SCDOT Innovation Challenge & Showcase 2026 Recap Report

The Challenge

The 2026 Innovation Challenge was the first challenge open to all SCDOT staff. Innovators submitted their innovations online at innovationsc.org, with submissions accepted from March 3 through May 15. During the submission period, R&I staff made visits, upon request, to several field and headquarters offices to promote the challenge and encourage participation.

Following the submission deadline, the Innovation Council met to review each submission and ask submitters clarifying questions as needed. After this review, the council approved 30 innovations to be considered and showcased.

Finally, the Innovation Council met again to evaluate the innovations based on four criteria: safety, efficiency, cost savings, and ingenuity. Following the evaluation, the council selected 10 innovations to receive Outstanding Innovation Awards.

2026 Innovation Council


Jeff Terry


Jim Beach


Bobby Usry


Ashleigh Sandel


David Cook

The Showcase

The 3rd Annual SCDOT Innovation Showcase was held on July 30, 2026, at the Columbia Metropolitan Convention Center. The event brought together approximately 140 employees from a variety of offices across SCDOT to celebrate innovation and recognize the employees who are finding new and creative ways to improve the agency.

A total of 47 innovators showcased 30 innovations, representing their work areas and demonstrating the creativity and ingenuity of employees at all levels of the agency. At the end of the showcase, Secretary Powell and Chief Engineer Leaphart presented 10 Innovations with a 2026 Oustanding Innovation Award.

EVENT AGENDA

10am - Opening Ceremony - Richland Room

Welcome from the R&I Unit
Merrill Zwanka, Materials & Research Engineer

Opening Remarks from SCDOT Leadership
Rob Perry, Deputy Secretary for Engineering

Continuing the Culture of Innovation
Terry Swygert, Research & Innovation Engineer

Impacts of the Innovation Challenge
Wayne Anderson
Clarence Cook and Jason Childers

2026 Summary & Recognition of the Innovators
Jodi Groller, Innovation Engineer

11am - Show & Tell - Exhibit Hall

12:15pm - Lunch - Richland Room

1pm - Awards Ceremony - Richland Room

Innovation on the National Scale
INDOT's Todd May, Co-Chair of AASHTO Innovation Community of Practice (ICOP)

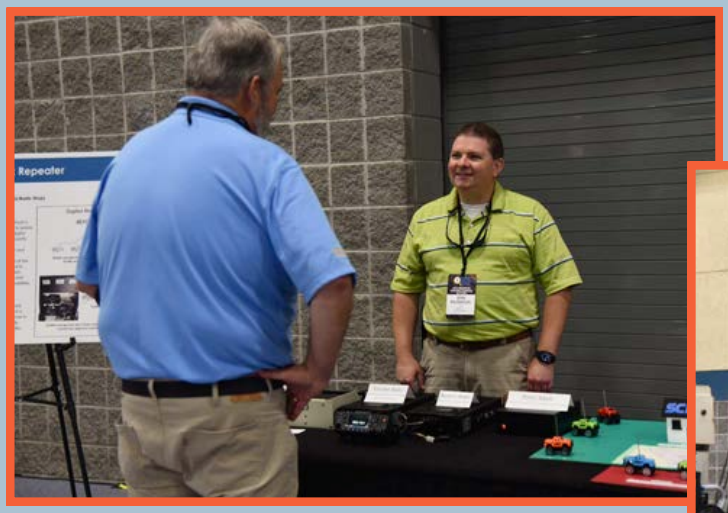
AASHTO AIM Winners
Rebecca Owen
Donald Mahoney, John Ives, and Marty Jones
Paul Phillips

Remarks from SCDOT Leadership
Justin Powell, Secretary of Transportation

2026 Outstanding Innovation Awards
Jodi Groller, Innovation Engineer
Jade Watford, Research Manager

Show & Tell

The most integral part of the showcase is the Show & Tell session. This is where innovators have the opportunity to bring their ideas to life by displaying physical equipment, demonstrating models, or verbally briefing alongside their posters. Beyond simply showcasing ideas, the Show & Tell session is an important part of technology transfer. By sharing successful innovations with employees from across the agency, the goal is to spread these ideas beyond their original offices and districts and encourage their adoption throughout SCDOT.



Innovation on the National Scale

Todd May is the Managing Director of Innovation, Research, and Emerging Mobility at the Indiana Department of Transportation. He also serves as co-chair of AASHTO's Innovation Community of Practice and has played a significant role in influencing the development of SCDOT's Innovation Challenge.

At the Innovation Showcase, May highlighted the importance of having an innovation challenge within a state transportation agency and the critical role leadership plays in supporting innovation. He emphasized that when agency leaders actively encourage and recognize innovative ideas, employees are more likely to take initiative, think creatively, and look for ways to improve the work they do every day. Leadership support helps create an environment where innovation is valued, encouraged, and integrated into the culture of the organization.

AASHTO AIM Winners

AASHTO Innovation Management is a nationwide group focused on advancing innovation within the transportation industry. Each year, the group solicits innovative solutions from across the country and selects winning innovations to showcase at the AASHTO Spring Meeting. In 2026, three of the 14 total winners were selected from SCDOT.

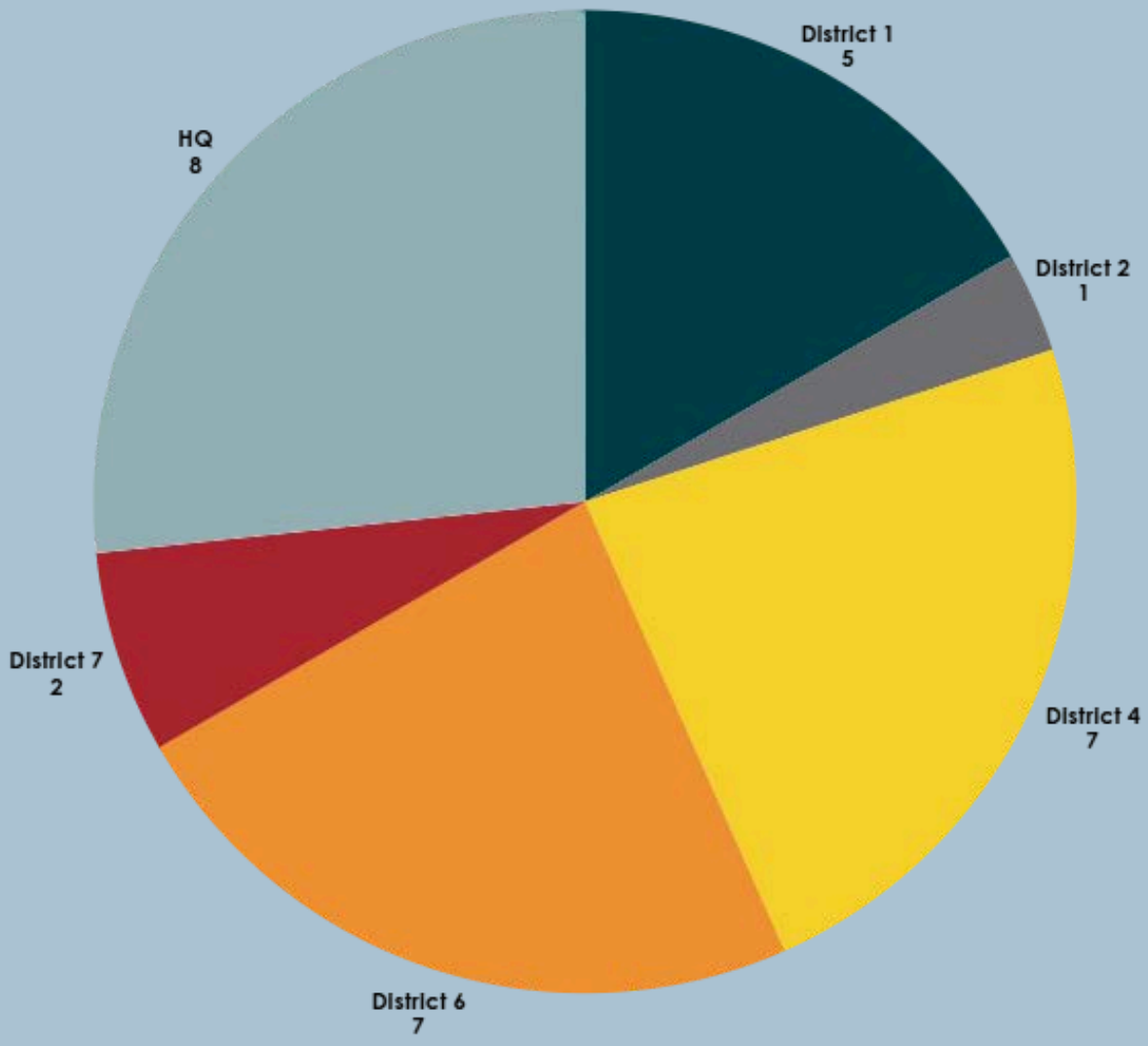
These SCDOT innovators were invited to return to the SCDOT showcase to reflect on their experience and provide a brief introduction to their innovations, highlighting the ideas and solutions that earned national recognition.

Secretary Powell also recognized the 2026 AASHTO AIM Showcase winners, presenting each recipient with his Secretary's Challenge Coin in recognition of their accomplishments and contributions to innovation.

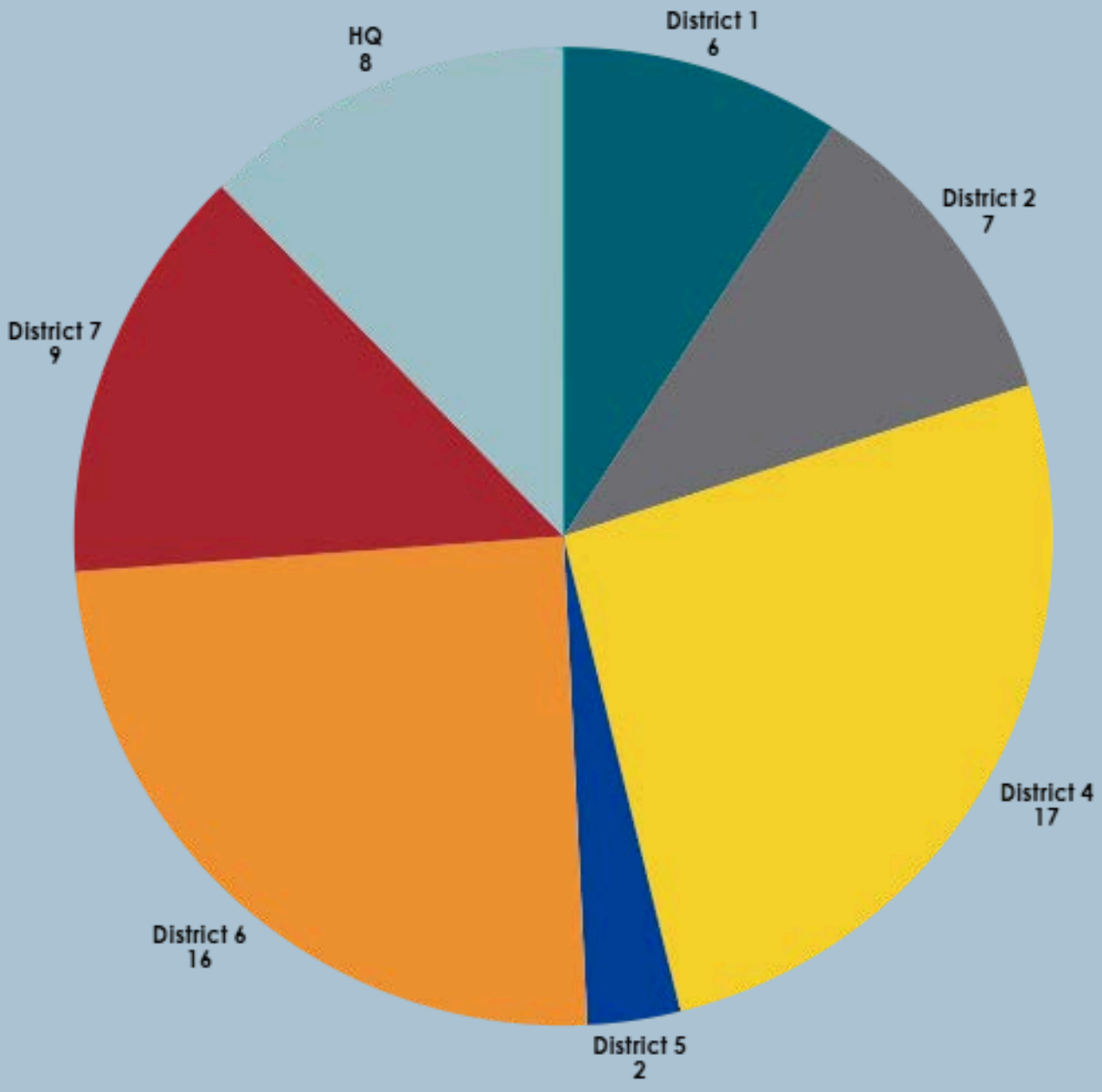
Technology Integration in Field Operations- Rebecca Owen
Debris Chute- Donald Mahoney, John Ives, Marty Jones
Vertical Work Zone Sign Stand Rack- Paul Phillips

