

Iowa DOT Engineering Intern Development and Management Program: 2012

**Final Report
May 2013**

IOWA STATE UNIVERSITY
Institute for Transportation

Sponsored by
the Iowa Department of Transportation
(InTrans Project 12-430)

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The preparation of this document was financed in part through funds provided by the Iowa Department of Transportation through its "Second Revised Agreement for the Management of Research Conducted by Iowa State University for the Iowa Department of Transportation" and its amendments.

The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of the Iowa Department of Transportation.

Technical Report Documentation Page

1. Report No. InTrans Project 12-430	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Iowa DOT Engineering Intern Development and Management Program		5. Report Date May 2013	
		6. Performing Organization Code	
7. Author(s) Shashi Nambisan and James Alleman		8. Performing Organization Report No. InTrans Project 12-430	
9. Performing Organization Name and Address Institute for Transportation Iowa State University 2711 South Loop Drive, Suite 4700 Ames, IA 50010-8664		10. Work Unit No. (TRAIS)	
		11. Contract or Grant No.	
12. Sponsoring Organization Name and Address Iowa Department of Transportation 800 Lincoln Way Ames, IA 50010		13. Type of Report and Period Covered Final Report	
		14. Sponsoring Agency Code TEWD-554; (SAFETEA-LU sec. 5204(e))	
15. Supplementary Notes Visit www.intrans.iastate.edu for color PDF files of this and other research reports.			
16. Abstract <p>This report summarizes efforts and key outcomes of a pilot student internship program developed in 2012 jointly by the Iowa Department of Transportation (DOT) and the Institute for Transportation (InTrans) at Iowa State University (ISU). The program provided students at ISU, and other colleges and universities in and around the state of Iowa experiential learning opportunities while addressing programmatic needs of the Iowa DOT. While initiated as a summer program, it was extended into the 2012 Fall semester. The summer program had 56 interns assigned to DOT office and projects across the state, and the 22 student interns in the Fall program were assigned to offices in Ames.</p> <p>The student interns maintained weekly journals and submitted written progress reports twice each month, as well as a final report. The faculty mentors made site visits to meet with the interns and their supervisors to monitor and evaluate the students' activities, progress, and obtain feedback from the interns and their supervisors regarding the program. Most students and all supervisors completed online surveys to help evaluate the program.</p> <p>Overall, more than 80 percent of the interns and more than 90 percent of the supervisor responses rated the program outcomes as "Great" or "OK." The interns particularly valued opportunities to work in professional settings, responsibilities entrusted to them, interactions with other professionals and practitioners, understanding the application of their "coursework" in the real world, gaining first-hand experience in the relationships between various aspects of transportation projects, and learning about expectations in a professional setting. Supervisors' comments were similar to those from the students, and they also noted the importance of establishing for the long term the internship and coop programs. Nearly 100 percent of the interns and 100 percent of the supervisors stated that they would recommend the program to future students. Due to the contributions made by the student interns, the Iowa DOT also was able to complete many activities that they would otherwise not have been able to complete during this time frame. Areas for potential improvement identified in the evaluations include matters related to the planning and coordination between the DOT and InTrans prior to the recruitment and hiring of the interns, providing longer lead times for the DOT personnel and offices, reducing reporting requirements for the interns, streamlining administrative and payroll matters.</p> <p>Overall, participants in the 2012 Summer and fall pilot internship programs had extremely positive comments about the benefits they and the Iowa DOT derived from the program. Thus, the investments in this program have short-term and long-term payoffs.</p>			
17. Key Words Experiential learning, internship program		18. Distribution Statement No restrictions.	
19. Security Classification (of this report) Unclassified.	20. Security Classification (of this page) Unclassified.	21. No. of Pages 60	22. Price NA

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Sponsored by
the Iowa Department of Transportation
(InTrans Project 12-430)

Preparation of this report was financed in part
through funds provided by the Iowa Department of Transportation
through its research management agreement with the
Institute for Transportation,
InTrans Project 12-430.

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TABLE OF CONTENTS

ACKNOWLEDGMENTS	IX
EXECUTIVE SUMMARY	XI
INTRODUCTION	1
Legislative Background and Basis for Program Implementation	1
Iowa DOT's Needs	1
Students' Needs	1
Role of InTrans	2
PROGRAM SCHEDULE AND PROJECTED INTERN ASSIGNMENTS	3
SCOPE OF THE INTERNSHIP ACTIVITIES	5
INTERNSHIP OBJECTIVES	7
Primary Program Activity and Implementation Details	7
Projected Possible 'Value Added' Intern Program Elements	7
PROGRAM ADMINISTRATION AND MANAGEMENT	10
ORIENTATION PROGRAM FOR STUDENTS	11
ORIENTATION PROGRAM FOR IOWA DOT SUPERVISORS	12
STUDENTS IN THE SUMMER INTERNSHIP PROGRAM	13
STUDENTS IN THE FALL INTERNSHIP PROGRAM	14
PROGRAM MONITORING AND EVALUATION	16
Summer 2012 Student Intern Responses to the Survey	17
Summer 2012 Iowa DOT Supervisor Responses to the Survey	19
Fall 2012 Student Intern Responses to the Survey	22
Fall 2012 Iowa DOT Supervisor Responses to the Survey	23
SUMMARY AND CONCLUSIONS	25
APPENDIX A: TEMPLATE FOR INTERNS' WEEKLY JOURNAL ENTRIES	27
APPENDIX B: TEMPLATE FOR INTERNS' FINAL REPORT	29
APPENDIX C: TEMPLATE FOR FACULTY MENTOR SITE VISIT MEETING NOTES	31
APPENDIX D: 2012 SUMMER PILOT INTERNSHIP PROGRAM - SURVEY OF STUDENTS	33
APPENDIX E: 2012 SUMMER PILOT INTERNSHIP PROGRAM - SURVEY OF IOWA DOT SUPERVISORS	41
APPENDIX F: 2012 FALL PILOT INTERNSHIP PROGRAM - SURVEY OF STUDENTS	45
APPENDIX G: 2012 FALL PILOT INTERNSHIP PROGRAM - SURVEY OF IOWA DOT SUPERVISORS	47

LIST OF FIGURES

Figure 1. Assignment of Students for the 2012 summer Internship Program15

LIST OF TABLES

Table 1. Protocol for Engineering Intern Experiential Learning 2012 summer program.....8

Table 2. Overview of Internship Program Activities and Schedule9

ACKNOWLEDGMENTS

The authors gratefully thank several individuals from the Iowa Department of Transportation (DOT) and the Federal Highway Administration - Iowa Division, who were instrumental in developing, guiding, and implementing the internship program. They include Sandra Larson, Vanessa Goetz, Lori Pflughaupt, and Mark Dunn of the Research and Technology Bureau at the Iowa DOT, and Max Grogg at the FHWA Iowa Division. The authors thank supervisors of the interns at the Iowa DOT who provided valuable guidance to the student interns and feedback to the PIs. The student interns are acknowledged for their participation in the program and the feedback they provided. The authors also acknowledge and thank several individuals at the Institute of Transportation for their invaluable support with administrative and logistical aspects of the program; they include Judy Thomas, Tim Morris, Katy Farlow, Tom McDonald, and Sabrina Shields-Cook.

Finally, the authors would like to acknowledge the support of the Iowa DOT in sponsoring the internship program and for providing students invaluable experiential learning opportunities related to their programs of study.

EXECUTIVE SUMMARY

This report summarizes efforts and key outcomes of a pilot student internship program developed in 2012 jointly by the Iowa Department of Transportation (DOT) and the Institute for Transportation (InTrans) at Iowa State University (ISU). The program provided students at ISU, and other colleges and universities in and around the state of Iowa experiential learning opportunities while addressing programmatic needs of the Iowa DOT. The program was administered and managed by InTrans. While initiated as a summer program, it was extended into the 2012 fall semester. During the summer program, 56 student interns worked at various DOT offices, labs, and sites across the state. However, the 22 student interns in the fall internship program were all assigned to Iowa DOT offices in Ames.

Student interns were required to maintain weekly journals and submit written progress reports twice each month. They were also required to submit a final report. They were provided templates and guidance by the faculty mentors to assist them to prepare the reports. The faculty mentors made site visits to meet with the interns and their supervisors to monitor and evaluate the students' activities, progress, and obtain feedback from the interns and their supervisors regarding the program. Further, at the end of their internships most students and all supervisors completed online surveys related to the program evaluation.

Results of the program monitoring and evaluation clearly show that the student interns and their Iowa DOT supervisors found the pilot internship program to be of great value. Overall, more than 80 percent of the students and more than 90 percent of the supervisor responses rated the level of technical challenge, responsibility, professional learning and personal enjoyment as being "Great" or "OK." The interns noted various ways in which they benefitted from the program particularly with regard to opportunities to work in professional settings, responsibilities entrusted to them, interactions with other professionals and practitioners, understanding the application of their "coursework" in the real world, gaining first-hand experience in the linkages between various aspects of transportation projects, and learning about expectations in a professional setting. Supervisors also commented very favorably on these aspects of their interactions with the student interns, as well as the importance of establishing for the long term the internship and coop programs. The value of such programs to recruit future DOT employees was specifically noted by the Supervisors at the DOT. Nearly 100 percent of the interns and 100 percent of the supervisors stated that they would recommend the program to future students. Due to the contributions made by the student interns, the Iowa DOT also was able to complete many activities that they would otherwise not have been able to complete during this time frame.

Areas for potential improvement identified in the evaluations include matters related to the planning and coordination between the DOT and InTrans prior to the recruitment and hiring of the interns, providing longer lead times for the DOT personnel and offices, reducing reporting requirements for the interns, and streamlining administrative and payroll matters.

Overall, participants in the 2012 summer and fall pilot internship programs had extremely positive comments about the benefits they and the Iowa DOT derived from the program. Thus, the investments in this program have short-term and long-term payoffs.

INTRODUCTION

A pilot student internship program was developed as a partnership between the Iowa Department of Transportation (DOT) and the Institute for Transportation (InTrans) at Iowa State University (ISU). It was initiated in the 2012 Spring Semester based on needs identified by the Iowa DOT and to provide students at ISU, and other colleges and universities in and around the state of Iowa experiential learning opportunities. The program was administered and managed by InTrans.

The lead faculty members from ISU for this program were licensed Professional Engineers. As Principal Investigators (PIs) they worked collaboratively with key representatives from the DOT to develop the pilot program to address the mutual needs of the DOT and students. The program was developed to provide students relevant learning experiences and opportunities during the 2012 academic year summer break. The internship opportunities were provided at various DOT offices across the state of Iowa. Based on the success of the summer program, the DOT expressed a desire to continue the program into the 2012 fall semester. The Iowa DOT and ISU jointly agreed to extend the internship program to December 2012. This extension was limited to the DOT offices in Ames. This report summarizes efforts related to the development and implementation of the pilot internship program, as well as key program outcomes.

Legislative Background and Basis for Program Implementation

The pilot internship program was funded primarily through federal funds made available to the Iowa DOT. A provision under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) enabled the use of such funds for the internship program. Specifically, Section 5204(e) of the SAFETEA-LU legislation, provides that funds from any of five major State core programs may be used to support activities related to training, education and workforce development. Additionally, the Iowa DOT utilized funds from state resources to support some aspects of the program.

Iowa DOT's Needs

Early in the year 2012, the Iowa DOT identified a need for approximately 55 college or university students from various academic disciplines to assist them during the summer of 2012. The needs were in number of subject matter areas across the broad range of activities within the DOT's mission. These needs were either at the DOT headquarters in Ames or at their District offices across Iowa. A pilot internship program was identified as a means to address these needs. The initial program was to be implemented over the 2012 summer break for students.

