

2013 Iowa DOT Engineering Intern Development and Management Program

**Final Report
November 2013**

IOWA STATE UNIVERSITY
Institute for Transportation

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EXECUTIVE SUMMARY

The Iowa Department of Transportation (DOT) has a long-standing commitment to experiential education. Experiential education provides real-world context to students, which is important for connecting educational concepts to professional practice. Internships also provide the opportunity for students to get to know the Iowa DOT, which encourages them to consider a career with the Iowa DOT upon graduation.

In a successful internship model, students are mentored by working professionals who apply educational concepts to professional engineering practice. In reality, supervisors may be technically proficient but not as skilled in mentoring students and drawing connections between classroom studies and state of the practice. In addition, students often need instruction beyond the classroom to have a successful internship in areas such as time management or professionalism.

Accordingly, the Institute for Transportation (InTrans) at Iowa State University (ISU) developed an internship mentoring program in collaboration with the Iowa DOT to provide additional mentorship to both student interns and Iowa DOT intern managers. For the 2013 summer Iowa DOT Engineering Intern Development and Management Program, this report summarizes the following:

- Mentoring activities conducted by ISU
- Results of the different intern program success assessments that were conducted
- Experiences, lessons learned, and recommendations
- Program benefits that were realized

The final progress reports for remote interns (stationed outside of Ames) were generally very complimentary about their summer internship experiences. The interns appreciated the mentoring that their supervisors provided. They also expressed their appreciation for the variety of types of field experiences that they received on various projects.

Based on progress reports and exit interviews from interns stationed in Ames, the Iowa DOT summer internship program was also largely successful from their perspective. The educational component of the internships stationed in Ames seemed strong in most cases.

The most common disappointment encountered among interns was the level of challenge of their work assignments. Many felt that they were prepared to take on more technically-difficult tasks or shoulder more responsibility. However, several of these interns were cognizant of the difficulties associated with bringing new interns up-to-speed in a short time and stated that the level of challenge improved over the course of the summer.

Interns with even just one year of engineering education prior to their internship found the learning experience very beneficial. Several interns were retained for Fall 2013 and the Iowa DOT decided to mentor these interns.

1. INTRODUCTION

1.1 Background

The Iowa Department of Transportation (DOT) has a long-standing commitment to experiential education. Experiential education provides real-world context to students, which is important for connecting educational concepts to professional practice. Internships also provide the opportunity for students to get to know the Iowa DOT, which encourages them to consider a career with the Iowa DOT upon graduation.

In a successful internship model, students are mentored by working professionals who apply educational concepts to professional engineering practice. In reality, supervisors may be technically proficient but not as skilled in mentoring students and drawing connections between classroom studies and state of the practice. In addition, students often need instruction beyond the classroom to have a successful internship in areas such as time management or professionalism.

Accordingly, the Institute for Transportation (InTrans) at Iowa State University (ISU) developed an internship mentoring program in collaboration with the Iowa DOT to provide additional mentorship to both student interns and Iowa DOT intern managers.

This report summarizes mentoring activities conducted by InTrans for the 2013 summer internship program, which included the following activities:

- Meet with the Iowa DOT to determine their mentoring needs to conduct their internship program
- Develop summaries by topic areas of potential activities for students
- Develop and present training information on professionalism and program expectations for student internship orientation meetings
- Provide information for Iowa DOT managers
- Provide one-on-one mentoring for student interns
- Summarize the mentoring program including lessons learned

1.2 Program Support

Support was provided by InTrans in coordination with the ISU Department of Civil, Construction, and Environmental Engineering (CCEE). InTrans worked with the DOT managers and students to serve as a resource to bridge the gap between classroom learning and professional work experience. Two lecturers in CCEE, Dr. Matt Rouse and Larry Cormicle, served as the main mentors. They were selected since they have significant experience serving as advisors and mentors.

1.3 Internship Program

The Iowa DOT recruited and hired student interns for the 2013 summer season. The following summarizes the intern applications and hiring:

- 231 applications were submitted for consideration from 20 different educational institutions
- 82 out of 82 positions were filled
 - 70 were engineering positions
 - 12 were business majors or geographic information system (GIS) positions
- Students were selected from the following schools:
 - 1 from Arizona State University
 - 2 from Des Moines Area Community College
 - 5 from Dordt
 - 54 from Iowa State University
 - 1 from Simpson College
 - 9 from the University of Iowa
 - 1 from the University of Minnesota
 - 1 from the University of Wisconsin-Madison
 - 7 from the University of Wisconsin-Platteville
- Start date was May 13 or May 20, 2013
- End date for employment varied depending on Fall semester class start date at each university (August 16 to 30, 2013)
- 28 different Iowa DOT offices/locations had interns (Figure 1.1)

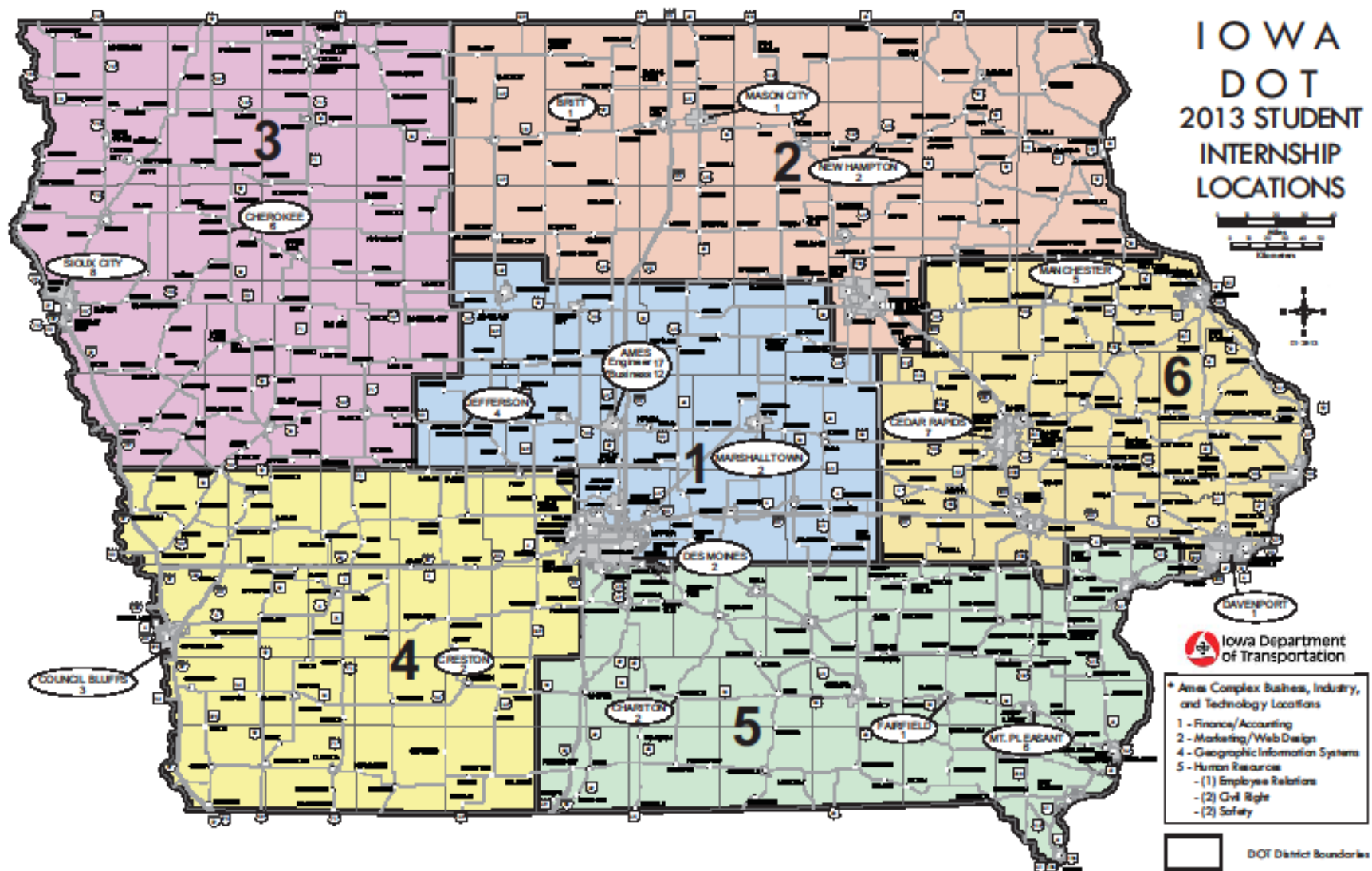


Figure 1.1. Locations of 2013 Iowa DOT interns

2. DEVELOP AND PRESENT TRAINING MATERIAL

The team developed material for students and Iowa DOT intern supervisors to provide structure for the mentoring program. The team also participated in the orientation workshops. Each is described in the sections below.

