

# CONTINUOUS IMPROVEMENT PROJECT DATABASE

## DIVISION 14 PROJECTS

Project Name	Project Description	Division	Project Year	Contact Name	Contact Number	Project Category
Contract Resurfacing Guidelines	<p>Each year there is contract resurfacing on both the Primary and Secondary System. These contract needs are developed within the Division. Unfortunately, many times there is poor communication between the various departments. This causes the following problems: roads scheduled for resurfacing are striped just months before resurfacing begins; utility companies have plans for repairs or new installations and shortly after the resurfacing they open cut the fresh asphalt; roads are resurfaced and within a matter of a few years are dug up and patched to replace a failed drainage pipe.</p> <p>By providing and following the Contract Resurfacing Guidelines, the proper notifications are sent to the parties who need to know in advance of a scheduled resurfacing project. Utility companies are given the opportunity to make repairs in advance and to make repairs by open cutting the roadway rather than boring since it will be resurfaced soon. This preserves the quality of NCDOT resurfacing, reduces project overruns and allows for preventative maintenance.</p> <p>The Contract Resurfacing Guidelines are being implemented this year.</p>	Div 14	2009	Steve Cannon	(828) 891-7911	Communications
Pre-Trip Inspection Guidebook	<p>Students in multiple sessions of Division 14 Fleet Safety classes needed consistent, thorough demonstrations of the Pre-Trip Inspection (a requirement of CDL licensed operators and NCDOT policy) that all could view clearly as well as personal study guides for the procedure.</p> <p>A PowerPoint slideshow and a fully illustrated guidebook to accompany the presentation were developed using photographs and audio recordings of actual DOT vehicles. The slideshow can be presented at varying pace to accommodate circumstances and student/instructor needs. The guidebook provides versatility in that, while it is useful as a companion to the slideshow in class, it is also useful as a reference for new employees, employees required or wishing to improve their skills in the procedures, and for supervisors who oversee employees required to perform these inspections.</p> <p>Pre-Trip Inspection exams administered as part of Division 14 Fleet Safety classes show dramatically improved scores following implementation of the slideshow and guidebook. The numbers of equipment accidents reported in any month since the implementation of the slideshow and guidebook are lower than those recorded any other month of 2008.</p>	Div 14	2009	Candie Auvil	(828) 631-1182	Safety Improvement
Property Owner Mowing Agreement	<p><b>Problem:</b> Property owners often do not like the method or results of machine clearing of the right of way. They would rather do the work themselves but are not always familiar with the standards required by NCDOT. They also need to be held accountable to these standards in the interest of the safety of the traveling public.</p> <p><b>Solution:</b> A signed agreement is executed with the property owner that contains the mowing standards. The agreement is also signed by the County Maintenance Engineer and returned to the property owner. A copy is placed in the district road file for the particular road and a copy is sent to the county maintenance facility to be placed in a mowing agreement file. The Sign Department is notified and Do Not Mow signs are placed at each end of the section covered by the agreement. Mowing contractors are notified not to mow these signed areas. If the property owner does not maintain the area to NCDOT specifications, the agreement is voided.</p>	Operations - Division 14	2006	Steve Cannon	(828) 891-7911	Customer Service
Actuated Signal Warning Flasher at "Dowdle Mountain"	<p><b>Problem:</b> The Division Traffic Engineering Team is Division 14 was assigned to install a traffic control signal on a high-speed four-lane highway. The problem was that some traffic, traveling above the 55 mph speed limit, would be in a different dilemma zone due to traveling at a speed outside the design parameter. The dilemma zone is the area in advance of a traffic signal where approaching traffic is unsure whether to try to stop or to proceed through the intersection. The team wanted to communicate to the driver a warning, at the appropriate point, that the signal is changing to red and that the driver needed to slow down and stop.</p> <p><b>Solution:</b> The team decided on a Traffic Signal Ahead warning sign with flashing warning beacons that were connected to the signal and only flashed when the signal indication was amber or red.</p>	Operations - Division 14	2006	Reuben Moore	(828) 586-2141	Safety Improvement