Students' Needs

The development of future work forces in transportation requires attracting prospective employees to explore opportunities, and then engaging and exciting them to pursue career prospects and opportunities. Experiential learning is an effective way to address these workforce development challenges. The literature documents various strategies to provide experiential learning opportunities. Internships offer excellent promise in this regard – both to students and to employers.

Internships afford students opportunities to apply and relate concepts, principles, theories, and case studies they have studied in their courses to real-world contexts. This also facilitates learning from situations that do not conform to ideal contexts which are typically encountered in practice compared to ideal settings used in textbooks and laboratories. In addition, experiential learning also enables students to exercise judgment in the making decisions in the work environment. In turn, it helps students to transform otherwise non-contextual information into knowledge. Thus, it helps deepen the understanding of subject materials. Further, students who are exposed to such experiential learning are able to better comprehend concepts, principles, and theories in subsequent coursework. This helps them to better apply knowledge, synthesize information and make better decisions on options available. These experiential learning opportunities also help engage and attract students to pursue related career opportunities.

In addition to the short-term contributions made by interns to their programs and projects, employers benefit from being able to nurture the work forces of the future, observe prospective employees, and attract to their organization those individuals whom they wish to recruit.

Role of InTrans

Education and workforce development are integral parts of InTrans' mission. Faculty members associated with InTrans who are licensed Professional Engineers are ideally situated to work with external partners, such as the Iowa DOT, to develop and implement internship programs that benefit the external partners as well as the students. These experiences also help the faculty members to enhance curricular programs and offerings, and enrich the student experiences. In turn, these benefit academic programs and future students, as well as employers of graduates of the programs. The experience of the staff at InTrans facilitates the administrative and management aspects of such programs.

PROGRAM SCHEDULE AND PROJECTED INTERN ASSIGNMENTS

The pilot internship program served two complementary purposes: provide students relevant technical real-world experiences in professional settings and address the Iowa DOT's need for additional personnel support for their programmatic needs. The program was to help students enhance their technical and non-technical skills related to their respective educational programs. Further, the experience was to help the students develop a better understanding of their fields and potential career opportunities to consider upon graduation. In addition to benefitting from the contributions made by the students during the internship program, the DOT also benefitted by being able to identify students who they could recruit as future employees.

In the internship program, Iowa DOT staff were to supervise the students and assign them duties. These Iowa DOT representatives were to consult with InTrans program faculty PIs to evaluate the students' performance. In addition, the students would work with InTrans program faculty program leaders for guidance and review of their work.

When the initial program was extended beyond the 2012 summer until December 2012, in order to address the federal fiscal year funding cycle, the program phases were defined as follows:

1. Phase 1: from February 2012 to September 30, 2012 (part of Federal Fiscal year 2012).
Further, the Phase 1 consists of two time periods:
 - A) February to August 19, 2012: 2012 summer internship program, and
 - B) August 20 to September 30, 2012: a part of the 2012 fall semester internship program.
2. Phase 2: from October 1, 2012 to March 31, 2013: a part of the 2012 fall semester internship program (part of Federal Fiscal year 2013).

Internship assignments in Phase 1A were distributed at the Iowa DOT Headquarters in Ames as well as DOT District office across Iowa. However, the internship assignments in Phase 1B and Phase 2 were only in the DOT office in Ames.

The initial estimates of placement opportunities for the summer pilot program within Iowa DOT's six districts and headquarters locations based on self-developed needs identified by each of the anticipated intern residency locations are as follows:

District Locations:

- District 1: **6** students: in Jefferson, Marshalltown, Ames, and Des Moines
- District 2: **4** students: in Britt, Mason City and New Hampton
- District 3: **12** students: in Sioux City and Cherokee
- District 4: **3** students: in Council Bluffs and Creston
- District 5: **9** students: in Mt. Pleasant, Chariton, Fairfield Material Office, Fairfield District Office
- District 6: **5** students: in Davenport, Cedar Rapids, and Manchester RCE Office

Headquarters (Ames Location):

- Design: **5** students
- Bridge: **2** students

- Materials: **2** students
- Traffic and Safety: **3** students
- Employee Services: **2** students
- Maintenance: **1**
- Enterprise Services/IT Division: **1**
- Research and Technology Bureau: **1**

The initial estimates of placement opportunities for the fall pilot program within Iowa DOT headquarters location in Ames based on self-developed needs identified by each of the anticipated intern residency locations are as follows:

- Design: **7** students
- Materials: **5** students
- Traffic and Safety: **3** students
- Employee Services: **1** students
- Maintenance: **1**
- Research and Technology Bureau: **1**
- Finance: **1**
- Civil Rights: **1**

SCOPE OF THE INTERNSHIP ACTIVITIES

The Iowa DOT's needs for student interns were primarily for students to work in areas related to Civil or Construction Engineering. Additionally, the DOT had needs for interns to work in their Office of Employee Services (OES: Safety, Industrial, Occupational Health), Geographic Information Science applications, as well as others such as Civil Rights, Finance, and Operations and Business. A brief summary of the internship programs in these major areas follows:

1. The Civil/Construction Engineering Student Internship Program: This option provided internship opportunities for students in the area of civil/construction engineering. The DOT selected students with knowledge of and/or experience in civil or construction engineering for these internships. The students worked at DOT offices, labs, and work sites across Iowa. They were scheduled to work 40 hours per week through the summer, with possible overtime work efforts being required during this period. Their efforts focused on gaining practical experience in areas such as: road design, bridge design, materials, traffic/safety and field construction inspection.
2. The Safety/Industrial/Occupational Health Student Internship Program: This option provided internship opportunities for students in the area of safety/industrial/occupational health. The DOT selected students with knowledge of and/or experience in safety/industrial standards and related training for these internships. The students worked at the DOT central office in the OES. They interacted with DOT staff and contractors. They were scheduled to work 40 hours per week through the summer, with possible overtime work efforts being required during this period. Their efforts focused on assisting in the review, research, development and conduct of comprehensive safety risk assessments and related training. This enabled them to gain practical experience and overall knowledge of all elements of safety and industrial/occupational health standards.
3. Geographic Information Science Student Internship Program: This option provides internship opportunities for students in the areas of geographic information science. The DOT selected students with knowledge of and experience in geographic information science for these internships. The students worked at the DOT central complex in the Office of Maintenance, Office of Enterprise Services, and Office of Traffic and Safety. They were scheduled to work 40 hours per week through the summer, with possible overtime work efforts being required during this period. Their efforts focused on gaining practical experience in areas such as: geographic information systems (GIS), remote sensing, and global positioning systems (GPS) and related data management.
4. Additional Student Internship Programs: This option is a broad category that includes internship opportunities in areas other than the aforementioned areas. This provides students with academic backgrounds relevant to other programmatic needs identified by the Iowa DOT. The DOT selected students with relevant knowledge of and or experience in a related academic discipline identified for these additional internship opportunities. The students were assigned to work at DOT offices, labs, and work sites across the state of Iowa. They were scheduled to work 40 hours per week through the summer, with possible overtime work efforts being required during this period. The interns' efforts focused on gaining practical experience in areas relevant to the individual student's curriculum of study.

Iowa DOT managers supervised the interns' work and assign duties on a daily basis. They also worked with ISU Faculty members at InTrans to evaluate the student reports and with InTrans staff on administrative matters related to the internship program. Students submitted twice monthly reports to the InTrans faculty mentors documenting their efforts and learning. At the end of the internship, students also submitted a final report related to their internship experience. InTrans faculty members conducted site visits to meet with the interns and their supervisors at their assigned work locations.

Orientation programs were developed and conducted for the student interns and the Iowa DOT Supervisors associated with the pilot internship program. The purpose of these programs were to provide the respective groups information about the program as a whole, their respective roles and responsibilities, as well as administrative and procedural matters. These are discussed in greater detail elsewhere in this report.

Student interns who worked on assignments that required additional protective equipment (safety-shoes) were required to wear such footwear. Based on with Iowa DOT policy, interns who were required to wear safety-shoes at their internship work sites were eligible to seek reimbursement for the purchase of such protective equipment. Further, Iowa DOT provided appropriate safety gear other than footwear (e.g., safety vests, helmets, etc.) to the student interns based on their assigned duties and responsibilities.

INTERNSHIP OBJECTIVES

The pilot Internship Program was initially conceived and designed to provide an experiential learning opportunity for students from engineering programs. The internship program requirements for the students required interns to have been enrolled full-time in spring 2012 in an engineering program. Further, students were expected to be available to work full-time on the internship during the 2012 summer break. Students were to be responsible for documenting career development employer competency factor and ABET-related outcomes. ABET is the relevant accrediting body for engineering programs. The protocol developed for the experiential learning by the Engineering Interns in the 2012 summer pilot program is summarized in Table 1.

However, as the DOT identified needs and opportunities beyond engineering disciplines, the scope of the program was expanded to include other disciplines as well. The student requirements and experiential learning expectations were modified accordingly to match the academic backgrounds expected of the students.

Primary Program Activity and Implementation Details

Table 2 provides a general overview of the ongoing duties and activities for the participants in the pilot internship program, including student interns, faculty mentors, and InTrans support staff. The initial plans were to require students to periodically (i.e., every 3 to 4 weeks) submit written reports and make oral presentations to summarize their internship efforts, their outcomes, and their relevance to their degree programs and career aspirations. These co-curricular activities are intended to complement each student's course work and lab experiences in their respective undergraduate degree **programs**. However, due to practical limitations such as work schedules expected by the DOT and the remote site locations of many of the interns, this was modified such that the students interns were required to submit written reports twice a month: once for the first 15 days of the month, and once for the latter half (15 or 16 days of the month). These were to be submitted in addition to the time sheets submitted by the interns for each pay period (which was once every 2 weeks).

Projected Possible 'Value Added' Intern Program Elements

When the program was formulated, consideration was given to enable students to earn academic credit for their internship experience. However, this was dependent on participating students' university policies. The student interns were informed that they would have to take on appropriate additional academic responsibilities necessary to earn such credit. A formal commitment by which an intern might secure these credits was to have been arranged through a stand-alone arrangement with each student's home-institution. This was not to be negotiated or managed by InTrans. Thus, the InTrans faculty or staff did not monitor the interns' pursuit of academic credit for their internship experience.

