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Mentoring Events

May 11, 2016 – Mentoring Mid-point Energizer 9am–noon at RedRossa in Hills/Highland Meeting Room in Pierre

July 19, - Mentoring Forum from 10am–Noon
Topic: Challenges in Travel Faced by People with Disabilities
Speaker: Kristi Eisenbraun, Miss Wheelchair South Dakota 2016

DOT News Available Online!

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TABLE OF CONTENTS

Evolution

Environmental Stewardship

Mitchell Celebrate Safety Days

New Project Delivery Team

Mentoring Corner

Communication & Employee Engagement

Bridge Inspections

Secretary's Corner

Cash Forecasting

Training, TRAC & EIT's

"Dignity"

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Evolution....

by Dean VanDeWiele, Pierre Area Engineer

When talking to the girls fastpitch team that I coach, I'm taken aback when I reference the movies "Sand Lot", "Bull Durham" and "Tommy Boy" and they have no idea what I'm talking about. I don't feel that old, but when I think about it, that was 25 years ago, and there's been a lot of evolution since that time.

As a kid, I was growing up in the days of 8-tracks, bell bottoms, pinball machines, Elvis and the revolutionary brain fart known as the "lawn dart". Yesss, there's a beer drinking game for you. When talking to those folks who started their careers in the 60's & 70's, they would tell you about measuring with planimeters, big drafting tables, smoking in the offices (w/state issued ash trays), comp time in lieu of overtime, file cabinets galore, plan rooms, leaded gas and snow plows w/internal heaters that would ensure your food would stay cold for the duration of your round.

Lee Iacocca influenced our 80's w/the "K" car...a hint better than the AMC Gremlin, but not much. DOT gobbled the "K" car up like Pac Man along w/our Datsun pickups. Computers were coming onto the scene and our design offices were transitioning from pen and paper to keyboards and screens. The computer was on a cart, and rolled around Road Design where you got to utilize the computer for a set amount of time to run your earthwork. If you had any questions, you could call out on the squad shared land line phone. Old plans could be reviewed on microfiche, and we could drive the roads w/video log. The 286 and 386 computers were monsters of the day, and 4 MG of RAM was a lot of memory. The 5 ¼" floppy was replaced by the 3 ½" disc, and whoah was it big when the CD came on the scene. As long as you didn't scratch it, memory was huge, and music/data quality was preserved.

We brought in bag phones in the 90's, and wasn't I a cool dude with my 3-watt bag phone w/ oversized digits in my 89 Chevy(non-extended cab, non AC, with an AM Delco radio, since AC and FM were considered luxuries, and would keep a young engineer sitting in his truck). What is this email thing, and I wonder if this will stick around? CEAL(green screen field office earthwork software) and IGRDS(Road Design earthwork software) went to the wayside for InRoads. Total stations came on the scene, and heaven forbid we blue top with this technology. We got rid of the single axle plow, the hammerhead came and went, Microsoft office became our standard, and the gridded green engineering paper became scarce, with Excel being the new norm. Computer memory was needed at an exponential rate, and a personal computer was now in every cubicle, every field office, w/every maintenance supervisor, and every lead worker. And we entered Power Point heaven or hell....you decide.

In the 2000's life got even faster. Flip phones started to replace CB radios, and the American w/ Disabilities(ADA) Act became front and center. We were now cognizant of ADA in our projects and our buildings - many a DOT office/shop/rest area were being reviewed and re-designed with ADA in mind. Most snow plows finally had a warm cab for the driver and a warm shop to rest in at night. And the science of snow removal took the leap of faith going to 100% salt application w/MgCl or salt brine(which is better between MgCl and salt brine is a conversation that can entertain for hours pending who you talk to). Plow trucks became $200,000 computers on wheels, with an MIT degree and 200 hours of Xbox experience necessary to properly operate. Storm water and environmental preservation became a part of every facet of DOT. ASD went to LRFD. In the mid 2000's, technology started sprinting into our lives even faster w/the introduction of 511, the smart phone, the one call process, Sub surface utility exploration(SUE-thank you Mr. Hausmann), online plan reviews, inter-connect fiber, the pdf(what the heck's a pdf?), LEDS, high tension cable, PICs, access management, Primavera, Oman Systems, IRIS, MDSS...Lions & Tigers and Bears oh my.

continued on page 3

“We Don’t Recognize You”

continued from page 2

Whoah!! VanDeWiele….is there a point to all this jibber jabber? Thought you’d never ask…(and after this cranial upchuck, may never be asked again!)

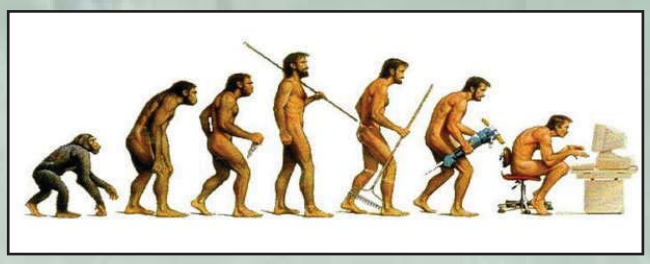
It always amazes me in talking to retired DOT when they come to visit, how they don’t “recognize” it anymore. Is it the people, or is it the processes? Maybe its both…Of all the things I mentioned, one of the biggest evolutions I have seen is the disposition of the department towards it’s greatest asset; it’s people.

The attempt to communicate and be transparent is at an all-time high. Our internet, intranet, newsletters, shared drives, manuals, and folders are now at our fingertips. In my short time w/the Pierre Area office, we’ve added monthly division reports, Twitter accounts(had to borrow a suit coat for that photo), and this article you find yourself reading as another attempt to make our department smaller and more personable.

The ACEs review process is designed to develop the employee and focus on training, while giving that ever valuable feedback. The time and effort that goes into this process is a testament of how important our staff is. The department now actively conducts surveys to get feedback on how to improve our workplace. Because it is….OUR workplace.

Administration (your immediate supervisors) reviews this feedback and is taking an active role (and being held accountable) to work on opportunities to improve our workplace. Staff is very active in strategic planning tackling items like contract time, backing accidents, encroachments, road reporting, crash mitigation, project finaling, etc. Bottom line; If you haven’t found an opportunity to contribute, influence, or better your workplace, you haven’t been looking. Never before has the opportunity to create a DOT for the people, by the people been so apparent.

