements by circling the most appropriate response

1. For my work, web-based project management made the submittal process_____.

   More Difficult No Effect (Easier)

2. For my work, web-based project management made the RFI process_____.

   More Difficult No Effect (Easier)

3. For my work, Web-based project management made relevant project information_____.

   Less Available No Effect (More Available)

4. Utilization of Web-based project management resulted in _____ in accountability for project participants.

   A Decrease No Effect (An Increase)

5. Utilization of Web-based project management website resulted in _____in the transparency of document management.

   A Decrease No Effect An Increase

6. Utilization of Web-based project management resulted in _____in the overall cost associated with document management and transmittal of documents.

   A Decrease No Effect An Increase

7. Web-based project management made my job _____.

   Harder No Effect Easier

8. Learning to use this web-based project management system was _____.

   Not Worth the Benefits Neutral Worth the Benefits

9. The computer and internet requirements for this system were _____.

   Unreasonable Neutral Reasonable

10. Based on my current knowledge and experience, web-based project management has the potential to _____ project management on other Iowa DOT bridge projects.

    Worsen No Effect Improve

11. I would recommend using web-based project management to assist project participants on projects that are _____ than Broadway Viaduct.

    Smaller The Same Size Larger

Please write in answers to the following questions:

What were the primary benefits from using web-based project management?

What were your biggest concerns with web-based project management and its use on this project?

Ease of use

Was there anything you want the system to do that it could not do?

Respond to RFI after they have been answered and returned

What parts of the system did you find to be hard to learn and use?

None

Attolist Pre Project Survey
Broadway Viaduct

Please answer the following questions based on your current experience and knowledge of web-based project management and its use by the Iowa DOT. Your answers are important in helping the Iowa DOT measure the benefits of using web-based project management on bridge construction projects. Upon completion please return this survey to Jose Perez, japerez@iastate.edu. Thank you.

Participant Information:

1. What is/was your role on this project (please circle):

   Iowa DOT Employee Consultant Contractor Supplier

2. Approximately how many times per month did you interface with the web-based project management site?

   Less than 10 10 to 20 More than 20

Project Website Experience:

Based on your knowledge of web-based project management and prior experience with Iowa DOT bridge projects, please respond to the following statements by circling the most appropriate response

1. For my work, web-based project management made the submittal process_____.

   More Difficult No Effect Easier

2. For my work, web-based project management made the RFI process_____.

   More Difficult No Effect Easier

3. For my work, Web-based project management made relevant project information_____.

   Less Available No Effect More Available

4. Utilization of Web-based project management resulted in _____ in accountability for project participants.

   A Decrease No Effect An Increase

5. Utilization of Web-based project management website resulted in _____in the transparency of document management.

   A Decrease | No Effect | An Increase

6. Utilization of Web-based project management resulted in _____in the overall cost associated with document management and transmittal of documents.

   A Decrease | No Effect | An Increase

7. Web-based project management made my job _____.

   Harder | No Effect | Easier

8. Learning to use this web-based project management system was _____.

   Not Worth the Benefits | Neutral | Worth the Benefits

9. The computer and internet requirements for this system were _____.

   Unreasonable | Neutral | Reasonable

10. Based on my current knowledge and experience, web-based project management has the potential to _____ project management on other Iowa DOT bridge projects.

    Worsen | No Effect | Improve

11. I would recommend using web-based project management to assist project participants on projects that are _____ than Broadway Viaduct.

    Smaller | The Same Size | Larger

Please write in answers to the following questions:

What were the primary benefits from using web-based project management?

None

What were your biggest concerns with web-based project management and its use on this project?

Missing Some Information in a Timely Manner

Was there anything you want the system to do that it could not do?

What parts of the system did you find to be hard to learn and use?

All

APPENDIX G. ANSWERED SURVEYS – IOWA FALLS ARCH BRIDGE

Attolist Pre Project Survey
Iowa Falls Arch Bridge

Please answer the following questions based on your current experience and knowledge of web-based project management and its use by the Iowa DOT. Your answers are important in helping the Iowa DOT measure the benefits of using web-based project management on bridge construction projects. Upon completion please return this survey to Jose Perez, japerez@iastate.edu. Thank you.