Table 1. Protocol for Engineering Intern Experiential Learning 2012 summer program

Overview	This ISU-IADOT summer Student Intern Program is a pilot initiative to provide an experiential learning experience for engineering interns	
Student requirements	<ul style="list-style-type: none"> - These engineering interns must be enrolled full time as engineering majors - Appointment will complement student engineering major course work - These engineering interns must be able to work full-time during summer - These engineering interns will be responsible for documenting career development employer competency factor and ABET-related outcomes 	
General student intern learning outcomes	<ul style="list-style-type: none"> - Improve technical skills - Develop and appreciation of and commitment to professionalism 	<ul style="list-style-type: none"> - Improve non-technical skills - Develop pragmatic engineering experience
Student intern complementary responsibilities	<ul style="list-style-type: none"> - Maintain weekly, and email with their time sheets, written ‘experience’ journal (i.e., documenting highlights of engineering activities) - Ongoing networking between intern & faculty mentors with phonecon/Skype, and face-to-face meetings - Formal summaries at final face-to-face intern & faculty mentor networking meeting - Interns will be required to submit a final “report” documenting their experiences during the internship, professional skills and abilities they developed from the internship, plus any recommendations to enhance the internship program. 	
Related student ABET outcome goals	<ul style="list-style-type: none"> a) an ability to apply knowledge of mathematics, science, engineering and technology b) an ability to design and conduct experiments, as well as to analyze and interpret data c) an ability to design a system, component, or process to meet desired needs d) an ability to function on multi-disciplinary teams e) an ability to identify, formulate, and solve engineering problems f) an understanding of professional and ethical responsibility g) an ability to communicate effectively h) the broad education necessary to understand the impact of engineering solutions in a global and societal context i) a recognition of the need for, and an ability to engage in life-long learning j) a knowledge of contemporary issues k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering and technology practice 	
Employer competency factors	<ul style="list-style-type: none"> 1. Engineering Knowledge 2. General Knowledge 3. Continuous Learning 4. Problem Solving 5. Quality Orientation 6. Initiative 7. Innovation 8. Cultural Adaptability 9. Analysis & Judgment 	<ul style="list-style-type: none"> 10. Planning and Project Management 11. Communication 12. Teamwork 13. Integrity 14. Professional Impact 15. Customer Focus 16. Safety Awareness 17. Reporting

Table 2. Overview of Internship Program Activities and Schedule

Period	Intern Duties and Activities	Faculty Mentor Activity (Nambisan & Alleman)	Support Activity (Pgm Assistant + Accountant)
Week 1 Days #1 &2	Attend training and team development workshop (from ~ 1:00 pm on day 1 to about 3:00 pm on day 2) Reimbursement to be paid for boarding and lodging at the state approved rates for eligible individuals	Lead workshop related to work responsibilities, administrative policies and procedures, and technical activities; Verify safety footwear	In partnership with Iowa DOT personnel, 1) Manage workshop, 2) Coordinate safety training, mentor coaching, Iowa orientation, etc., speakers, 3) Arrange program logistics (location, audio-video, printing, housing, meals, etc.)
Week 1 Day #3	Report at assigned intern location and attend orientation at the location	Participate in location orientation	
Week 1 to Week 3	Start and continue internship work activities with local supervision by assigned Iowa DOT supervisors, and co-supervisory oversight by faculty leads at the university Prepare and submit bi-weekly time sheets, progress reports to both DOT supervisor and Faculty leads	<ul style="list-style-type: none"> • Be available for routine faculty-student mentoring in-person or via email, and teleconferences as warranted • Participate in digital, remote intern report meeting (anticipated to be early on Monday mornings – to be finalized in consultation with DOT managers) • In consultation with Iowa DOT supervisors of interns, review student progress reports, and provide feedback • Conduct site visits to meet with the interns and their supervisors • Participate in routine faculty and Iowa DOT supervisors networking teleconferences 	Continue management support of overall program, including responsibility for internship administrative support and fiscal operations
Weeks 4-7, 8- 11, 12- 15	Continue internship: prepare and present progress reports	Ditto	Ditto
End	Final report	In consultation with Iowa DOT supervisors of interns, review final reports	Prepare final project report to Iowa DOT

PROGRAM ADMINISTRATION AND MANAGEMENT

Representatives from the Iowa DOT developed informational materials to publicize the pilot internship program. These materials were distributed by the DOT and the PIs to various colleges and universities across Iowa and some of the neighboring states. The DOT staff were responsible for receiving and processing applications. Applicants indicated their preferences for geographic locations for their assignments as well as specific subject areas of interest. In-person interviews were conducted to select students for the various assignments. In making the internship assignments, conscious efforts were made to match the stated preferences of the applicants to programmatic needs of the DOT offices. The internship appointments were made through InTrans. Staff members at InTrans worked with the Iowa DOT staff and applicants selected for the internship to complete process at ISU to appoint them to their respective internships. InTrans staff were subsequently responsible for all administrative, financial disbursement, etc. matters related to internship program.

The administrative and contractual matters related to the internship program that needed to be addressed at ISU were many. These required significant efforts and time prior to student beginning their efforts on the internship, during the program, as well as following the completion of the student efforts on the internships. Key issues included the following:

1. establishing the relevance of the program to the students' educational programs;
2. addressing federal, state, and universities rules and regulations related to the internship;
3. addressing the logistics of paying from ISU interns who were not enrolled at ISU;
4. welfare and safety students while working on the internship;
5. use of Iowa DOT owned vehicles an equipment by interns who were appointed through ISU and who were not Iowa DOT employees;
6. risk management;
7. developing and refining learning objectives goals for the students;
8. developing an appropriate orientation program for the DOT personnel who were to supervise the students on a day-to-day basis;
9. developing an appropriate general orientation program for the student interns;
10. establishing processes and procedures to operate the program;
11. processing the multitude of documents related to hiring and payroll of the interns.

Offices at ISU involved in these matters include the following: Office of the Provost, College of Engineering Dean's Office, Engineering Career Services, Office of Human Resource Services, Office of Risk Management, and the Purchasing Office.

The safety and welfare of the student interns were of utmost importance to InTrans and the Iowa DOT. Likewise, the safety and appropriate use of DOT resources (equipment, materials, vehicles, etc.) as well as the safety of other individuals affected by the interns' work were also of prime concern to InTrans and the Iowa DOT. A general orientation program was developed for the interns so as to help them recognize and understand the importance of these matters. Further, a separate orientation session was developed for the Iowa DOT personnel who were to supervise the interns on order to provide them a broad understanding of the pilot internship program.

ORIENTATION PROGRAM FOR STUDENTS

The InTrans faculty members, with assistance from other representatives at InTrans and Iowa DOT developed an 8-hour long general orientation program for the student interns. The interns were required to attend this orientation session prior to commencing their internship efforts.

Topics discussed in the general orientation program were the following:

1. Welcome & FHWA background comments
2. Internship program participation
3. Intern 'report' preparation, submission, and presentation
4. Report template review
5. Employee and supervisor survey completion responsibilities
6. Reimbursement how-to guidance
7. Payroll procedures & time card processing
8. Key contact procedures
9. ISU IDs, email accounts, Access Plus
10. Iowa DOT IDs, Non-DOT badges, email accounts, computing systems and software access
11. Emergency action process & driver's license 'check'
12. Vehicle accident response: "What to do!"
13. Defensive plus safe driving requirements
14. Work zone rules, chain of command, emergency response
15. Work zone day-time versus night-time safety issues
16. Temporary work site traffic control
17. General safety & personal protection equipment (PPE)
18. Working around large machinery
19. Intern 'chain of command' Re: ISU & Iowa DOT
20. Work rules review Re: ISU & Iowa DOT
21. Disciplinary action process and implications
22. Confined space work site procedures and risk avoidance
23. Trenching work site procedures and risk avoidance
24. Emergency first aid
25. Blood-borne pathogen risk avoidance

Several individuals from FHWA, Iowa DOT, InTrans and ISU led the discussions for various sections of the orientation program. The materials that were handed out and discussed during the orientation program for students are available at InTrans. Most interns attended one of two the sessions held on May 7, 2012 and May 14, 2012. Students who were not able to attend this session were provided alternative opportunities through one-on-one meetings.

Additionally, individual DOT offices provided orientation or training specific to their respective offices. For example, interns who were required to participate in inspections were required to the appropriate training / certification prior to participating in such activities.

ORIENTATION PROGRAM FOR IOWA DOT SUPERVISORS

An orientation program was developed by the InTrans faculty for the Iowa DOT supervisors of student interns. This was to inform them about the pilot internship program, roles and expectations of the interns and the supervisors, schedules and other administrative considerations, and also to elicit their input to make the program effective for all concerned. This 2-hour long orientation session was held on May 2, 2012 and it was led by Professor Jim Alleman from InTrans. The session was conducted at the Iowa DOT headquarters in Ames. But, it was also made available through Adobe Connect in order to facilitate participation by Iowa DOT personnel at remote offices. Topics included in the orientation program for the supervisors included the following:

1. Welcome plus meet-and-greet introductions
2. Review overall summer intern program and orientation agenda
3. Review orientation and supervisor agenda topics
4. Discussion Re: additions, changes, etc.to agenda?
5. Review 'work rules' in general
6. Review protocols individually
7. Review and discuss disciplinary action process and 'protocol'
8. Review 'what to do if disciplinary action is necessary'
9. Review specific 'talking points' for intern 'management'
10. Emergency contacts
11. Sick interns
12. Absent and tardy interns
13. Injured interns
14. Interns discipline
15. Intern badges
16. Interns who are terminated
17. Interns who quit
18. Paperwork (time sheets, expenses)
19. Vehicle use, refueling, accident response
20. Personal protection equipment
21. Intern system access
22. Review intern 'journal', meetings, and site visit planning by faculty mentors

A total of 25 out of the 35 individuals identified as Supervisors by the Iowa DOT attended the session either in person at the conference room or via webinar link using Adobe Connect. The materials distributed at the orientation session are available at InTrans.

STUDENTS IN THE SUMMER INTERNSHIP PROGRAM

A total of 56 interns participated in the 2012 summer program (Phase 1A). They were enrolled at one of the following colleges and universities in Iowa, Nebraska, or Wisconsin.

1. Iowa State University, Iowa	42 students
2. University of Iowa, Iowa	8 students
3. Dordt College, Iowa	3 students
4. Kirkwood Community College, Iowa	1 student
5. University of Wisconsin, Platteville	1 student
6. Wayne State College, Nebraska	1 student

Figure 1 shows a map of the state of Iowa that identifies the initial assignment of the interns.

The interns in Phase 1A generally started working on the first Monday after their examinations for the 2012 spring term. They worked until the Friday prior to the first day of their respective 2012 fall term. This time period spanned from May 7, 2012 to August 17, 2012. Typically, each intern worked full-time (40 hours per week) for 15 weeks, although several students worked for one or two fewer weeks. Many students also worked over time as required by their Iowa DOT supervisors so as to address their responsibilities. Any efforts by an intern that exceeded a total of 40 hours per week were considered to be over-time efforts.

STUDENTS IN THE FALL INTERNSHIP PROGRAM

As previously stated, interns in the 2012 Fall portion of the program (Phases 1B and 2) were all assigned to offices at the DOT headquarters in Ames. Since Phase 1B and Phase 2 were during the academic year and the internships were based in Ames, only students enrolled at ISU were selected for internship assignments in Phase 1 B and Phase 2. In total 22 student were hired as interns for the 2012 fall portion of the program. Eighteen of these individuals were interns who were continuing from the summer program and 4 of them had worked in summer 2012 on coops with the Iowa DOT. These internships were generally from August 17, 2012 to December 14, 2012. These internship assignments were limited to no more than one-half time effort (i.e., less than or equal to 20 hours per week).

PROGRAM MONITORING AND EVALUATION

Several methods were used to monitor and evaluate the program. These included weekly journals and field notes maintained by the interns, photographs or other means the interns used to document key internship related situations and activities, written reports submitted by the student interns, site visits and communications by the faculty mentors to meet with the interns and their supervisors, and responses provided by the interns and their supervisors to surveys conducted by the faculty PIs.

As part of the internship program requirements, students were required to submit written reports twice a month and also a final report to document their efforts, experiences, and learning. The first progress report in each month covered the first 15 days of the month, and the second report in each month covered the last 15 or 16 days of the month). The interns were encouraged to use their journals and field notes as the basis to develop their progress reports. The InTrans faculty provided the interns guidance on the structure and contents of these progress reports as well as that for the final report. The template for the Weekly Journals is presented in Appendix A. The template provided to the interns to develop their final reports is presented in Appendix B. Most students submitted their reports via E-mail. However, a few students did not have ready access to E-mail communications for such transmittals because they were assigned to project sites in the field that did not have internet access. Such students either mailed or faxed their reports.