Do I like all this change? I would be lying if I said “Yes”, I’m a creature of habit like everyone else. And sometimes going back down memory lane riding in my brothers ‘73 Mustang with an AC/DC 8-track blaring and the wind in my hair (no gray then) just sounds appealing (and relaxing relative to todays norm).



Clarence Denouden, Jeff Senst, Tom Reiger, Tom Gilsrud, Tom Stalley, Kevin Goeden
Tammy Williams, Dean Bierwagon, Gregg Fuller

Do I see the benefit of ramping up of our efforts to engage our people, utilize our people, and make it OUR DOT? I’d say absolutely “Yes”!! DOT is now embarking on the “Baldridge” process; another business reflection and study to review opportunities for improvement and I believe we are really on to something regarding these processes of empowering and putting such emphasis on our staff.

I have worked with some truly amazing and talented people, who as long as they are a part of our Department direction, will ultimately ensure their own happiness and their own fulfillment and, in the process, will ensure DOT survival, DOT success, and ultimately….. DOT evolution. (Elvis has left the building!)

** pla-nim-e-ter (noun) - an instrument for mechanically measuring the area of a plane figure. (Or for the engineering challenged): a measuring instrument used to determine the area of an arbitrary two-dimensional shape. (Didn’t I learn this in high school - and they said I’d never need it again!)*

by Melissa Dockter, Erosion Control/Landscape Designer

TREE ROOT SYSTEMS

Understanding tree root systems is important when determining ways to prevent damage to trees during construction. A tree's root system usually extends beyond the canopy of established trees. Fifty percent of the root system is within one foot of the soil surface and over 90% of the root system is in the top three feet of soil.

When trees are damaged, the injured tissue is not repaired and does not heal. Trees respond to injuries through a process called compartmentalization where the damaged area is sealed off from the rest of the tree.

TREE SURVIVABILITY AFTER DAMAGE

Root systems can be damaged and lost by trenching, removal of topsoil, and compaction from construction equipment or the addition of soil over the original grade. Soil compaction is by far the most common way construction damage can harm and kill trees—one pass by a heavy truck is all it takes.

Grading also causes substantial damage to tree roots. When the grade is lowered by more than 2 inches, vital feeder roots are eliminated and the remaining root system is severely wounded and as little as a few inches of additional soil can seriously damage some species of trees.

As a general rule, 20% of the root system can be destroyed before the tree will show signs of damage. If 40% of the root system is lost, the tree will probably die and should be removed. Trees with trunk wounds that encompass more than 50% of the tree's diameter should also be removed. Trees that are severely damaged and not removed are major safety concerns.

Older trees are more likely to sustain damage due to their extensive root systems and reduced vigor. Over-mature trees (trees that have started to drop branches regularly and show other symptoms of old-age like a thin/reduced canopy) should be removed if it is determined that root damage is unavoidable.

Information on construction damage to trees was found at: http://www.dnr.state.mn.us/treecare/maintenance/construction_damage.html

PRESERVING YOUR TREE AFTER CONSTRUCTION

Identifying soil compaction as a cause of tree dieback can be difficult because a tree can live up to five years after the initial damage. Compaction can be partially alleviated by drilling a series of two inch diameter holes to a depth of 12 to 18 inches. Begin three feet from the trunk and continue drilling holes at two foot intervals in concentric rings around the tree and continue to at least the dripline. Each hole may be refilled with sand, peat moss or mulch. Don't recap the hole with a sod plug. There are also alternatives to drilling available from some professional tree care services.

Small wounds to the trunks are not serious but may act as entry points for fungi which cause decay later on. Painting wounds or pruning scars actually increases decay organism activity, so it isn't recommended except for oaks to prevent oak wilt disease infection in May and June.

A tree with a stem wound destroying more than 50% of the wood diameter, is hazardous and should be cut down.

Broken branches should be pruned back to their main branches using the proper pruning techniques.

continued on page 5

continued from page 4

REPLACING TREES REMOVED DURING CONSTRUCTION

In order to reduce root damage to new trees planted on your property you should:

- Plant new trees at least half of the width of its full-grown canopy size away from the ROW line.
- Avoid planting trees over or near underground utilities in case those utilities require future maintenance.
- Plant trees that are to scale with your lot size so you don't have to worry about branches hanging over your roof or your neighbors' roofs.
- If you plan on removing the bottom 6' of branches, don't select small trees with low branching habits.

Boulevard Tree Planting Guidance

Check to see if your city has boulevard tree planting ordinances. Some cities require tree planting permits or approval for planting trees in boulevards. Also look at ordinances relating to tree pruning and maintenance over roadways and sidewalks.

Some developments may also have covenants relating to tree placement and landscaping.

Always call 811 before planting trees to avoid damaging underground utilities while digging the planting hole.

Tree selection should also be based on soil conditions (pH, salt, soil drainage, and available water), tree form and size, and the size and location of the site.

Below are some recommendations derived from Bismarck's Boulevard Tree Selection List:

Boulevard 4' or larger
Flowering Crabapples
Hawthorn
Ironwood
Peking Lilac
Japanese Lilac Tree
Amur Maple
Amur Maackia
Tatarian Maple
Oakleaf Mountain Ash
Showy Mountain Ash
Flowering Pear
Black Plum
Serviceberry

Boulevard 5 ½' or larger
Manchurian Alder
Ohio Buckeye
Amur Corktree
Larch
Thornless Honeylocust
Hybrid Linden
Littleleaf Linden
Mongolian Linden
Black Locust
Norway Maple
Red Maple
Sugar Maple

Boulevard 7' or larger
Kentucky Coffeetree
Elm Hybrids
Ginkgo
Common Hackberry
American Linden
Bur Oak
Swamp White Oak
Black Walnut
Laurel Leaf Willow

Boulevard 9 ½' or larger
Northern Catalpa
Freeman Hybrid Maple
Silver Maple
Ponderosa Pine
Scotch Pine

Reference:
www.bismarck.org/forestry

Boulevards narrower than 4' may only be suitable for grass and other perennials. Planting trees in smaller than recommended boulevards can result in sidewalk cracking and upheaval and/or a failure of the tree to thrive.

SDSU Extension Forestry Specialist John Ball does not recommend planting ash trees because of the threat of emerald ash borer and the extensive planting of ash in the past. He has also developed useful literature on tree selection for South Dakota. Tree selection may be limited by local availability.