2026 Submissions & Summaries

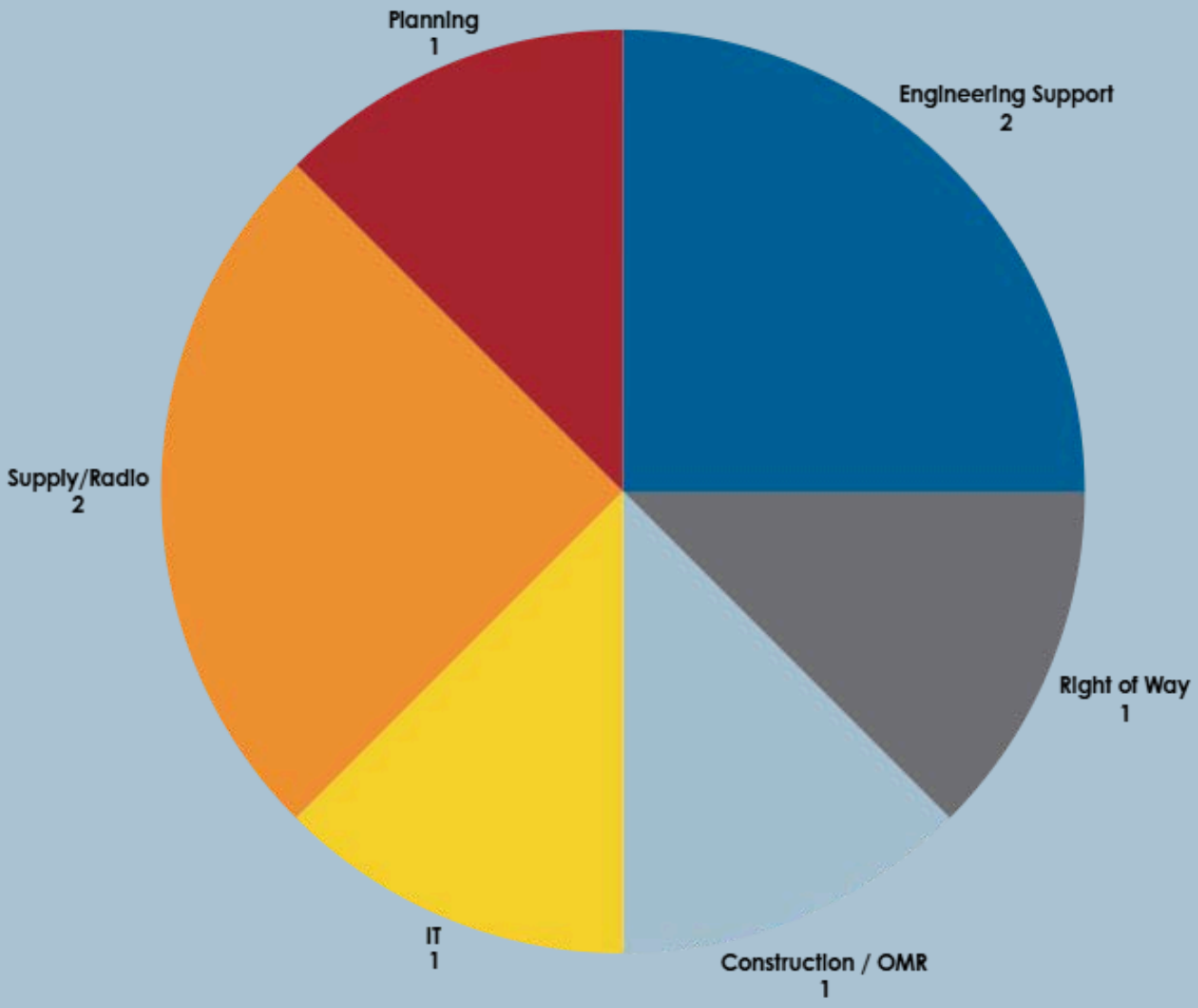
2026 Submissions by District



All-Time Submissions by District



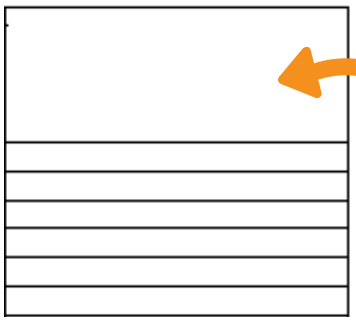
2026 HQ Submissions by Office



Right of Way Data Sheet Update

Submitted by: Jason Riley (HQ/Right of Way Office)
Manager: Robbie Giddens

Description:
The SCDOT Roadway Data Sheet has been revised to incorporate dedicated fields and automated calculations for Temporary Construction Easement (TCE) areas. This enhancement improves accuracy and consistency across project plans. The updated format aligns with current federal requirements, as TCEs have now replaced traditional permissions on all federally funded projects statewide, ensuring compliance while increasing efficiency for design and review teams.



Before

TCE areas used to get lost in the "remarks" section

How does this Innovation benefit SCDOT:
Our updated data sheet greatly streamlines the Temporary Construction Easement (TCE) process for the entire department. Previously TCE areas were only shown in the "remarks" section of the data sheet and were often incorrectly combined with other obtain totals. Our new data sheet eliminates the confusion via the addition of a new column specifically for TCE totals.

Now

They have their own column

SCDOT
South Carolina Department of Transportation

RI

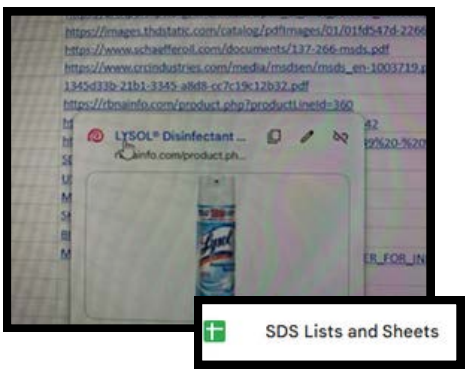
TRACT NO.	Remarks PROPERTY OWNER	TAX MAP REFERENCE	TOTAL TRACT ACRES	OBTAIN TCE (TEMPORARY CONSTRUCTION EASEMENT)	OBTAIN LEFT	OBTAIN RIGHT	OBTAIN TOTAL
1	1600 MARINA RD LLC	R02405-01-33	11.33	701 SF (0.02 AC)			

SDS Spreadsheet

Submitted by: Jennifer Pickens (D2/Anderson Construction)
Manager: Zach Herron

Description:
The SDS Spreadsheet allows employees to access Safety Data Sheets (SDS) quickly using a smartphone or tablet in the event an employee has been exposed to a chemical substance and the first aid and/or emergency procedures to be followed. SDS also contain information about safe handling, storage, and hazards of chemical substances.

How does this Innovation benefit SCDOT:
OSHA requires employers to maintain SDS for all chemical substances that are used in the workplace and that they are readily accessible to all employees. Due to SCDOT Road Inspectors predominantly working in the field, it is not feasible to keep physical copies updated in every work vehicle. Using their SCDOT issued smartphone or Tablet, the SDS Spreadsheet allows Road Inspectors to quickly access the SDS on the jobsite. Road Inspectors can have direct access to specific list of the chemicals they work with, and the spreadsheet contains links to open the SDS for each specific chemical in less than one minutes time.

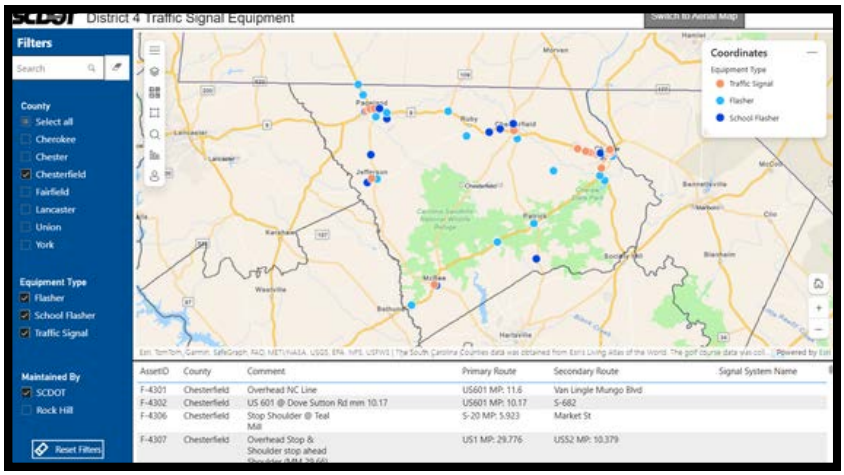


Problem → → → Solution

Traffic Operations Hub

Submitted by: Cliff Goolsby & Colby Hall (D4/Engineering)
Manager: Thomas Feemster

Description:
The D4 Traffic Operations Hub is a centralized, interactive Power BI platform that provides real-time visibility of traffic signals, flashers, school zones, and cameras across District 4 for authorized users. Built using existing systems and Microsoft tools, the hub supports daily operations, troubleshooting, and project tracking with no additional costs beyond a Power BI license (~$200–$300 annually), improving efficiency and decision-making across teams.

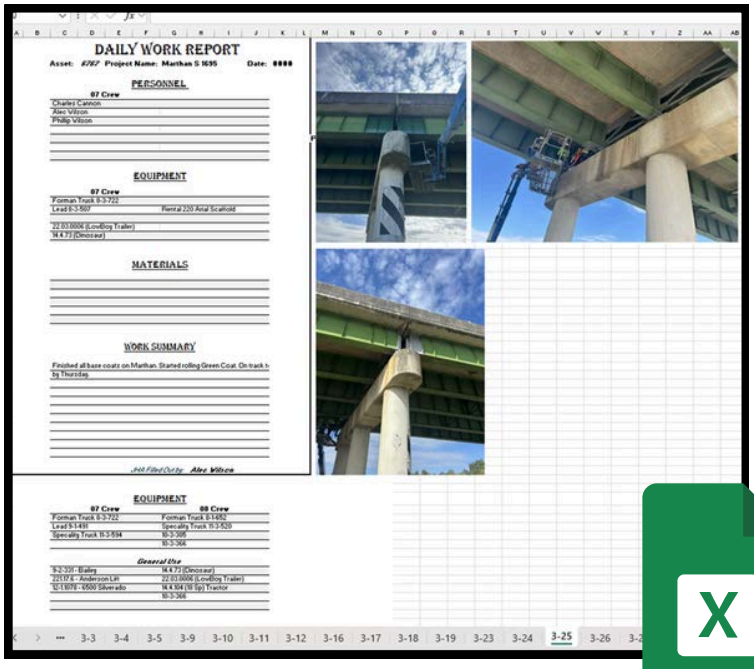


How does this Innovation benefit SCDOT:
This dashboard consolidates asset data from multiple spreadsheets, maps, and systems into a single, user-friendly platform. With geospatial mapping, live camera access, and customizable filters, employees can quickly locate assets and access critical information. The scalable solution improves efficiency, enhances data accuracy, and strengthens coordination between office staff and field operations..

"Daily Work Report" Excel Spreadsheet

Submitted by: Charles Cannon (D1/Bridge Maintenance)
Manager: William Bailey

Description:
This is a spreadsheet that essentially functions as a comprehensive record for tracking every day work related subjects such as which personnel were present, which vehicles/materials were used that day, and a work summary area to describe what was accomplished that day.



How does this Innovation benefit SCDOT:
The main benefit is that It streamlines communication by providing our chain of command with instant access and increased transparency. It also helps document project progress as we often switch between bridges, making it easier to pick up where we left off. Bridge crews experience high amounts of turnover and this tool helps with knowledge transfer between staff.

SCAN FOR A TEMPLATE

Post Pounder Rack

Submitted by: Charles Smith (D6/Jasper Maintenance)
Manager: Donnie Orr

Description:
The post pounder rack is a light duty holder that allows our sign crew to store the skidril gas powered post driver in the upright position.

How does this Innovation benefit SCDOT:
The post pounder rack makes the post driver easier for the sign crew to access without climbing onto the truck bed. It also cuts down on damage from moving around on the truck bed. This is a safer way to store the tool and keep the operator from climbing on to the truck preventing potential injury.