The faculty mentors activities included monitoring and reviewing the reports submitted by the interns, and following-up as needed with the students. The heavy volume and frequency of the reports posed significant demands on the faculty mentors time. Several students also noted in their feedback that the weekly journals and twice monthly reports were onerous. The compliance with meeting the reporting requirements varied significantly among the interns. A majority of the interns were reasonably prompt with their submittals. However, a few interns were very late or in some cases submitted their reports for multiple periods at one time. It is recommended that future programs should more closely monitor such reporting requirements, and hold the interns accountable for the same. One mechanism to consider is to withhold processing of their payroll documents until they submit an acceptable written report for each pay period.

The faculty members also conducted site visits to meet with the interns and their supervisors at their work locations. They developed a simple template to record key points of information related to their discussions during the site visits. This template is shown in Appendix C.

Professors Alleman and Nambisan conducted the first site visit together on May 17 and 18, 2012. During this trip, they visited the interns and their supervisors assigned to the following locations: Chariton, Fairfield, Mt, Pleasant, Davenport, Cedar Rapids, and Manchester. They also jointly visited with interns assigned to the Office of Design in Ames. The rest of the site visits were conducted individually by one of them. Professor Alleman visited the interns and their supervisors stationed at the following locations: Creston, Council Bluffs, Cherokee, Sioux Center, Britt, Mason City, New Hampton, Des Moines, and Jefferson. Professor Nambisan met with interns stationed in Ames and their supervisors. The work schedules of the interns and their supervisors made it very difficult to schedule such site visits. This was especially so when trying to build an itinerary that combined locations which were away from Ames based on their geographic proximity to one another. This led to the second set of site visits not materializing.

Feedback was sought from the interns and their supervisors for the internship program, both for the summer and fall components. For this, simple online surveys were created using Survey Monkey. E-mail messages were sent to solicit responses from the participants, and reminders were sent to increase the response rate. For the summer component of the program, the response rate was 100 percent. For the fall component, the response rate from supervisors was close to 100 percent, while it was lower for the interns. Overall, the feedback was positive. This indicated that the program was of value to the students and to the Iowa DOT personnel and offices.

Summer 2012 Student Intern Responses to the Survey

The surveys for the interns consisted of the following 5 questions related to the program.

1. *How would you rate your summer intern experience in terms of the following outcomes?*

- Technical challenge
- Responsibility
- Professional learning
- Personal enjoyment
- Financial processing and management
- Reporting

Responses were to be provided the following Likert Scale: Great, OK, Marginal, Poor.

2. *In your opinion, what was the best part of your summer intern experience?*

Responses were to be provided in a short narrative format.

3. *In your opinion, what was the worst part of your summer intern experience?*

Responses were to be provided in a short narrative format.

4. *Do you have any suggestions as to how we could improve this summer intern program?*

Responses were to be provided in a short narrative format.

5. *Would you recommend this summer intern program to other future students?*

Responses were to be provided as Yes or No.

All the summer interns responded to the survey. Their responses to these questions are presented in Appendix D. The following is a summary of the responses to the questions in the survey.

1. How would you rate your summer intern experience in terms of the following outcomes?

More than 80 percent of the students rated their experience to be Great or OK for the first four parts of this question. The professional learning aspect drew the strongest favorable ratings with about 98 percent of the respondents rating it to be Great or OK. Further, nearly 95 percent of the students indicated their personal enjoyment to be Great or OK. The weakest responses on this question related to the reporting component, for which although more than 90 percent rated their experience to be Great or OK, nearly two-thirds rated this to be OK. No student rated any of parts of the question as poor.

2. In your opinion, what was the best part of your summer intern experience?

The interns provided a wide range of responses to this question. Overall, the comments were extremely positive. The following list summarizes some of the common sentiments / responses:

- Having real-world experiences as opposed to learning from textbooks / in classrooms
- Learning how the design process relates to actual construction aspects
- Getting exposure to varied manuals, programs, and engineers
- Working with dot personnel / co-workers and learning from them
- Having a broad range of experiences and gaining knowledge from the same
- Getting a feel for full-time / real-world work in a professional environment

In short, responses to Question 2 of the student survey clearly show the value and benefits that the students gained from the internship experience. Several of these responses explicitly refer to attainment of the objectives established for the program.

3. In your opinion, what was the worst part of your summer intern experience?

The responses to Question 3 of the student survey were positive, but wide ranging. The following list either express common sentiments or highlight some critical responses:

- The nature of some of the work was monotonous
- The interns were not always kept busy, some of them felt bored
- The experience was very enjoyable.
- There was really nothing that I disliked about my internship.

Thus, the comments ranged from “nothing that I did not enjoy” and “I enjoyed it all” to “slow pace of work,” “repetitive work” or “monotony” or and “not being challenged” by the work assignments. However, overall, the students’ responses indicated that they gained significantly from the experience. This included learning in a professional setting, interactions with DOT staff and colleagues, and from the varied activities they participated in during their internship.

4. Do you have any suggestions as to how we could improve this summer intern program?

Similar to Question 3, the responses to Question 4 of the student survey were varied. The following list either express common sentiments or highlight some critical responses:

- Many interns felt bored, and not challenged
- The intern program was far more beneficial to learning than any class
- Improved organization and communication at the beginning of the summer.
- While the reports were beneficial by making students recap tasks they completed, the weekly intern reports need to be changed: they should be less specific and not as often
- Update the technology used by the interns,
- Provide opportunities to work in a few different work areas.
- The program went great and my supervisors did a great job of helping me.

The responses to Question 4 of the student survey were also wide ranging. They include comments related to “boredom” and “not having enough work / responsibility” to the need to “improve the organizational aspects leading up to the start of the internship”, “the report / journal submission need to be made less frequent” to “nothing to change” and “no comments.” Responses from several students indicate that they were very happy with the program and

recommended no changes. In summary, a recurring theme appeared to be that the interns felt bored and not challenged and that the interns would like to be given additional responsibilities and be afforded a broader range of opportunities during their internship including some field work for those interns who were primarily working in office settings. Further, the reporting requirement was considered to be too burdensome or not being of value by a few interns.

5. *Would you recommend this summer intern program to other future students?*

The following is a tabulation of the responses to this question.

<u>Response</u>	<u>Percent</u>	<u>Number</u>
Yes	98.2%	55
No	1.8%	1

All but one students responded that they would recommend the summer intern program to future students. This represents a 98.2 percent favorable assessment of the program. This is a resounding endorsement by the students of the value of the summer internship program.

Summer 2012 Iowa DOT Supervisor Responses to the Survey

The surveys for the Iowa DOT Supervisors for the 2012 summer pilot internship program consisted of the following 5 questions.

1. *How would you rate your summer intern experience in terms of the following outcomes? (select one of the following responses; Great, OK, Marginal, Poor)*
 - Level of technical challenge they accepted
 - Level of responsibility they maintained
 - Level of professional learning they gained
 - Level of enjoyment they seemed to find in their efforts
 - Level of your satisfaction with faculty mentors interactions (i.e., Shashi Nambisan and Jim Alleman)
 - Level of smoothness with program logistics (e.g., financial processing and management)

2. *In your opinion, do you believe this summer intern program was valuable to the IADOT mission?*
Responses were to be provided in a short narrative format.

3. *From your perspective, did you see any aspects of this summer intern program that were problematic...and which needed to be changed?*
Responses were to be provided in a short narrative format.

4. *Do you have any overall suggestions as to how we could improve the success and outcomes of this summer intern program?*
Responses were to be provided in a short narrative format.

5. *Would you recommend this summer intern program to other future students?*
Responses were to be provided as Yes or No.

Responses were received from all 31 of the supervisors to whom interns were assigned. The responses received to these questions are presented in Appendix E. The following is a summary of the responses from the Iowa DOT supervisors to the questions in the survey for the summer program. The response overwhelmingly support the program and recognize its value to the DOT, its offices, and to the staff.

1. *How would you rate your summer intern experience in terms of the following outcomes?*

More than 95 percent of the supervisors rate their interns to be Great or OK on the various aspects of this question. Specifically, about 75 percent or greater of the respondents rated as Great the following aspects about the interns they worked with: *Level of technical challenge they accepted? Level of responsibility they maintained? Level of enjoyment they seemed to find in their efforts?* Nearly 97 percent of the responses were either Great or OK for the questions on the *level of professional learning gained by the interns* and the *Level of smoothness with program logistics* as highly. The question related to “*Level of your satisfaction with faculty mentors interactions (i.e., Shashi Nambisan and Jim Alleman)*” had more than 93 percent of the responses being Great or OK. Overall, the responses from the supervisors were very favorable for each outcome related to the summer internship program.

2. *In your opinion, do you believe this summer intern program was valuable to the Iowa DOT mission?*

The Iowa DOT supervisors were unanimous in their opinion that the summer intern program was valuable to the Iowa DOT’s mission. “Absolutely” and “Yes” were the common words by the Supervisors responses to Question 2. The supervisors clearly state that the program was valuable to the mission of the Iowa DOT and several of them provided additional comments. Some of them commented about the interns they worked with as individuals they would like to recruit to the DOT. Others pointed out that the efforts of the interns enabled them to achieve more than they could have otherwise, and others noted that the program provided the students learning opportunities. The following list summarizes some of prevailing sentiments:

- The program benefits the DOT in providing more resources to cover the work.
- Don't know how we will accomplish what we did without them in the future.
- It's beneficial to these interns to see, interact, and get hands on experience with the day to day operations of the DOT.
- These young Engineers will/can be future hires. Learning their abilities before hiring them is a huge benefit.
- We are able to educate them on what is going on and give them responsibilities which then frees up permanent staff to perform other duties.
- Yes, the feedback from the interns has showed they were given a variety of exposure. They have expressed that they wish to return if given the chance.

3. *From your perspective, did you see any aspects of this summer intern program that were problematic...and which needed to be changed?*

The supervisors’ responses to Question 3 did not indicate any prevalent problematic areas that need to be changed for future internship programs. Many Iowa DOT supervisors reported no problems with the program. However, some other common themes from the responses are the following: need for longer lead times and better coordination to develop the program (i.e., prior

to the interns being hired), several administrative matters including the process to evaluate interns, paper based time sheets. Some responses that merit consideration for future implementation of the internship program include the following:

- The program needs to be broader (i.e., less engineering focused).
- Insurance requirements for interns to drive state vehicle
- Need to improve coordination between the faculty and the supervisors, particularly related to the orientation (one supervisor felt that supervisors involved in the program are already trained in personnel matters. An extensive meeting to discuss these parameters is redundant and wastes time)
- Develop a simplified evaluation that could cover the performance of an intern would be desired: the intern evaluation is extensive and difficult to complete.
- The length could have been longer as mentioned previously, but this is more of an IDOT issue and funding issue.
- Developed a portion of the orientation into a web-based application.

4. Do you have any overall suggestions as to how we could improve the success and outcomes of this summer intern program?

Many respondents stated that they did not have any specific suggestions to improve the program. One termed it to be a “*huge success*.” The following summary presents the overall sentiment of comments submitted in response to this question.

- Continue the program; consider more / longer internship / coop opportunities
- Extend the duration of the internship beyond the summer
- Continue to require student work journals.