2.1 Discipline-Specific Material

One objective of the mentoring program was to help Iowa DOT intern supervisors draw a connection between the classroom and summer internship work. The team recruited experts from each major discipline represented by the interns and developed a “menu” of discipline-specific experiences and activities that students could engage in that were based on learning objectives, which could supplement coursework. Disciplines covered included Civil, Construction, and Environmental Engineering (Construction, Traffic and Safety, Design, Materials, and Environment); Finance/Accounting; and Human Resources/Communications.

An example of one of the menus is provided in Table 2.1. Items 1 through 3 were common for all disciplines because they represent general skills, except that Item 3 was added to/customized for students interning in traffic operations or safety in this example. In addition, Item 4 was specific for students interning in traffic operations or safety in this example. Discipline-specific material was incorporated into a progress report as shown in Appendix A. Material developed for each discipline is provided in Appendix B.

Table 2.1. Sample “menu” for Iowa DOT supervisors

Topic	Date Completed
1. Communication	
Participate in/observe meetings	
Make a formal presentation to supervisor or other construction team members	
Write a formal report to supervisor	
Write a memorandum to supervisor or construction team	
Make a short video presentation about your experience as an IDOT intern	
Write a hand-written thank-you to someone who helped improve your intern experience	
2. Understand business relationships/team building	
Attend a public hearing	
Attend a preconstruction meeting	
Attend a prebid meeting	
observe a bid letting	
Learn about pre-qualification and bid requirements	
3. Application of Commercial Software	
Microsoft Office (Word, Excel, PowerPoint, Access)	
List traffic operations/GIS/safety software packages utilized	
4. Traffic and Safety	
Conduct a spot speed study, calculate mean speed, standard deviation, 85th percentile speed, and 10 mph pace	
Conduct an intersection turning moving count	
Calculate the crash rate for a segment or intersection	
Review a collision diagram and identify the most common crash types	
Conduct a volume study, calculate ADT, headway, and fleet mix	
Calculate LOS for an intersection or other roadway facility	
Calculate the optimal phasing for a simple 2 phase intersection	
Conduct a safety audit	
Check sign and/or pavement marking retroreflectivity	
Evaluate stop sign compliance	
Conduct an environmental impact statement	

2.2 Iowa DOT Supervisor Information

The team developed tips for supervisors on dealing with student workers. This was particularly useful given it was potentially the first job for some student interns and student interns may need guidance in adapting beyond simply technical expertise. In addition, intern supervisors may not be aware of the objectives for internships or how to link summer work to the classroom. Material was developed into a one-page brief, which was provided to intern supervisors at the beginning of the internship program, and included the following:

- An internship is not just a summer job. Remember that the primary objective of an internship is to provide realistic work experiences for the educational benefit of the intern. Iowa DOT formally acknowledges this principle.
- A secondary objective for the Iowa DOT is to identify and groom potential full-time employees, so the work assigned to interns should be challenging. Give interns the opportunity to display initiative and think for themselves.
- Be a mentor as well as a supervisor. Remember your own first professional job, and try to anticipate the insecurities we all feel when put into a new environment. Encourage interns to ask questions and voice concerns.
- At the outset, develop a set of learning objectives for each intern appropriate for the duties they will be assigned. This is required by ISU for interns to receive academic credit for their internship (see attached documents). Involve the intern in the development of the objectives. To help with this, a menu of suggested activities that would supplement interns' academic coursework is also attached.
- After each project or assignment, provide feedback to interns in regard to their performance. This can be as simple as telling them, "great job."
- For longer-term projects, provide deadlines for some interim reports/updates. This can help interns develop time management skills.
- Provide opportunities to practice communication skills. Ask interns to make written or oral reports and presentations.

Each supervisor was also provided a menu of activities specific to their discipline (as described in the previous section).

2.3 Intern Orientation Workshop

Mentors Larry Cormicle and Matt Rouse developed a one-hour lecture coaching new interns on professionalism, job expectations, appropriate attitude, and making a positive impression on employers. This lecture was delivered three separate times during new employee orientation for interns and co-op students at the Iowa DOT offices on May 13, 2013 for about 60 interns, May 20, 2013 for about 20 interns, and again on May 28, 2013 for 2 interns. The agenda is shown in Appendix C.

During this lecture, the mentors introduced themselves, outlined their roles as teachers, professional resources, and intern advocates. The mentors also introduced templates for mid-term and end-of-term progress reports as well as a final video assignment. These assignments are discussed in more detail in Chapter 3. Interns were urged to use the progress report templates to keep track of their activities over the course of the internship to gain perspective on their experience and help them seek learning opportunities within their respective fields.

A handout was also delivered to the interns with tips on how to be successful in their internships. The handout emphasized the following points:

- Ask for feedback on a regular basis
- Go above and beyond your job description
- Be professional and consistent
- Record your accomplishments
- Act like you're a full-time employee
- Secure a mentor within the Iowa DOT
- Have a solid understanding of the broader DOT organization and business

3. ONE-ON-ONE MENTORING

The Iowa DOT provided ISU mentors with a list of students participating in the 2013 Iowa DOT internship program. Immediately following the May 13, 2013 intern orientation meeting, the project mentors decided to divide the interns into two distinct groups with Cormicle assuming responsibility for the interns assigned to the field at remote locations (42 interns) and Rouse assuming responsibility for the 40 interns primarily engaged in widely-varying office/laboratory work, the majority of whom were assigned to the Ames Iowa DOT offices. It was clear that these two groups would present distinctly different challenges and likely have differing needs. (Cormicle has expertise in construction management and was uniquely qualified to address issues for field-based interns.)

3.1 Initial Contacts with Interns and Supervisors

Shortly after the orientation workshop, the ISU mentors sent each intern a blank progress report template via email. One part of the progress report template asked the interns a series of questions with the following broad objectives:

- Encourage reflection on their internship experiences relative to their education
- Project their internship experiences onto possible future careers
- Probe the educational quality of their work assignments
- Identify difficulties with which a mentor might be of help

The second part of the progress report template included a table with the “menu” of beneficial experiences tailored to each discipline (see Section 2.1) in which the interns could track their experiences. The table was included to provide suggestions for enterprising interns to seek out educational experiences and activities within their field to enhance the educational component of the internship.

The students were requested to complete the progress report template as appropriate and return it via email to their respective mentors by June 24, 2013 (mid-term) and again by August 9, 2013 (end-of-term). A sample of one of these progress report templates is included in Appendix B.

The progress report templates were also emailed to each Iowa DOT intern supervisor with a request for feedback. The objectives of sending the progress report templates to Iowa DOT supervisors were to open a discussion between the mentors and supervisors regarding the internships and to provide supervisors with educational suggestions that might be woven into intern work assignments. A document titled Advice for Supervisors of Interns was sent along with the progress report template. This email message was followed up generally with an introductory phone call by the mentors to the Iowa DOT supervisors as an introduction and opportunity for discussion about the internship plans.