Plate Transport/Bucket Tie Down

Submitted by: Charles Smith (D6/Jasper Maintenance)
Manager: Donnie Orr

Description:
The Plate Transport/Bucket tie down is a multi-use add on that has increased efficiency in Jasper. It can be used on the backhoe to move the cover plate both on and off of the trailer or into it's proper placement at job site.
Before and after the job, the rings can also be used with chain binders to secure the bucket of the backhoe down during transport.

How does this Innovation benefit SCDOT:
This method is a much safer way to move plates on and off the trailer or roadway at a job site. Employees prefer to use the chain binder method to secure the backhoe because it elimiates the need to climb in and out of the trailer. Both uses protect employees and SCDOT equipment.

Transport

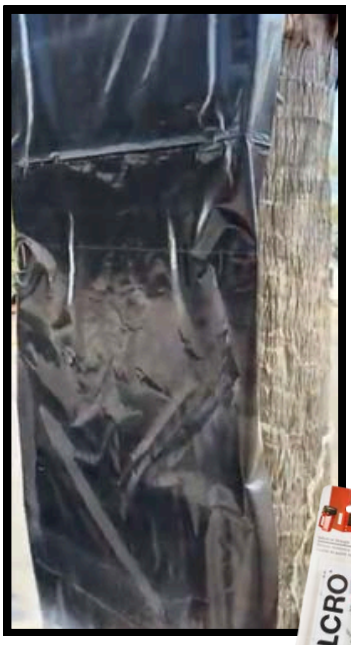
Placement

Better Way To Cover Your Signs

Submitted by: Thaire "Scooter" Daley (D6/Jasper Maintenance)
Manager: Keith Mitchell

Description:
There are various reasons why SCDOT maintenance staff may be tasked with covering and uncovering signs. The traditional method required someone to hold the plastic onto the sign while another person wrapped the duct tape around. Instead of duct tape, we use one-inch strips of Velcro to attach the 6 millimeter plastic to the back of the sign.

How does this Innovation benefit SCDOT:
The most noticable benefit is the clean, professional look that the new method provides. We aren't the only ones who take pride in our work, the public notices and complains when things look poorly done. The innovative method is also very durable, withstanding both hurricane winds and unexpected snowfall. This innovation also saves SCDOT money as the velcro allows the plastic to be reused. Application also takes less time and less labor, turning a two person job into a single person job.



Before

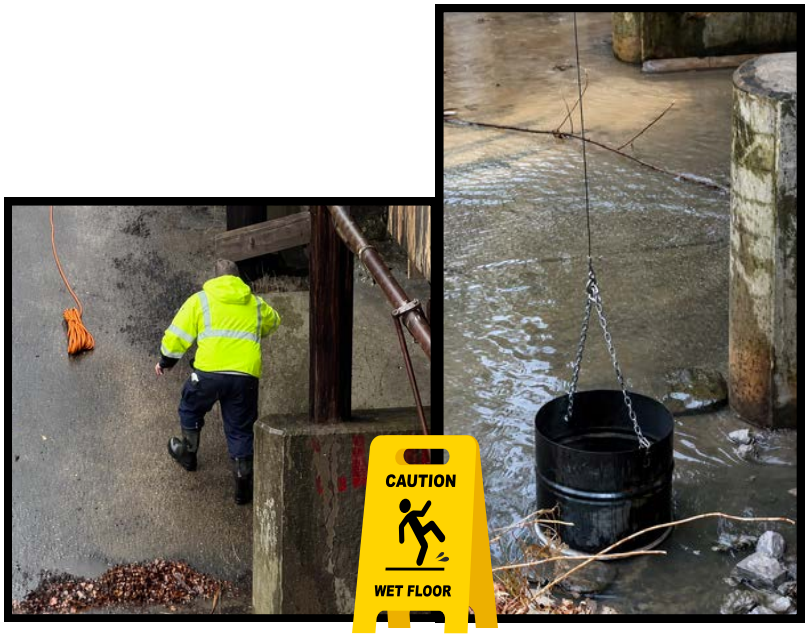
After

Bridge Basket Lift

Submitted by: Alec Wilson (D1/Bridge Maintenance)
Manager: Charles Cannon

Description:
Using a 2,000 lb bed-mounted crane in an innovative way, our crew designed two custom attachments to safely transport materials between the bridge deck and the area below. A repurposed metal drum serves as a heavy-duty basket for debris and loose materials, while a custom plywood platform provides a stable surface for tools and new supplies. Together, these low-cost solutions improve safety, efficiency, and material handling in challenging bridge work environments.

How does this Innovation benefit SCDOT:
Built from recycled materials, this custom crane attachment makes transporting tools and supplies safer and more efficient on steep, slippery bridge terrain. Working rain or shine, crews can move materials up and down while reducing the risk of injury — all at a fraction of the cost of pre-manufactured equipment.



Welding Lead Wrangler

Submitted by: Phillip Wilson & Jonathan Bentley (D1/Bridge Maintenance)
Manager: Charles Cannon & Benjamin Catoe

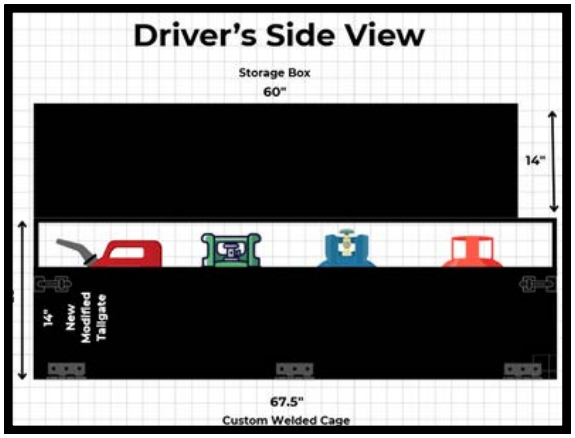
Description:
This innovation is a simple solution with a big impact for our crew. It is made of scrap angle iron and is welded into a "Y" shape. It is secured to the base of our welder with regular bolts.

How does this Innovation benefit SCDOT:
The Welding Lead Wrangler transformed a frustrating, time-consuming process into a safer and more efficient operation. Instead of tangled welding leads cluttering the truck bed and unreliable hose reels constantly breaking, this custom-built solution keeps leads organized, accessible, and securely connected to the welder. By utilizing vertical space, it frees up valuable room in the truck bed and reduces setup from a two-person task to a one-person job. Best of all, it costs less than $30 and can be built in about an hour.

Wilsons' Wonderbed

Submitted by: Alec Wilson & Phillip Wilson (D1/Bridge Maintenance)
Manager: Charles Cannon

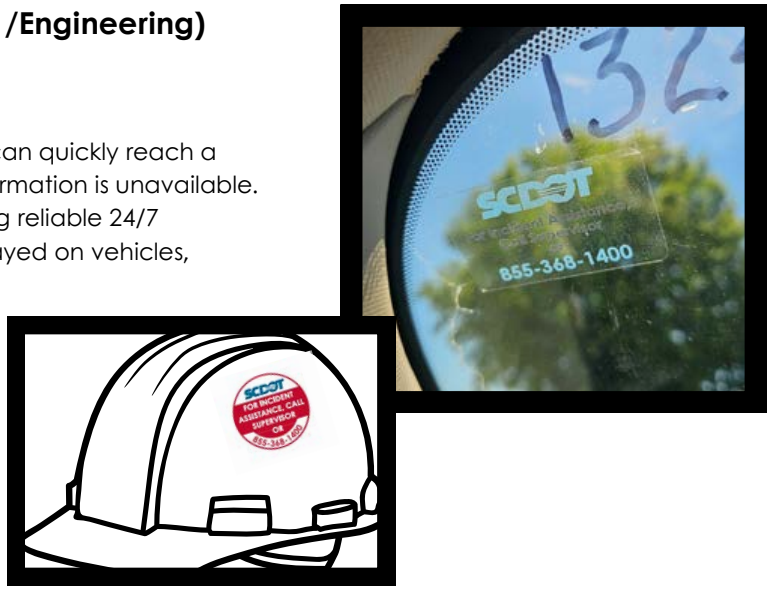
Description:
We welded a custom cage made of extra angle iron that was just big enough to fit and secure our fuel cans. On top of the cage we installed a storage box, which frees bed space and fully enclosed the cans from above. Then, we cut the driver's side of the bed and added 3 hinges along the bottom (supporting it with chains). It now flips down to allow quicker and safer access to the gas cans from the driver's side of the truck.



How does this Innovation benefit SCDOT:
The Wonderbed improves safety, efficiency, and organization for our crew. By securely storing fuel cans, it helps prevent dangerous incidents and reduces strain on employees by eliminating heavy lifting over the truck bed. The fold-down side panel also doubles as a convenient workbench in the field. Built in just a few hours for less than $50, the Wonderbed provides a low-cost alternative to commercial truck beds costing over $10,000 — while adding extra storage and saving valuable time each day through better organization and easier access to equipment.

SCDOT Incident Assistance Safety Number

Submitted by: Lori Campbell & Patty Langland (D1/Engineering)
Manager: Robert Dickinson



Description:
A dedicated safety hotline was created to ensure employees can quickly reach a safety officer during an incident, even if individual contact information is unavailable. Calls automatically route to the next available officer, providing reliable 24/7 coverage. To increase accessibility, the hotline number is displayed on vehicles, equipment, and hard hats.

How does this Innovation benefit SCDOT:
This simple solution has provided enhanced safety and protection for District 1 employees. Implementation is low-cost and could easily expand statewide as a valuable backup to existing safety protocols.

Cook's Backhoe Closure

Submitted by: Clarence Cook (D4/Union Maintenance)
Manager: Jason Childers

Description:
This low-cost innovation provides a secure secondary latch system for backhoe door glass during transportation. Using just two custom steel brackets and a $12 hood latch, the design keeps the door securely closed and prevents the glass from swinging open and breaking in transit.

How does this Innovation benefit SCDOT:
This simple, low-cost secondary latch system securely keeps backhoe door glass closed during transport, preventing costly damage and downtime. Designed using existing mounting points, it protects the integrity of the ROPS (Roll Over Protection System) by avoiding drilled holes that could compromise safety features or wiring.

The latch is easy to build, install, and replace, costing only about $12 compared to more than $1,300 for window replacement and labor. Durable, safe, and effective, this innovation has significantly reduced broken glass and maintenance costs in the field.

Curb Cobra

Submitted by: Jeremy Etters & Brian McAbee (D4 Pavement Preservation)
Manager: Brian Hodges

Description:
A tool that can be installed to any equipment's front bucket, that assist in cleaning curb and gutter. This attachment eliminates the need for any "boots on the ground" while cutting the grass edge and cleaning the top and bottom of the curb simultaneously.

How does this Innovation benefit SCDOT:
Cleaning debris from curb and gutter can be a very physical task especially considering outside elements. This innovation eliminates the need for "boots on the ground" allowing for fewer serious accidents / injuries as well as heat related emergencies

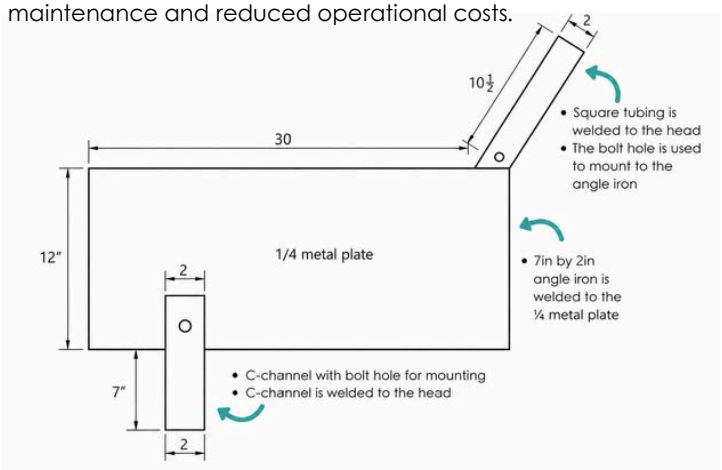
Trims the curb... **AND clears the gutter!**

Forestry Head Hose/Fitting Protector

Submitted by: Patrick Marhan (D4/York Maintenance)
Manager: Nate Lance

Description:
The Forestry Head Hose & Fitting Protector is a durable cover designed to shield hydraulic hoses and fittings from debris such as wood chips, brush, fencing, and hidden roadside materials during operation. By preventing impacts from flying or unseen debris, it helps reduce costly damage and equipment downtime.

How does this Innovation benefit SCDOT:
This innovation provides significant cost and time savings for SCDOT by reducing the need for replacement hydraulic lines, fittings, and fluid. It also minimizes costly downtime by preventing extended delays associated with traveling off-site for repairs and returning to service. It keeps equipment operating longer, cleaner, and more efficiently while supporting faster maintenance and reduced operational costs.