Some responses that merit consideration for future implementation of the internship program include the following:

- It would probably be best not to make this position available to first year students.
- Possibly some changes in the interviewing procedure but overall I would say "I have none"

Similar to Question 3, responses to Question 4 point to the need to improve and streamline the administrative and management process involved with the program especially “groundwork” prior to the interns being appointed, increase the duration of the internship appointments (i.e., beyond the summer into the rest of the year). One Supervisor recommended that the interns be required to maintain work journals and another commented on requiring proper dress etiquette.

5. Would you recommend this summer intern program to other future students?

The following is a tabulation of the responses to this question.

<u>Response</u>	<u>Percent</u>	<u>Number</u>
Yes	100%	32
No	0%	0

All the supervisors responded that they would recommend the summer intern program to future students. This unanimous response very strongly demonstrates the value that the Iowa DOT Supervisor's recognize in the summer internship program.

Fall 2012 Student Intern Responses to the Survey

For the fall 2012 pilot internship program (Phase 1B and Phase 2), 17 students completed the survey. Their detailed responses are provided in Appendix F. A summary of the responses to the survey follows.

1. How would you rate your summer intern experience in terms of the following outcomes?

The ratings to Question 1 and its component parts in fall were similar to those in the summer program. Except for the question related to Professional learning, all other questions had about 90 percent or more of the respondents rating them to be Great or OK. However, in fall 2012 about 82 percent of the students rated the professional learning question to be Great or OK compared to 98 percent 2 percent of the interns doing so for the summer program. The experience from the summer program benefitted the fall program. This may be the reason for the improved ratings for the question about financial processing, payroll, etc.

2. In your opinion, what was the best part of your fall 2012 intern experience?

As was the case for the summer 2012 program, responses to Question 2 of the student survey for the fall program indicate that the students feel that the internship experience was valuable to them. In particular, several responses noted the "professional" exposure, experience, and guidance that they enjoyed. A few students also recognized the flexibility provided by the DOT to accommodate the students' class schedules.

3. In your opinion, what was the worst part of your fall 2012 intern experience?

The common points / themes noted from eh responses to Question 3 of the Fall student survey were issues related to class scheduling and the consequent limitation on the number of hours the interns could devote weekly to the internship, lack of coordination / communication on the administrative side and consequent delays in finalizing internship offers for the Fall program. As was the case in the survey for the summer program, some students noted that the work was monotonous / repetitive or there was not enough work.

4. Do you have any suggestions as to how we could improve this IADOT intern program?

The following specific recommendations or observations are noted from the responses to Question 4 of the student survey for the fall program:

- broaden the opportunities to work across the organization;
- provide an orientation session to help the interns learn the DOT's procedures and process regarding the use of MicroStation (which is different from what the students learned at ISU),
- have the DOT directly hire the interns; and
- the DOT needs to be better organized / prepared before the start of the internship.

5. Would you recommend this summer intern program to other future students?

The following is a tabulation of the responses to this question.

<u>Response</u>	<u>Percent</u>	<u>Number</u>
Yes	100%	17
No	0%	0

All the students who responded that they would recommend the summer intern program to future students. This demonstrates the value internship program from the students’ perspective.

Fall 2012 Iowa DOT Supervisor Responses to the Survey

The responses from the Iowa DOT supervisors to the survey for the fall 2012 internship program are provided next. All 6 supervisors involved with the program in fall responded to the survey. Their detailed responses are provided in Appendix G. As was the case for the summer program, the supervisors of the interns support the program and recognize its value to the DOT, its offices, to the staff, and to recruiting future DOT staff members.

1. Based on your perspectives as an Iowa DOT fall intern supervisor, how would you rate these students in terms of the following outcomes?

When responding to Question 1, more than 83 percent of the supervisors (5 out of 6) rate their interns with the program to be Great or OK with respect to the following aspects: Level of technical challenge they accepted (83 percent); Level of responsibility they maintained (100 percent); Level of professional learning they gained (83 percent); 4 out of the 6 respondents rated as Great the “Level of enjoyment they seemed to find in their efforts.” The supervisors’ responses show that the “level of smoothness with program logistics (e.g., financial processing and management)” is one which could be improved.

2. In your opinion, what was the best part of your fall 2012 intern experience?

The responses to Question 2 clearly show that an overwhelming majority of the Supervisors that valued the program. One supervisor commented that the part-time appointment of the interns did not provide the same continuity (... as was the case with full time interns in the summer?).

3. In your opinion, what was the worst part of your fall 2012 intern experience?

The supervisors’ responses to Question 3 did not indicate any major problematic areas that need to be changed for future internship programs. Specific comments provided related to the program receiving approval much sooner and the reduced availability of interns during the school year.

4. Do you have any suggestions as to how we could improve this IADOT intern program?

In response to Question 4, the supervisors offered several suggestions. They include continuing the program from a long term continuity perspective, increasing the number of interns and coop students, and providing online orientation.

5. *Would you recommend this summer intern program to other future students?*

The following is a tabulation of the responses to this question.

<u>Response</u>	<u>Percent</u>	<u>Number</u>
Yes	100%	6
No	0%	0

As was the case for the 2012 summer internship program, all the supervisors responded affirmatively to this question. This demonstrates the value derived by the Supervisors and from the internship program.

SUMMARY AND CONCLUSIONS

This report summarized the development, implementation, and assessment of a pilot internship program as a partnership between the Iowa DOT and InTrans. The program was administered and managed by InTrans at ISU. Faculty and staff at InTrans developed and implemented a variety of administrative, management, and programmatic processes and tools to successfully carry out the internship program.

The pilot internship program served two complementary purposes. First, it provided students technical real-world experiences in professional settings related to their educational programs. Second, it addressed the Iowa DOT's need for additional personnel to support their programmatic needs and to train individuals who could be attracted to pursue careers in transportation. The program helped students to enhance their technical and non-technical skills related to their academic programs. The experience also helped the student interns develop a better understanding of their fields and potential career opportunities to consider upon graduation. The Iowa DOT benefitted from the programmatic contributions made by the student interns. The DOT also benefitted by being able to identify students who they could recruit as future employees.

The pilot program was initially conceptualized to be implemented in the 2012 summer. However, its success in the summer led to the program being extended through the 2012 fall semester. The summer component of the program included 56 student interns from the following colleges and programs: Iowa State University, University of Iowa, Dordt College, Kirkwood Community College, University of Wisconsin – Platteville, and Wayne State College (Nebraska). During the summer, the internships were full-time assignments with many interns also working over-time. These interns were assigned to the Iowa DOT Headquarters offices in Ames and also the DOT's District offices across the state. The fall component of the program was smaller in scale and scope. It only engaged 22 interns all of whom were based in the DOT's Headquarters offices in Ames. The fall internships were for not more than one-half time effort.

The student interns were required to maintain weekly journals and submit progress reports to the InTrans faculty members twice a month, as well as a final report. The interns were provided templates and guidance on developing these reports. These reports were to document their efforts on the internship, their outcomes, the learning from these as well as the relevance of the internship to a variety of Employer Competency Factors. These factors included technical and non-technical aspects related to the students' educational programs and beyond. The program's activities and their effectiveness and value were evaluated using online surveys of the interns and their supervisors at the DOT. Such surveys were conducted at the end of the summer component and at the end of the fall component of the program. The surveys addressed key questions pertaining to the objectives of the program as well as the program's value to the students, the supervisors, and to the DOT. Additionally, the surveys also sought feedback on how the program could be improved.

The results of the surveys for the summer and the fall programs were consistent with each other. Overall, both the student interns as well as their supervisors were extremely supportive of the program and its value to them. Specifically, more than 80 percent of the student respondents and more than 90 percent of the DOT supervisors rated the level of technical challenge,

responsibility, professional learning and personal enjoyment as being “Great” or “OK.” The interns commented on various ways in which the program was valuable. In particular, they noted the opportunities to work in professional settings, responsibilities entrusted to them, interactions with other professionals and practitioners, understanding the application of their “coursework” in the real world, gaining first-hand experience in the relationships between various aspects of transportation projects, and learning about expectations in a professional setting. Supervisors also commented very favorably on these aspects of their interactions with the student interns, as well as the importance of developing and maintaining for the long term the internship program (and coops). The role of such programs to recruit future DOT employees was specifically noted by the Supervisors at the DOT. With the exception of one individual, all the interns and all the supervisors would recommend this internship program to future students.

The evaluations also identified some areas for potential improvement. These include improving the planning and coordination between the DOT and InTrans prior to the recruitment and hiring of the interns, providing longer lead times for the DOT personnel and offices, reducing reporting requirements for the interns, streamlining administrative and payroll matters.

Overall, feedback from participants in the 2012 summer and fall pilot internship programs was overwhelmingly positive regarding the benefits derived by the participants and the Iowa DOT. The investments in this program have short-term and long-term payoffs.

Key short-term payoffs include the invaluable education, training, and professional development experience for the student interns. For the Iowa DOT, the short-term support payoffs include the support they gained from student interns in a variety of programmatic areas which enabled the DOT to complete many activities that they would otherwise not have been able to complete. Important longer-term payoffs to the students include the strengthening of their understanding of topics they studied in courses previously, enhancing their ability to learn more effectively in the future, and enabling them to appropriately apply knowledge from their academic programs to real-world contexts, and enhancing their desire to pursue transportation related careers. The main longer-term benefits to the Iowa DOT include completion of several activities in the near term that are vital to the longer term mission of the organizations, developing transportation workforces of the future and specifically identifying individuals to recruit as future employees.

The project specific activities supported by the student interns also benefit the public because the interns’ activities enabled the DOT to expedite progress on a variety of activities that are critical for project delivery and completion. The completion of such projects helps enhance accessibility, mobility, and safety of the traveling public. These also indirectly benefit businesses who rely on the transport network for trade and commerce. Other indirect benefits from the student interns’ efforts include economic savings to contractors and public sector organizations from expedited progress on projects, improved travel time / reduced travel delays to passenger and freight traffic, and related environmental benefits especially to air-quality. However, these are difficult to easily quantify.

APPENDIX A: TEMPLATE FOR INTERNS' WEEKLY JOURNAL ENTRIES

Iowa DOT Engineering Intern: Weekly Journal Entry

Name	
Date	

Employer Competency Factors	ABET Outcome Goals	Weekly Journal Intern Report
Engineering Knowledge	a) an ability to apply knowledge of mathematics, science, engineering and technology	Entry: <i>(e.g., pragmatic opportunity to use existing core knowledge to work experience)</i>
General Knowledge		Entry: <i>(e.g., overall use of knowledge)</i>
Continuous Learning	i) a recognition of the need for, and an ability to engage in life-long learning	Entry: <i>(e.g., this topic may be 'fuzzy', but it involves an appreciation that continuous learning is important)</i>
Problem Solving		Entry: <i>(e.g., apply problem solving skills to address barriers to getting work completed)</i>
Quality Orientation		Entry: <i>(e.g., what did you do to improve quality)</i>
Initiative		Entry: <i>(e.g., what did you do on your own initiative to make a decision, make a recommendation, etc.)</i>
Innovation		Entry: <i>(e.g., what innovative decisions, recommendations, etc. did you make or suggest)</i>
Cultural Adaptability	h) the broad education necessary to understand the impact of engineering solutions in a global and societal context	Entry: <i>(e.g., awareness and understanding of job-related impacts of cultural, societal, and even global context)</i>

APPENDIX A: TEMPLATE FOR INTERNS' WEEKLY JOURNAL ENTRIES (cont.)