3.2 Summer Mentoring

Throughout the summer, the mentors had periodic phone calls or meetings with the interns. For interns working at remote construction sites around the state, in-person meetings were generally not feasible. For these interns, even periodic phone contact was often difficult given that interns frequently didn't carry cell phones themselves or were precluded from phone conversations for noise or safety concerns. Some interns could be reached by email or would return calls, but contacts could be characterized as very intermittent.

The 43 remote summer interns worked in the following Iowa DOT offices: Cedar Rapids, Chariton, Cherokee, Council Bluffs, Creston, Davenport, Des Moines, Jefferson, Manchester, Marshalltown, Mt. Pleasant, New Hampton, and Sioux City.

Interviewing the 43 summer interns that were located outside of the Ames area consisted of phone interviews with a portion of the interns. Phone conversations overall were very short and several interns were not contacted by phone during normal working hours except by leaving them a voice mail to call Cormicle back with any concerns or questions about their summer intern experiences. Interns responded to a voice mail message by email, or not at all.

When asked how their summer internship experience was going, the general answer was "fine," "great," and "working lots of overtime on site observations, and I don't have time to talk now." None of the 43 students contacted Cormicle by initiating a phone call. Yet, every one of these interns completed their two written reports (mid-term and final report) and submitted them to Cormicle by email by the required deadlines.

For students stationed in Ames, contact between mentor and interns was easier. Rouse was able to speak with each intern by phone at least twice and corresponded regularly via email with several interns. In addition, periodic small-group, brown-bag lunch meetings on picnic tables outside the Ames DOT offices proved amiable and convenient for many interns. All interns were invited to such meetings with more than 80 percent of the interns stationed in Ames attending at least once. These meetings were generally held from 11:30 a.m. to 12:30 p.m. throughout June and July with anywhere from one to six interns in attendance. Conversations were informal, but topics such as living in Ames, the DOT work environment, career goals, work-family priorities, real-world engineering challenges, and career experiences were ones that flowed easily among attendees. Many of these interns commented that they would have liked to participate in more of such lunch meetings given the opportunity.

3.4 Fall Mentoring

The Iowa DOT took over mentoring the interns/co-ops who continued working after mid-August when InTrans at ISU completed their summer mentoring. Thirty-five interns and five co-ops continued working for the Iowa DOT, usually with the same Iowa DOT supervisor. The interns were part-time in various offices and divisions in the central complex and field while they continued working on their college degrees. The co-ops continued working full-time with three

in the field offices and two in the central complex and they will complete their term of employment at the end of December.

The offices where the interns worked in the central complex and field were as follows: Office of Safety, Office of Accounting, Office of Research & Technology, Jefferson Resident Construction Engineer (RCE), District 1 Materials, New Hampton RCE, Sioux City RCE, Creston RCE, District 5 Materials, Cedar Rapids RCE, Manchester RCE, Davenport RCE, Office of Design, Office of Construction and Materials, Office of Location & Environment, Office of Traffic & Safety, and Office of Maintenance. The five co-ops are working in the District 2 Office, Council Bluffs RCE, Manchester RCE, Office of Bridges & Structures, and Office of Design.

The Iowa DOT supervisors will continue to mentor the students and submit quarterly reports on their progress.

The summary of tasks that the students were assigned were the same or similar to what InTrans reported in the next chapter of this report.

4. SUMMARY OF INTERN ACTIVITIES

It was not the intent of the internship mentoring program to monitor the work assigned to each intern given that this was the responsibility of the Iowa DOT supervisors. However, students did note work accomplished in their progress reports. Because this information may be of interest to the Iowa DOT, a brief summary is provided below.

Summary of tasks that were assigned to interns by their supervisors at remote DOT offices:

- Attended and observed meetings with DOT staff and with contractor's staff on projects
- Observed and inspected different phases of construction for a variety of project types: bridges, road resurfacing, road paving (HMA and PCC), utilities, earthwork, and pavement repairs
- Assisted a survey crew with "as-builts," surveying "Right of Way"
- Assisted a survey crew with field staking and the use of GPS technology in surveying
- Performed various materials testing tasks: Proctor tests on soil and aggregate sample, slump and air entrainment content tests, molding of concrete cylinders, moisture content testing of soils
- Incorporation of old construction plans into the DOT internal system (ERMS) using ArgMap.
- Participated in various meetings involving the EPA, US Army Corp of Engineers, and Fishery and Wildlife agency
- Participated in training for: GIS, Microstation and Geopak
- Participated in training for: stream investigations, soil stabilization and design workshop
- Observed and recorded actual work quantities on various projects: bridges, paving, earthwork, utilities, pavement repairs, pavement demolition
- Operated GPS surveying equipment to set grade stakes for earthwork operations on various projects
- Interpretation of contract documents with contractors
- Coordination of traffic control on project sites
- Observed and inspected the installation of reinforcing steel on various structures
- Observed and inspected a bridge overlay project
- Measured in-place work items to verify compliance with contract documents as well as certification of actual quantities of work in place
- Inspected structural steel on a bridge project
- Inspected the installation of sub-drains
- Assisted with the "sounding" of an existing bridge deck to determine the locations for bridge deck patching
- Observed and inspected the installation of driven steel piling foundations on a bridge project
- Processed required documents for extra work orders and payment applications from contractors
- Observed and inspected the replacement of bridge beams and the repairs to a damaged bridge structure
- Used various software applications as part of job duties: Microsoft Office, Field Manager, Microstation, Adobe Acrobat, Payroll software, FieldBook, Trimble RTK GPS, GeoPAK, ProjectWise Explorer

Summary of activities for the Ames-based interns:

- Creating various health and safety multimedia tools for DOT employees
- Visiting wetland mitigation sites during different stages of construction, research on forested wetlands, Air Pruning methods of seedlings and the advantages and disadvantages of using wire tree cages vs. tree tubes, assisting with wetland delineations, weekly meetings discussing different stream mitigation methods, and waste water sampling
- Customizing software called “gINT” for the soils lab. I read code in their old programs, and add functions to “gINT”, so soils lab can run tests and store data with it in the future
- Publishing GIS data to be consumed by district maintenance personnel and other departments; i.e. paint reflectivity data, scenic easements, interstate crossover locations, interstate closure gate locations, welcome center/rest area locations, etc.
- Creating information, location, quantity, plan and profile, cross section and traffic control sheets for highway projects
- Travelling to a city in Iowa and collect free-flow speed data from vehicles on US/IA highways in the different speed transition zones in a city
- Performing GPR and Friction data analysis, FWD, Friction, and Smoothness testing on roads all over Iowa, Servicing DOT vehicles, organizing data input and filing testing results
- Building the desktop version of the Driver’s License Practice Test and the Mobile Interactive Bike Map
- Performing PCC and HMA aggregate sampling and testing, mainly sieve analysis
- Observing job sites (cement and asphalt), sampling from rock quarries and sand pits, gradations, and observing testing done in the lab
- Reviewing bid proposals in response to RFP for a Statewide Traffic Operations Center.
- Assisting the award winning contractor with initial startup
- collecting intersection approach IDs, transportation node IDs, and transportation link IDs for each expressway, US and Iowa Highway intersection points in the state of Iowa
- Updating the Workforce Planning Model and the recruiting and hiring processes
- Running tests on recycled asphalt pavement (RAP) to acquire asphalt content and absorption percentages
- Collecting and analyzing crash data for and the writing of HSIP Project Effectiveness Reports
- Creating a Virtual Museum from the basic shell and inputting my design for the site
- Spatially locating “As-built” plans in a GIS system
- Configuring and testing new trials of the traffic analytic software Abacus and TrafficVision for the ENTERPRISE Video Analytics Project
- Running aggregate tests such as abrasion testing, specific gravity tests, floating coal and shale, pore index tests, freeze and thaw testing, and weighing up samples
- Creating spreadsheets to support cost such as: Preliminary Engineering, Construction Engineering, Construction, and other cost that are incurred during a project

5. ASSESS PROGRAM SUCCESS

Another responsibility of the ISU mentoring team was to help assess the success of the internship program for the Iowa DOT. This assessment included exit interviews for interns and a survey for Iowa DOT intern supervisors.

