

CSX TRANSPORTATION

ONE-CSX DIMENSIONAL LOAD PROCESS

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NE Region - Central Zone



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Key areas of Opportunity

- Improve collaboration between the three departments involved in our Dimensional Load process
- Improve asset utilization
- Train new inspectors and strengthen existing field inspector knowledge



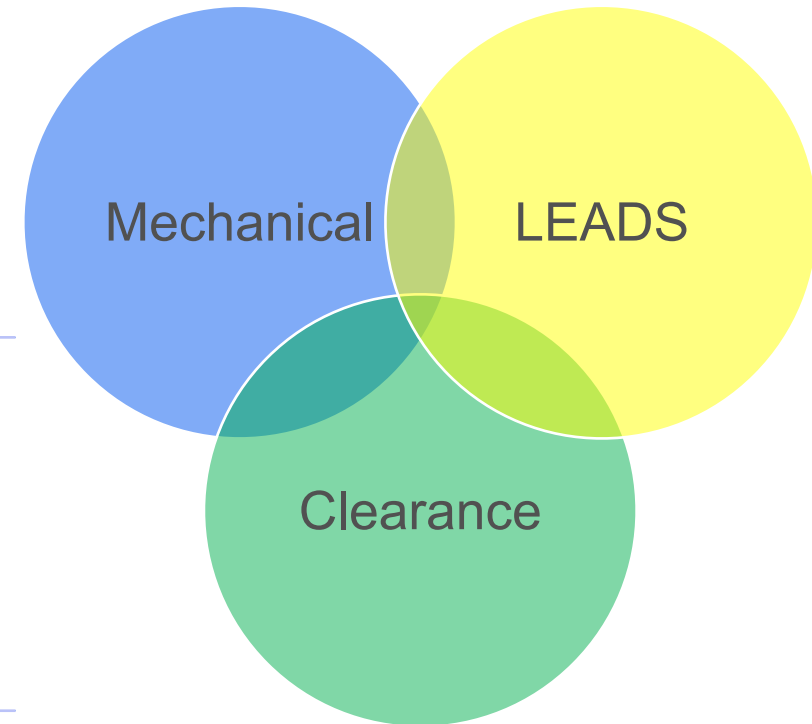
ONE CSX DIMENSIONAL LOAD PROCESS

Improve
Collaboration

LEADS (Load Engineering and Design): Coordinate with field operations to ensure proper loading and securement compliance. Provide guidance on any issues that may arise.

Mechanical: Field inspection of rail car - Provide final measurements to Clearance Bureau and ensure safe movement over selected route.

Clearance Bureau: Determine routing information and establish any movement restrictions the load may have. Map the allowable clearance of the proposed route. Coordinate with transportation on the movements.





ONE CSX DIMENSIONAL LOAD PROCESS

Clearance Request

- Submit Clearance Request form in ShipCSX
- Get Clearance file number once approved

Pricing

- Obtain Pricing by submitting a price request form

Order Car

- If your dimensional load is longer than 18 feet and weighs more than 190,000 lbs., or is shorter than 18 feet and weighs more than 140,000 lbs., log in to ShipCSX and request a heavy-duty flat car
- If you need a standard rail car, log in to ShipCSX and use the Car Order tool.