Analysis & Judgment	b) an ability to design and conduct experiments, as well as to analyze and interpret data	Entry: <i>(e.g., constructively analyzing and interpreting field data to achieve desired outcomes on project)</i>
Planning and Project Management	c) an ability to design and conduct experiments, as well as to analyze and interpret data	Entry: <i>(e.g., helping to coordinate work with other involved parties; assist in planning, scheduling, and managing projects and daily activities)</i>
Communication	g) an ability to communicate effectively	Entry: <i>(e.g., active written and oral interaction during project activities)</i>
Teamwork	d) an ability to function on multi-disciplinary teams	Entry: <i>(e.g., actively participate in team meetings)</i>
Integrity	f) an understanding of professional and ethical responsibility	Entry: <i>(e.g., awareness of ethical and integrity-related work place implications)</i>
Professional Impact		Entry: <i>(e.g., recognition of, and adherence to, professional approach to work assignments)</i>
Customer Focus		Entry: <i>(e.g., what actions, decisions, recommendations, etc. did you suggest or pursue that were customer-focused?)</i>
Safety Awareness		Entry: <i>(e.g., routine awareness of, and responsiveness to, work place safety issues)</i>
Reporting Awareness		Entry: <i>(e.g., demonstrating verbal and written report preparation and presentation to supervisors and others as required)</i>

APPENDIX B: TEMPLATE FOR INTERNS' FINAL REPORT

2012 ISU-Iowa DOT summer Intern
FINAL REPORT

Name: _____
University Affiliation: _____
Report Date: _____
Intern Assignment Location: _____ (City and Iowa DOT District)
Supervisor Name: _____

1. Overview of Position Responsibilities

(provide a summary [e.g., bullet list] of what technical activities your position involved)

2. Summary of Learning Outcomes

(provide a synopsis of learning outcomes which you believe this position provided)

3. Perspectives on Positive and Negative Program Aspects

(provide a narrative overview of both 'good' and 'bad' experiential aspects for your intern activity)

4. Recommendations for Future Intern Program Improvements

(provide any suggestions which you feel would help to elevate this intern program's quality and success)

APPENDIX C: TEMPLATE FOR FACULTY MENTOR SITE VISIT MEETING NOTES

Iowa DOT – InTrans Internship Program 2012 Site Visit Meeting Notes

Date: _____

Meeting Location: _____

DOT Office: _____

DOT Representative(s) /Supervisor(s): _____

Student Intern(s): _____

ISU Faculty Advisor(s): _____

1. DOT ID: Yes / No DOT Access key: Yes / No
2. Systems and other resources
 - a. Computing System access: Yes / No
 - b. E-mail ID: Yes / No
 - c. Computing hardware: Yes / No
 - d. Computing software: Yes / No
 - e. Camera: Yes / No
 - f. Cell phone: Yes / No
 - g. Other equipment: Yes / No
3. Safety considerations, PPE
4. DOT vehicle use: Yes / No
 - a. Gas card PIN
 - b. Vehicle Washing / servicing
5. Personal vehicle use & reimbursement: Yes / No
6. Overnight travel: Yes / No
 - a. Lodging
 - b. Meals
7. Overtime efforts: Yes / No
8. Housing / accommodation
9. Time cards and pay schedule (1-15 and 15-30/31 of the month)
10. Weekly journals (diary?)
11. End of internship
 - a. Summary report
 - b. Surveys of supervisor and intern
12. Experiential Learning elements, accreditation
13. Core Competencies: technical and otherwise

APPENDIX D: 2012 SUMMER PILOT INTERNSHIP PROGRAM - SURVEY OF STUDENTS

1. How would you rate your summer intern experience in terms of the following outcomes?

	Great	OK	Marginal	Poor	# Responses
Technical challenge	33.9% (19)	48.2% (27)	17.9% (10)		56
Responsibility	44.6% (25)	44.6% (25)	10.7% (6)		56
Professional learning	58.9% (33)	39.3% (22)	1.8% (1)		56
Personal enjoyment	53.6% (30)	41.1% (23)	5.4% (3)		56
Financial processing and management	28.6% (16)	51.8% (29)	17.9% (10)		56
Reporting	26.8% (15)	64.3% (36)	8.9% (5)		56

2. In your opinion, what was the best part of your summer intern experience? (Note that the responses are paraphrased)

- interacting with current DOT employees and learning from their many years of experience
- I enjoyed working with the people of the DOT and learning how the DOT is involved in replacing and maintaining the infrastructure of Iowa.
- The hands on learning and being able to observe the methods of construction and measurement used in the process of building roadways/bridges
- Learning about new road technologies that can be used for road stabilization.
- I was able to learn quite a bit about transportation engineering, and it will greatly help me in my classes during the coming semesters.
- Watching a bridge be built in real life and gaining that experience
- the best part of the internship was working with my coworkers. we got to travel all over southern Iowa and go to a bunch of projects.
- Being able to broaden my engineering background.
- the on the job site experience that I was able to get.
- Exposure to management level activities with and without GIS
- Getting to learn Civil Engineering practices hands-on as opposed to reading in a text book.
- Actually being out in the field and learning instead of the classroom and applying what I learned.
- Learning about all of the different things that are needed in order to properly maintain the roads.
- Working out in the field and understanding how operations run smoothly.
- Going on the field exams to see how the design process tied into actual construction of the project.
- Working on a survey crew.
- The best part of the summer internship was learning about the design process for highway projects in Iowa. It was very interesting to see how a project goes through different stages of development and how each individual has a very specific role in creating the finalized product.

- I loved learning about all the different projects that the DOT does.
- Being able to work outside and learning firsthand about one of the areas a civil engineer can enter.
- Meeting and getting to know my coworkers. Getting a feel for working 40 hours a week in a professional environment.
- I had the ability to observe the major types of highway projects. This knowledge of these construction methods will be very useful in my future engineering work.
- After working in the private sector, it was learning how to work within the public sector. Very different in terms of business and processes. Good to know.
- Learning how to use MicroStation. I enjoyed working with the software and think the experience will benefit my future career.
- Seeing the bridges being built
- The best part of this summer was being on the job and hands on learning.
- I got to work on multiple projects that provided a broad spectrum of learning experiences.
- All of the different projects I worked on provided a broad spectrum of learning experiences.
- I was able to learn and see many new things, which I had no idea about previously.
- The best part of this experience was being able to get hands on experience in the accounting field with some great employees. The employees here at the Iowa DOT were better than I could have ever asked for. The work that I had to do was very interesting and opens up a great perspective on what to look forward to upon graduation.
- I am glad to learn the many procedures of construction.
- Design the Highway road and Ramps
- After initially learning all the processes in the lab it was nice to do tests on my own and help out more and more as the summer went on. The people I worked with were also great.
- being given the amount of responsibility I had.
- The best part of my summer intern experience was when I had the opportunity to take over inspection duties on 3 projects for a week and a half to fill in for an inspector. This gave me the opportunity to read through construction plans, measure out quantities for pay and document construction activity which was all reported to my supervisor. This opportunity gave me the best learning experience and also the most responsibility I had over the summer which really helped me to decide that I did enjoy the work I was doing.
- I really enjoyed meeting new people and using the engineering skills I learned in the classroom out in the field.
- Lots of exposure to different manuals, programs, and engineers which all helped me get a real life hands on experience.
- Getting to apply what I have learned in the classroom to the field. Being able to see what happens on a jobsite day to day.
- Seeing the bridge construction process and being able to visualize the work called out in the plans. I learned a lot throughout the summer.
- I was able to work about 50% in the field and 50% in the office. I liked getting a look at both aspects of the job.
- Learning firsthand how the DOT monitors the condition of the highways and interstate systems. Also learning what a PE does every day and taking part in some of those activities.
- I enjoyed touring the mine in Ames and visiting different job sites (seeing how the engineer reacts with others, etc)
- Being able to see that the work I was doing was meaningful and important, and was something I could see myself doing in a full-time position after college.

- I was able to have a lot of interaction with the other engineers and technicians. It was good to learn from them too.
- Watching my project go live and actually be used before I have to leave. I was originally supposed to create an index of restricted duty tasks for injured employees and that was my main project. However, mid way through the summer I was given a lot more responsibility with the return to work program and was actively involved in the evaluation and placements of injured employees. I enjoyed the responsibility and having such an active role in an important program.
- Getting hands on experience on bridge inspections and overlay concepts
- The best part of my intern experience was being able to see all the different construction on a bridge over pass. I learned a lot and saw classroom knowledge applied in the field.
- In my opinion, the best part of my summer internship experience was the flexibility of my work. Over all, I had one main project to work on, but I also had the opportunity to do much more. I participated in a webinar, presented in a new employee training, helped lead the safety committee, and I was able to get hands on experience and understanding some of the safety equipment we send out to other DOT employees.
- I learned a ton about the process of road construction and it will be so helpful in future classes.
- Learning more about the decisions that must be made and how certain factors must be considered when deciding the best course of action.
- Without a doubt the people in the office that I worked in. I didn't and don't feel as though I am an intern but part of the team.
- I thought the best part was the freedom allowed me to find my own way and really learn how to do the job.
- The best part of my internship experience was working with new inspectors and construction workers on a daily basis. It was exciting to work with new people and help them solve their construction issues.
- The interaction with other inspectors and workers was the best part of my intern experience. I found it exciting to meet new people daily and work with them on each construction challenge they were facing.
- The best part was watching several bridges be constructed from beginning to end and being involved in that process.
- The willingness from everyone involved to explain things that I didn't understand. Was given many chances to show what I know as well as many opportunities to learn.

3. *In your opinion, what was the worst part of your summer intern experience? (Note that the responses are paraphrased)*

- How late information pertaining to when/where/how this internship was going to start and other important info was sent out before the internship started.
- The worst part was having weekly reports. I think that having biweekly reports (covering two weeks) would have been better, since if the interns were working on one project for the entire week, sometimes there just isn't too much to write about that week. But if they are given two weeks to write about, then there are more things to include in the report, making it more substantial. (Not necessarily in size but in substance.)
- Travel. Projects could be a great distance apart from one another, leading to long distance travel daily.
- Nothing.
- Partially the technology I worked with. I would have preferred a better mouse, and dual monitors.