Links to tree planting guides for South Dakota can be found on page 12.

Mitchell Region

by Craig Smith, Mitchell Region Engineer

Improve Public Safety and Workforce Safety is a priority for the department and has been identified as a strategic objective. Additionally, the strategic plan has identified short and long-term goals to reduce serious injury and fatal crashes, winter related crashes, workforce lost time injuries, state vehicle accidents, and state vehicle backing accidents. Mitchell Region held a Safety Awareness Day on April 7, in Mitchell to raise employee safety awareness, share best practices, build co-worker relationships, and recognize employees.

The key note speaker was Amy Dee from Mitchell, a humorous speaker with a motivational message. Amy has been a professional speaker / workshop leader for more than 20 years and uses music, humor and personal stories to deliver her message. Focusing on stress in the workplace and balancing your work life and personal life, the primary theme was "change the way you look at things and the things you look at change." Essentially everyone has the ability and responsibility to determine how situations and outside factors influence their reaction and emotions.

Each area office and the region operations office presented a topic. The topics included motorcycle safety (SD Safety Council Motorcycle Training Program), proper installation of telespar sign supports, the dangers of distracted driving (focused on texting, but included any distraction), and video system to gather traffic counts.

Other outside presentations were done by Jim Heaphy, SDAGC (Construction Worksite Safety), Patty Junke, APS Healthcare (Latitude Employee Assistance Program, LEAP), and Alan Freng, SD Retirement (State Employee Retirement System). Alan was also available to employees seeking one-on-one guidance about the retirement system.

Employees with an outstanding safety record were recognized at the conclusion of the event. First report of injury and preventable state vehicle accidents were used to identify these employees and thank them for their devotion to safety. The day long workshop which focused on safety was a great reminder to all employees of their personal responsibility for the safety of themselves and their co-workers.

continued on page 7

2016 Employee Safety Recognition – First Report of Injury

10 Years with No First Report of Injury			
Brad Cox	Mike Border	Bruce Van Zee	Tim Sorensen
Butch Yesda	Randy Lee	Todd Kirkie	Kelly Tramp
Lyle Norling	Jared Pfaff	Tim Boehmer	Brian Vandam
Steve Rhoades	Glenn Walz	Paulette Huber	Ed Koopman
20 Years with No First Report of Injury			
Jay Peppel	Craig Smith	Evan Edinger (Retired)	
25 Years with No First Report of Injury			
Harvey Odens	Greg Putnam	Paul Kaus	Greg Brosz
Danl Wipf			
35+ Years with No First Report of Injury			
Jerome Jansen	Rod Gall		

2016 Employee Safety Recognition – State Vehicle Accident Report

100,000 Miles Driven with No "Preventable" Accident (Maintenance Only)			
Brad Huffman	Trevor Job	Andy Anderson	Doc Verba
Brian Bossman	David Fischer	Bruce Crumb	Gary Steinhoff
Ray Haenfler			
150,000 Miles Driven with No "Preventable" Accident			
Brad Cox	Steve Schneider	Nathan Loecker	Greg Rothschadl
Steve Neumeister	Rick Brandner	Joe Sestak	Mike Barbarulo
Jerome Janssen	Rich Harding	Keith Doyle	Jerry Hansen
Greg Putnam			
200,000 Miles Driven with No "Preventable" Accident			
Rob Hansen			

Celebrate Safety Days

continued from page 5

10 years with No First Report of Injuries

25 years with No First Report of Injuries

100,000 miles driven with No "Preventable" Accident

150,000 miles driven with No "Preventable" Accident

150,000 miles driven with No "Preventable" Accident

The New Project Delivery Office

by Peggy Laurenz, Project Delivery Manager

Project management is a term familiar in the DOT and construction world, but the less familiar term, *Project Delivery,* has become part of the conversation around the DOT. *Project Delivery* encompasses the entire life of the project and the methods used to ensure projects are delivered on time and within financial parameters.

The Strategic Plan includes goals specific to project delivery and DOT leadership decided it was time to focus on project delivery and meeting planned project delivery dates for pre-construction projects. The 4-Year goal states, "Let 70% of state projects in the federal fiscal year it is originally programmed in the 4-year STIP." The 1-Year goal states, "Let 80% of planned projects for the current federal fiscal year" and "Let 75% of those projects planned to be let by March 1." To focus on achieving these goals, a Project Delivery Office has been created under the Director of Planning & Engineering, Mike Behm, to emphasize this aspect of our business.

The Project Delivery Office will aid in the delivery and project management of projects by supporting the people, processes and tools. The Project Delivery Office, currently comprised of two employees, is also responsible for managing the Primavera data base, project scheduling and statistical analysis. Peggy Laurenz has been hired as the Project Delivery Manager to work with project managers and teams to track project status and overcome barriers to delivering projects on time. Dave Grambihler will continue to work as the Primavera Specialist to manage the database, schedule projects as they come into the STIP and work with program staff to adjust individual project schedules. Soon, a third person will be hired soon to assist with work on project scheduling.

Project success is dependent upon the entire team and good communication. While DOT is successful in completing and letting projects, there is room for improvement and the goal of *Project Delivery* is to improve the efficiency, quality and timeliness of project delivery by working smarter, not harder. A *Project Delivery* Team (PDT) has been created to champion this effort by identifying issues and proposing solutions; be the communication link with offices; and to be influencer's to help others see the value of working towards the solutions. The first monthly PDT meeting was held on April 8. If you have questions about or suggestions that may help the project delivery effort, please reach out to one of the *Project Delivery* team members.