5.1 Intern Exit Interviews

A final exit interview with each intern was conducted in August in which interns could speak in more depth about their final progress reports or add suggestions not covered specifically in the progress report template. For interns stationed at remote construction sites, the exit interviews were conducted by phone. For those stationed in Ames, the exit interviews were usually conducted in person in the Iowa DOT cafeteria. The ISU mentors used the following questions as a guide to discuss the internship experience with each intern:

- Do you have any suggestions for improving the DOT's internship program for future interns?
- Was there anything you found disappointing about your internship?
- How would you characterize the work environment at the DOT for interns?
- How challenging, in general, were the work assignments given to you?
- The difference between an internship and a summer job is the educational component of the internship. How was the balance between the work emphasis and educational emphasis in your experience?
- Do you feel you gained a good understanding of the DOT, its mission, business, and culture over the course of the summer?
- Can you explain why you don't plan to seek full-time employment with the DOT in the future? (for students who answered undecided or do not plan to apply on final progress report template to the question about whether they will seek full-time employment with the DOT)
- Do you see any benefit to the mentoring we provided through ISU over the course of the summer?
- Would you prefer to have more or less contact with such a mentor if you were to do this again?
- Were the assignments the mentors gave you appropriate in length and frequency?
- Did writing the progress reports help you put your internship into perspective?
- Is there anything that you'll take from your internship experience that you think will influence the course of your future?

Summary for Remote Interns

The final progress reports for remote interns were generally very complimentary about their summer internship experiences. The interns appreciated the mentoring that their supervisors provided. They also expressed their appreciation for the variety of types of field experiences that they received on various projects.

One of the questions that the interns responded to in their final progress reports was, “How likely are you to seek permanent employment with the Iowa DOT after you complete your degree?” Table 4.1 summarizes the responses (with 43 respondents).

Table 4.1. Summary of exit intern interviews for remote interns

Will definitely apply 1	2	Undecided 3	4	Don't plan to apply 5
13	7	16	3	4
30%	16%	37%	7%	9%

Note: Percentages total 99% due to rounding

Almost half of the summer interns are either definitely considering apply or almost definitely considering applying to the Iowa DOT for a full-time position after receiving their undergraduate degree.

With these 43 interns working at various offices performing field observations and inspections, their experiences varied widely depending on the type of project.

A few students had not yet taken upper level civil engineering courses as part of their undergraduate education and commented that they still learned a lot with the individual mentoring of their supervisors and the resident construction engineers.

Several interns commented on their exposure to problem solving on the project and to teamwork among the DOT employees and the contractor's employees.

Several interns either were reading blueprints/plans for the first time or had a prior course that they felt prepared them well to work as an intern.

A few found that their on-the-job work as a material tester was repetitive and not very challenging after mastering the skill. Others found this testing experience valuable as it reinforced the content of an undergraduate engineering course.

Summary for Interns Stationed in Ames

Based on progress reports and exit interviews, the Iowa DOT summer internship program was largely successful from the perspective of interns stationed in Ames. With a few notable exceptions, interns found the DOT's work environment comfortable and very positive. Work assignments were generally viewed as both educational and relevant to future professional careers.

By the end of the summer, approximately 70 percent of the interns stationed in Ames indicated that they will likely seek full-time employment with the Iowa DOT in the future. Of the approximately 15 percent of students who indicated that they were unlikely to seek full-time

employment with the Iowa DOT, about half explained that this decision had nothing to do with the DOT itself but that they had specific plans in other fields or geographic locations. About 15 percent of the interns indicated that they were undecided about seeking full-time positions at the DOT.

The educational component of the internships seemed strong in most cases. The Office of Location and Environment and the Office of Finance seemed particularly well prepared to provide interns with educational experiences, workshops, field trips, on-the-job mentoring, and opportunities to learn outside of normal work activities. One student from the Office of Location and Environment even commented that the internship felt more like school than a job.

The most common disappointment encountered among the interns was the level of challenge of the work assignments. Many felt that they were prepared to take on more technically-difficult tasks or shoulder more responsibility. However, several of these interns were cognizant of the difficulties associated with bringing new interns up-to-speed in a short time and stated that the level of challenge improved over the course of the summer.

Another occasional complaint was that the person(s) working directly with the intern seemed unprepared at the beginning of the summer to use the intern productively. It should be noted here that, in many cases, the DOT employee directing and making work assignments for the intern was not the person listed as the intern's official supervisor. Some interns also reported periods with nothing to do often related to weather.

Regarding the mentoring provided through InTrans, most of the interns indicated that the level of contact with their mentor seemed about right. Of the interns stationed in Ames, many also said that they would have enjoyed more opportunity for face-to-face contact (maybe meeting in a small group setting for lunch once a month or so).

Interns also commonly identified and appreciated the mentor's role as an intern advocate outside the DOT organization to whom they could turn for advice with conflicts in the workplace. This aspect of the mentoring program was exercised by three interns that felt caught up in conflicts among full-time employees.

Some interns also stated that they appreciated the opportunity to discuss big-picture issues such as long-term careers, engineering challenges, and education.

The progress reports were well received generally in terms of length and frequency. Several students followed mentor advice to track their activities on a daily or weekly schedule and stated that this regimen helped them reflect on their overall experience. Others clearly were glad that the progress reports were relatively infrequent and could be completed in a cursory way with little effort if so desired by the intern.

4.2 Intern Videos

The Iowa DOT requested that interns develop a short video describing their work experience, which would provide anecdotal information on what went well and what did not. The videos were requested so that the DOT could use the material for recruiting and to assess the success of the program.

Even with several emails sent to all summer interns by ISU faculty and Iowa DOT staff, the interns found the video portion of their final report somewhat confusing and unclear how to complete. Nonetheless, 60 videos were submitted to the Iowa DOT (Mike Coon).

The video assignment received mixed reviews. Some interns took the assignment seriously and were creative in assembling group videos discussing their internships. Others definitely felt pushed outside their comfort zone and would have preferred a written format. Still others indicated that with no quality control, they just produced a low-quality video that had marginal value to themselves or anyone else.

In addition, the large file sizes generated by the assignment led to difficulty in sending videos by email and caused considerable issues in delivering the assignment on time. This aspect of the video assignment, if continued, should be streamlined in the future.

4.3 Summary of Supervisor Feedback

In an effort to gather written feedback from supervisors at the end of the summer internship program, a survey was prepared and sent to all Iowa DOT supervisors in the form of a link to a SurveyMonkey survey that was sent via email on August 9, 2013. The survey questions are shown in Appendix D.

Of the 30 supervisors who were sent the survey invitation, 14 completed the survey (47 percent). The survey was deactivated and the results were downloaded from SurveyMonkey on September 6, 2013. A compilation of the results is provided in Appendix E. A few selected quotes from supervisor responses follow:

I believe the program is positive. Summer help, Internships, or Co-op programs are excellent for the intern and the employer. We were able to cover staffing gaps while providing the students an opportunity to learn hands on.

It is a great program to help future engineers to gain practical experience and also help with inspection in the field.

Students were very positive and eager to learn.

As with any intern program, they not only help us fill a staffing void, but possibly improve our ability to hire experienced interns full-time.