- Slow days where all the contractor is doing is moving dirt or some other task that requires little inspection and offers little experience
- We weren't all that busy though out the summer so some days i was really board.
- Initial setup was somewhat confusing and delayed.
- There really wasn't much real inspection that I could do as an intern so there really wasn't a whole lot of responsibility that landed on me.
- Due to the nature of management activities, it was difficult being more an observer than participant; although, I understand why this must be this way.
- I would have liked to have had more responsibility and more tasks trusted to me.
- The days when there wasn't much to do because none of the contractors were working (happened a few days).
- I feel that the weekly reports were just because I couldn't find the time to do them at the end of the week.
- Not enough field work.
- In some cases, there wasn't enough work to keep me busy for an entire day and the projects tend to get repetitive.
- I liked all of the internship.
- The worst part of my summer intern experience was the first few weeks when there were few assignments given to interns. This caused a lot of time where I did not know what to do.
- At times, inspecting the projects got a little bit boring.
- Sometimes there is not much to do on rainy days.
- Lack of feedback for the weekly journals and monthly meetings from the ISU professors. After the first meeting between the interns, bosses, and ISU professor, there was never a followup meeting with the professor. Sometimes I didn't even know if my work in the weekly journals was what they were looking for so the absence of a reply told me that I was doing well.
- The nature of the position I had (Field Office) was a lot slower pace than I anticipated. I wish I would have been challenged more and given more work assignments.
- The internship didn't seem to be very structured when I got here. I was given a broad project to work on and finish, without much structure to follow. Most of it was done by the seat of my pants and me guessing what was wanted. I think I performed up to their standards but I just was not sure.
- There were some days that I did not have any tasks to work on, so I had to find ways to keep busy by reading the design manual and SUDAS.
- The days when there was nothing to do except watch contractors
- In the beginning it seemed somewhat disorganized. Such as not knowing my supervisor or where to go until the day before starting work.
- Some of the work was monotonous, but it was a marginal problem and not recurring
- Some of the work was monotonous, but this wasn't a recurring problem
- The summer went by too fast and I feel I could still learn more if I had more time.
- I really have nothing to complain about when it comes to this internship. Everything went better than I could have ever imagined. The experience was very enjoyable.
- There was a lot of down time. Construction is a slow process.
- working near to the grass and weeds which make my Allergies be worse.
- 7 am start time was really early. Sometimes the job was boring when we didn't have samples in the lab.
- long boring days of baby sitting the job site

- The worst part of the intern experience was that the assigned tasks for some days were rather menial and did not provide for much learning, but even on those days there were opportunities to observe and learn about the processes that go into constructing roads and roadway structures,
- A couple of days were a bit slow and boring, but this was only a few days early on. Overall, it was a great experience that I would definitely do again.
- I was not a fan of sitting indoors all day at a computer. I am more of an outdoors person, but this was just part of the job.
- Monotony. Sometimes during the summer the project wasn't moving along very fast.
- Down time and lack of work to perform.
- There was really nothing that I disliked about my internship.
- I enjoyed every aspect of the internship.
- If there were not a lot of samples to run in the lab the days that I worked there, it was hard to stay busy
- There were times where I didn't have much work to do while at work.
- At times I did not have anything to do or did not know how to accomplish a task. I felt as if my time was being wasted.
- There was no "worst" part of my experience. Overall I had a great time with the DOT and was able to work with other interns and full time DOT personnel. During the summer I also met with employees throughout the state and had a hands on view of the different things the DOT is involved in. The only thing I would change is my amount of time out in the field. I would have enjoyed spending some time in the field to see what typical workers do and that would have also aided in the completion of my project.
- scanning documents for the majority of my time
- There wasn't really any bad parts of the internship that come to mind.
- It's hard to say what the worst part of my summer intern experience was, but if I had to say something it would be that on occasion some of the hours sitting at my desk became very long. I enjoyed researching and presenting materials, but I also really enjoyed the hands on experience and smaller projects I helped out with. So having to sit at a desk for several hours straight would have to be my least enjoyed part of my summer experience.
- I wish I had been given more responsibility day to day. I felt I could have handled more and it would have kept me busier.
- Many days felt like they were of little value when there were already many DOT employees on a project and there really was not even enough work for those employees, let alone the interns. I like to accomplish things and feel useful.
- I wouldn't really say that there was a bad part however, my project was extremely repetitive which I didn't have an issue with, however, because of this there really weren't any new skills that I was able to learn however, I was able to improve some of the skills I had already learned.
- In my opinion, the unbearable heat of this summer was the worst part of the internship.
- The worst part of the internship was the slow pace at which things progressed. I would've liked a faster paced, higher work load environment.
- I constantly found it frustrating that there was not more work to do. Our workload was dependent on the progress of the project so this, understandably, made our DOT work slow at times.
- There were several times throughout the summer where there just wasn't enough work for the normal inspectors and multiple interns. We ended up simply sitting out of the way on a few jobsites.
- None, I enjoyed it all.
- None, I enjoyed all of it.

4. Do you have any suggestions as to how we could improve this summer intern program?
(Note that the responses are paraphrased)

- I would change the weekly reports to bi-weekly, and see if it can be arranged to be longer if possible. I realize that this is only a summer internship, but if it could be made longer, I believe that it could prove to be beneficial to both the interns and the DOT.
- None, it was a great experience and I gained much knowledge about the construction process of roadways/bridges
- None.
- Update the technology we work with, and possibly get us to a few different work areas.
- Weekly reports are pretty excessive, the job does not change much week to week
- Give the intern some more responsibility.
- A lot of times, I felt under-utilized and did not feel like there was much value in being there. Having more for interns to do or giving more responsibility to interns so that we are not there with four other guys to do what two or three people could do would be beneficial.
- After talking with a few of the interns a commonly reoccurring theme was that the interns felt bored most of the time, mainly because of a lack of responsibility. I feel that many of the interns would have preferred to have more responsibility so as to feel as though there was both beneficial for the DOT and beneficial for their learning. This intern program was far more beneficial to my learning than any class I have taken, but I do feel that the experience could be improved by granting the interns more responsibility.
- By having a predetermined list of projects the IADOT would like the interns to complete for the summer internship. This would give the student an idea of what he/she needed to complete over the course of the summer and help the IADOT keep track of what work the intern has completed.
- By trying to relating the program with individual interest area
- Do not make the interns do the weekly journal entries like we had to do this year. They were a complete waste of my time and most likely the teachers time as well that had to read them.
- have reinforced concrete design as a prerequisite so that interns may help out in some design work, or just to have a wider variety of tasks to complete
- Have the program set up more in advance so the student and DOT office is completely set up before beginning with everything needed to be paid and supplies and transportation for the job.
- Have us working some with the engineers too instead of just with the inspectors everyday.
- I don't have any suggestions at this time
- I feel everything was very straightforward and easy to understand. I think this summer internship was great the way it's set up.
- I have no suggestions for how the program can be improved.
- However overall the program was great and very well organized. There were times I would have rather verbally expressed my experience vs. using a journal, however I do understand with 50+ interns that can be a struggle.
- I think the program went great and my supervisors did a great job of helping me.
- I would have liked to spend more time with the engineers to see the things they do and the decisions they make each day.
- I would suggest changing the weekly intern reports. The reports were beneficial by making me recap tasks that I have completed, but I think they should be written less specific. Some weeks it was difficult to have a response for each criteria. I would suggest either using a less broad report, or make one report due at the end of each pay period.

- I'm sure for most this internship was a grand success. I am told I performed a critical function for the team this summer, but it was not structured. There needs to be more smaller projects to broaden the experience and to use time better.
- Include more education on what goes on before and after the sample is received at the lab and ran, in order to give the tests more purpose.
- Just have one report template as opposed to one every pay period because a lot of the template was very specific and hard to fill out every week.
- Make sure that each intern has specific tasks to complete. I felt that at times, the tasks or proposed outcomes were vague. I suggest that key outcomes be stated as well as the steps to achieve them.
- Make the journals bi-weekly.
- More organization and communication at the beginning of the summer (regarding orientation and starting work) would be better. Given that this was the first time the program was offered, it was understandable.
- More organization prior to the first week of work.
- My only suggestion is to be more prepared and keep in contact with the interns and the supervisors a little more.
- N/a
- no
- No suggestions
- No the internship was great. I wouldn't change anything.
- No, I do not have any suggestions for improving the program. Overall, I found the program satisfactory and in no need of improvement.
- No, I have no suggestions as to how to improve the job. I found the experience to be satisfactory.
- No, I thought the entire program was set up very well. I have no complaints. Great program!
- Not at the moment.
- One suggestion that I have would be to cut down on the amount of times journal entries need to be completed. Doing this task once a week appeared to be a little too much. Consider doing it every other week or maybe even once a month.
- Possibly more communication in the weeks leading up to our first day of work.
- Spend less time on the orientation part of it. A whole day for that was too long, at least for my position.
- Stick to the "feedback" structure that was planned out in the beginning of the internship. ie: meetings with professors
- Streamline the communication between InTrans and the Iowa DOT. I feel that there was not a lot of clarity at the beginning of the program as to what was going on and who was taking care of different things.
- The DOT is a large organization that has numerous functions. I believe that many non-engineering students would benefit from this experience. Furthermore, I believe that the DOT could benefit from having students from non-engineering backgrounds provide a different view of the organizational challenges of the DOT.
- The weekly reports are hard to stay up on and remember to do.
- This might be specific just to my experience, but it would have been nice to have a bit more variety in my tasks and responsibilities. Maybe cut the journal reports back to just once or twice a month.

5. *Would you recommend this summer intern program to other future students?*

Yes	98.2%	55
No	1.8%	1

APPENDIX E: 2012 SUMMER PILOT INTERNSHIP PROGRAM - SURVEY OF IOWA DOT SUPERVISORS

Summer 2012 IADOT-ISU Intern Supervisor Survey Feedback					
<i>27 August 2012</i>					
31 responses					
1. How would you rate your summer intern experience in terms of the following outcomes?					
	Great	OK	Marginal	Poor	# Responses
Level of technical challenge they accepted?	77.4% (24)	22.6% (7)	0.0% (0)		31
Level of responsibility they maintained?	74.2% (23)	25.8% (8)	0.0% (0)		31
Level of professional learning they gained?	54.8% (17)	41.9% (13)	3.2% (1)		31
Level of enjoyment they seemed to find in their efforts?	80.6% (25)	19.4% (6)	0.0% (0)		31
Level of your satisfaction with faculty mentors interactions (i.e., Shashi Nambisan and Jim Alleman)	58.1% (18)	35.5% (11)	6.5% (2)		31
Level of smoothness with program logistics (e.g., financial processing and management)?	54.8% (17)	41.9% (13)	3.2% (1)		31
2. In your opinion, do you believe this summer intern program was valuable to the IADOT mission?					
<ul style="list-style-type: none"> • Yes, but the COOP program that offers a longer assignment provides more benefits and allows the intern to assume more responsibilities. • Absolutely • Absolutely. • Absolutely. 					

- Absolutely. and quite frankly I don't know how we will accomplish what we did without them in the future. This is a great way for us to "promote" the accounting functions at DOT.
- All aspects of this program were valuable to me in conducting the project in which our intern was assigned.
- It was a tremendous help in our Civil Rights Program Development.
- It was great to have the students here this season. I hope their experiences were all of the positive nature.
- It was valuable as we were able to gain staff w/o hiring someone. The one we had was excellent help and will keep in touch as I am trying to convert a vacant position to an Engineer graduate position. I also feel that he was able to learn how roadways are actually constructed.
- The program was extremely valuable to our section. Our intern was able to work in a real world environment, gaining real world engineering skills and insights.
- Yes
- Yes
- Yes
- Yes
- Yes
- Yes I do. It's beneficial to these interns to see, interact, and get hands on experience with the day to day operations of the DOT.
- Yes!
- Yes, Absolutely. These young Engineers will/can be future hires. Learning their abilities before hiring them is a huge benefit.
- yes, absolutley
- Yes, I believe the students learned a great deal with being in the field.
- Yes, it provided valuable help to the DOT and at the same time provided a learning opportunity for the interns
- Yes, the feedback from the interns has showed they were given a variety of exposure. They have expressed that they wish to return if given the chance
- Yes, we were able to accomplish some work that otherwise would have taken longer.
- Yes.
- Yes.
- Yes. In addition to providing experience to potential future engineers, we benefitted from assistance in production of plans.
- Yes. It is a great way for the students to learn.
- Yes. It was nice having individuals with engineering knowledge with the volume of projects that the DOT is overseeing this year. It was beneficial having interns with an engineering background.
- Yes. Our summer intern (who was ending his sophomore year) was well educated and able to become productive in a very short time frame. He was able to contribute to the design of many projects during his summer.
- Yes. The program benefits the DOT in providing more resources to cover the work during the peak of the construction season. A big help is the interest the interns have in the work due to the field which they intend on having a career. We are able to educate them on what is going on and give them responsibilities which then frees up permanent staff to perform other duties.