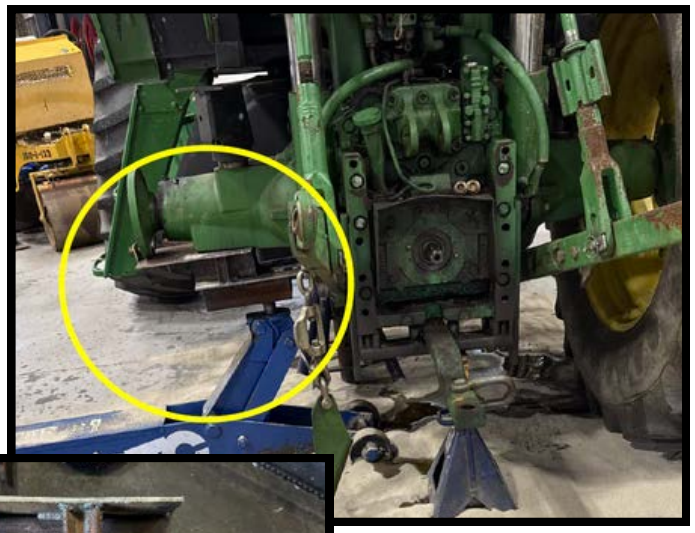


Hub Carrier

Submitted by: Zach Clark (D4/York Maintenance)
Manager: Jamie Ferrell

Description:
The innovation is a custom-fabricated hub carrier/remover designed and built to safely support and remove the axle hub assembly from a 2007 John Deere 6615 tractor. The tool was created in-house after identifying the need for a stronger and more effective method of removing the heavy axle hub without damaging components or creating unsafe working conditions.

How does this Innovation benefit SCDOT:
This innovation benefits SCDOT by improving employee safety, reducing equipment downtime, and eliminating the need to outsource specialized repairs.



QR- Based Signal Equipment Inventory System

Submitted by: Colby Hall (D4/Traffic Signals)
Manager: Thomas Feemster

Description:
District 4 Traffic Signals developed a QR-code-based inventory tracking system to improve accuracy, accountability, and compliance for traffic signal equipment. Using DOT-issued mobile devices, technicians can quickly scan QR codes in the field to document material usage, installation locations, serial numbers, and photos for verification.

How does this Innovation benefit SCDOT:
This innovation improves inventory accuracy, accountability, and compliance with ED-78 inventory control requirements.

Id	Completion time	Name	Asset Selection	Picture of Serial Numbe	Location
16	2/26/26 7:12	Andrew Langley	Controller	https://scdot.sharepoint.co	TS4109 Wylie / York / Hudson(m
17	3/3/26 8:36	Ryan Salley	Controller	https://scdot.sharepoint.co	TS4798 SC 161 / Kings Mountian
18	3/4/26 13:39	Andrew Langley	Controller	https://scdot.sharepoint.co	TS4440 Meeting / Woodland st.(
21	3/30/26 7:19	Joseph Ford Jr	Iteris Loop Camera	https://scdot.sharepoint.co	TS4043 Floyd Bkr. Blvd. @ Gettys
22	4/7/26 13:52	Andrew Langley	Controller	https://scdot.sharepoint.co	TS4071 Old Georgia Hwy. @ Stou
30	4/21/26 12:14	Robert Hall	Controller	https://scdot.sharepoint.co	TS4107 Boulwares
31	4/23/26 6:34	James Jackson Iii	Iteris Loop Camera	https://scdot.sharepoint.co	TS4832 49/274@557/49(Charlott
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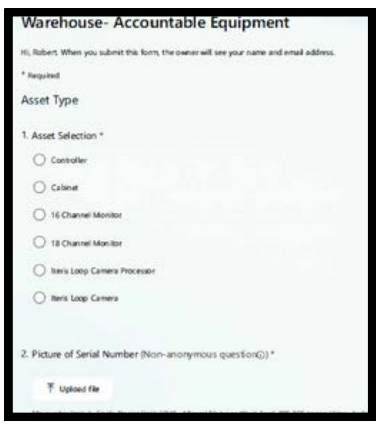


Timber Pile & Steel Bracing Straps

Submitted by: Matthew Hunter & Jayme Norton (D4/Bridge Maintenance Manager: Cody McAbee

Description:
This design uses custom steel jack plates and bracing strips to securely lift and stabilize new pile splices. The jack plate increases surface area on a standard bottle jack, reducing the risk of slipping while positioning heavy timber sections. Steel bracing strips then hold the splice securely in place until permanent concrete encasement is completed.

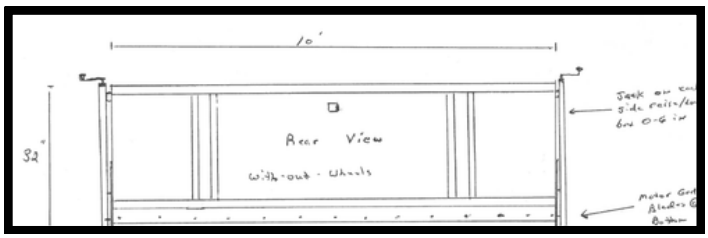
How does this Innovation benefit SCDOT:
This innovation provides a safer and more efficient method for replacing timber bridge piles.

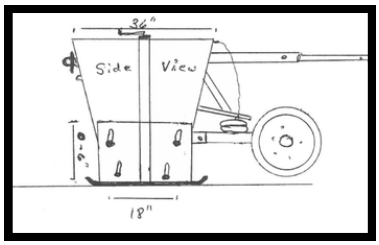
Asphalt Drag Box

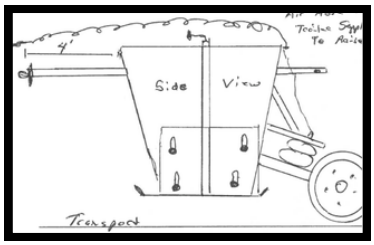
Submitted by: Howard Stokes, Ed Denby, & Isaac Greene (D7/Bamberg Maintenance) Manager: Wayne Anderson

Description:
Drag Box is designed to hold asphalt and level it as it is pulled along the roadway. Skids on each side are designed to set depth of discharge.

How does this Innovation benefit SCDOT:
The Drag Box benefits SCDOT because it transforms a standard Dump Truck into a specialized paving machine, offering a low-cost, versatile alternative traditional paving operations for full depth and or short runs of paving.





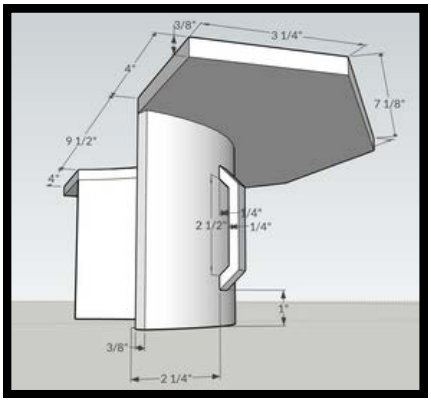


Top Hat

Submitted by: Preston Lavender (D7/Bridge Maintenance)
Manager: Drew Vartenisian

Description:
The "Top Hat" Support System is a lightweight, fabricated aluminum assembly that creates a stable platform for installing steel collar repairs on deteriorated timber bridge piles, improving safety, alignment, and efficiency while reducing manpower requirements.

How does this Innovation benefit SCDOT:
The Top Hat Support System improves safety and efficiency during timber pile repairs by stabilizing heavy steel collar sections, reducing manual lifting, minimizing manpower needs, and speeding up bridge repair operations.



Fuel/Water Separator Guard

Submitted by: Carson Welborn (D6/Beaufort Shop)
Manager: Joe Baggett

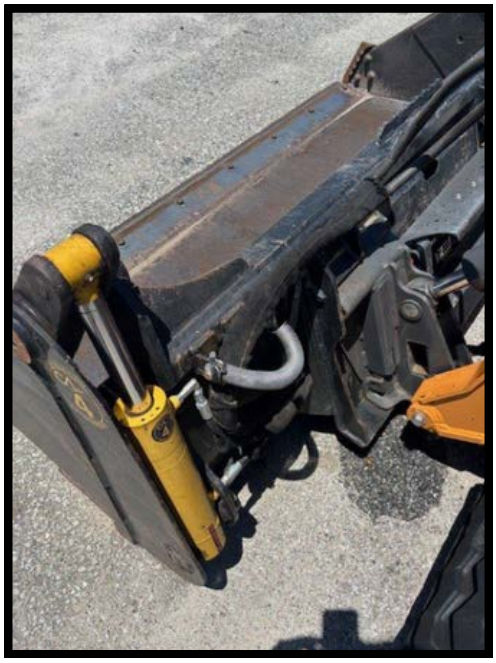
Description:
Expanded metal frame with mud flaps attached, then attached to frame of vehicle with rubber guard around edges to protect hoses and wiring.

How does this Innovation benefit SCDOT:
This design protects the fuel water separator, wiring, and hoses from road debris, mud, snow, ice, and environmental wear. By reducing damage-related failures and unplanned maintenance, it lowers repair costs, minimizes equipment downtime, and extends the life of critical components. The improvement also reduces labor hours spent on preventable repairs, helping keep operations safe, efficient, and productive.

Hose Guard

Submitted by: Carson Welborn (D6/Beaufort Shop)
Manager: Joe Baggett

Description:
This innovation is mounted to the skid steer bucket using two welded brackets, with a spring attached to the back. Hoses can be routed through the spring, which keeps them securely in place while still allowing the flexibility needed for movement.



How does this Innovation benefit SCDOT:
A custom guard and spring system was developed to prevent hydraulic hoses from becoming trapped under the tracks and pulling loose from fittings. The design maintains full operator range of motion while allowing the hoses to flex without excessive tension, preventing hose and fitting failures. This solution has eliminated recurring repairs, reducing downtime and saving both labor and maintenance costs.

Signpost Strobe Light

Submitted by: Bryan Tenbroeck (D6/Beaufort Shop)
Manager: Joe Baggett

Description:
A small light bar is mounted to the end of a signpost that is secured in the truck bed and extends beyond the tailgate. This solution provides additional rear lighting for the portion of the load extending past the truck, improving visibility and safety.

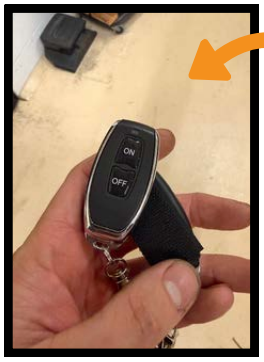
How does this Innovation benefit SCDOT:
This custom end piece replaces traditional rags or flags with a highly visible safety solution for signposts extending from SCDOT vehicles. Featuring reflective backing and dual strobe lights, it greatly improves visibility and awareness for motorists during both day and night operations, helping enhance safety for on-call and maintenance crews.

Wireless Remote For Brine Tank

Submitted by: Bryan Tenbroeck (D6/Beaufort Shop)
Manager: Joe Baggett

Description:
Traditionally, brine tanks are connected to specific trucks, making them unusable when those trucks are out of service. A remote valve was wired to work with any SCDOT vehicle equipped with a universal 7-pin connector for brine tanks. The system's wireless remote allows operators to activate the brine tank valve directly from the cab.

How does this Innovation benefit SCDOT:
This universal brine tank setup was designed for use across multiple vehicles and applications, reducing downtime when equipment is out of service while increasing operational flexibility. By allowing the tank to be operated remotely, it improves safety by minimizing exposure to extreme weather and high-traffic conditions. Its adaptable design also provides opportunities for future applications beyond brine tank operations.

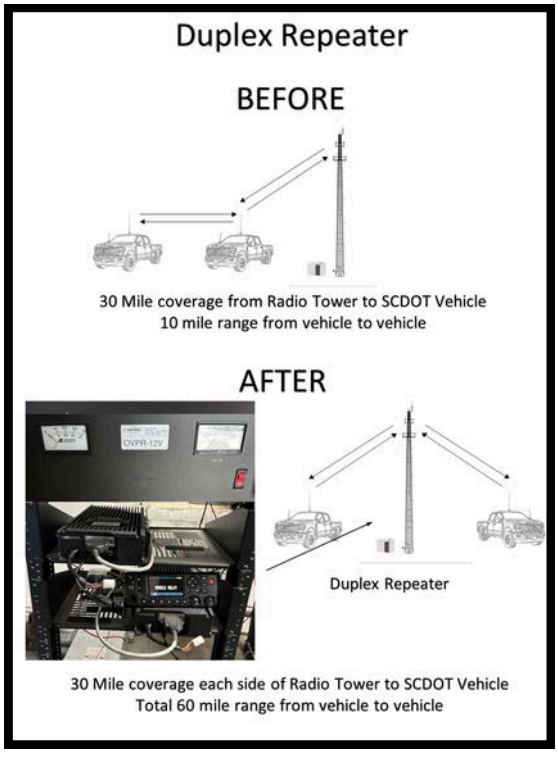


Digital Duplex Repeater

Submitted by: John Richardson, Teresa Beeson, & Adam Cobbs (HQ/Radio Shop)
Manager: Nelson Squire

Description:
By leveraging the Cross-band mobile repeater system, John used this method to devise a fixed base digital station repeater using a cavity filter (duplexer) to isolate transmitted and received signals within our SCDOT frequency band. This digital cross-band/repeater combination is at the Sumter 350 ft Tower and significantly enhances radio coverage in the Sumter area by allowing simultaneous transmission and reception on a single antenna, improving signal strength and eliminating dead zones. It provides increased range and clearer, reliable communication for the vehicle's mobile NX5600 digital radios. Also, as part of the team, Teresa Beeson physically constructed the specialized cables needed to build the Cross-band Repeater and beyond the initial hardware build, Adam Cobbs was instrumental in conducting comprehensive system range tests and gathering vital data that validated the Crossband system's real-world capabilities.