Loading

- Contact LEADS to determine proper loading procedures LEADSOpenTop@csx.com

Inspection

- Request Inspection of loaded shipment. CSX Mechanical 904-366-5313

Shipping Instructions

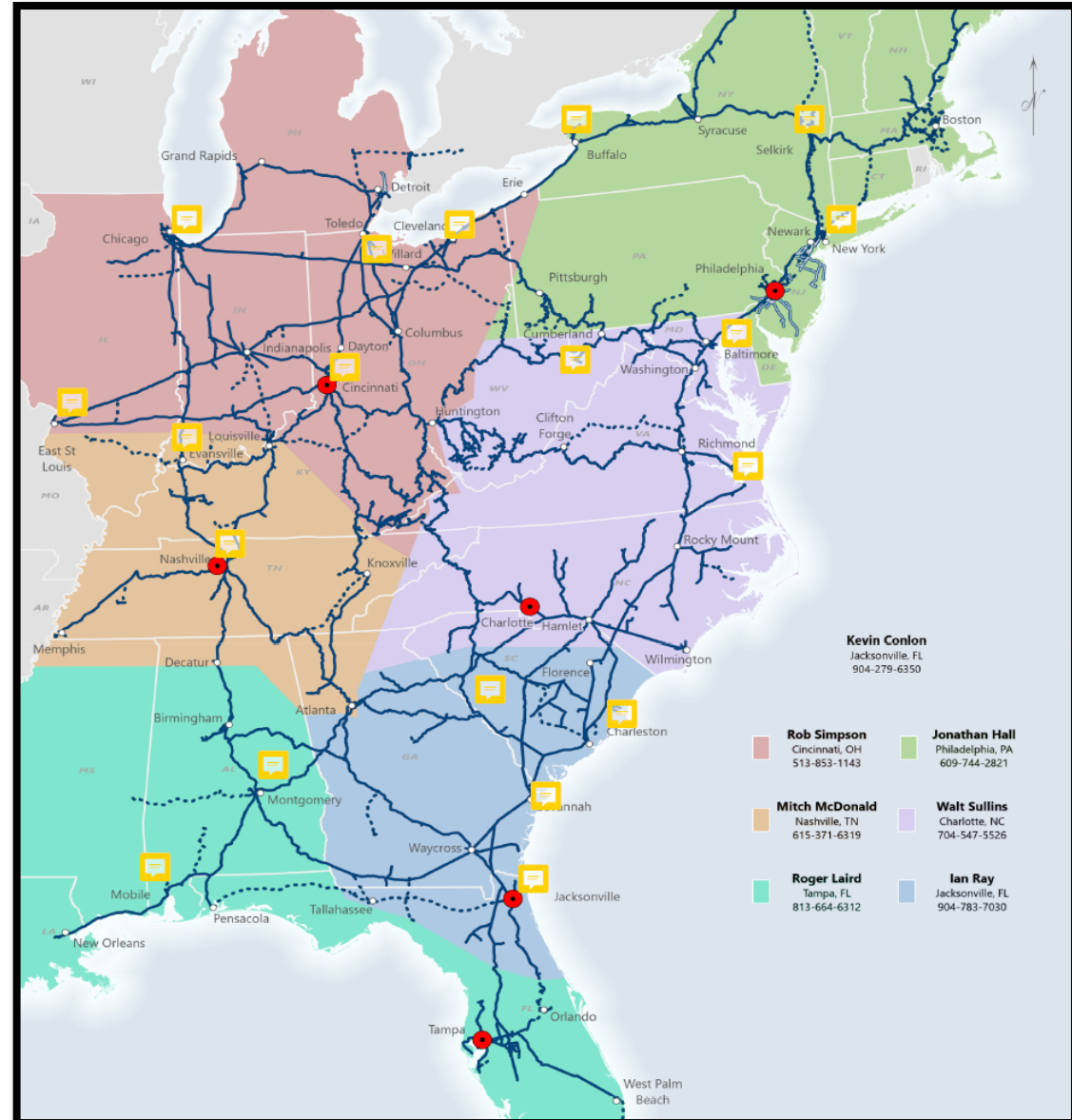
- Log in to ShipCSX and use the Shipping Instructions tool to complete and submit.



ONE CSX DIMENSIONAL LOAD NETWORK

Asset Utilization

- 6 LEAD Manager Territories
- 19 Measurement Devices
- Approximately 50 Dimensional Load Inspectors



Leads Manager Involvement

- Assist shipper with loading plan
- Provide oversight on Open Top Load Rules compliance
- Address Shipper errors to prevent delays and improve safety



Trends

- Have seen overall reduction of bad ordered HIWD cars due to load securement failures
- Increase in Military load securement issues, blocking not wider than it is tall as required, Improperly secured doors
- Joint inspections planned with counterparts on Western carriers to improve interchange process and reduce delays



New Dimensional Load Training

Curriculum will include:

- Mechanical Car inspection
- AAR Open Top Load Rules
- Clearance Measurement
- Specialized Equipment rules
- Movement Restrictions