When asked to suggest improvements to the summer intern program, supervisor responses varied considerably depending on the type of work the interns were performing. Appendix E lists all of the responding supervisors' comments and suggestions. Here are a few selected ones:

Requiring interns to submit a video was not executed well.

This can't just be an engineering focused program. It is silly to have admin interns being mentored by engineering professors. It is my job to mentor my intern and provide him with resources and connections within the GIS field.

Let the applicants know of the potential working at night and over the weekend so that they are aware of the potential work hours before applying.

Make mentoring the responsibility of the supervisor or key employee in the intern's office.

It would save a little time to get all the training and certification classes out of the way before starting.

When asked to rate the effectiveness of the summer intern program, the supervisors responded as shown in Table 4.2. As noted, the numerical average exceeded 4 on a scale of 5 in all three categories, which is a rating of very effective to highly effective.

Table 4.2. Summary of supervisor responses

Answer Options	Ineffective 1	Marginally effective 2	Neutral 3	Very effective 4	Highly effective 5	Rating Average Out of 5	Response Count
Providing you the personnel to complete your work load	0	0	2	4	4	4.2	10
Preparing the intern for their professional career	0	0	0	7	2	4.22	9
Identifying potential future employees	0	0	4	0	5	4.11	9

5. SUMMARY

5.1 Summary of Experiences and Recommendations

The following summarizes lessons learned from the summer 2013 internship mentoring program. The lessons learned are provided in bullet points. Recommendations to address items that were a concern are provided as separate paragraphs that follow the last eight bullet items (and are highlighted in red text).

- Most supervisors provided a mentor relationship with their summer interns, and the interns appreciated the efforts of their mentor.
- The majority of the summer interns identified in their final progress reports that they learned many new skills and gained a better understanding of how projects are constructed.
- The Iowa DOT internship program was deemed successful overall by students. Almost half of the summer interns that worked outside of the Ames Iowa DOT offices and 70 percent of interns at the Ames offices replied that they definitely would or most likely would apply for full-time employment with the Iowa DOT after graduation. Interns with even just one year of engineering education prior to their internship found the learning experience very beneficial.
- During the initial orientation presentation, ISU mentors emphasized that the internship is a great opportunity to explore the career opportunities at the Iowa DOT and it is also the opportunity for the Iowa DOT to get to know them as potential full-time employees. This may have better prepared interns to consider employment in the long term with the Iowa DOT.
- Mentoring an intern on a remote job site by ISU mentors proved to be very difficult and, by the end of the summer, it was difficult to connect and mentor every intern that worked outside of the Ames offices. This mentoring proved to be very difficult due to the lack of face-to-face communication. Whereas, the interns that were based in Ames were very accessible to the ISU faculty member and that allowed mentoring during face-to-face meetings over lunch.

More than 50% of off-site and 70% of Ames-based interns said they would be likely to apply for full-time employment with the Iowa DOT after graduation

ISU mentors attempted to visit each intern during the previous year's mentoring program. This proved too time and resource intensive for the ISU team and was modified to phone contacts for remote interns for the 2013 program. As noted, this was less effective. The in-person mentoring for 2013 appeared to be very effective but is only realistic for interns at the Ames Iowa DOT offices.

If future mentoring is provided for the Iowa DOT internship program, the team suggests providing remote interns with ISU mentor contact information but otherwise not using resources to attempt to contact these interns.

Remote interns submitted all progress reports, so this aspect of the mentoring process could be retained. In addition, ISU mentors could make site visits to a few select offices that are interested and have a sufficient number of interns to make the visits cost effective. In these cases, it may be best to work with intern supervisors who are motivated to improve their mentoring skills and leave the mentoring to the interns' supervisors.

- For interns stationed in Ames, the ISU mentoring experience appeared to be more fruitful. An additional benefit of discussing bigger picture issues beyond the scope of the internship was more feasible. To truly establish the personal rapport that makes such mentoring beneficial, interns and mentors should meet face-to-face at least in small group settings (no more than five interns per meeting) a few times over the course of the summer. Such meetings should be entirely voluntary on the part of the intern.

The face-to-face lunch meetings appeared to be beneficial. The team recommends incorporating this as an informal task into future mentorship.

- Mentoring interns that are not engineering students by engineering faculty created some dissatisfaction with one supervisor.

The team suggests that the Iowa DOT considers assigning interns to offices with supervisors who have the skills to mentor interns in their own fields.

Non-engineering interns may be more receptive to mentors with professional experience in their own field. Feedback from such students this summer revealed that most of these students were generally successful in establishing mentoring relationships with their Iowa DOT supervisors.

- The initial orientation session that was held in mid-May proved to be effective in communicating the overall expectations of the DOT to the new interns. For interns that will work in materials testing and inspections, several supervisors suggested that all certification of interns in the many materials testing methods be completed before sending the intern to the remote Iowa DOT office.

It is recommended that the Iowa DOT continue with the orientation workshops. For the summer interns assigned to remote offices and job duties that include materials testing, the initial training and certification of each intern should be completed prior to sending the intern to the remote office. This training and certification could potentially be done during the orientation workshops.

- Most supervisors seemed prepared for summer interns and worked to make the experience positive. Most field office supervisors commented that they specifically planned to vary the type of field experiences that their intern received in an effort to broaden the student's experiences.

It is not known how many supervisors utilized the discipline-specific material that was developed. However, it appears that supervisors and interns benefit from having suggestions as to what activities interns can complete to draw links to what they learn in the classroom.

Alternatively, it may be useful to poll supervisors to determine what material could be reinforced in the classroom to help students as they prepare to enter the workforce.

- The communications between ISU mentors and Iowa DOT supervisors sparked several useful conversations. Cormicle worked with supervisors in the remote offices and was able to answer the supervisors' questions and listen to their concerns. From these conversations, Cormicle developed the list of questions for the Supervisors Survey. In return, the survey results repeated almost every suggested improvement and concern that the supervisors shared. The ISU mentors felt that one of the greatest values offered was in connecting with the supervisors, answering their questions, and gathering their input.

The team recommends continuing the supervisor surveys, which can provide useful feedback to the Iowa DOT in improving the internship program.

- Common complaints from interns about the overall internship experience include the following: disappointment in the level of challenge of the work assignments, supervisors being unprepared at the beginning of the summer to use the intern productively, and down time due to weather.

When a supervisor is deciding to hire an intern, a written plan should be developed outlining planned duties, educational components, and day-to-day supervision. Faculty mentors could participate in this process before internships begin to initiate a continuous improvement plan for the internship program.

One suggestion is to have a long-term, high-challenge project in place for each intern to work on during slow times. This could get interns more invested in the DOT, relieve pressure on supervisors to keep interns busy, help identify highly-motivated students, generate topics for research, and potentially promote unconventional approaches to long-standing difficulties.

Another possibility might be to rotate interns between different offices in mid-summer to provide the intern more variety in the types of field experiences.

One intern who had also had an internship with the DOT last summer doing field work stated that the field work helped him tremendously in gaining perspective on his office internship in the current summer as well as his courses at ISU. Perhaps younger interns should be directed toward field work while more advanced students should be directed to office/laboratory postings.

The Iowa DOT could consider holding a workshop between mentors and Iowa DOT supervisors similar to the internship orientation workshop. The meeting could be held via video or teleconference. The objective would be to help supervisors plan components of the internship before they begin. This could become part of a continuous improvement plan for the intern program as a whole.

- The intern video assignment was productive but concerns were expressed. Even with several email messages to all summer interns by ISU faculty and Iowa DOT staff, interns found the video portion of their final report somewhat confusing and unclear how to complete.

It was difficult to follow up and have interns complete the video assignments. It may be more useful to have an Iowa DOT or InTrans media person contact a few select students, make appointments, and videotape and process the videos. If the Iowa DOT wishes to continue having all interns make a video, the best solution would be to require Iowa DOT intern supervisors to work with the students to finalize this.