How does this Innovation benefit SCDOT:
This system provides several key benefits for the Sumter area, including expanded radio coverage, clearer and more reliable signal quality, reduced communication dead zones, and simplified infrastructure through the use of a single antenna for transmitting and receiving. The duplexer plays a critical role in filtering interference and allowing the repeater system to operate efficiently, which is especially valuable in crowded VHF/UHF frequency environments like Sumter.



Cross-Band Repeater (Highband/Lowband)

Submitted by: Gene Wynn, Teresa Beeson, & Juston Pearce (HQ/Radio Shop)
Manager: Nelson Squire

Description:

Limited range and signal dead zones with NX-1200 high-band radios created communication challenges for flagging operations and field personnel. To solve this, Gene developed a mobile cross-band repeater system that links local high-band frequencies to a long-range low-band radio, greatly improving coverage while allowing crews to continue using their standard NX-1200 radios. The system is portable, quick to deploy, and can be easily moved between job sites as needed. Specialized cable construction, system testing, and field data collection by the project team helped validate the system's reliability and real-world performance.

How does this Innovation benefit SCDOT:

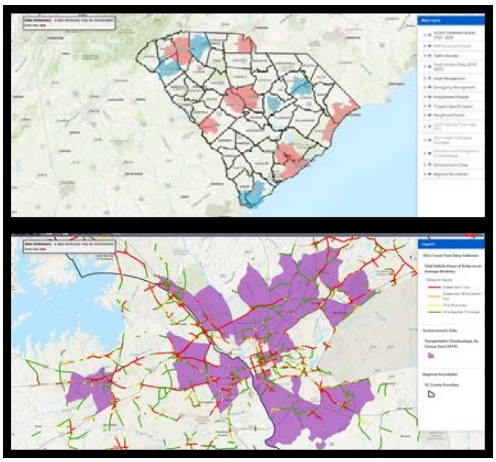
This system improves communication in South Carolina paving zones by overcoming terrain obstacles, extending radio range across long work areas, and reducing communication dead zones. It provides reliable coordination between crews, pilot cars, and flaggers, helping improve safety, maintain compliance with SCDOT and OSHA requirements, and reduce traffic delays. By placing the repeater on a high point or work vehicle, crews can maintain clear communication even in high-speed or low-visibility areas.

Regional Mobility Geographic Information System (ReGIS)

Submitted by: Joe Sturm, Tameika Bostic, Guillermo Espinosa, Rebecca Galloway, Chowdhury Siddiqui & Elizabeth Thebo (HQ/Planning & GIS)
Manager: Joe Sturm & Brian Klauk

Description:

The Regional Mobility Geographic Information System (ReGIS) is a transportation planning information platform maintained by SCDOT Office of Planning. This comprehensive mapping application allows users to review statewide planning data from multiple SCDOT programs, such as: existing projects, crashes, congestion, traffic volumes, designated routes, socioeconomic data, and bridge and pavement condition. Developed in collaboration with the SCDOT GIS Office, this cloud-based application is free-of-cost to SCDOT staff, and partner organizations such as Metropolitan Planning Organizations (MPO's) and Councils of Government (COG's). ReGIS will continue to be updated as new data and innovations in transportation planning are produced in South Carolina.



How does this Innovation benefit SCDOT:

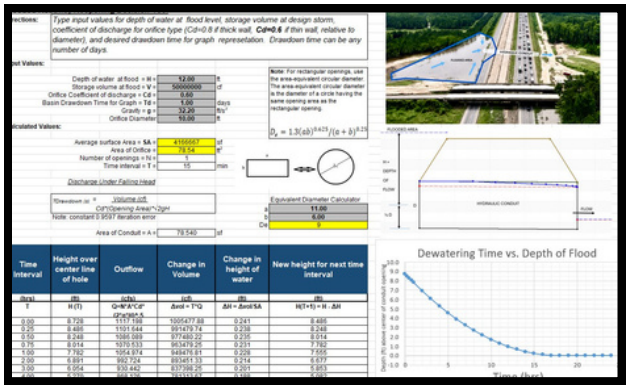
This innovation benefits SCDOT by consolidating transportation planning and project information into a one-stop-shop. This application facilitates program coordination by allowing SCDOT staff, as well as partner organizations, to work with the latest information available.
Users benefit from reviewing the base information that is used to develop project recommendations, as well as their impact once projects are open to the public.
ReGIS is also the primary host of ReCAP (Regional Corridor Analysis Process): a corridor scale, high-level engineering feasibility screening used in the planning of projects for the MPO and COG regions.

Flooded Roadway Reopening Prediction Tool

Submitted by: Roberto Ruiz (HQ/Engineering Support)
Manager: Sam Pridgen

Description:
This innovation is a practical Excel-based dewatering tool developed to estimate how long floodwater will take to drain from roadways through culverts, pipes, bridges, or other outlets. Created in response to major flooding events such as I-95 (2023) and I-26 (2024), it provides SCDOT Hydraulic Support staff with a fast, reliable way to estimate roadway recovery times after floodwaters begin to recede. Unlike traditional hydrologic models that require ongoing rainfall inputs, this tool is designed specifically for drawdown conditions using a step-by-step falling-head method that updates discharge and water depth as levels decline. This results in more accurate estimates of when roadways will become passable or ready for inspection. Developed using standard Excel software with no additional licensing costs, the tool improves operational decision-making during flood response while leveraging existing SCDOT resources.

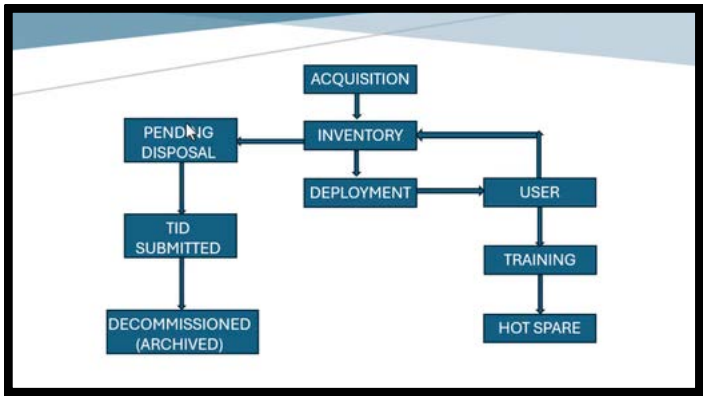
How does this Innovation benefit SCDOT:
Overall, the spreadsheet transforms field observations and flood elevation data into actionable operational information. The tool has already been used successfully during real flooding events and helps SCDOT make safer, faster, and more informed decisions when response time is critical.



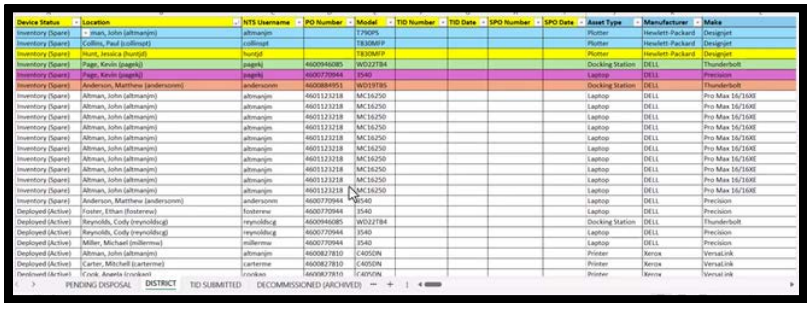
SCDOT Asset Lifecycle Management System

Submitted by: Kenneth W. Butler (HQ/IT)
Manager: Wayne Eargle

Description:
This innovation is an enterprise-grade Asset Lifecycle Management System developed in Microsoft Excel using VBA and Active Directory integration to create a controlled, automated platform for managing asset lifecycles. By combining rule-based automation, validation controls, and event-driven processing, the system improves data accuracy, operational efficiency, compliance readiness, and long-term asset governance while reducing manual effort.



How does this Innovation benefit SCDOT:
This innovation benefits SCDOT by transforming a traditional Excel spreadsheet into a controlled, automated Asset Lifecycle Management System that improves data accuracy, operational efficiency, consistency, and audit readiness. Through VBA automation and Active Directory integration, the system reduces manual effort, strengthens governance and compliance controls, and provides a scalable foundation for managing asset lifecycles more effectively across the organization.



In-Service Performance Evaluation of SCDOT Median Cable Barrier System

Submitted by: Jason Hall (HQ/Engineering Support)
Manager: Mark Anthony

Description:
This innovation applies In-Service Performance Evaluations (ISPEs) to cable barrier systems by using real-world crash data, maintenance history, and site-specific conditions to support performance-based decision-making rather than relying solely on prescriptive standards. The approach helps DOTs improve safety, prioritize resources more effectively, reduce unnecessary replacement costs, and make more strategic, data-driven infrastructure decisions.

How does this Innovation benefit SCDOT:
This ISPE report was submitted to our local FHWA office, and they agreed (based on system performance) that SCDOT is justified in continuing using our current median cable barrier system until a suitable generic MASH compliant system is developed. This will save SCDOT millions of dollars by not forcing SCDOT to upgrade to a more expensive proprietary system which on average cost approximately 50% more than our current generic median cable barrier system.

Table 7. Summary of Key ISPE Performance Metrics

Performance Measure	Observed Result
Barrier Breach Rate	2–3%
Successful Containment	97–98%
Rollover Frequency	~3%
Secondary Roadside Impacts	<1%
Secondary Roadway Impacts	1–2%
Dominant Vehicle Type	Passenger Cars
Consistency Across PALs	Yes

Independent Assurance System Based Program

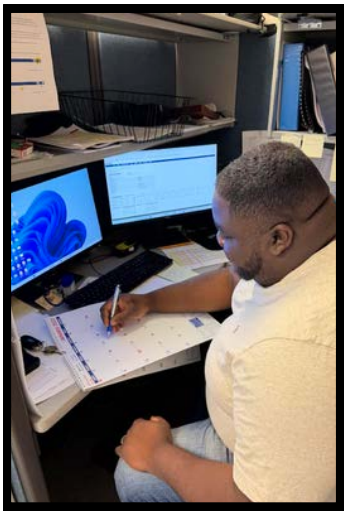
Submitted by: Chris Lybarker, Benji Branham, & Will Dickert (HQ/OMR)
Manager: Temple Short, Merritt Vann, & Tom Dorn

Description:
In response to increasing project demands and limited staffing, SCDOT developed an innovative system-based IA program for plant-produced asphalt that streamlined FHWA-required evaluations through a more efficient, data-driven approach. Implemented in 2018 with FHWA approval, the program uses annual evaluations and a centralized tracking database to reduce travel, conserve resources, and improve oversight of asphalt plant and roadway technicians statewide.

How does this Innovation benefit SCDOT:
The system-based approach has proven to be a win-win for all parties involved. It has reduced the number of repeated evaluations performed by the IA Inspectors on the same technician by approximately 20 to 25 evaluations per calendar year. SCDOT has also seen a reduction of several hundred related samples per calendar year.

This approach, compared to project based IA, has greatly reduced repeated sampling for the IA inspectors, OMR testing units, and the contractors performing asphalt construction. The success of this system-based approach for asphalt has been so effective that it has since been expanded to include prestressed concrete statewide, as well as earthwork and base course materials and concrete on the first phases of the Carolina Crossroads project.

