

# Corrosion Prevention Methods



# Impact :

Winter maintenance requires the use of chemicals and salt to keep roadways clear of snow and ice. These chemicals are highly corrosive to vehicles and equipment and will cause increased maintenance and repair cost, reduced vehicle life and increased downtime.

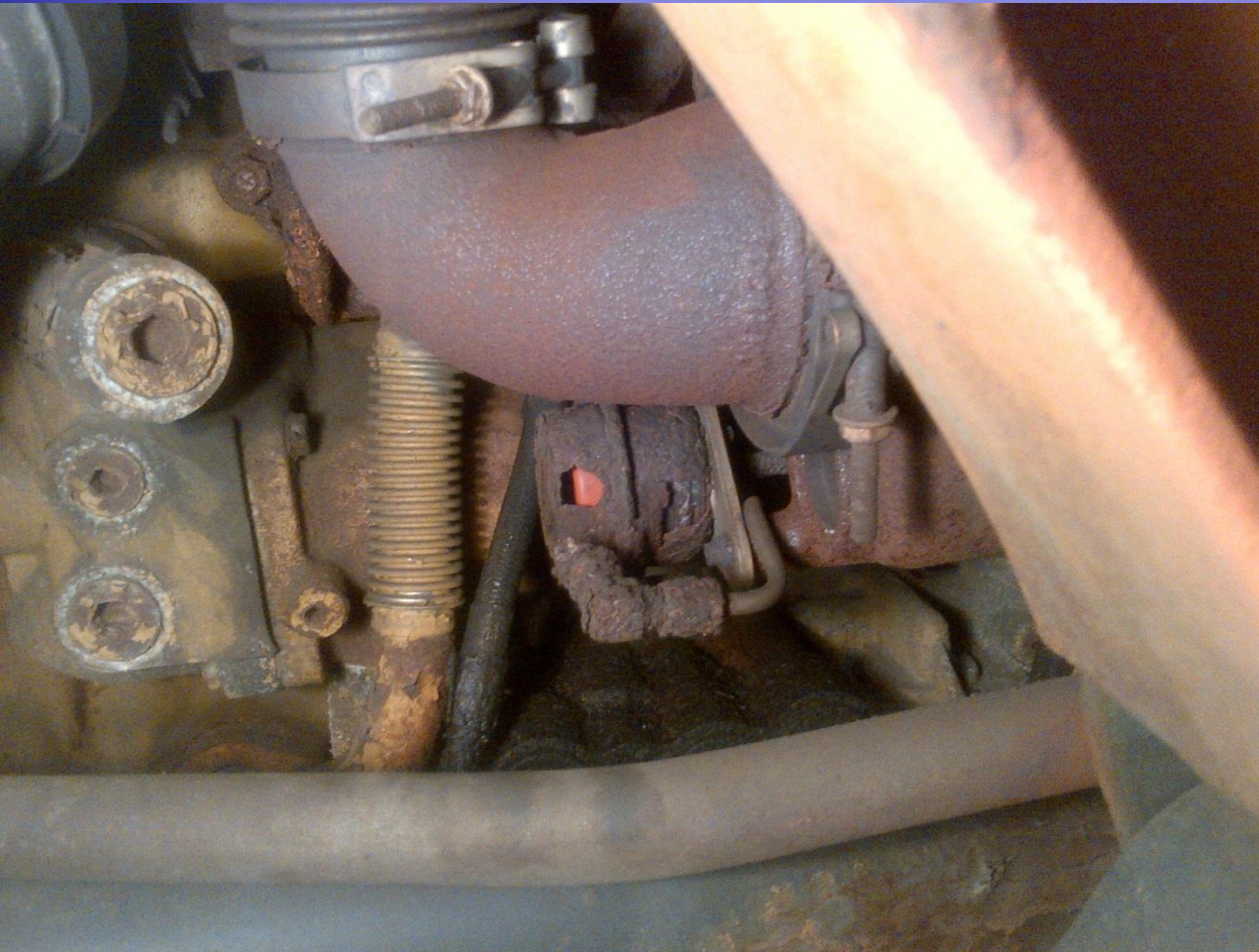
Corrosion is one of our biggest enemies. It's not as obvious as broken or bent pieces of steel. Corrosion can creep up on you and impact equipment in ways that can be devastating or just plain frustrating.