Participant Information:

1. What is your role on this project (please circle):
   Iowa DOT Employee Consultant Contractor Sub or Supplier
2. Approximately how many times per month do you expect you will need to interface with the web-based project management site?
   Less than 10 10 to 20 More than 20

Project Website Experience:

Based on your knowledge of web-based project management and prior experience with Iowa DOT bridge projects, please respond to the following statements by circling the most appropriate response

1. For my work, I expect web-based project management will make the submittal process_____.
   More Difficult No Effect Easier
2. For my work, I expect web-based project management to make the RFI process_____.
   More Difficult No Effect Easier
3. For my work, Web-based project management will make relevant project information_____.
   Less Available No Effect More Available
4. Utilization of Web-based project management will result in _____ in accountability for project participants.
   A Decrease No Effect An Increase
5. Utilization of Web-based project management website will result in _____in the transparency of document management.
   A Decrease No Effect An Increase
6. Utilization of Web-based project management will result in _____in the overall cost associated with document management and transmittal of documents.
   A Decrease No Effect An Increase
7. Web-based project management will make my job _____.
   Harder No Effect Easier
8. Learning to use this web-based project management system was _____.
   Not Worth the Benefits Neutral Worth the Benefits
9. The computer and internet requirements for this system are _____.
   Unreasonable Neutral Reasonable

10. Based on my current knowledge and experience web-based project management has the potential to _____ project management on other Iowa DOT bridge projects.
    Worsen No Effect Improve
11. I would recommend using web-based project management to assist project participants on projects that are _____ than Iowa Falls Arch Bridge.
    Smaller The Same Size Larger

Please write in answers to the following questions:

What do you expect to be the primary benefits from using web-based project management?

What are your biggest concerns with web-based project management and its use on this project?

Was there anything you want the system to do that it could not do?

What parts of the system did you find or expect to be hard to learn and use?

I'm not sure how to answer the questions yet. I will be the materials auditor on the project and have not had an opportunity to fully utilize the program to date, however, from what I have seen, I feel this will be very user friendly and make my job easier.

Attolist Pre Project Survey
Iowa Falls Arch Bridge

Please answer the following questions based on your current experience and knowledge of web-based project management and its use by the Iowa DOT. Your answers are important in helping the Iowa DOT measure the benefits of using web-based project management on bridge construction projects. Upon completion please return this survey to Jose Perez, japerez@iastate.edu. Thank you.

Participant Information:

1. What is your role on this project (please circle):
   Supplier
2. Approximately how many times per month do you expect you will need to interface with the web-based project management site?
   Less than 10 _____

Project Website Experience:

Based on your knowledge of web-based project management and prior experience with Iowa DOT bridge projects, please respond to the following statements by circling the most appropriate response

1. For my work, I expect web-based project management will make the submittal process_____.
   Easier__
2. For my work, I expect web-based project management to make the RFI process_____.
   Easier
3. For my work, Web-based project management will make relevant project information_____.
   More Available
4. Utilization of Web-based project management will result in _____ in accountability for project participants.
   An Increase
5. Utilization of Web-based project management website will result in _____in the transparency of document management.
   An Increase
6. Utilization of Web-based project management will result in _____in the overall cost associated with document management and transmittal of documents.
   A Decrease
7. Web-based project management will make my job _____.
   Easier
8. Learning to use this web-based project management system was _____.
   Worth the Benefits
9. The computer and internet requirements for this system are _____.
   Didn't notice_____
10. Based on my current knowledge and experience web-based project management has the potential to _____ project management on other Iowa DOT bridge projects.
    Improve

11. I would recommend using web-based project management to assist project participants on projects that are _____ than Iowa Falls Arch Bridge.
    Smaller The Same Size Larger

Please write in answers to the following questions:

What do you expect to be the primary benefits from using web-based project management?

Time management

What are your biggest concerns with web-based project management and its use on this project?

No verbal communication when there is difficulties?????

Was there anything you want the system to do that it could not do?

More clear description of transmittal

What parts of the system did you find or expect to be hard to learn and use?

Viewing where information was regarding returned submittals, it turned out that the only place was on the face of the page. This made it easier however it was not clear that this was the transmittal and document information that we needed. We searched for more information and did not find any.

Attolist Pre Project Survey
Iowa Falls Arch Bridge

Please answer the following questions based on your current experience and knowledge of web-based project management and its use by the Iowa DOT. Your answers are important in helping the Iowa DOT measure the benefits of using web-based project management on bridge construction projects. Upon completion please return this survey to Jose Perez, japerez@iastate.edu. Thank you.