The video assignments were productive, but technology for handling large files should be researched and in place to streamline submission of the videos. A reward for producing the best video could enhance student effort on this assignment.

5.2 Program Benefits

Several benefits resulted from the mentoring program. Benefits for the Iowa DOT include the following:

- The experiences provided by the mentoring program made the internship more productive, which is likely to lead to a larger number of students considering the Iowa DOT for employment after graduation.
- Mentoring experts were able to provide their expertise without requiring the additional Iowa DOT staff.
- Students generally appreciated having a resource outside the DOT to whom they could turn for advice for workplace conflicts. Such conflicts did and do arise occasionally in many work environments. In one instance, the ISU mentors served as an outside advocate to help troubleshoot workplace conflicts that could have resulted in interns terminating their internship with the DOT. Instead of leaving with a bad experience, which may have been communicated to future potential interns and workers, the issues were resolved in a positive manner benefiting both the Iowa DOT and interns.
- The “menu” of experiences developed for each field provided interested supervisors with additional tools to make the internship more meaningful.

The main benefit is that student interns may be more likely to consider a career with the Iowa DOT after graduation

Several benefits resulted for the interns, including the following:

- The field-specific “menu” of beneficial activities and experiences developed by ISU provided ideas for supervisors to enhance the educational experience of their interns as well as provided opportunities for enterprising interns to seek out.
- The field-specific progress report templates provided to interns guided them to track their activities, reflect on their internship experience, and consider their future careers.

- Serving as an intern advocate outside of the DOT organization allowed ISU mentors to help troubleshoot workplace conflicts that may seem particularly acute to short-term interns.
- Reviewing progress reports allowed mentors to assess the educational component of intern work assignments and make suggestions as deemed appropriate.
- Meeting face-to-face for interns stationed in Ames provided an opportunity to discuss big-picture issues that often get pushed aside in students' daily lives. Such issues included living in Ames, the DOT work environment, career goals, work-family priorities, real-world engineering challenges, and career experiences.
- The program helps foster ongoing relationships between faculty and students.
- The initiative provided an organization-wide perspective and critique regarding a very large intern development program.

APPENDIX A. SAMPLE STUDENT PROGRESS REPORT AND INTERN INFORMATION

Name: University: Iowa State Major: Construction Engineering
DOT Office: Des Moines DOT Supervisor: r Mentor: Larry Cormicle

2013 Iowa DOT Summer Internship Progress Report

- Fill out your answers and e-mail a soft copy of your report to your faculty mentor
- Mid-term report due Monday, June 24 by 5:00 pm
- End-of-term report due Friday, August 9 by 5:00 pm
- End-of-term video report due Friday, August 9 by 5:00 pm. Acceptable file types: AVI, MPG4, MPG2, WMV, H.264 (which is what most smart phones send). File naming convention: Jane_Doe_midterm.doc.

In what work activities have you been primarily engaged?

This summer, I have primarily been out in the field working with inspectors. This kind of work includes a little bit of everything from running errands to witnessing and taking part in quantity takeoffs. I have done some material testing for both concrete (air and slump tests) and soil (moisture test) quite a few times. I have also been able to witness and learn all the different phases of construction for paving, bridge structures, lane and bridge expansion, and pipe jacking.

In which of the activities listed on the back of this page have you participated? Please fill in the table with the requested information.

All the activities I have participated in are filled in the table on the following page. The dates were not originally recorded for these activities so the dates given are close guesses.

How has your prior coursework at your university prepared you to perform the duties assigned to you? Are there specific courses that have been particularly well supplemented or augmented by your internship?

My prior coursework has introduced me to the environment that I currently work in. Heavy equipment, processes of construction, plans, and construction terms/vocabulary are all things that have been introduced to me via textbooks which I have now seen in action out in the field. I'm sure that future courses will also be enhanced as a result from my internship with the DOT.

What skills (e.g. public speaking, teamwork, plan reading, application of statistics, etc.) have you had to learn/hone this summer as part of your intern job?

I have been able to implement and polish all of the skills listed above during the course of my internship. Working out on projects requires a number of skills and abilities ranging from working with different companies/people to being able to conduct material tests. The only set of skills for me that did not improve was my math and physics simply because I worked out on projects which consisted of more hands on work.

What software have you used on the job?

For my job, I'm primarily working out in the field. Therefore, the only software I have had to deal with is for my time sheets. Currently, I cannot recall the name of the software.

What have you learned from your internship about your chosen career (e.g. civil engineering, accounting, etc.) that you previously did not know?

From this internship, I learned that I have chosen the right career path. I initially attended Iowa State as an undecided engineering major but was drawn to construction engineering my sophomore year. This hands-on experience has personally introduced me to the industry and has aided my confidence in the career path that I have chosen. I have also learned the numerous employment opportunities that await me in the construction industry. These many opportunities can include anything from an inspector/project manager to a regional engineer or president of a construction firm.

What are the most significant challenges you have encountered in your work this summer?

This internship has been pretty smooth throughout the whole summer so the only challenges I've faced were the certification classes for sampling which were hardly a challenge.

How likely are you to seek permanent employment with the Iowa DOT after you complete your degree? (circle one)

☒ 1 Will Definitely Apply 2 3 Undecided 4 5 I Don't Plan to Apply

Are you having any ongoing difficulties with which your mentor might help?

Not at the moment.

2013 Iowa DOT Engineering Intern Development and Management Program
Intern Mid-term Progress Report/ Intern Final Report

Mid-term report due: Monday, June 24, 2013

Final report due: Friday, August 9, 2013

	Project	Dates
1. Communication		
Participate in/Observe meetings	297	5-20-13
Make a formal presentation to supervisor or other construction team members		
Write a formal report to supervisor		
Write a memorandum to supervisor or construction team		
Make a short video presentation about your experience as an IDOT intern		8-9-13
Write a hand-written thank-you to someone who helped improve your intern experience		
2. Understand business relationships/team building		
Attend a public hearing		
Attend a preconstruction meeting		
Attend a prebid meeting		
Observe a bid letting		
Learn about pre-qualification and bid requirements		
3. Application of Commercial Software		
Microsoft Office (Word, Excel, PowerPoint, Access)		
Other software applications (Timesheet application)	297	Daily
4. Construction Observation		

Observe/inspect different phases of construction for a bridge project	297	Daily
Foundations	297	5-27-13
Vertical structures	297	6-4-13
Beams and Decks	297	6-11-13
Approaches		
Observe/inspect different phases of construction for a road project	297	5-20-13
Demolition/patching of pavement		
Grinding and surface preparation of pavement	297	5-28-13
ACC Pavement: inspection and QC/QA		
PCC Pavement: inspection and QC/QA	297	5-20-13
Jobsite and Traffic Safety	351	7-15-13
Tasks		
Field observations and inspections	297	Daily
Quantity surveys	297	6-17-13
Certification of quantities	297	6-17-13
Materials testing: concrete, soils, aggregates, hot-mix asphalt	297	6-3-13

APPENDIX B. DISCIPLINE-SPECIFIC MATERIAL

Material Provided to All Interns

	Project	Dates
1. Communication		
Participate in/Observe meetings		
Make a formal presentation to supervisor or other construction team members		
Write a formal report to supervisor		
Write a memorandum to supervisor or construction team		
Make a short video presentation about your experience as an IDOT intern		
Write a hand-written thank-you to someone who helped improve your intern experience		
2. Understand business relationships/team building		
Attend a public hearing		
Attend a preconstruction meeting		
Attend a prebid meeting		
Observe a bid letting		
Learn about pre-qualification and bid requirements		
3. Application of Commercial Software		
Microsoft Office (Word, Excel, PowerPoint, Access)		
Other software applications (name or list)		