Costly effects of corrosion



2007 International 7600 C 13  
CAT with 68,000 miles





Frame rail corrosion, 2002 International 4900

Rust jacking at hard to clean areas caused broken truck frame.



# Corrosion Prevention Best Practices







Good policy and procedures for operator maintenance ( truck Washing) should include procedures for winter season and post season to remove all chlorides .

Salt is hygroscopic .... It will both attract and retain moisture. Salt that remains attached to a corrodible material will attract and retain moisture causing equipment to corrode more quickly.



Work with **OEM** truck manufacturers and body builders to move critical electrical components inside the cab or to protected environment



2007 RPM box mounted under cab

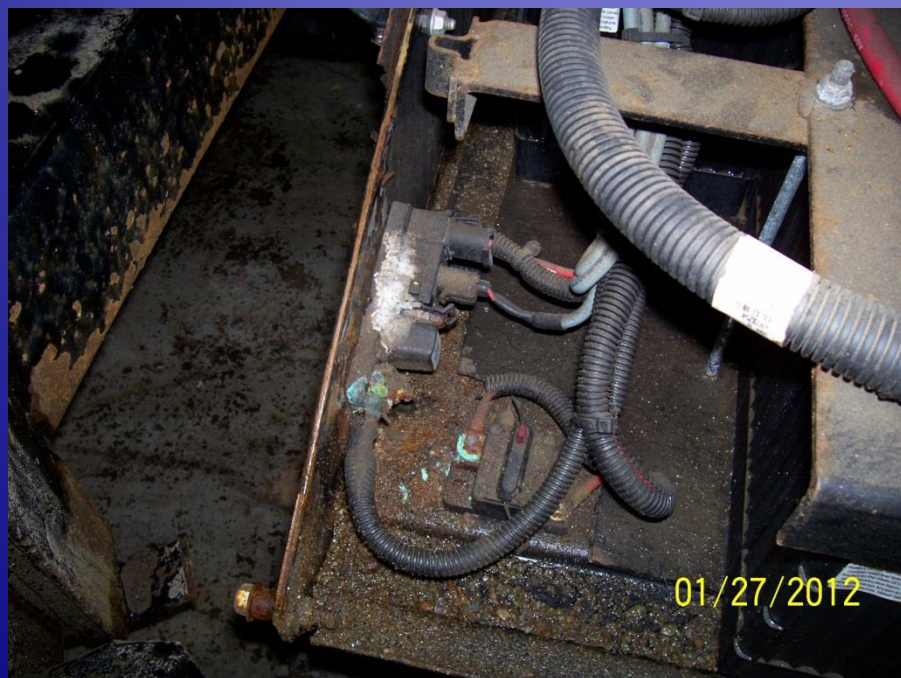


2010 RPM box mounted behind driver seat

Electrical components has plagued ConnDOT . ConnDOT require body builders to provide sealed connections and plugs and use dielectric grease on all.



Relay and circuit breaker for spreader controls moved to an enclosed box inside the cab (pictures provided by PennDOT)



Specify high quality paint and primer requirements on truck purchases . ConnDOT specification requires body builder to completely prime and paint with "Continental " 2 part urethane paint and primer.



Coatings: Marine grade coating applied to brake valves, hydraulic fittings etc..



Fluid Film applied to frame rails and undercarriage. Originally designed for the highly corrosive marine environment it provides corrosion control and excellent water displacement .  
ConnDOT tested winter of 2013/2014 with excellent results and the program is being developed to include the complete fleet in the future



In 2011 ConnDOT required as part of its specification for Wheeled Loaders the vendor to provide an **Extended Corrosion Control** system for the complete wheeled loader . To include but not limited to hydraulic cooler , radiator and all metal parts.