Participant Information:

1. What is your role on this project (please circle):
   Iowa DOT Employee Consultant Contractor Sub or Supplier
2. Approximately how many times per month do you expect you will need to interface with the web-based project management site?
   Less than 10 10 to 20 More than 20

Project Website Experience:

Based on your knowledge of web-based project management and prior experience with Iowa DOT bridge projects, please respond to the following statements by circling the most appropriate response

1. For my work, I expect web-based project management will make the submittal process_____.
   More Difficult No Effect Easier
2. For my work, I expect web-based project management to make the RFI process_____.
   More Difficult No Effect Easier
3. For my work, Web-based project management will make relevant project information_____.
   Less Available No Effect More Available
4. Utilization of Web-based project management will result in _____ in accountability for project participants.
   A Decrease No Effect An Increase
5. Utilization of Web-based project management website will result in _____in the transparency of document management.
   A Decrease No Effect An Increase
6. Utilization of Web-based project management will result in _____in the overall cost associated with document management and transmittal of documents.
   A Decrease No Effect An Increase
7. Web-based project management will make my job _____.
   Harder No Effect Easier
8. Learning to use this web-based project management system was _____.
   Not Worth the Benefits Neutral Worth the Benefits
9. The computer and internet requirements for this system are _____.
   Unreasonable Neutral Reasonable
10. Based on my current knowledge and experience web-based project management has the potential to _____ project management on other Iowa DOT bridge projects.
    Worsen No Effect Improve

11. I would recommend using web-based project management to assist project participants on projects that are _____ than Iowa Falls Arch Bridge.
    Smaller The Same Size Larger

Please write in answers to the following questions:

What do you expect to be the primary benefits from using web-based project management?

Communication and availability of documentation

What are your biggest concerns with web-based project management and its use on this project?

Inexperience on my part with web-based project management

Was there anything you want the system to do that it could not do?

This is my first experience; I do not know what I would be missing.

What parts of the system did you find or expect to be hard to learn and use?

As a consultant, we have established our own in-house documentation procedures which do not integrate into the web-based system.

Attolist Pre Project Survey
Iowa Falls Arch Bridge

Please answer the following questions based on your current experience and knowledge of web-based project management and its use by the Iowa DOT. Your answers are important in helping the Iowa DOT measure the benefits of using web-based project management on bridge construction projects. Upon completion please return this survey to Jose Perez, japerez@iastate.edu. Thank you.

Participant Information:

1. What is your role on this project (please circle):
   Iowa DOT Employee Consultant Contractor Sub or Supplier
2. Approximately how many times per month do you expect you will need to interface with the web-based project management site?
   Less than 10 10 to 20 More than 20

Project Website Experience:

Based on your knowledge of web-based project management and prior experience with Iowa DOT bridge projects, please respond to the following statements by circling the most appropriate response

1. For my work, I expect web-based project management will make the submittal process_____.
   More Difficult No Effect Easier
2. For my work, I expect web-based project management to make the RFI process_____.
   More Difficult No Effect Easier
3. For my work, Web-based project management will make relevant project information_____.
   Less Available No Effect More Available
4. Utilization of Web-based project management will result in _____ in accountability for project participants.
   A Decrease No Effect An Increase
5. Utilization of Web-based project management website will result in _____in the transparency of document management.
   A Decrease No Effect An Increase
6. Utilization of Web-based project management will result in _____in the overall cost associated with document management and transmittal of documents.
   A Decrease No Effect An Increase
7. Web-based project management will make my job _____.
   Harder No Effect Easier
8. Learning to use this web-based project management system was _____.
   Not Worth the Benefits Neutral Worth the Benefits
9. The computer and internet requirements for this system are _____.
   Unreasonable Neutral Reasonable
10. Based on my current knowledge and experience web-based project management has the potential to _____ project management on other Iowa DOT bridge projects.
    Worsen No Effect Improve

11. I would recommend using web-based project management to assist project participants on projects that are _____ than Iowa Falls Arch Bridge.
    Smaller The Same Size Larger

Please write in answers to the following questions:

What do you expect to be the primary benefits from using web-based project management?

Simultaneous review and communications of appropriate people.

What are your biggest concerns with web-based project management and its use on this project?

No concerns

Was there anything you want the system to do that it could not do?

No

What parts of the system did you find or expect to be hard to learn and use?