3. From your perspective, did you see any aspects of this summer intern program that were problematic...and which needed to be changed?

- Absolutely
- Coordination between the faculty and the supervisors. The supervisors which are involved in the program are already trained in personnel matters. An extensive meeting to discuss these parameters is redundant and wastes time. Then when specific questions arise, the direction was unknown. The focus needs to be on the differences rather than basic supervisor information which we have already completed required training. The intern evaluation is extensive and difficult to complete. A simplified evaluation could cover the performance of an intern would be desired. I am busy. I think most all of the supervisors are busy. Short, specific emails are preferred without all capitalization and bold text. I am completing the intern evaluation and this evaluation because it was requested... but don't appreciate the perception of being yelled at to do so.
- everything was very smooth.
- It seemed to run smoothly.
- Needs to be less engineer focused. There are a lot of different business areas this program could support.
- No
- No
- No
- No
- No
- No problems
- No problems experienced
- No reported problems to me.
- No.
- No.
- None
- Not really.
- Not really.
- Not really. So short of a time period that it was hard to get too deep into details.
- Nothing problematic. The additional time requirements (manual timesheets, minor red tape during program setup) should probably be looked at for tweaking.
- Of the two interns assigned to our office one had more of a construction background than the other. The one without experience lacked the basics construction fundamentals.
- Paper time sheets seem behind the times.
- Some of our office duties were repetitive and tedious, yet someone had to do it... so it fell on our interns.
- Some of the students would like to take time off for vacation. Since we need them to work and learn, there are trainings that they would need to take. Thus, if the students would like to be in the program, I would suggest that they delay taking time off.
- The details early on with hiring and how the program was going to work were sketchy. I'm sure it will be better in the future.
- The Insurance for driving state vehicle
- The length could have been longer as mentioned previously, but this is more of an IDOT issue and funding issue.
- The only real problem was the haste with which the program was developed.
- The problems I saw were limited to the coordination for screening, hiring, and pre-employment confusion.

- We could have used the increased allotment of overtime sooner.
- would like to see a portion of the orientation developed into web-based application

4. Do you have any overall suggestions as to how we could improve the success and outcomes of this summer intern program?

- Continue to make the program more integrated into DOT policies and procedures for co-op/intern programs. Continue to require student work journals.
- I felt it ran smoothly.
- It worked fairly well.
- It would be a great benefit to have the students for a longer period of time.
- It would be good to maximize the time frame of the program.
- It would probably be best not to make this position available to first year students. It would be helpful to have a better understanding of what we can expect the interns to be able to comprehend and undertake.
- Keep it alive thru the fall and spring semesters. And again next year!
- Keep sponsoring the program!!! Thanks for all your efforts to make this happen.
- No
- No
- No.
- No. Very satisfied with the program & will most likely look at it again.
- No; keep it going
- None
- None, I thought the program went very well.
- None.
- Not really, but I would prefer to have had direct supervision over the intern.
- Only proper etiquette for dress.
- Overall, I thought the program was a huge success.
- Overall, I thought the program was a huge success.
- Possibly some changes in the interviewing procedure but over all I would say "I have none"
- Should this program be available next year, some of the groundwork mentioned in #3. should be in place for future programs.
- The Program is operating very efficiently. We had a good match.
- While functionally it wasn't a big problem, it seemed that there was considerable bureaucracy involved in the program; this formality is likely necessary in that the program needs to be structured so as to satisfy the needs of three large agencies, ISU, Iowa DOT, and FHWA, and that of the students. If this program continues in the future, I suspect many things will be smoother because many issues have been worked out - reimbursement for safety shoes, is overtime available or not, etc.
- would love to see the program extended beyond the summer months.

5. Would you recommend this summer intern program to other future students?

Yes	100%	31
No	0%	0

APPENDIX F: 2012 FALL PILOT INTERNSHIP PROGRAM - SURVEY OF STUDENTS

1. How would you rate your Fall 2012 intern experience in terms of the following outcomes? Create Chart Download						
	Great	OK	Marginal	Poor	Rating Average	Rating Count
Technical challenge	41.2% (7)	47.1% (8)	11.8% (2)	0.0% (0)	3.29	17
Responsibility	58.8% (10)	29.4% (5)	5.9% (1)	5.9% (1)	3.41	17
Professional learning	52.9% (9)	29.4% (5)	17.6% (3)	0.0% (0)	3.35	17
Personal enjoyment	58.8% (10)	41.2% (7)	0.0% (0)	0.0% (0)	3.59	17
Financial processing, payroll, etc.	70.6% (12)	29.4% (5)	0.0% (0)	0.0% (0)	3.71	17
answered question						17
skipped question						0

Question #2 In your opinion, what was the best part of your Fall 2012 intern experience?

- 1) I had the chance to see and do a lot of different things with the DOT which I had no previous knowledge of.
- 2) Being handed a task and doing whatever seemed necessary to complete it.
- 3) The diversity in the projects I supported and their importance to the Office of Maintenance.
- 4) Getting to interact with a client and converse with them to solve problems and come to a common solution. The flexibility in hours was wonderful.
- 5) Very similar to the summer in that I was able to work with a great team and learn a great deal about how the DOT works and build upon my GIS skills
- 6) Getting to know the students
- 7) Experience
- 8) Experiencing a professional engineer's duties.
- 9) Being able to learn the design side of the civil engineering field hands-on.
- 10) It was nice they were able to work with my class schedule.
- 11) Getting hands-on experience in my field.
- 12) I liked having the flexible schedule while being in classes. I also liked being able to continue what I learned in the summer and not having to learn a new job for the semester.
- 13) Interacting and meeting many professionals that helped and guided me so I could accomplish my tasks.
- 14) The knowledge I gained that I can use in the future
- 15) The ability to continue and take on new projects
- 16) It went very smoothly thanks to the staff at ISU InTrans (Shashi, Jim, Judy, Tim & Katy)! Great collaboration between the Iowa DOT and ISU. Excellent orientation planning and presentation.
- 17) I enjoyed working with the staff at the Dot

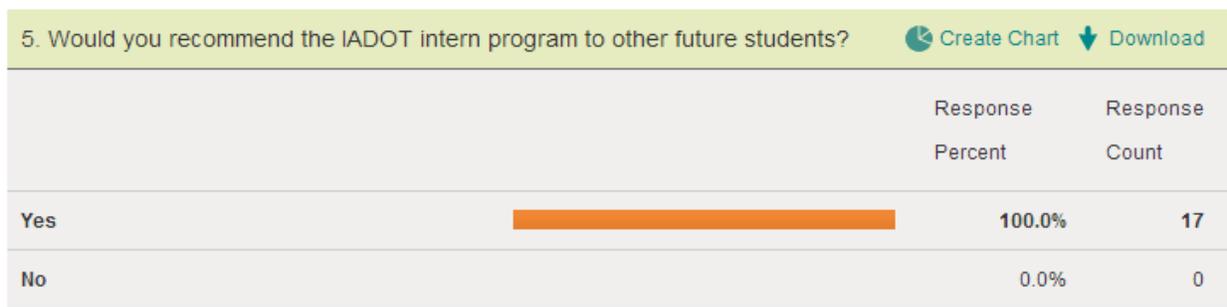
Question #3. In your opinion, what was the worst part of your Fall 2012 intern experience?

- 1) I felt that the weekly journals and final paper were a waste of time because I feel our advisors at InTrans never had time or cared to review them.
- 2) Some days were slow with not much work.
- 3) Not knowing if the Fall positions were going to come to fruition. Work opportunities, commensurate to one's ability, are greatly reduced after the start of the semester.
- 4) Some of the tasks became repetitive, but they were necessary
- 5) That I could not work more hours
- 6) Scheduling interviews
- 7) Conflicts with school
- 8) The pay could have been better.
- 9) Not being able to work very much due to the hours of operation at the DOT. I had class most of the day, so I was not able to work very much between 9 and 5.
- 10) Monotonous, repetitive work.
- 11) There really wasn't anything that negative that I can think of.
- 12) I can't think of any worst part.
- 13) N/A
- 14) I've already done the work before.
- 15) Having to balance work and school as opposed to doing only one or the other.
- 16) No clear, "yes or no there will be a fall continuation" from management....and apparently poor communication between DOT staff and students regarding the fall continuation....but it all worked out.
- 17) Trying to work and take classes at the same time.

Question #4. Do you have any suggestions as to how we could improve this IADOT intern program?

- 1) Have work and or tasks ready to be completed instead of trying to find work to do at the last minute.
- 2) Broadening these opportunities to more disciplines across campus.
- 3) I feel that the intern program was handled very well.
- 4) DOT direct hires
- 5) Nope
- 6) Increase pay as students are trying to make money for tuition, rent, etc. Maybe set up some kind of interaction activities for all the interns.
- 7) Include an orientation involving the DOT's use of microstation - a lot of things were different than what we are taught at ISU. Some job shadow days could also be included - it would be beneficial to see what a lot of the "higher up" engineers do or to see what different sections do at the DOT.
- 8) The ability to have a little more variety of work would be nice.
- 9) I liked the program a lot and I can't think of anything I would change.
- 10) N/A
- 11) No.

Question #5. Would you recommend the IADOT intern program to other future students?



APPENDIX G: 2012 FALL PILOT INTERNSHIP PROGRAM - SURVEY OF IOWA DOT SUPERVISORS

1. Based on your perspectives as an IADOT fall intern supervisor, how would you rate these students in terms of the following outcomes? Create Chart Download						
	Great	OK	Marginal	Poor	Rating Average	Rating Count
Level of technical challenge they accepted?	83.3% (5)	16.7% (1)	0.0% (0)	0.0% (0)	3.83	6
Level of responsibility they maintained?	100.0% (6)	0.0% (0)	0.0% (0)	0.0% (0)	4.00	6
Level of professional learning they gained?	83.3% (5)	16.7% (1)	0.0% (0)	0.0% (0)	3.83	6
Level of enjoyment they seemed to find in their efforts?	66.7% (4)	33.3% (2)	0.0% (0)	0.0% (0)	3.67	6
Level of smoothness with program logistics (e.g., financial processing, management, payroll)?	50.0% (3)	33.3% (2)	16.7% (1)	0.0% (0)	3.33	6
answered question						6
skipped question						0

Question #2 In your opinion, what was the best part of your Fall 2012 intern experience?

- 1) Yes!
- 2) yes
- 3) absolutely, we wouldn't have completed what we did without them. Also gave DOT an opportunity to showcase our accounting operations and interest an intern to consider DOT for prospective employer.
- 4) Didn't have the same continuity with the students only working part-time but all in all we were able to get some things done.
- 5) Absolutely.
- 6) Yes

Question #3. In your opinion, what was the worst part of your Fall 2012 intern experience?

- 1) Approval for the program needs to be done MUCH sooner!
- 2) no
- 3) no
- 4) just the reduced hours of availability during the school year.
- 5) No.
- 6) No

Question #4. Do you have any suggestions as to how we could improve this IADOT intern program?

- 1) The program should continue. These young engineers are the future of the DOT.
- 2) online orientation
- 3) thought it was very smooth
- 4) Keep offering it and have long term intern opportunities for some continuity. You can only get so far in a summer or half time during the school year. We are doing the same or more with less so this has been a great backup support system.
- 5) Have more interns and co-ops (especially) available.
- 6) No suggestions

5. *Would you recommend this summer intern program to other future students?*

Yes	100%	6
No	0%	0