Caterpillar was awarded the contract and provided the system from Nyalic. Excellent results have been recorded over the past three winters

**NYALIC**  
Clear Surface Protectant



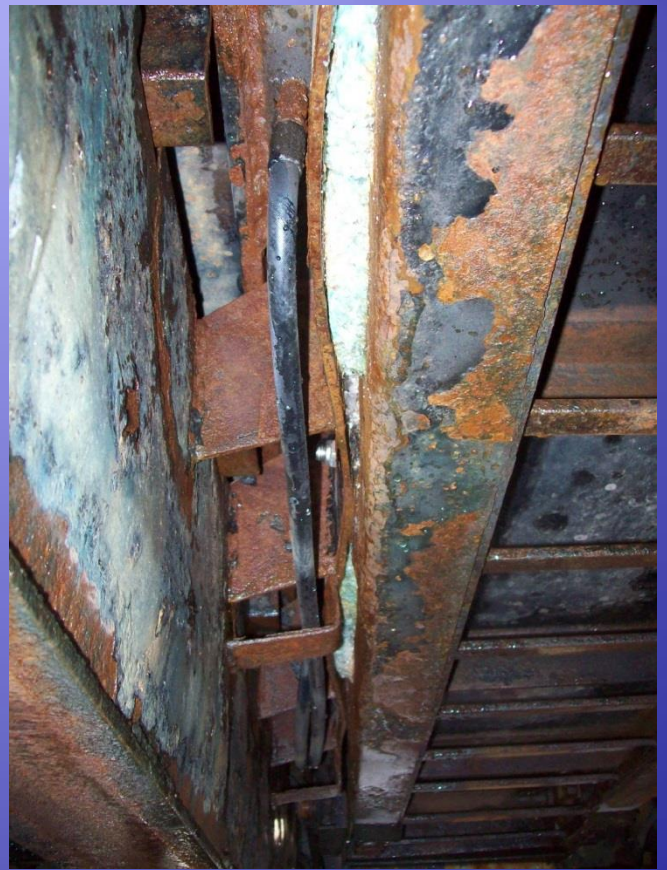




- ConnDOT made the change to stainless steel hydraulic piping wherever feasible on all new truck builds.

ConnDOT replaces corroded oil pans and transmission coolers with stainless steel .  
Will be requesting on future builds from OEM manufacturers





ConnDOT uses a mix of Weathering Steel (Cor-Ten) and Stainless steel to Manage cost and truck lifecycle.

2007 Body

2014 Body





- ConnDOT purchased its 2014 bodies with stainless steel stacked understructure with the rest of the body being steel . Bodies are finished in powder coat . This provides a 12% savings in the purchase price while providing corrosion control .

ConnDOT has seen extensive corrosion with sanding chains requiring annual maintenance for the fleet . In 2014 ConnDOT was able to work with body builder to produce a auger system tray that bolts into the current sanding chain area of the body. Reduced maintenance over the lifecycle of the truck was the concept.



ConnDOT purchased western style understructure tri axle trucks . Western understructure gives a smooth floor with little area to collect salt and debris and is much easier to clean an reduce corrosion



# Repair and Rebuild

- ConnDOT currently completes sandblast and repaint as part of its program. Trucks and equipment are evaluated on a per unit basis for lifecycle remaining and value to proceed with repaint.