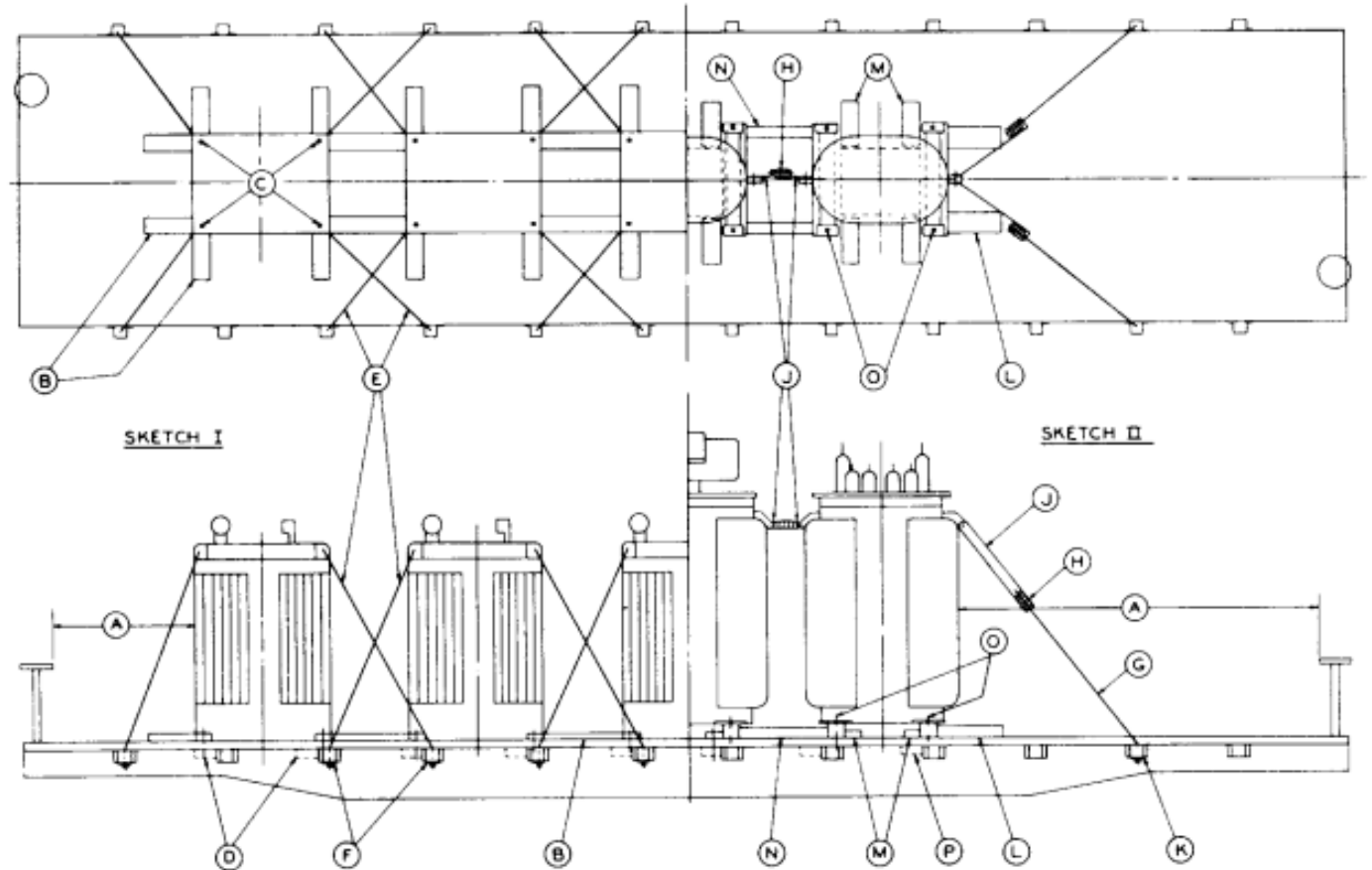
New processes:

- LEADS Review Process
- Subject Matter Expert Support

AAR Open Top Loading Rules Manual

Fig. 1 (Rev. 9/86)
(New 2/60)