Material for Interns in Construction

	Project	Dates
Construction Observation		
Observe/inspect different phases of construction for a bridge project		
Foundations		
Vertical structures		
Beams and Decks		
Approaches		
Observe/inspect different phases of construction for a road project		
Demolition/patching of pavement		
Grinding and surface preparation of pavement		
ACC Pavement: inspection and QC/QA		
PCC Pavement: inspection and QC/QA		
Jobsite and Traffic Safety		
Tasks		
Field observations and inspections		
Quantity surveys		
Certification of quantities		
Materials testing: concrete, soils, aggregates, hot-mix asphalt		

Material for Interns in Human Resources

	Project	Dates
Human Resources Department		
Manage data base for Pre-qualifications of DBE vendors (suppliers and contractors)		
Manage personnel data base (demographic data analysis)		
Develop Employee Safety Training materials		

Material for Interns in Marketing

	Project	Dates
Marketing		
Orient yourself with the web content management system that your unit provides. Popular web content management systems include WordPress, Drupal, Joomla!, etc.		
Become familiar with the style of writing appropriate for websites.		
Associated Press style is the publishing style of choice for communicating to a lay audience.		
For news articles, learn search engine optimization (SEO) writing style.		
Learn design software that assists in web publishing		
Study the audience for which you provide content.		
Integrate one-way, two-way, or social communication within website, even if it means linking to social media pages		
Create a Google Analytics account for your website.		

Material for Interns in Environmental

	Project	Dates
Location and Environment		
Help prepare an environmental impact statement		
Develop site specific plans for wetland mitigation		
Develop site specific plans for stream mitigation		
Learn air-quality management strategies		
Use GIS to catalog and manage environmental data		
Determine run-off flow and help design drainage plan		

Material for Interns in Finance

	Project	Dates
Accounting		
Familiarize yourself with the Iowa DOT chart of accounts and what constitutes their accounting cycle		
Learn how source documents are reviewed, approved, and posted to chart of accounts		
Depending on the division assigned learn about budgeting items, budget development, and budget process timelines		
Learn about accounting deadlines and importance of deadlines		
Practice communicating accounting information to non-accountants		

Material for Interns in Materials

	Project	Dates
Materials		
Observe lab and field tests for AC pavements		
Sampling, sieve analysis, specific gravity, binder tests, volumetrics		
Perform a flexible pavement analysis and design		
Marshall mix design, AASHTO and AI techniques, Superpave		
Observe lab and field tests for PC pavements		
Aggregate tests, cement tests, slump, air, MOR, compressive str.,		
Splitting tensile, coring, smoothness testing, joint sealing, etc.		
Perform a rigid pavement analysis and design		
PCC mix design, AASHTO and PCA techniques		
Observe lab and field test for unbound materials		
Sampling, consistency, classification, compaction, strength, etc.		
Observe non-destructive testing for ACC and PCC pavements		
Learn retrofit and repair techniques for ACC and PCC pavements		

Material for Interns in Traffic and Safety

	Project	Dates
Traffic and Safety		
Conduct a spot speed study, calculate mean speed, standard deviation, 85th percentile speed, and 10 mph pace		
Conduct an intersection turning moving count		
Calculate the crash rate for a segment or intersection		
Review a collision diagram and identify the most common crash types		
Conduct a volume study, calculate ADT, headway, and fleet mix		
Calculate LOS for an intersection or other roadway facility		
Calculate the optimal phasing for a simple 2 phase intersection		
Conduct a safety audit		
Check sign and/or pavement marking retroreflectivity		
Evaluate stop sign compliance		
Conduct an environmental impact statement		

Material for Interns in Highway Design

	Project	Dates
Highway Design		
Conduct a location survey		
Compute a mass diagram		
Design a horizontal and/or vertical curve		
participate in development of an environmental impact statement		
Compute design hourly volume		
Design a roadway cross-section		
Design a bicycle or pedestrian facility		
Determine run-off flow		
Design a culvert		

APPENDIX C. INTERN ORIENTATION AGENDA

2013 Summer Student Intern Program

Iowa Department of Transportation

Ames, IA

SPEAKER	TOPIC
7:30-8:00 AM	CHECK IN
8:00-8:10 AM	Max Grogg / DOT Staff
8:10-8:40 AM	Von Richards / Rhonda Giebelstein
8:40-9:40 AM	Mike Harvey
9:40-9:50 AM	BREAK
9:50-10:00 AM	Jim Peters
10:00-10:15 AM	Kelly Bunting / Linda Thede
10:15-10:35 AM	Linda Anderson
10:35-10:45 AM	BREAK
10:45-11:45 AM	Matt Rouse / Larry Cormicle
11:45 AM-12:45 PM	Lunch
1:00-1:30 PM	Jim Peters
1:30 PM	Non-engineering students are dismissed. If possible, return to your assigned work location.
1:30-2:30 PM	Mark Bortle
2:30-2:45 PM	BREAK
2:45-4:15 PM	Jim Peters / Mike Harvey
4:15-4:30 PM	Wrap Up

APPENDIX D. SUPERVISOR SURVEY

Iowa DOT Supervisor's End of Summer Intern Program Survey-Summer

INTRODUCTION

As part of the Iowa Department of Transportation Summer Internship program for the Summer of 2013, we are requesting that all Iowa DOT Supervisors complete this end of work term survey. Responses to this survey will be gathered and shared with the Iowa DOT management team in an effort to judge the effectiveness and success of this intern program. You are encouraged to answer all questions and complete responses to all requests for feedback.

The survey is structured as a "PLUS" - "DELTA" survey.

In other words,

"What went well with the summer intern program?"

"What improvements would you suggest to make the summer intern program more effective?"

All respondents must identify themselves, yet your responses will not have names attached to them. Submitting your name as a supervisor is used to track the goal of full responses to the supervisor survey.

Iowa DOT Supervisor's End of Summer Intern Program Survey-Summer

*** 1. What is your first name?**

*** 2. What is your last name?**

*** 3. What is the job title for your current position?**

*** 4. What is your Iowa DOT email address?**

*** 5. At which Iowa DOT location do you work?**

*** 6. What is your Iowa DOT office phone number?**

*** 7. List the name(s) of the student intern employees that worked under your supervision this summer.**

Intern employee's first and name:

Intern employee's first and name:

Intern employee's first and name:

Intern employee's first and name:

Intern employee's first and name:

Intern employee's first and name:

Intern employee's first and name:

Intern employee's first and name:

*** 8. Please comment on the overall effectiveness of the summer intern program.**

Iowa DOT Supervisor's End of Summer Intern Program Survey-Summer

***9. What features of the summer intern program did you find worked well?**

10. What features or parts of the summer internship program could be improved?

***11. How would you suggest the summer internship program be changed in a future summer to improve it overall?**

12. Please rate the effectiveness of the summer intern program by completing the chart below:

	Ineffective	Marginally effective	Neutral	Very effective	Highly effective	N/A
Providing you the personnel to complete your work load	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Preparing the intern for their professional career	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Identifying potential future employees	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

13. What skills should the student interns be trained in prior to being sent to work at your location? (i.e. materials testing certification, etc...)

14. How prepared was the intern to work on their intern job duties and responsibilities?

	Not prepared	Somewhat prepared	Prepared	Well prepared	Highly prepared
Intern preparedness for intern job duties and responsibilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Iowa DOT Supervisor's End of Summer Intern Program Survey-Summer

SUMMARY

Thank you for your participation in this survey.

Your input will be shared with the Iowa DOT management team and all comments and suggestions will be summarized for further consideration.

Please contact Larry Cormicle if you are experiencing any difficulties in completing and submitting this supervisor's survey.