# Rebuild and Refurbish

**Before**



**After**

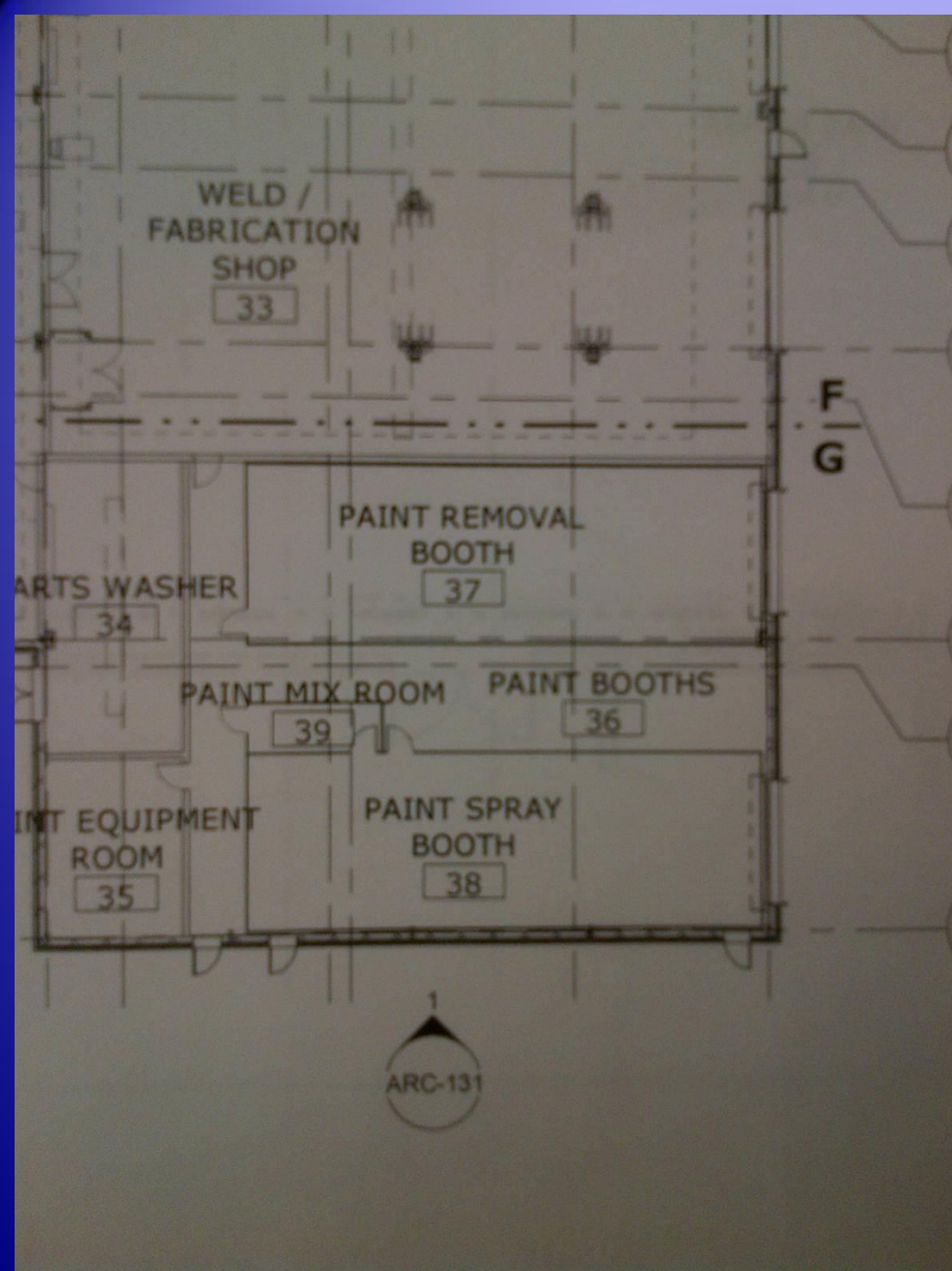


- Sandblasted



- Primed and painted





- Looking at the future ConnDOT has allocated funding for new facilities and updates to current facilities and equipment as part of its Corrosion Control program.

# Additional Corrosion Improvement Areas

- Powder coated wheels required to be provided by OEM's
- Aluminum Fuel and air tanks
- Rear body material spreaders
- Throttle , brake and clutch pedals required to be suspended in specifications.
- Continued evaluations of in house applied sealants.
- Wash chemicals to assist in removing chlorides



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