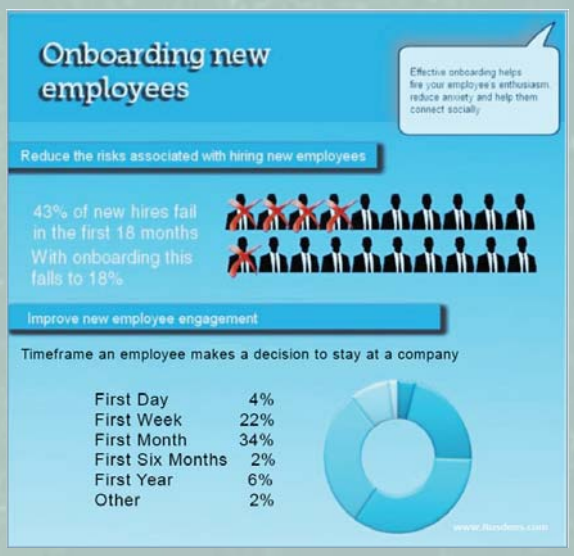
Project Delivery Team:

Peggy Laurenz – Project Delivery
Dave Grambihler – Project Delivery
Brian Raecke - Surfacing Plans
Tom Lehmkuhl - Environmental
Brace Prouty - Project Development
Joel Gengler - Right of Way
Karen Olson - Road Design
Kenny Marks - Transportation Inventory Management
Dave Madden – Bridge Design
Mark Leiferman - Project Development
Brandon Riss – Road Design
Tony Ondricek – Pierre Region Design

DOT Welcomes New Employees through Onboarding Program

by June Hansen, Mentoring Program Co-Coordinator

Each year, nearly 25% of the working population undergoes some type of career transition. Due to the various geographic locations and size of the agency, the department faces the challenge of ensuring that new employees feel welcome and a part of the team. At the request of the Executive Team, the Mentoring Committee has developed and implemented a "New Employee Onboarding" program to assist new employees in the transition to the department. Surveys have shown an effective onboarding program can improve employee engagement and reduce turnover.



Onboarding is an informal approach to making the new employee feel welcomed and integrated with the team. It begins before orientation and extends through the first few days and weeks, up to six months. It's about taking a customized approach for the position, the location, and the individuals working there.

Onboarding is personalized for each employee where new employee orientation is a formalized event to give a new employee an overview of the department and its mission. The success of onboarding program relies on the enthusiastic and engaged Guides. Each new employee has a guide assigned for onboarding purposes.

A guide will be assigned to the new employee for the onboarding process. Guides are the designated point of contact for the new employee to ask questions about how to get along in the workplace. This means answering questions about how things are done, where to find things, and offering encouragement and advice. Guides are not held responsible for the employee's performance. They will also not be assessed on whether the new employee grows or thrives during your "guide" period with him or her. Ultimately, growth, performance and development are the supervisor's job. Guides are here to get the new employee started off on the right foot.

Training is available for the guides and supervisors to ensure that each understands their role so the lines are not blurred. The onboarding program does not replace the guidance and training done by a supervisor for a new employee. Also, Onboarding shouldn't be confused with the mentoring program and guides shouldn't overstep into a mentoring relationship. That's more than is expected of guides. Mentoring may be a next step for a new employee after being established in his or her position. If an employee wants to work on professional or personal growth and development – that's the mentoring program. Onboarding is strictly for new employees and concentrates on the day-to-day concerns like "what does everyone do for lunch around here?" or "what's considered right or wrong around here?"

Over the next few months, the program should be rolled out statewide. The Mentoring Committee will continue to review feedback from participants and make adjustments to the program to ensure DOT's new employees have the best opportunity to succeed. If you are interested in being a guide for onboarding a new employee, contact your supervisor.

Special thanks to Kathy Hildebrandt from BHR Training for assisting in the development of the Onboarding program, e-learning and resource materials. Thank you to the Onboarding Subcommittee of Matt Brey, Richard Harding, Joel Larson, Brad Norrid and Brad Remmich for developing and implementing both the Onboarding Program and Onboarding Pilot program.

Communication and

by Tammy Williams, Belle Fourche Area Engineer

Communication is vital to the success of high performing organizations such as ours. What can be done to increase employee engagement? Well it's often said "Communicate, communicate, communicate!" If we are to be successful in building a more engaging culture and are committed to making this happen, we need to make a conscious effort to communicate more about what we are doing and why.

Increased and improved communication can look different to every employee and, in some ways, can seem quite elusive. What one employee perceives as effective communication may not be effective for another employee. Results of the recent Employee Engagement survey showed that we have an opportunity to improve in this area.

All employees have recently attended or will be attending training entitled "Communication and Customer Service". Kathy Hildebrandt, BHR Trainer, provides a good reminder and effectively points out how people communicate differently and how best to use certain types of communication as well as when, how important building relationships is and the benefits of a cooperative and positive attitude, to name just a few objectives of the course. With all DOT employees attending this training over the course of 18 months or so, it was felt that employees would be more aware of how important communication is to our organization and have a few "take-aways" in which to use in their everyday work with others. Learning to communicate more effectively is something that takes time and practice every day. It's a skill that can be learned and that one uses all the time. Communicating means dealing with conflict, having conversations other than through technology, giving and receiving supportive feedback, trusting each other, taking ownership of the work we do, listening to others, and having some fun too!

Communication occurs in many different forms, manners and avenues in the department. The ones noted here are in a written format meant to keep employees informed of the many things happening in our organization and is not all inclusive but an example of a few:

- All staff emails from Secretary Bergquist highlighting updates on legislative happenings, employee engagement survey results, railroad infrastructure improvement opportunities for our state, Strategic Plan updates, etc.
- DOT Training updates from Ann Campbell every two weeks highlighting training opportunities available for employees
- DOT Newsletter from Kristi Sandal every month highlighting the work we do, our accomplishments, updates from the Executive Team on improvements, action plan progress, recognition of employee years of service, retirements, Team Awards, etc.
- Monthly Division reports are on the Intranet highlighting what is being worked on by employees in the department as well as its status, communications with our stakeholders, etc.
- Quarterly performance measure updates from Josh Bench-Bresher on sign inventory replacement progress (measures drive performance as well as increase communication among employees)
- Monthly performance measure updates from Brad Maupin on equipment major and minor preventative maintenance

Two way communications can be in the form of routine monthly meetings with your immediate supervisor. Many times information is passed down and up through our hierarchical organizational structure by way of meetings every month... for example, Executive Team meetings, Division level meetings with Program Managers or Region Engineers, Program Manager meetings with Supervisors, Region Engineer meetings with Area and Operations Engineers, Area Engineers with Supervisors, Supervisor meetings with employees. As employees, active participation in these types of meetings is a form of communication and a way to share improvement opportunities, best practices, etc.

continued on page 11

Employee Engagement

continued from page 10

Meetings that integrate ideas, increase communication among peer groups and coworkers as well as sharing of knowledge and experiences can be found in many forms:

- Internal STIP Programming meeting once a year
- Statewide Area Engineer meetings twice a year
- Statewide field Engineer Supervisor meetings twice a year
- Annual Region Materials Engineer meeting
- Regular Traffic Engineer Operations Panel meetings (TEOP)
- Maintenance Standards Panel
- Construction Standards Panel
- Operations Winter Meetings / Roadeos
- Engineer Winter Meetings
- Mentoring Program – Mentee/Mentor relationship
- Onboarding – New employees partnering with a guide
- DOT Training Program – Standing Training Groups (STG's)
- Monthly Region Safety Committee meetings
- Monthly crew/unit safety meetings
- Celebrate Success or Safety Days
- Construction Management System User Group meetings
- Work Center meetings focusing on work schedules and progress during design phase of projects

Employee evaluations are also a great way to focus on one-on-one communication between an employee and his or her immediate supervisor. Communication levels as well as engagement levels tend to increase as the relationship develops to a state of mutual trust and respect. Get to really know the people you work with…engage each other in conversation that goes beyond the everyday work conversations.