Overwhelmed



On Schedule

Outstanding Innovation Award Winners

Wilsons' Wonderbed

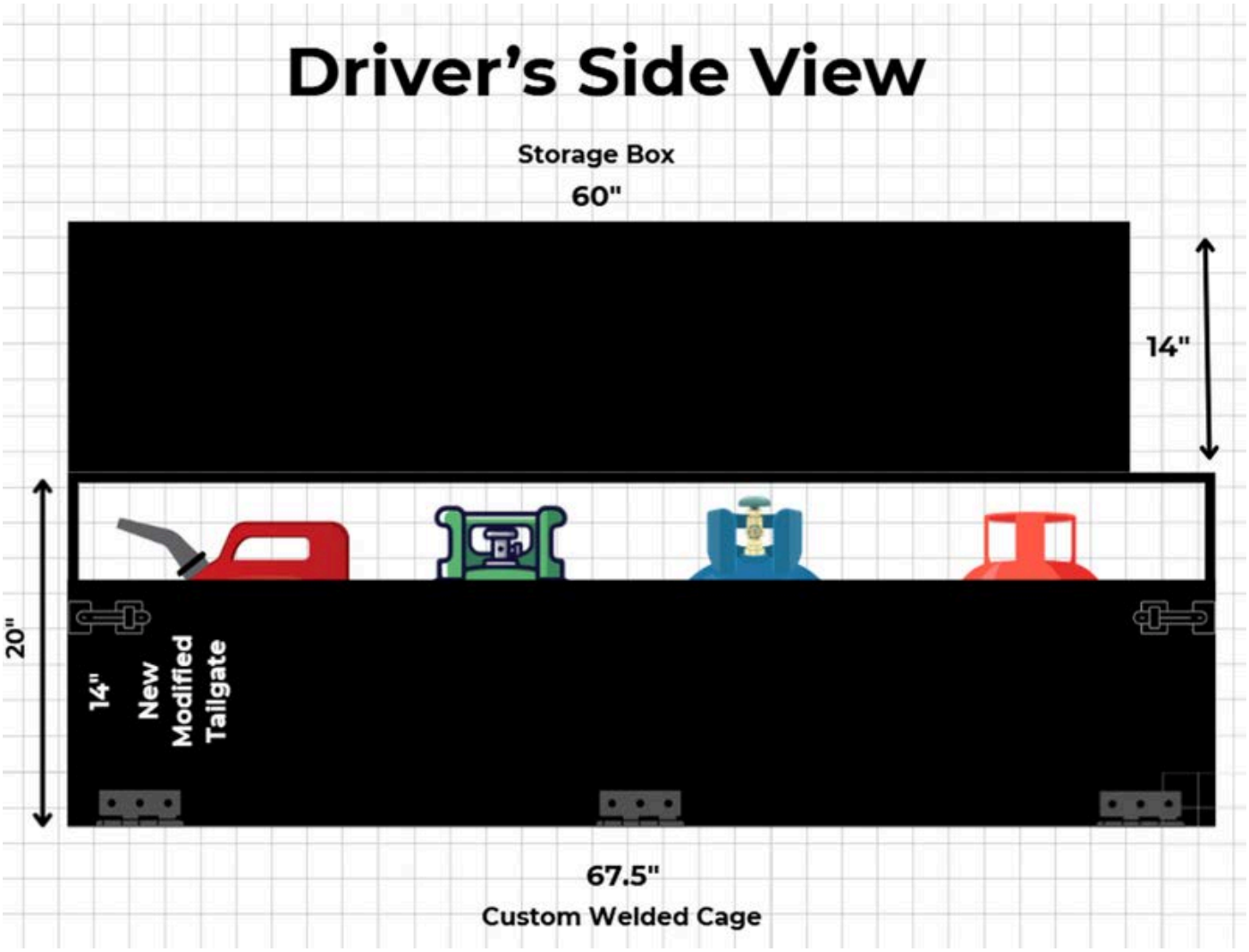
Submitted by: Alec Wilson & Phillip Wilson (D1/Bridge Maintenance)
Manager: Charles Cannon

Description:
We welded a custom cage made of extra angle iron that was just big enough to fit and secure our fuel cans. On top of the cage we installed a storage box, which frees bed space and fully enclosed the cans from above. Then, we cut the driver's side of the bed and added 3 hinges along the bottom (supporting it with chains). It now flips down to allow quicker and safer access to the gas cans from the driver's side of the truck.

YouTube

How does this Innovation benefit SCDOT:
The Wonderbed improves safety, efficiency, and organization for our crew. By securely storing fuel cans, it helps prevent dangerous incidents and reduces strain on employees by eliminating heavy lifting over the truck bed. The fold-down side panel also doubles as a convenient workbench in the field. Built in just a few hours for less than $50, the Wonderbed provides a low-cost alternative to commercial truck beds costing over $10,000 — while adding extra storage and saving valuable time each day through better organization and easier access to equipment.

Wilsons' Wonderbed



Materials List:

- Angle iron
- Door hinges
- Chain

Post Pounder Rack

Submitted by: Charles Smith (D6/Jasper Maintenance)
Manager: Donnie Orr

Description:
The post pounder rack is a light duty holder that allows our sign crew to store the skidril gas powered post driver in the upright position.

How does this Innovation benefit SCDOT:
The post pounder rack makes the post driver easier for the sign crew to access without climbing onto the truck bed. It also cuts down on damage from moving around on the truck bed. This is a safer way to store the tool and keep the operator from climbing on to the truck preventing potential injury.

YouTube

Post Pounder Rack

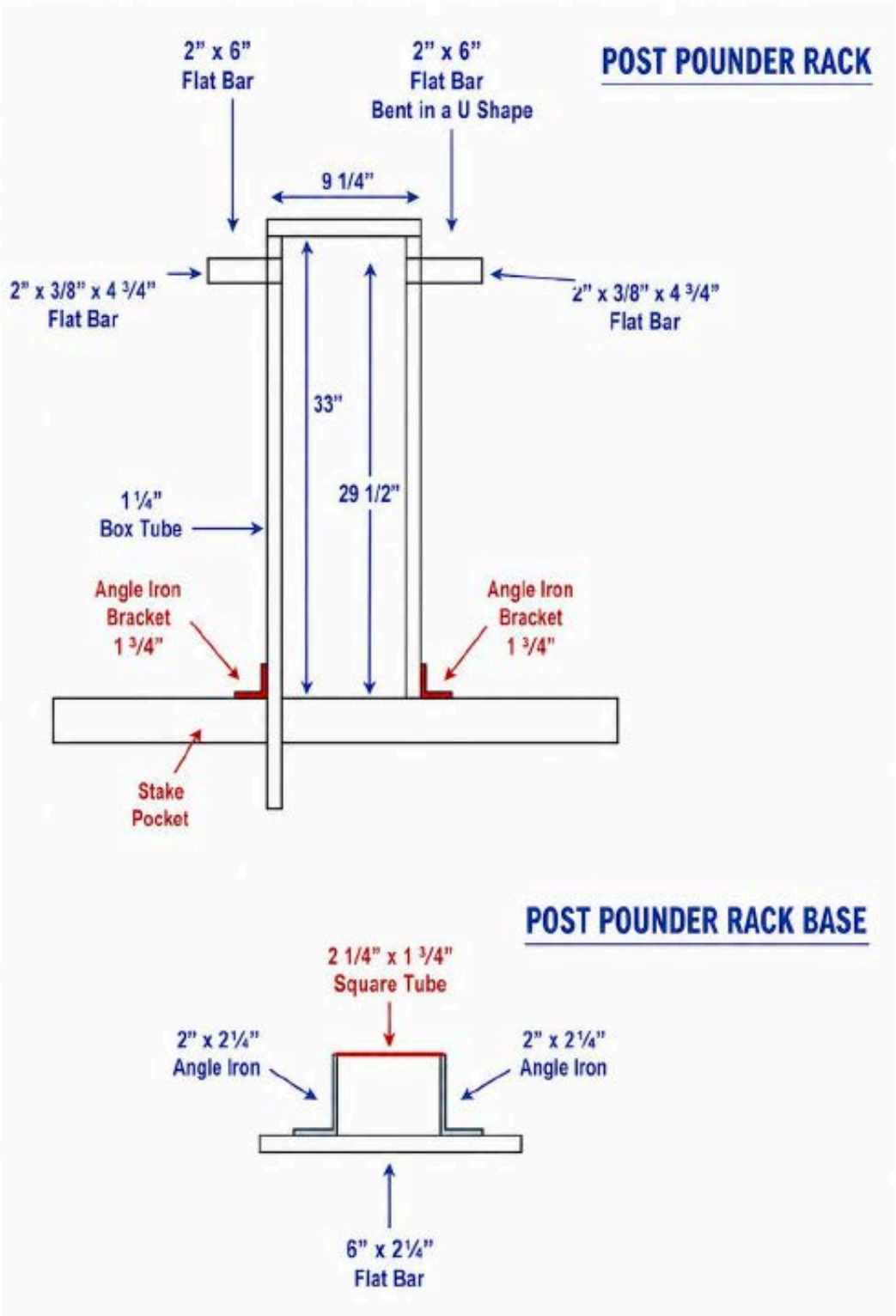


Plate Transport/Bucket Tie Down

Submitted by: Charles Smith (D6/Jasper Maintenance)
Manager: Donnie Orr

Description:

The Plate Transport/Bucket tie down is a multi-use add on that has increased efficiency in Jasper. It can be used on the backhoe to move the cover plate both on and off of the trailer or into it's proper placement at job site. Before and after the job, the rings can also be used with chain binders to secure the bucket of the backhoe down during transport.

How does this Innovation benefit SCDOT:

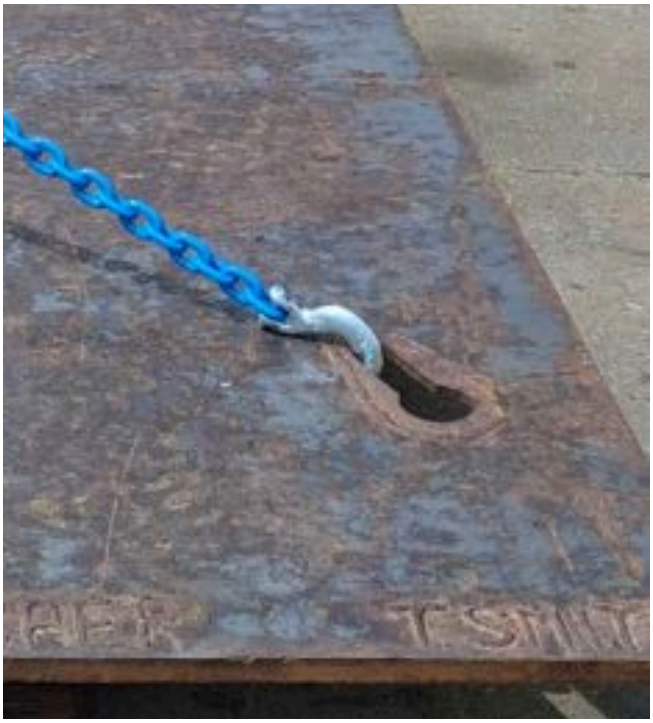
This method is a much safer way to move plates on and off the trailer or roadway at a job site. Employees prefer to use the chain binder method to secure the backhoe because it elimiates the need to climb in and out of the trailer. Both uses protect employees and SCDOT equipment.