None from my use perspective

Attolist Pre Project Survey
Iowa Falls Arch Bridge

Please answer the following questions based on your current experience and knowledge of web-based project management and its use by the Iowa DOT. Your answers are important in helping the Iowa DOT measure the benefits of using web-based project management on bridge construction projects. Upon completion please return this survey to Jose Perez, japerez@iastate.edu. Thank you.

Participant Information:

1. What is your role on this project (please circle):
   Iowa DOT Employee Consultant Contractor Sub or Supplier
2. Approximately how many times per month do you expect you will need to interface with the web-based project management site?
   Less than 10 10 to 20 More than 20

Project Website Experience:

Based on your knowledge of web-based project management and prior experience with Iowa DOT bridge projects, please respond to the following statements by circling the most appropriate response

1. For my work, I expect web-based project management will make the submittal process_____.
   More Difficult No Effect Easier
2. For my work, I expect web-based project management to make the RFI process_____.
   More Difficult No Effect Easier
3. For my work, Web-based project management will make relevant project information_____.
   Less Available No Effect More Available
4. Utilization of Web-based project management will result in _____ in accountability for project participants.
   A Decrease No Effect An Increase
5. Utilization of Web-based project management website will result in _____in the transparency of document management.
   A Decrease No Effect An Increase
6. Utilization of Web-based project management will result in _____in the overall cost associated with document management and transmittal of documents.
   A Decrease No Effect An Increase
7. Web-based project management will make my job _____.
   Harder No Effect Easier
8. Learning to use this web-based project management system was _____.
   Not Worth the Benefits Neutral Worth the Benefits
9. The computer and internet requirements for this system are _____.
   Unreasonable Neutral Reasonable
10. Based on my current knowledge and experience web-based project management has the potential to _____ project management on other Iowa DOT bridge projects.
    Worsen No Effect Improve

11. I would recommend using web-based project management to assist project participants on projects that are _____ than Iowa Falls Arch Bridge.
    Smaller The Same Size Larger

Please write in answers to the following questions:

What do you expect to be the primary benefits from using web-based project management?

What are your biggest concerns with web-based project management and its use on this project?

Was there anything you want the system to do that it could not do?

What parts of the system did you find or expect to be hard to learn and use?

Attolist Pre Project Survey
Iowa Falls Arch Bridge

Please answer the following questions based on your current experience and knowledge of web-based project management and its use by the Iowa DOT. Your answers are important in helping the Iowa DOT measure the benefits of using web-based project management on bridge construction projects. Upon completion please return this survey to Jose Perez, japerez@iastate.edu. Thank you.

Participant Information:

1. What is your role on this project (please circle):
   Iowa DOT Employee Consultant Contractor Sub or Supplier
2. Approximately how many times per month do you expect you will need to interface with the web-based project management site?
   Less than 10 10 to 20 More than 20

Project Website Experience:

Based on your knowledge of web-based project management and prior experience with Iowa DOT bridge projects, please respond to the following statements by circling the most appropriate response

1. For my work, I expect web-based project management will make the submittal process_____.
   More Difficult No Effect Easier
2. For my work, I expect web-based project management to make the RFI process_____.
   More Difficult No Effect Easier
3. For my work, Web-based project management will make relevant project information_____.
   Less Available No Effect More Available
4. Utilization of Web-based project management will result in _____ in accountability for project participants.
   A Decrease No Effect An Increase
5. Utilization of Web-based project management website will result in _____in the transparency of document management.
   A Decrease No Effect An Increase
6. Utilization of Web-based project management will result in _____in the overall cost associated with document management and transmittal of documents.
   A Decrease No Effect An Increase
7. Web-based project management will make my job _____.
   Harder No Effect Easier
8. Learning to use this web-based project management system was _____.
   Not Worth the Benefits Neutral Worth the Benefits
9. The computer and internet requirements for this system are _____.
   Unreasonable Neutral Reasonable
10. Based on my current knowledge and experience web-based project management has the potential to _____ project management on other Iowa DOT bridge projects.
    Worsen No Effect Improve

11. I would recommend using web-based project management to assist project participants on projects that are _____ than Iowa Falls Arch Bridge.

    Smaller The Same Size Larger

Please write in answers to the following questions:

What do you expect to be the primary benefits from using web-based project management?

Faster and more traceable submittal process.

What are your biggest concerns with web-based project management and its use on this project?

No concerns

Was there anything you want the system to do that it could not do?

It lacks some features commonly found in other tools such as ProjectWise. An example is copying other users on submittals without requiring action.