Feedback on improvement opportunities in our processes, maintenance work, etc. is also requested in a number of other ways. We've recently seen an increase in the number of surveys looking for feedback from employees. The feedback is used in making small improvements over time. If an idea you have passed on gets implemented, take pride in knowing that you have helped move us in the direction of improving our organization as a whole.

As can be seen, there are many forms of communication in the department and those noted here are just a few. Questions we can all ask ourselves every day…

"What can I do to improve communication within my office, my crew, my Area?

"Did I do my best today to make progress towards good two-way communication?"

"Did I do my best to build positive relationships… providing an up-beat, positive attitude that promotes good communication?

"Did I do my best to be fully engaged?"

For employee engagement to succeed and good communication to occur, organizations and leaders must work to engage employees; in turn, employees have a choice about the level of engagement they offer their employer….choose to be engaged! Get involved…ask questions, participate in meetings, share your stories, knowledge and experiences, be curious, look for ways to make improvements in the work you do, take action, enjoy what you do! All of these things can lead to increased communication within an organization.

Bridge Inspection

by Kevin Goeden, Bridge Engineer

"What is wrong with the bridge?" "Is it safe to cross?" These are questions commonly asked by the public when seeing bridge inspection personnel & equipment in operation. When drivers have to slow down or stop at signals at either end of a bridge or seeing inspectors in bright safety gear and big scary looking equipment can be unnerving to some people when crossing a bridge. Almost always the answer to the second question is "Yes", the structure is definitely safe to cross and the SDDOT is just conducting the biannual routine bridge safety inspection.

What is involved in a bridge safety inspection you may ask? Well, we have to go back a few years and review the history behind the establishment of the National Bridge Inspection Standards (NBIS). The genesis of the NBIS was the catastrophic collapse of the Silver Bridge (steel eye-bar suspension bridge) on U.S. 35 over the Ohio River in 1967 between Point Pleasant, West Virginia and Kanauga, Ohio. This tragic incident resulted in the loss of 46 lives and raised serious concern across the nation regarding bridge safety. As a result, the Federal Highway Act of 1968 initiated the national bridge inspection program and the first NBIS was developed in 1971. The NBIS requires inspection of all bridges of a certain length on public roads in the United States and includes regulations on inspection procedures, frequency, reporting and inspector qualifications. The law also requires the Federal Highway Administration (FHWA), in consultation with the states, to maintain an inventory of bridges, known as the National Bridge Inventory (NBI). Owners are required to submit updated NBI data on all bridges annually to the FHWA.

The definition of a "bridge" in NBIS terms is: "A structure including supports erected over a depression or an obstruction, such as water, highway, or railway, and having a track or passageway for carrying traffic or other moving loads, and having an opening measured along the center of the roadway of more than 20 feet between undercopings of abutments or spring lines of arches, or extreme ends of openings for multiple boxes; it may also include multiple pipes, where the clear distance between openings is less than half of the smaller contiguous opening." Whew, that is a mouthful! Good thing there are diagrams and examples in the coding manual illustrating this definition! Currently, the NBI includes approximately 600,000 public road bridges across the country. Of these, as of March 2016, South Dakota has 5,730. SDDOT owns and has responsibility for 1,799 of them.

The Bridge Maintenance Engineer in the Office of Bridge Design is the Program Manager for the SDDOT NBIS safety bridge inspection program. The actual bridge inspections for SDDOT owned bridges are conducted by SDDOT teams in each of the four regions. The organization, responsibilities and qualifications for those involved in the SDDOT bridge inspection program are defined in the following policy: "NBIS Safety Bridge Inspection" http://intapps.sd.gov/hm90Policy/l.x?args=34FFC166EE4CFBCCB945855AEB789BD7915FD2D82CE3E26E.

Generally, most bridges in the state are inspected every two years. SDDOT received approval from FHWA to inspect some of the bridges every four years. 436 structures are currently eligible for four-year inspections. These structure types are generally those that do not change or deteriorate very fast.

All major Missouri River bridge crossings under SDDOT inventory responsibility are inspected every year, except Highway 19 over the Missouri River which was built in 2001 and inspected on a two-year cycle. Bridges that require underwater inspections are inspected every five years by an underwater inspection consultant where only the underwater portion of the bridge is inspected.

Routine bridge inspections are very comprehensive "arm's length" visual examinations of all exposed portions of the bridge from top to bottom. Other more intensive inspection techniques are also utilized for detecting and recording suspected material flaws/damages. These may include physical testing methods such as "chain drag" to detect delamination areas in concrete decks, "hammer sounding" to examine suspect areas of concrete members, application of "dye penetrant" to illustrate surface cracks in steel, and non-destructive type "magnetic particle and/or ultrasonic testing" to detect subsurface flaws in steel. Inspection access equipment typically used by our bridge inspectors includes Aspen Aerial bridge inspection cranes

“Is This Bridge Safe”

(snoopers), bucket trucks, man lifts, boats, structure mounted inspection platform travelers, ladders, waders, and climbing gear. A number of hand held tools and measuring devices are commonly utilized in day-to-day bridge inspections as well (feeler gages, paint thickness gages, measuring tapes, calipers, electronic and ultrasonic measuring devices, GPS, survey equipment, string line, drills, drivers, wrenches, hammers, picks, levels, etc.). Inspection teams for each bridge typically are comprised of a minimum of two individuals. Smaller/simpler bridges can be inspected in less than a day, while larger more complex bridges may take several weeks to complete the inspection and recording by the team.