Transport

YouTube

Placement

Plate Transport/Bucket Tie Down



Regional Mobility Geographic Information System (ReGIS)

Submitted by: Joe Sturm, Tameika Bostic, Guillermo Espinosa, Rebecca Galloway, Chowdhury Siddiqui & Elizabeth Thebo (HQ/Planning & GIS)
Manager: Joe Sturm & Brian Klauk

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YouTube

Regional Mobility Geographic Information System (ReGIS)

How does this Innovation benefit SCDOT:

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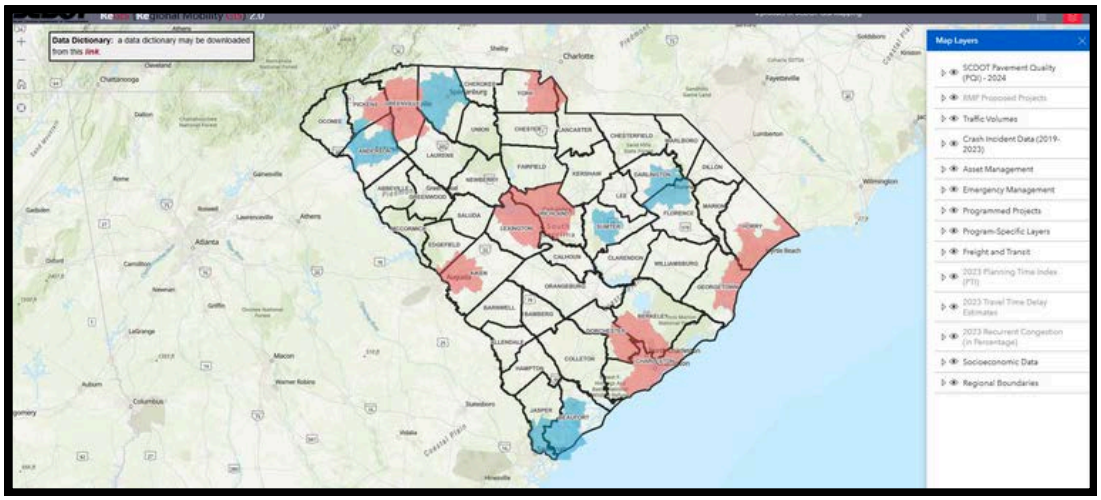


Asphalt Drag Box

Submitted by: Howard Stokes, Ed Denby, & Isaac Greene
(D7/Bamberg Maintenance)
Manager: Wayne Anderson

Description:

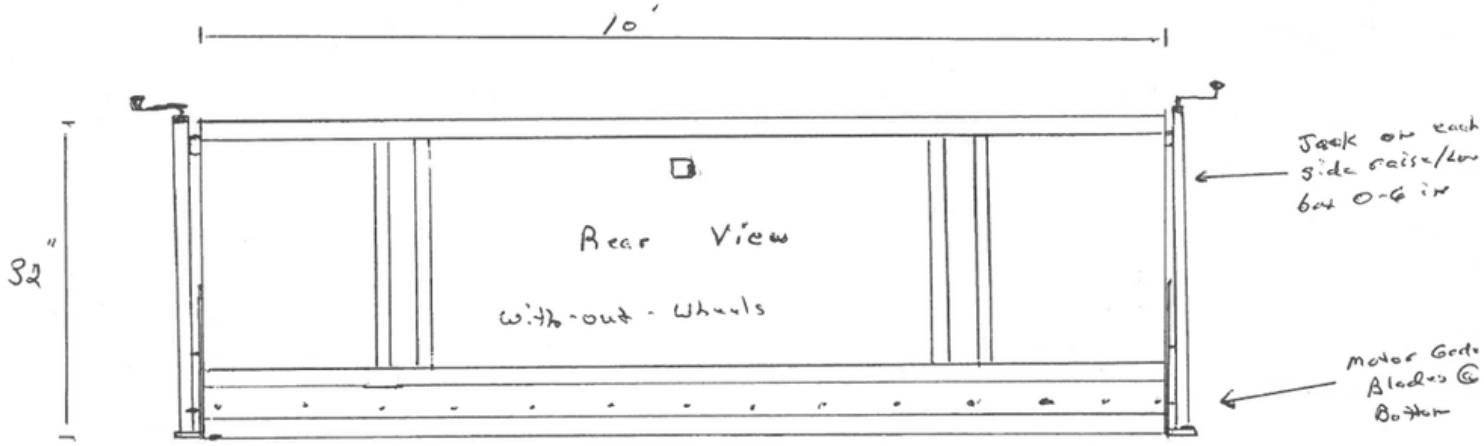
Drag Box is designed to hold asphalt and level it as it is pulled along the roadway. Skids on each side are designed to set depth of discharge.

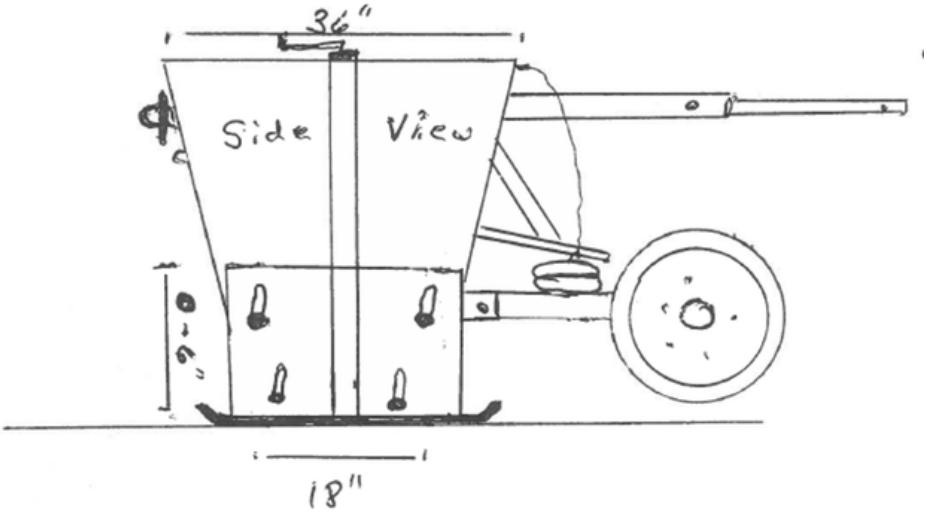
How does this Innovation benefit SCDOT:

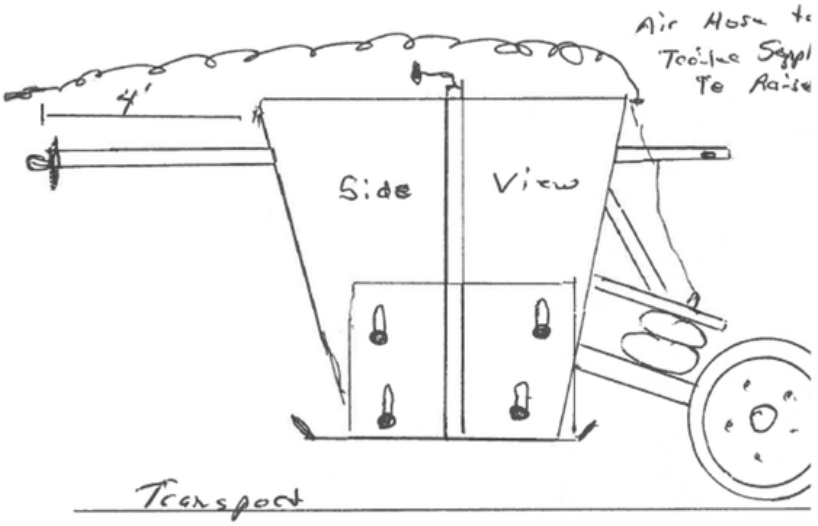
The Drag Box benefits SCDOT because it transforms a standard Dump Truck into a specialized paving machine, offering a low-cost, versatile alternative traditional paving operations for full depth and or short runs of paving.

YouTube

Asphalt Drag Box







Cross-Band Repeater (Highband/Lowband)

Submitted by: Gene Wynn, Teresa Beeson, & Juston Pearce (HQ/Radio Shop)
Manager: Nelson Squire

Description:

Limited range and signal dead zones with NX-1200 high-band radios created communication challenges for flagging operations and field personnel. To solve this, Gene developed a mobile cross-band repeater system that links local high-band frequencies to a long-range low-band radio, greatly improving coverage while allowing crews to continue using their standard NX-1200 radios. The system is portable, quick to deploy, and can be easily moved between job sites as needed. Specialized cable construction, system testing, and field data collection by the project team helped validate the system's reliability and real-world performance.

How does this Innovation benefit SCDOT:

This system improves communication in South Carolina paving zones by overcoming terrain obstacles, extending radio range across long work areas, and reducing communication dead zones. It provides reliable coordination between crews, pilot cars, and flaggers, helping improve safety, maintain compliance with SCDOT and OSHA requirements, and reduce traffic delays. By placing the repeater on a high point or work vehicle, crews can maintain clear communication even in high-speed or low-visibility areas.

Cross-Band Repeater (Highband/Lowband)

BEFORE

Flagger Radios have a maximum 2 Mile coverage
Also only Flagger can recieve and transmit communication

AFTER

Cross-band Repeater installed inside a Foreman's vehicle
High Band and Low Band Radios install in the back
Control Head Unit installed on the front console

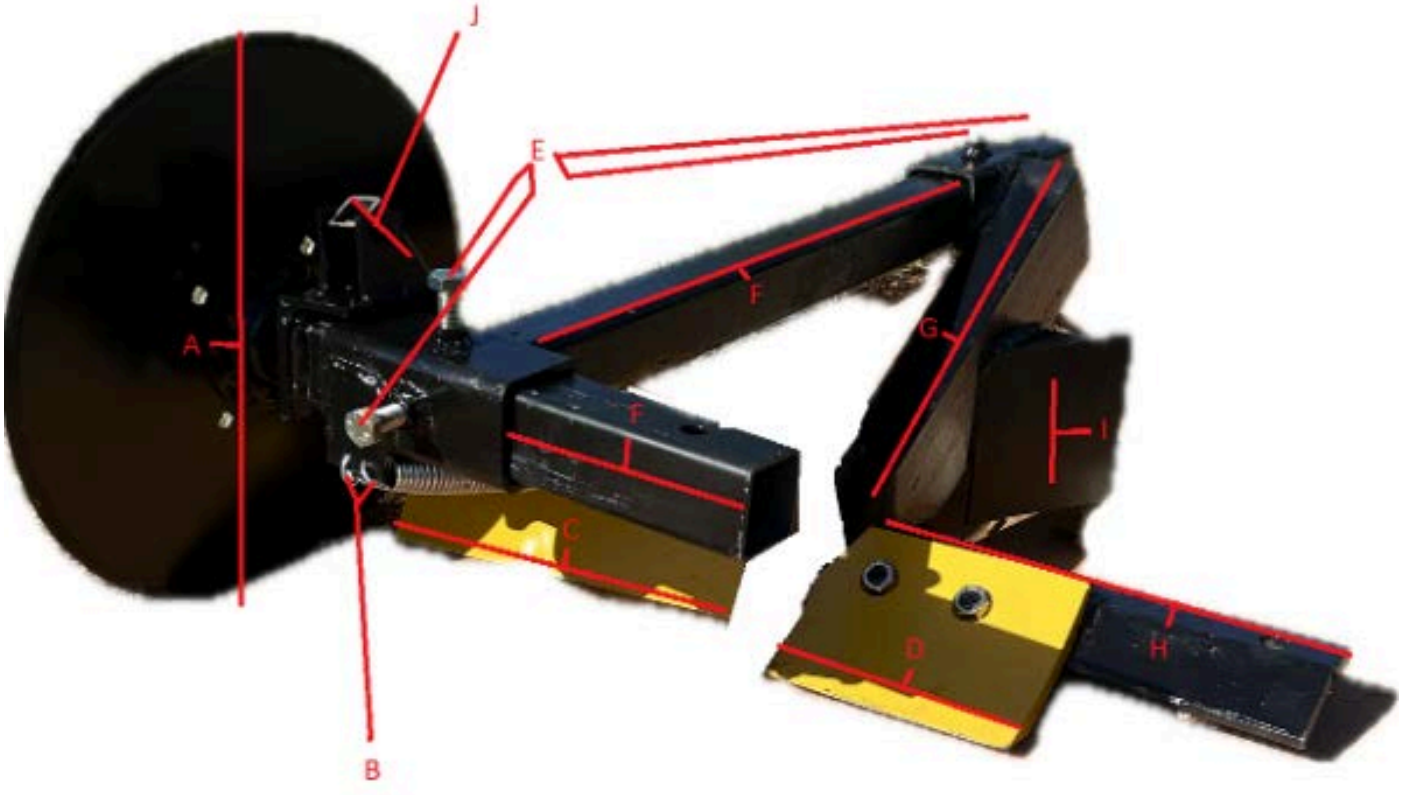
This allows the Flagger radios to transmit and receive through the Foreman's vehicle
Not only does this increase the radio coverage to a maximum 10 miles
It also enables all work zone personnel to monitor the flaggers' communications

Curb Cobra

Submitted by: Jeremy Etters & Brian McAbee (D4 Pavement Preservation)
Manager: Brian Hodges

Description:
A tool that can be installed to any equipment's front bucket, that assist in cleaning curb and gutter. This attachment eliminates the need for any "boots on the ground" while cutting the grass edge and cleaning the top and bottom of the curb simultaneously.