What parts of the system did you find or expect to be hard to learn and use?

None

Attolist Pre Project Survey
Iowa Falls Arch Bridge

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Participant Information:

1. What is your role on this project (please circle):
   Iowa DOT Employee Consultant Contractor Sub or Supplier
2. Approximately how many times per month do you expect you will need to interface with the web-based project management site?
   Less than 10 10 to 20 More than 20

Project Website Experience:

Based on your knowledge of web-based project management and prior experience with Iowa DOT bridge projects, please respond to the following statements by circling the most appropriate response

1. For my work, I expect web-based project management will make the submittal process_____.
   More Difficult No Effect Easier
2. For my work, I expect web-based project management to make the RFI process_____.
   More Difficult No Effect Easier
3. For my work, Web-based project management will make relevant project information_____.
   Less Available No Effect More Available
4. Utilization of Web-based project management will result in _____ in accountability for project participants.
   A Decrease No Effect An Increase
5. Utilization of Web-based project management website will result in _____in the transparency of document management.
   A Decrease No Effect An Increase
6. Utilization of Web-based project management will result in _____in the overall cost associated with document management and transmittal of documents.
   A Decrease No Effect An Increase
7. Web-based project management will make my job _____.
   Harder No Effect Easier
8. Learning to use this web-based project management system was _____.
   Not Worth the Benefits Neutral Worth the Benefits
9. The computer and internet requirements for this system are _____.
   Unreasonable Neutral Reasonable
10. Based on my current knowledge and experience web-based project management has the potential to _____ project management on other Iowa DOT bridge projects.
    Worsen No Effect Improve

11. I would recommend using web-based project management to assist project participants on projects that are _____ than Iowa Falls Arch Bridge.
    Smaller The Same Size Larger

Please write in answers to the following questions:

What do you expect to be the primary benefits from using web-based project management?

Everything in one place

What are your biggest concerns with web-based project management and its use on this project?

Difficult and cumbersome to work with in some instances.

Was there anything you want the system to do that it could not do?

Be easier to work with.

What parts of the system did you find or expect to be hard to learn and use?

Multiple items.

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    Worsen No Effect Improve

11. I would recommend using web-based project management to assist project participants on projects that are _____ than Iowa Falls Arch Bridge.

    Smaller The Same Size Larger

Please write in answers to the following questions:

What do you expect to be the primary benefits from using web-based project management?

Less time spent getting submittals to the correct people.

What are your biggest concerns with web-based project management and its use on this project?

No concerns at this time.

Was there anything you want the system to do that it could not do?

No

What parts of the system did you find or expect to be hard to learn and use?

The system seems very easy to understand.

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Less Available No Effect (More Available)

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   Harder — No Effect — Easier

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   Not Worth the Benefits — Neutral — Worth the Benefits

9. The computer and internet requirements for this system are _____.

   Unreasonable — Neutral — Reasonable

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    Worsen — No Effect — Improve

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    Smaller — The Same Size — Larger

Please write in answers to the following questions:

What do you expect to be the primary benefits from using web-based project management?

What are your biggest concerns with web-based project management and its use on this project?

Was there anything you want the system to do that it could not do?

What parts of the system did you find or expect to be hard to learn and use?

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10. Based on my current knowledge and experience web-based project management has the potential to _____ project management on other Iowa DOT bridge projects.

    Worsen No Effect Improve

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    Smaller The Same Size Larger

Please write in answers to the following questions:

What do you expect to be the primary benefits from using web-based project management?

Most correspondence and submittals may be located at one location and accessed by all involved.

What are your biggest concerns with web-based project management and its use on this project?

Was there anything you want the system to do that it could not do?

What parts of the system did you find or expect to be hard to learn and use?

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Iowa DOT Employee Consultant Contractor SUBCONTRACTOR Sub or Supplier

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Less than 10 10 to 20 More than 20

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Based on your knowledge of web-based project management and prior experience with Iowa DOT bridge projects, please respond to the following statements by circling the most appropriate response

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    Worsen No Effect **Improve**

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    Smaller **The Same Size** Larger

<u>Please write in answers to the following questions:</u>

What do you expect to be the primary benefits from using web-based project management?

IF USED CONSISTANTLY I WOULD EXPECT YOU WILL GET A MORE REAL TIME AWARENESS OF WHAT IS GOING ON IN THE PROCESS AND AS A SUBCONTRACTOR YOU WILL KNOW WHAT IS GOING ON FOR THE FULL SCOPE OF THE WORK & NOT JUST WHAT IS RELEVANT TO YOUR WORK.