Literally hundreds of coding items are required to adequately complete inventory and inspection records for even the simplest of bridges. The results of each bridge inspection are recorded electronically by the region bridge team leaders and reports are provided to the office of Bridge Design for review and inclusion into the bridge management system database. SDDOT utilizes the AASHTOWare Bridge Management System (BrM) as a tool to store and manage all of our bridge inventory/ inspection records as well as assist in planning and programming of projects.

Performance measures typically used for bridges and derived from the inspection data present in the NBI have historically included the following: “Structural Deficiency (SD)”, “Functional Obsolescence (FO)”, “Sufficiency Rating (SR)” and “Health Index (HI)”. The (SD) measure has been the most publicized, and perhaps the most misunderstood, term associated with bridge management. The technical definition for a (SD) classification is when a bridge has a condition rating of 4 or less (poor) out of 9 on one or more key NBI structure elements (deck, superstructure, substructure or culvert). However, this does not necessarily mean the (SD) bridge is unsafe, but it does indicate that some work is needed on that particular element to keep the bridge in a state of good repair. If the inspection data and subsequent live load rating reveals that a bridge is no longer capable of carrying legal loads, it is posted for safe load capacity or closed to traffic. Bridges not posted for load restriction are safe for all legal loads to travel over.

The bridge performance measure goal in the current SDDOT Strategic Plan under the “Sustain and Manage the State Transportation System and Assets” Objective is related to the number of our (SD) bridges in the NBI. Our goal is to *“Maintain 95% of the state highway bridges on the NBI in good or fair condition.”* The new “Good, Fair and Poor” bridge condition measures are currently proposed by federal regulations. While not yet final, SDDOT pro-actively used this system in developing the goal. The proposed “Poor” condition definition is similar to the (SD) definition. As of the March 2016 NBI submittal, the percentage of SDDOT owned bridges classified as (SD) was only 3.9% by number (96.1% in good or fair). Therefore, we satisfied the goal for 2016.

The region bridge crews also do routine or minor maintenance and preservation work on the bridges under their purview (e.g. washing, cleaning joints, spot painting, concrete deck crack sealing and concrete patching). More significant bridge work needs are accomplished through programmed projects. Candidate projects are determined from consideration of inspector recommendations, BrM recommendations, established preservation & maintenance practices, performance measures, emergencies (e.g. over-height impact damages), coordination with other highway construction projects, and available funding. Candidate projects are prioritized by the Bridge Management and Bridge Maintenance Engineers in coordination with the Chief Bridge Engineer and region stakeholders. The prioritized list of projects ultimately becomes the Bridge Projects category included in the Statewide Transportation Improvement Program (STIP). The STIP programmed projects annually undergo review by all stakeholders in the normal STIP vetting process. The overall goal of our bridge management process is to keep the state owned system of bridges in the best possible condition with the available funding.

Secretary's Corner

by Darin Bergquist, Secretary

On Wednesday, March 23, the very tip of southeast South Dakota was hit with a significant spring snow event. As much as 14" of snow was reported between Elk Point and Sioux City. On Tuesday, March 22, the weather service had predicted snow all day but nothing happened so Unit 291 (Junction City & Beresford) left for home at 7 p.m. You know what's coming next - at 9 p.m. it started to snow, hard and heavy - up to three inches per hour.

At 1 a.m., Jerry Hansen, the Junction City maintenance foreman, got a call from the Highway Patrol that Interstate 29 from Elk Point to Sioux City was blocked with snow and stuck vehicles. Jerry immediately called out his crew (Unit 291) from Junction City and Beresford and they responded in full force at 1:30 AM, just six hours after leaving.

Due to multiple cars and trucks being stuck in the road from exit 1 to exit 9 it was decided at 2:30 a.m. to close the Interstate from the Vermillion Exit south to the Iowa border. The crew tried to clear the Interstate in the dark and in low visibility conditions even with cars and trucks being stuck in the middle of the road.

Private contractors K&L Construction and Pollman Construction were also called out to help with the snow removal effort. At 9:30 a.m. the last stuck truck was removed from the driving lanes of I-29 and the snow was cleared enough to open the Interstate. The crew then worked all day Wednesday, until 7:30 p.m., and the roads were completely clear when left for the day.

When it was known the snow was going to be lighter to the north of Elk Point, the crew from Lennox came and helped in the Beresford area while the Beresford crew helped the Junction City crew.

The amount of snow that officially fell was 15" at the border of South Dakota and Iowa and 10" in the Elk Point area.

The department's Core Values of Public Service and Safety were demonstrated by their quick response to an early morning wake up call. Thank you Beresford, Junction City and Lennox crews for representing DOT with your dedication and teamwork. You make us proud. *Photos by Rod Gall.*

The SDDOT, Pierre & Rapid City Regions, were awarded the **2015 Operation and Maintenance Award** for wastewater treatment facilities from the Department of Environment and Natural Resources (DENR). This award is given to systems recognized as operating in compliance with its Surface Water Discharge permit.

This award was presented during the 2016 South Dakota Water and Wastewater Association Operators Seminar held on April 20-21 in Pierre.

The award is based on the most recent inspection findings conducted by the Department of Environment and Natural Resources, facility performance, and the facility's reporting requirements during the 2015 calendar year.

Presented by Albert Spangler, P.E. Surface Water Discharge Team Leader, DENR

Cash Forecasting Project

by Jan Talley, Finance Program Manager

For several years, the DOT has had a cash forecasting program that was built within the mainframe system. The system is out-of-date and does not reflect all of the project information and data needed to do the cash forecast as accurately as possible. The department knew something had to be done and hired Vanguard Software Corporation, a company that has experience in cash forecasting systems for other DOT's, to develop a cash forecasting system that was more reliable and user friendly.

The overall intent of the new system is to allow us to project what our cash balance will be given the current projects that have been let and scheduled based on the C2C system. As different situations occur, such as tax increases and changes in federal reimbursement rates, those impact the cash forecast. In the event of a tax increase the system would forecast based on the new actuals that would include the increased tax revenue. DOT oversees hundreds of millions of dollars worth of construction projects, so knowing our financial situation is critical.

The Cash Forecasting system is loaded with weekly data from various systems in DOT including the DOT accounting system-PAT, construction billing, CM&P, the state accounting system, and C2C. Updates to the system occur each Saturday and include any project in the STIP is forecasted once it has a letting date. Each project is detailed in the cash forecasting system showing actuals and forecasted costs throughout the expected life of the project.