Embankment Repair on I-40	<p>Failure of the fill slope occurred on I-40 between the roadway and the Pigeon River beneath a retain wall containing a cross pipe outlet. The foundation of the retaining wall was exposed and was undercut near the midpoint just below the pipe outlet. The foundation and retaining wall did not appear to have moved. The decision was made to repair the slope with obsolete portable concrete barriers and back fill underneath the retaining wall foundation.</p> <p>The length of the proposed fill was 60-90 feet and the height was approximately 53 feet. The pipe invert near the bottom of the retaining wall was approximately 16 feet below the top of the wall. The only access to the work site was from above. An access road was cut into the fill slope from above. All access to the site was from I-40 itself, which necessitated a lane closure while construction was underway.</p>	Operations Division 14	2005	Jamie Wilson	(828) 586-2141	Environmental Sustainability
Tailgate Safety Meeting Plan and Report	<p>In January 2004, Division 14 experienced a workplace fatality. An employee committed a violation of Safe Operating Procedure and disregarded a supervisor's direct instruction. The employee placed himself in danger and was run over by a Blaw-Knox shoulder building machine. The incident investigation team received conflicting information regarding the conduct of the required tailgate safety meeting.</p> <p>The Safety Programs Subcommittee reviewed existing literature regarding the workplace safety program and designed a survey for Division 14 to report on current practices with tailgate safety meetings. The survey resulted in an identified need for a formalization of the process of planning and reporting on tailgate safety meetings. The committee refined the Tailgate Safety Meeting Plan and Report form for crew leaders and supervisors to use.</p>	Operations-Division 14	2005	Reuben Moore	(828) 586-2141	Safety Improvement
Secondary Paved Road Improvement Program	<p>Our unit has been unable to fully utilize all of our Secondary Road Funds in recent years due to the lack of available right of way and environmental issues on unpaved secondary roads in priority. Several Districts had begun to pursue improvements to the secondary paved road system to expend these funds. Additionally, G.S. 136-182 was amended to allow the expenditure of Secondary Trust Funds for safety improvements on secondary paved roads. Recognizing this, we elected to pursue a priority system similar to the unpaved secondary road priority rating system to assist in determining which secondary paved roads to attempt to pave. A team of Transportation Engineers was assembled that had experience in constructing and maintaining roads within Division 14. After a series of meetings and discussions, this team developed the Secondary Paved Road Improvement Program document. This document is used to determine the priority order in which secondary paved roads will be attempted for improvement. This document also provides guidance to the engineer on the ideal typical section based on service to be provided in the design year.</p>	Operations-Div 14	2004	Brian Burch	(828) 586-2141.	Customer Service
Secondary Road Paving Standards, Context Sensitive Solutions	<p>Div. 14 received much scrutiny of their secondary roads paving standards from property owners and environmental agencies. Safe and effective uniform standards were needed.</p> <p>Div. 14 developed a document entitled "Secondary Road Paving Standards" which gives guidance to engineers on selecting the least disruptive, but adequate section for a project.</p>	Operations Div 14	2003	Joel Setzer	(828) 586-2141	Environmental Sustainability
Median Guardrail Turf Conversion	<p>Guardrail in median creates challenges for maintenance of turf there.</p> <p>Previous methods of changing turf vegetation involved sodding and overseeding over a period of 2 to 3 years. Div. 14 selected a more desirable mix of hard fescue and bluegrass more suitable to cooler areas west of Raleigh. New mixture has year round growth, low fertilizer requirements, better drought tolerance and less mowing.</p> <p>Also, the active year round grass provides better pollution absorption, is suitable for poor soils and less runoff to harm environment.</p>	Operations Div 14	2003	Reuben Moore	(828)586-2141	Environmental Sustainability
Salt Brine System	<p>The salt brine system was developed in order to provide a higher level of service to the public during the onset of snow and ice events, primarily in Henderson County. The system currently in operation has two mix bins and 20,000 gallons of storage capacity. We have six tandem truck tanks with a capacity of 1,200 gallons each and two tanks with a capacity of 2,500 gallons each that mount on a low boy.</p>	OPERATIONS - DIVISION 14	2002	Mark Gibbs	(828) 891-7911.	Customer Service

Superelevation Calculator	In the design of a roadway with horizontal curves, it is necessary to compute the transition of the roadway edge of pavement elevations to develop superelevation of curves, or banking of curves. The calculations are based on design criteria, which are obtained from the AASHTO Design manual for Highways. Once this data has been decided upon, the project specific calculations can begin. This is where improvements could be made. The calculations are repetitive and numerous; therefore, the chance of error significant. An Excel spreadsheet was designed to generate superelevation rates at each even increment of superelevation change, as well as each even fifty-foot station. This is accomplished after the data from the AASHTO publication is entered into the specified data fields. Other elements of the spreadsheet alert the designer to the overlap of curves when multiple curves are required. This assures proper spacing of curves for adequate superelevation transition.	OPERATIONS - DIVISION 14	2002	Greg Shuler	(828) 586-2141.	Cycle Time Reduction
QMS HP-48 Calculator Program	performs sampling and testing of Asphalt pavements. It is done in the laboratory and roadway. The data obtained is must be accurate as the data is used to determine if the payment will be a full contract price. The technician involved in the sampling and testing must perform many mathematical calculations without error in a timely manner. A series of programs were developed for the HP-48 programmable calculator to make it easy to perform the mathematical calculations for the QA/QC technician. The programs are used in conjunction with NCDOT forms. The programs ask the user to input the data at the correct interval, performs the calculations and gives the user the correct answer	OPERATIONS - DIVISION 14	2002	Dan Hunter	(828) 586-2141	Labor Hour Savings
Modification to "Under Railer"	The original "Under Railer" would not push the spoil material under the guardrail and past the break point of the shoulder. It left a berm behind the guardrail which trapped water. We came up with the idea to attach the "Under Railer" to a motor grader and use the hydraulics of the grader to telescope the arm and blade out an additional 7-8 feet to roll spoil material over the bank.	OPERATIONS - DIVISION 14	2002	Mark Gibbs	(828) 891-7911	Labor Hour Savings
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