What are your biggest concerns with web-based project management and its use on this project?

THAT IF WE ARE NOT CHECKING THE SITE CONSTANTLY WE WON'T BE NOTIFIED PROMPTLY THAT A SUBMITTAL OR RFI HAS BEEN ADDRESSED OR SOME OTHER CORRESPONDENCE HAS BEEN ISSUED THAT WE NEED TO KNOW ABOUT THAT MAY AFFECT OUR WORK.

Was there anything you want the system to do that it could not do?

NONE THAT I CAN THINK OF RIGHT NOW.

What parts of the system did you find or expect to be hard to learn and use?

I DON'T REALLY KNOW RIGHT NOW AS SYSTEM IS NEW TO ME ALSO.

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    Worsen | No Effect | Improve

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    Smaller | The Same Size | Larger

Please write in answers to the following questions:

What do you expect to be the primary benefits from using web-based project management?

Locating specifications
Tracking submittals

What are your biggest concerns with web-based project management and its use on this project?

Have difficulty locating a particular document.

Was there anything you want the system to do that it could not do?

Keep track of documents that I have viewed (history)

What parts of the system did you find or expect to be hard to learn and use?

Locating particular documents.

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Not Worth the Benefits | Neutral | Worth the Benefits

9. The computer and internet requirements for this system are _____.

Unreasonable | Neutral | Reasonable

10. Based on my current knowledge and experience web-based project management has the potential to _____ project management on other Iowa DOT bridge projects.

Worsen | No Effect | Improve

11. I would recommend using web-based project management to assist project participants on projects that are _____ than Iowa Falls Arch Bridge.

Smaller | The Same Size | Larger

Please write in answers to the following questions:

What do you expect to be the primary benefits from using web-based project management?

EASY ACCESS TO ALL CONTRACT DOCUMENTS FOR THE PROJECT.

What are your biggest concerns with web-based project management and its use on this project?

I ONLY WANT TO BE CONTACTED FOR ITEMS THAT PERTAIN TO MY JOB DUTIES / AREA OF INTEREST.

Was there anything you want the system to do that it could not do?

INFORMATION CAN BE HARD TO TRACK. MARK-UPS, COMMENTS AND ATTACHMENTS INSIDE OF RESPONSES CAN MAKE IT HARD TO FIND DATA.

What parts of the system did you find or expect to be hard to learn and use?

NONE

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Worsen | No Effect | (Improve)

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Smaller | The Same Size | (Larger)

Please write in answers to the following questions:

What do you expect to be the primary benefits from using web-based project management?

Timeliness for reviews. Participants see review status and others' comments at essentially the same time. Reviews move through the "pipeline" faster.

What are your biggest concerns with web-based project management and its use on this project?

Not enough experience with this yet to respond.

Was there anything you want the system to do that it could not do?

Be simpler (?). Typically there are several categories of documents, the naming of which within the system is often not intuitively obvious. This can make navigating the system frustrating.

What parts of the system did you find or expect to be hard to learn and use?

Navigating the categories / subcategories of documents can be like a maze.

10/1/10

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    Smaller | The Same Size | Larger

Please write in answers to the following questions:

What do you expect to be the primary benefits from using web-based project management?

Transfer of documents between all parties will be fast and simple.

What are your biggest concerns with web-based project management and its use on this project?

Participants will expect immediate response to issues that still require time to carefully evaluate.

Was there anything you want the system to do that it could not do?

What parts of the system did you find or expect to be hard to learn and use?

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    Worsen No Effect Improve

11. I would recommend using web-based project management to assist project participants on projects that are _____ than Iowa Falls Arch Bridge.

    Smaller The Same Size Larger

Please write in answers to the following questions:

What do you expect to be the primary benefits from using web-based project management?

- A CENTRAL LOCATIONS RELATED TO ALL CONSTRUCTION DOCUMENTS (RFI's & SUBMITTALS)
- DOCUMENTATION OF RESPONSES AND TIMES WHEN ITEMS WERE SUBMITTED BY ALL PARTIES.
- ORGANIZATION OF DOCUMENTS.

2

What are your biggest concerns with web-based project management and its use on this project?

Was there anything you want the system to do that it could not do?

What parts of the system did you find or expect to be hard to learn and use?