The Forecast Server accumulates a report showing actual cash balances and forecasted cash balances based on Vanguard forecasting model. The cash forecast report shows receipts, expenditures and ending cash balances for actuals and forecasted months. This is very similar to a traditional condition statement. This report will be used by management for project planning and expenditures. In the future, the model may be used by Bureau of Finance & Management for cash forecasting of DOT funds for budgeting purposes.

One benefit of the cash forecasting system it is one of the few systems in DOT where all data resides in one place.

How does the forecast model work?

Future construction payments are calculated by matching a small number of project characteristics to past project payouts. Specifically, Vanguard combines information about the project start date, duration, and total expected cost, along with globally-defined parameters for the duration bias, amount bias, and seasonality to calculate a payout curve. The duration bias and amount bias numbers account for systematic over- or under-estimation of the project duration and total cost. The seasonality curve accounts for the seasonal nature of construction projects. They also apply a "bow-wave" adjustment factor to model the maximum amount which projects can be accelerated to keep it on schedule. For example, if you are three-quarters of the way through a project but have incurred only half the cost, it is likely the rate of project work will accelerate, but not enough to keep the end date from pushing out.

The parameters that go into the spread-curve model are calculated by applying a proprietary stochastic optimization technique to a set of past projects (the training set). This analysis is run on Vanguard's in-house computer grid where sixteen processors working in tandem usually take about an hour to optimize the spread curve model. It is important to note that the model is optimized to calculate total cash flow most accurately rather than precisely model individual projects. It is counter-intuitive, but true, that optimizing the spread curve model to be most accurate on a single project basis and then summing across projects produces a less accurate result than optimizing the model to be globally accurate. For this reason it is expected there will be errors, such as over- or under-estimation of seasonality effects in individual projects while the portfolio total will be very precise.

Where are we at with the project?

We are reviewing final changes to the system and will do training on the system in May 2016. We anticipate using this system this next fiscal year, beginning July 1, 2016. This will be a critical year in the evaluation of this system and it's reliability.

Rock Blasting in Custer at the "Devil's Triangle"

by Corrie-Ann Campbell, Training Coordinator

The Engineer-in-Training (EIT) program offers scheduled classroom training in-person and over the video-conference system and during construction season, engineers can participate in organized field tours to observe construction project activities first-hand. The goal of program is to enhance job knowledge for new engineers.

The Training Program focuses on arranging scheduled sessions with clear learning objectives, but recently EIT's in the program had the option to attend a unique event in Custer. Keith Winter, an EIT from the Custer Area, informed the group that a rock-blasting was going to be done by the contractor working on the project at the intersection of Highways 16A and 87 in Custer State Park - also commonly referred to by locals as the Devil's Triangle.

Jordan Brown, Tyler Brunsvig, Dustin Witt, Kirk VanRoekel, Corey Pinkley, Neal Olmstead, Keith Winter, JoElle Dammann, Andrew Warren, Bryce Kampe, Cody Lorenz

Drilling and blasting dates back to the 1600s and is the controlled use of explosives to cleave rock. It is done by a professional blasting contractor and was part of the project contract. This was a unique opportunity for the EIT's largely due to the limited blasting that occurs on DOT construction projects. The rocky slopes in the Black Hills do require blasting from time-to-time, but it's very rare.

Because the blasting has to fit in the contractor's schedule, there was very little notice given to the training program, but several EITs were able to attend. Keith led the group through the project and explained the various aspects of what was being done and why. Although the trip was not originally planned, this in-person experience allowed engineers to witness an aspect of construction that does not happen often. Footage from the trip can be viewed on the DOT Flickr account at: https://www.flickr.com/photos/sddot/albums. Photos by Sandal

Over the past couple of months there have been some changes to the Training Program. The adjustments will support the end goal of developing a formalized, centralized and structured SDDOT Training Program. One program objective is to maximize efficiencies and utilize the unique skills that each employee brings to the team. The program staff will continue to evaluate, enhance and improve efficiencies in the months to follow. A summary of the roles and responsibilities for the staff is listed below.

Joel Jundt, Deputy Secretary: Oversees the overall management of the training program including budgetary and administration.

Ann Campbell, Training Program Coordinator: Responsible for the management of the training program resources and staff, manages program work-flow, facilitates training work-groups, responsible for program results and training development.

Todd Hanson, DOT Trainer: Creates eLearning, videos, edits certification manuals, develops and delivers training.

Amanda Olson, Training Program Assistant: Serves as the point-of-contact on all course questions, schedules courses, responsible for course logistics, organizes course details and coordinates the day-to-day functions of the TLN resource.

Training: TRAC Program

AASHTO TRAC Program, *an Educational Outreach Program*

Over the past year, the department has been exploring bringing the TRAC (Transportation and Civil Engineering) Program to South Dakota. The goal of the TRAC Program is to inspire students to consider careers in Civil Engineering and other transportation related professions. The way the program works is the DOT supplies modules that come in a trunk that includes curriculum and materials to classroom teachers that relate to a transportation field. There are a variety of modules - 8 to be exact - that teachers can choose from to support the subject of their course.

8 TRAC Modules

- Bridge Builder
- Highway Development and the Environment
- Highway Safety
- Magnetic Levitation
- Traffic Technology
- Motion and the Transportation Engineer
- Roadway Design and Construction
- City Planning

Each of the modules contains 75 hands-on activities, including a teacher guidebook, equipment, software, and supplies.

Teachers first attend training hosted by the state DOT and is delivered by the National TRAC Program during their summer break prior to receiving the resources. The training allows them to discover how the materials can be implemented into their existing curriculum. During the school year, DOT's supply volunteer mentors to assist classroom teachers during different hands-on activities. The volunteers have an opportunity to talk to the students about their profession and their work in the "real" world.

In September 2015, SDDOT established an oversight committee to create a transportation partnership based TRAC Program. Representatives from SDDOT, the Associated General Contractors, the Engineering Society and educators from Pierre Riggs High School have met several times to discuss a program focus and structure. The group has reviewed progress of a pilot program that was conducted to explore the effectiveness and feasibility of the TRAC Program. The group will continue to build a program together over the next few years.