Larry W. Cormicle, P.E.
Iowa State University
454 Town Engineering Building
Ames, IA 50011
Phone: 515-294-8299
Email: cormicle@iastate.edu

APPENDIX E. SUPERVISOR SURVEY RESPONSES

Responses to the Supervisor Survey are included in this appendix. (Questions 1 through 7 gathered identification information, as shown in in Appendix D, and are not included here.)

Q8. Please comment on the overall effectiveness of the summer intern program.

- Very effective
- this was great, not only did the students learned something I got a valuable resource in return
- I thought it worked very well. Our 2 interns were able to develop final plans for 4 different projects using several of our design automation tools
- We were very fortunate to have 3 excellent interns working for us. All 3 would be welcomed back at any time.
- Overall program parameters work well for both the Department and interns.
- The summer intern program was very effective in all aspects. As the DOT, we were able to work with some bright young students that may become part of the DOT in the future. The help they provided allowed us to survive a summer when our assets were stretched.
- The students learned quickly and were able to assist inspection staff with projects effectively.
- I feel the summer intern program is great opportunity for the interns to get an idea for the type of engineering they plan to pursue.
- I believe the program is positive. Summer help, Internships, or Co-op programs are excellent for the intern and the employer. We were able to cover staffing gaps while providing the students an opportunity to learn hands on.
- Overall, the program was excellent. The interns were incredibly talented and became valuable members of our team. There were some glitches in regards to communication with the program and the mentoring piece administered through Iowa State was convoluted and not executed well.
- It seemed to work okay. Fortunately, I only had one intern who performed very well.
- I got pretty lucky this time with an intern who is intelligent and a go getter. He has been able to follow instructions well and provide added value. I am very pleased he is willing to stay on through the school year to maintain continuity.
- It is a great program to help future engineers to gain practical experience and also help with inspection in the field.
- I felt the internship with the Office of Location and Environment offered the students a professional learning environment. We were fortunate to have a very eager group of students and I think their willingness to learn new things was appreciated.

Q9. What features of the summer intern program did you find worked well?

- Students were very positive and eager to learn.
- rotated interns to different types of work
- Full-Time commitment Junior/Senior experience
- Our three interns were hard workers and caught on well to the construction/survey process.
- Orientation adequately prepared the intern for work with minimal effort required from the assigned office

- We were able to rotate our interns through the separate areas allowing them to work a variety of assignments.
- Ease of selection and hiring.
- I liked the interns being put on the RMS timesheet system.
- The hands on work the interns were able to perform.
- Having the opportunity to have interns full-time.
- As with any intern program, they not only help us fill a staffing void, but possibly improve our ability to hire experienced interns full-time.
- 40 hours a week of focus have been great.
- Additional help with inspection.
- Our office developed a learning plan and objectives. At the end of their internship we had them do a presentation on what they learned (research topic).

Q10. What features or parts of the summer internship program could be improved?

- none
- I felt bad that our office was slow this summer as far as construction work was concerned. I would have liked to get them a lot more experience.
- Have the interns provide more specific information about their personal interests and goals as well as abilities and skills as part of the application and screening process...
- No changes.
- Wish they could stay another month in the fall, but school starts. If material cert classes could be taught as part of the university curriculum, then spring start up could be quicker
- The evaluation portion. Many of the questions are difficult to answer as the role the intern has does not necessarily provide them an opportunity to be involved the extensive questions listed. The goal is to get real world experience for the intern. Some of the questions are difficult to apply.
- Requiring interns to submit a video was not executed well. The necessary quality, scope of video was not communicated. The full role the videographer would play was not discussed with Strategic Comm/videographer ahead of time and was miscommunicated to interns. Also, logistics of the video submission process were not explored ahead of time and communicated to the interns. Also, much of the communication to the interns, especially from the ISU mentors were sent to their school addresses which weren't checked regularly. This meant my interns missed appointments with their mentor. ISU mentors were also engineering professors who could not relate to the experiences my interns were having in the communications field.
- I can't think of any now that we hire the intern (as opposed to last year where they were hired by a consultant and loaned to us).
- This can't just be an engineering focused program. It is silly to have admin interns being mentored by engineering professors. It is my job to mentor my intern and provide him with resources and connections within the GIS field. As the chair of the Iowa GIS group right now you should leverage some of these professional groups if you want everyday professionals helping guide these kids in their future careers.
- Let the applicants know of the potential working at night and over the weekend so that they are aware of the potential work hours before applying.
- Since not all of the interns were from Iowa State, I felt that some of our interns were

confused about their obligations. I felt the communication on what was expected from the students may have been a little better. Our interns were not clear on the objective for most of their tasks assigned to them from their mentor.

Q11. How would you suggest the summer internship program be changed in a future summer to improve it overall?

- Provide a more condensed, streamlined training (fewer days, all in the same week).
- Allow extra hours
- Provisions to continue part time thru the following semester.
- Would be nice to have them here until the end of the first semester.
- See no 10... overall been pleased with the program and desire to seek input from both the department and interns with an interest to make improvements that benefit all...
- No changes.
- Allow for a couple of coop students to stay thru the fall
- Seems to be working fine.
- I have no suggestions.
- Make mentoring the responsibility of the supervisor or key employee in the intern's office. Have key subject areas or questions they need to go over to guide them and make it a requirement that they meet for a set amount of time on a regular basis (so they schedule the time.) Give students the option to do a summary of the program in a format they are comfortable with: written paper, video, PPT/Prezi presentation etc. Make sure once an intern has a DOT address that communication is coming to that email, not their school email. Make sure communication is clear, well spelled out and if DOT staff is supposed to deliver something make sure they can deliver it before you communicate it to the interns. Finally, your form on question #12 doesn't allow you to rate each area. I would rate them all as "Highly Effective."
- No suggestions.
- Have a separate focus/training/requirements for non-engineering based positions. Go at this with the assumption that this will be a 12 month program for some of the kids so they can make plans farther in advance if they end up being a good fit.
- It would save a little time to get all the training and certification classes out of the way before starting.
- There is always room for improvement, but I cannot think of anything specific. Maybe written objectives and task lists would be beneficial and they should be shared with the supervisor.

Q12. Please rate the effectiveness of the summer intern program by completing the chart below (summary of results are filled in here):

Answer Options	Ineffective 1	Marginally effective 2	Neutral 3	Very effective 4	Highly effective 5	Rating Average Out of 5	Response Count
Providing you the personnel to complete your work load	0	0	2	4	4	4.2	10
Preparing the intern for their professional career	0	0	0	7	2	4.22	9
Identifying potential future employees	0	0	4	0	5	4.11	9

Q13. What skills should the student interns be trained in prior to being sent to work at your location? (i.e., materials testing certification, etc...)

- material testing in associated to construction
- Survey Roadway Design
- nothing to add
- not as much about technical skills as much as personnel interest, attitude and a high desire to learn and work...
- The interns need to have Aggregate 1 & 2, PCC1 and HMA sampler at a minimum. These certifications can be completed at the beginning of the summer.
- Materials testing certifications
- Materials testing
- The training will be done on site. The materials testing is something that we did within the District. I view most all the training needed would be provided by the work location.
- My interns came in with the necessary skills.
- Agg 1 & 2, PCC 1 and HMA Sampler Certifications under the IA DOT Certification courses (which can and was structured very well prior to coming to work for us). Also, just basic reporting skills.
- Basic GIS software skills
- Materials certifications.
- How to use GIS and GPS equipment and have familiarity with CAD software (specifically MicroStation).

Q14. How prepared was the intern to work on their intern job duties and responsibilities? (summary of results are filled in here)

Answer Options	Not prepared 1	Somewhat prepared 2	Prepared 3	Well prepared 4	Highly prepared 5	Rating Average Out of 5	Response Count
Intern preparedness for intern job duties and responsibilities	0	2	3	7	2	3.64	14