How does this Innovation benefit SCDOT:
Cleaning debris from curb and gutter can be a very physical task especially considering outside elements. This innovation eliminates the need for "boots on the ground" allowing for fewer serious accidents / injuries as well as heat related emergencies



Curb Cobra

Cost List

Desciption	Quantity	Size	Cost each	Total
Cultivating disc	1	12 "	$34.00	$34.00
springs	2	5" long	$5.00	$10.00
Grader Blade piece	1	7" wide x 3" high	on hand	on hand
Grader Blade piece	1	8" wide	on hand	on hand
Bolts with nuts	4	1/2"	$1.25	$5.00
square tubing	4 feet	2"x 2"	$24.00	$24.00
bucket support	2 feet	2"x 3" angle	$30.00	$30.00
Cutting edge support	2 feet x 4"	1/2" steel plate	$50.00	$50.00
Divertor	1	4"x4"x1/8" thick plate	$5.00	$5.00
square tubing	1	2"x2"x 1 foot long	$10.00	$10.00
Sales tax	1	7%		
				$181.44

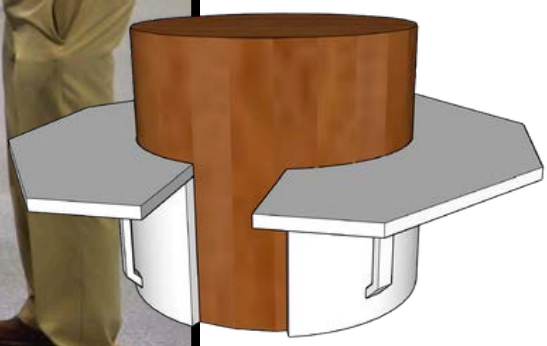
YouTube

Top Hat

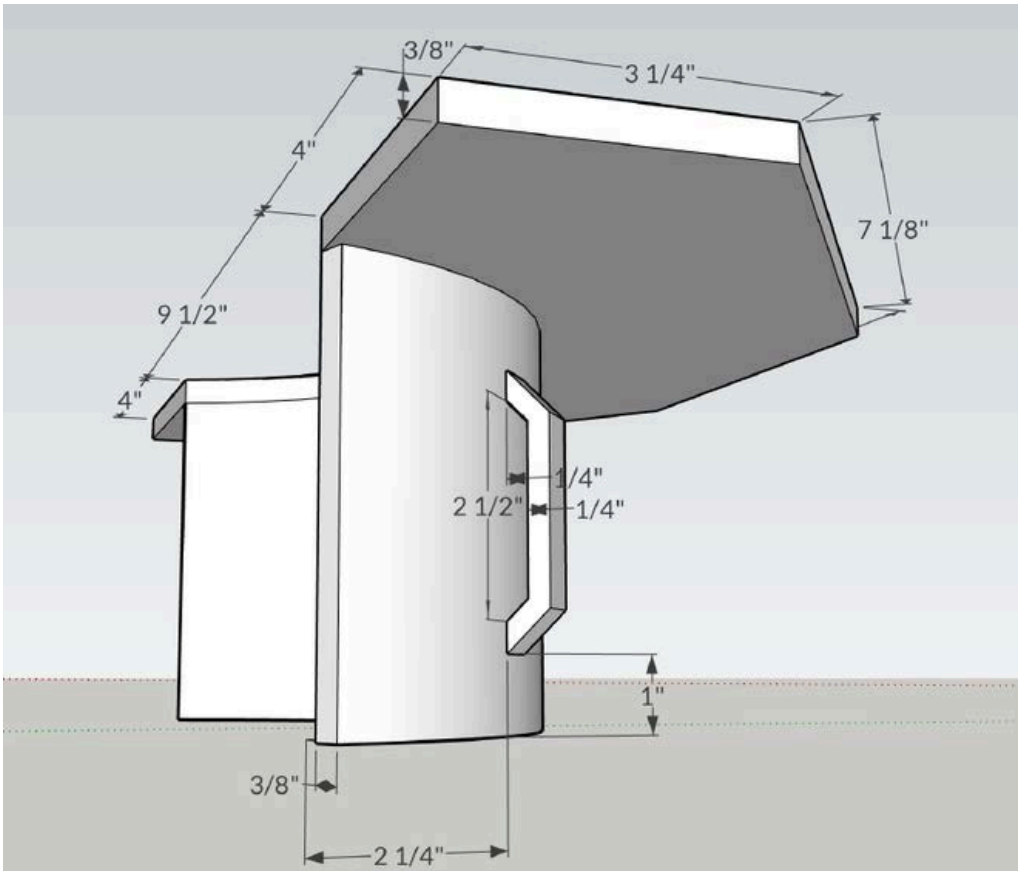
Submitted by: Preston Lavender (D7/Bridge Maintenance)
Manager: Drew Vartenisian

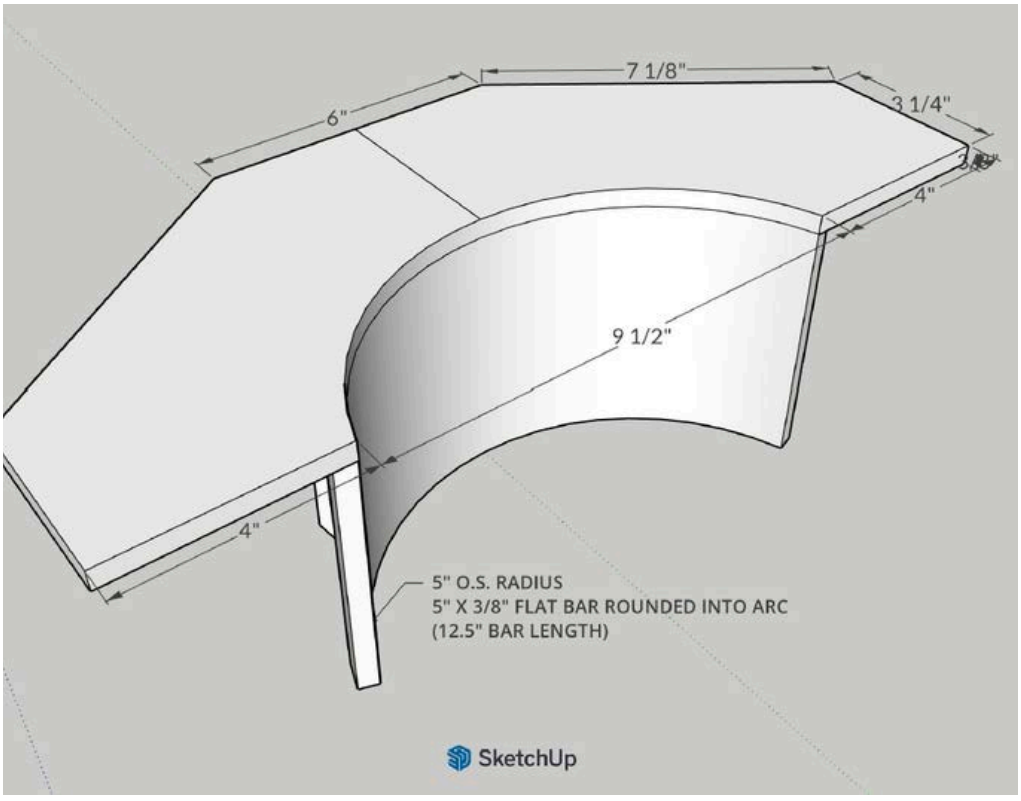
Description:
The "Top Hat" Support System is a lightweight, fabricated aluminum assembly that creates a stable platform for installing steel collar repairs on deteriorated timber bridge piles, improving safety, alignment, and efficiency while reducing manpower requirements.

How does this Innovation benefit SCDOT:
The Top Hat Support System improves safety and efficiency during timber pile repairs by stabilizing heavy steel collar sections, reducing manual lifting, minimizing manpower needs, and speeding up bridge repair operations.



Top Hat


3/8"
3 1/4"
4"
7 1/8"
9 1/2"
4"
1/4"
2 1/2"
1/4"
1"
3/8"
2 1/4"


7 1/8"
6"
3 1/4"
4"
9 1/2"
4"
5" O.S. RADIUS
5" X 3/8" FLAT BAR ROUNDED INTO ARC
(12.5" BAR LENGTH)
SketchUp

Top Hat

1) Cutting Pile

2) Planing pile

3) Measuring for new pile

4) Splicing in new pile

Top Hat

5) Installing Top Hat 2; below joint

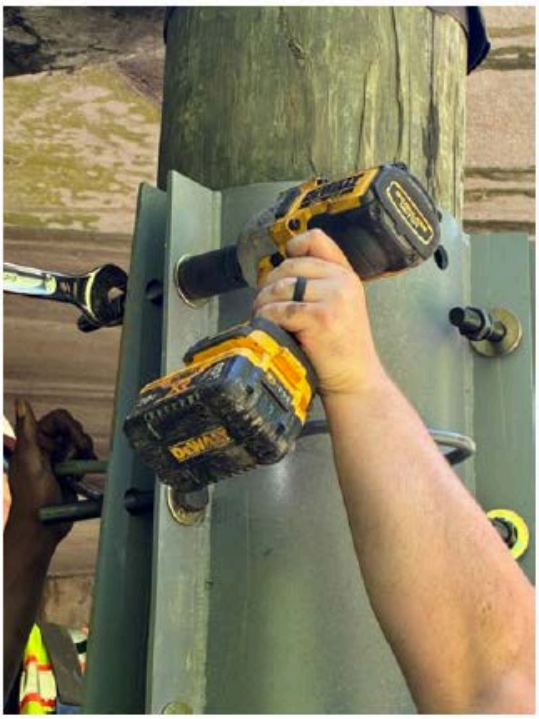
6) securing Top Hat

7) Top Hat ready for collars

8) Placing Collar on Top Hat

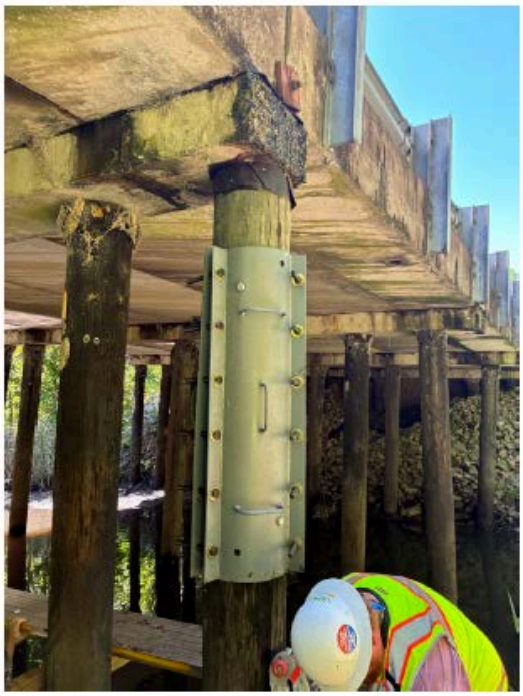
Top Hat

9) Two collars placed



10) Tightening Bolts

11) Removing Top Hat



12) Collars installed

Wireless Remote For Brine Tank

Submitted by: Bryan Tenbroeck (D6/Beaufort Shop)
Manager: Joe Baggett

Description:
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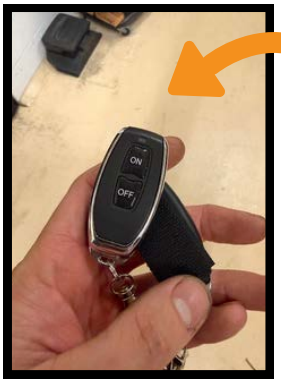

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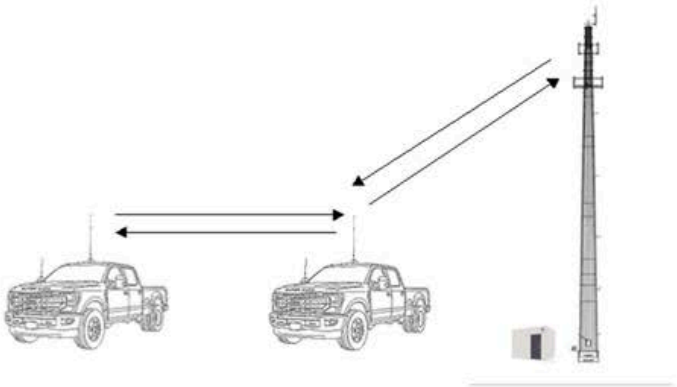
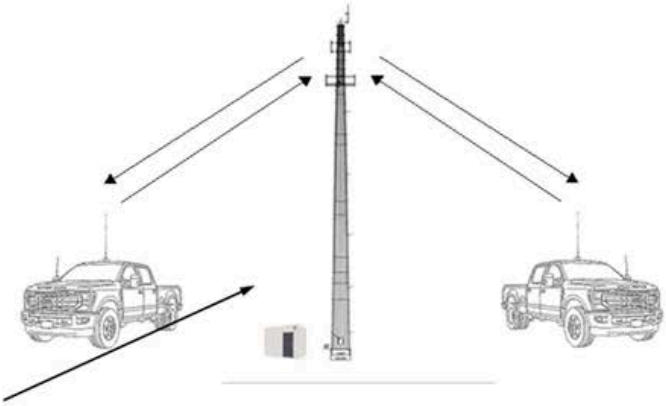
Digital Duplex Repeater

BEFORE



30 Mile coverage from Radio Tower to SCDOT Vehicle
10 mile range from vehicle to vehicle

AFTER



Duplex Repeater

30 Mile coverage each side of Radio Tower to SCDOT Vehicle
Total 60 mile range from vehicle to vehicle