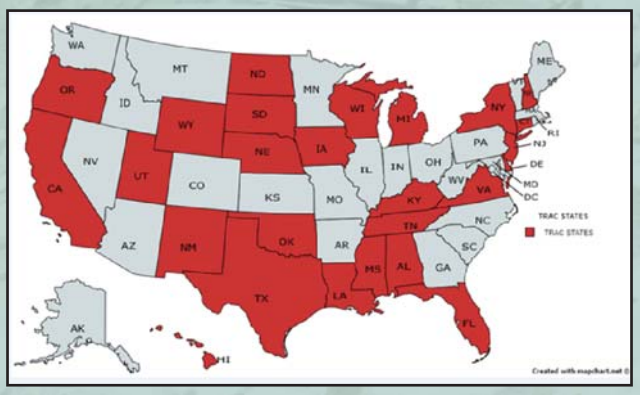
A South Dakota TRAC pilot program began in the fall of 2015 at the Pierre Riggs High School. (You got a glimpse of the program in the March *Connecting the DOTs n*ewsletter). The goal of the pilot was to gather feedback on the resources supplied in the TRAC Program modules. Three modules were used in two different classrooms; Physics courses and Environmental Science courses. The teachers found the modules easy to work with and the activities aligned with content already being covered in the classroom, but with the added benefit of pre-designed hands-on activities. Experiencing a real-world view from volunteers helped students understand the diversity in transportation related careers. Building a bridge from balsa wood was the most popular activity with the students. The bridge breaking competition not only drew other classrooms, but also individual students from study halls, parents and faculty.

In February 2016, some DOT and Riggs High School staff attended a Science and Math conference to distribute information about the program and gauge interest from educators. During the conference, teachers had the opportunity to submit their name for the first training. As school participation requires support from the building principal, school visits have been made to explain the program thoroughly to the school. For the 2016-2017 school year, a few additional school districts will be participating in the program by sending 2-3 teachers from their school.

The first teacher training will be held in Pierre June 6-7, 2016, for teachers that will be using a module in their classroom. Prior to receiving the resources, teachers will be required to attend the training that will be offered annually.

There are still a few slots for the training 2016 training available. If you know of an interested teacher, please email SDTRAC@state.sd.us for more information.

Checkout the link below for great TRAC Program information! This is a new website for Mississippi's DOT TRAC Program. http://mdot.ms.gov/stemeducation/. (SDDOT is working on building their site which should be ready soon).



AASHTO TRAC Program Participating States
AASHTO *Photo*

“Dignity”

by Jason Humphrey, Construction/Maintenance Engineer

In 2015, Gov. Daugaard announced the Norm and Eunabel McKie family from Rapid City would be donating a statue to the State of South Dakota. The statue, titled “Dignity” and sculpted by artist Dale Lamphere, is currently under construction at the sculptor’s studio near Sturgis. Dignity depicts a Native American woman wrapped in a star quilt.

When completed, the statue will stand more than 50-feet tall and overlook the Missouri River at the Lewis and Clark Visitor Center at the Chamberlain Rest Area. The location offers an iconic view from Interstate 90 as well as offering a beautiful gathering place for interpretation. Westbound I-90 travelers will see her from the higher ground as they approach the rest area and eastbound travelers will have views of Dignity while crossing the Missouri River. Her location will create a memorable silhouette with the sky as a background from all directions.

To complement Dignity, Landscape Architect Patrick Wyss has developed site plans for Dignity Park. When completed, Dignity Park will encompass the land owned by the Department of Transportation behind the Chamberlain Rest Area. New sidewalks, tree and shrub plantings, and benches will allow visitors to enjoy the area as they walk up to visit Dignity.

When completed this fall, Dignity will honor all people by celebrating the native cultures of this land.

Rock Slide on Highway 14A thru Spearfish Canyon on April 26. Crews from Units 454 and 456 cleaned up the mess while HP controlled traffic. More pics on the DOT Flikr site. *Photos by Greg Bonness.*

Employees

Brad Letcher, Huron Area Engineer, receives his 25 year pin from Aberdeen Region EngineerJeff Senst.

Jan Miller, Pierre shop, receives his 45-year plate for his plaque from Tim Blow, Equipment Shop Forman.

SDDOT Supervisors attended a three-day customized workshop using the Baldridge Criteria to focus on leadership development, strengths and opportunities in the department. The workshop was an excellent opportunity to develop our current leaders, as well as build a program to assure our future leaders have the necessary skills to be successful.

Grandpa, a.k.a. Greg Fuller, shows his future engineer grandson Daniel around the DOT.

Longevity

Darren Griese	25	04/24/2016	Engineering Manager I	Pierre Region
Rick Brandner	25	05/13/2016	Engineer III	Mitchell Area

BABIES

Scott and Sarah Eisenbeisz are the proud parents to **Emma Mary**.
DOB: April 23, 2016
Weight: 7 lbs. 1 oz.
Length: 20 inches
Scott is the Business Manager for the Aberdeen Region

Condolences

Lynn Kennison's mom, Irene, passed away on Feb. 26 in Belle fourche. Lynn works in the Air, Rail and Transit office in Pierre.

Judy Chambers, mother to Bryce Chamber, Materials & Surfacing and wife to Carl Chambers, retired DOT employee, passed way on March 27.

Audrey Nelson's brother, Buck Larson, passed away April 11. Audrey works in Right of Way in Pierre.

Theodore "Joe" Krogman passed away April 23. Joe was employed at the DOT shop in White River from 2010 until the time of his death.

continued from page 5 - Environmental Stewardship...

Below are links to tree planting guides or ordinances developed by South Dakota local governments.

Sioux Falls
http://www.siouxfalls.org/~/media/Documents/parks/forestry_trim/street_tree_brochure_kr.pdf?item=m

Yankton
http://www.cityofyankton.org/departments-services/parks-recreation/yankton-parks/urban-forestry

Rapid City
http://library.amlegal.com/nxt/gateway.dll/South%20Dakota/rapidcity_sd/cityofrapidcitysouthdakotacodeofordinanc?f=templates$fn=default.htm$3.0$vid=amlegal:rapidcity_sd

Mitchell
http://www.cityofmitchell.org/index.asp?SEC=D25BDFD0-E571-4556-BCAE-9582A38C3387&Type=B_BASIC

Aberdeen
http://www.aberdeen.sd.us/index.aspx?NID=248

Pierre
https://sdda.sd.gov/legacydocs/Forestry/publications/PDF/Tree-Landscape-Planting.pdf