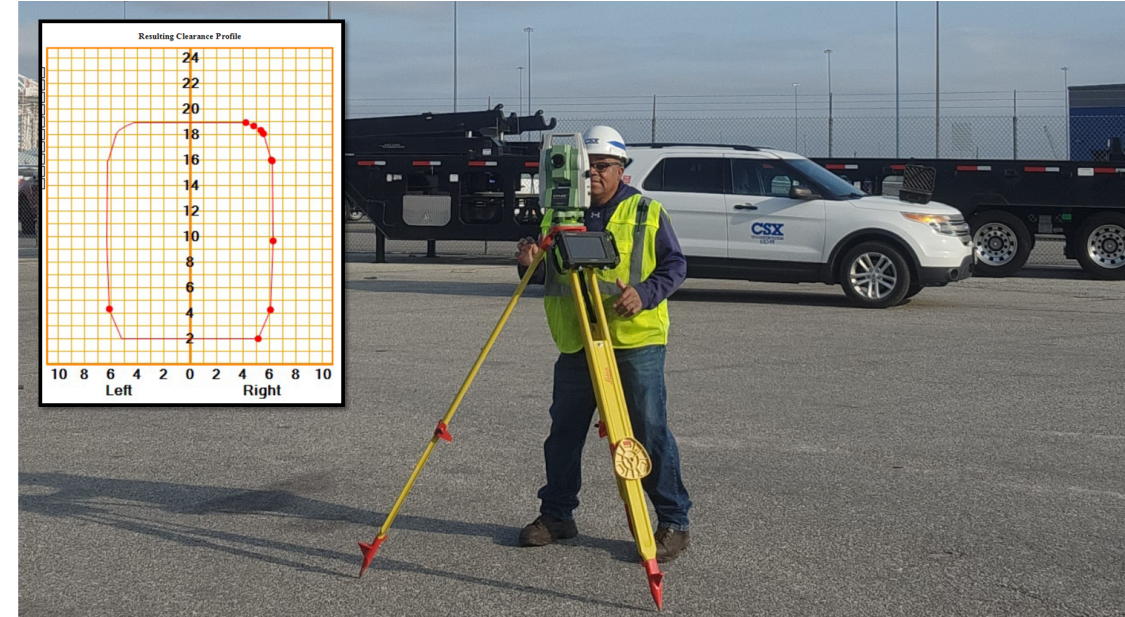
TRANSFORMERS, TRANSFORMER TANKS, CIRCUIT BREAKERS AND SIMILAR UNITS, 35,000 LB OR LESS—FLATCARS



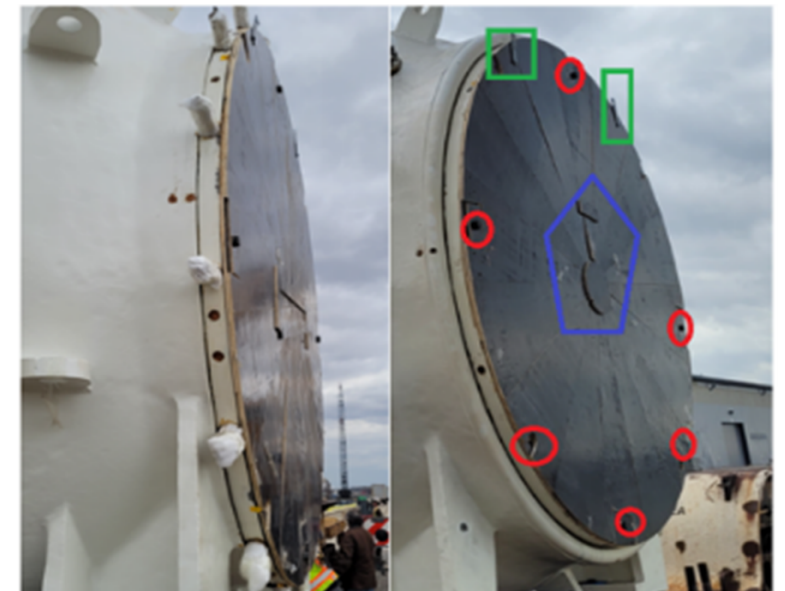


MECHANICAL INSPECTION PROCESS

- Inspect railcar for any defects that could impede safe travel, including all draft components, running gear and safety appliances.
- Verify load is properly secured to the car and communicate issues to LEADS Manager.
- Verify car length and overall dimensions.
- Measure all extreme dimensions of the load while secured on the car.
- Generate and document report for the Clearance Bureau to review.



- Our measurements did not match the measurements that the customer provided. Found the loading facility offset the load by 2 inches
- Our measurements were off by 4 inches from the manufacturing specs. Found the manufacturer had revised their product but did not send the updated blueprint
- Found car slightly off balance, if the load is not properly balanced it can cause the car to lean, any discrepancy in measurements is amplified the higher up a measurement is taken
- Car loaded with pipe on to soft wood chock blocks instead of hardwood as required by AAR OTLR. Wood split causing load to shift



- Straight, level track
- 20 ft clearance around car
- Low traffic area
- Stand alone (not coupled to other equipment)
- Outdoors / with good lighting
- Low vegetation
- Dirt is preferred over concrete or asphalt



Evolving and innovating

- **Autonomous Track Assessment Cars** proactively gather critical data measuring track efficiencies
- **Drone program** remotely detects and transmits track issues for repair teams, enhancing safety, reducing failures and train delays
- **Train Inspection Portals** are using machine vision to optimize train safety and efficiency, improving service reliability and consistency





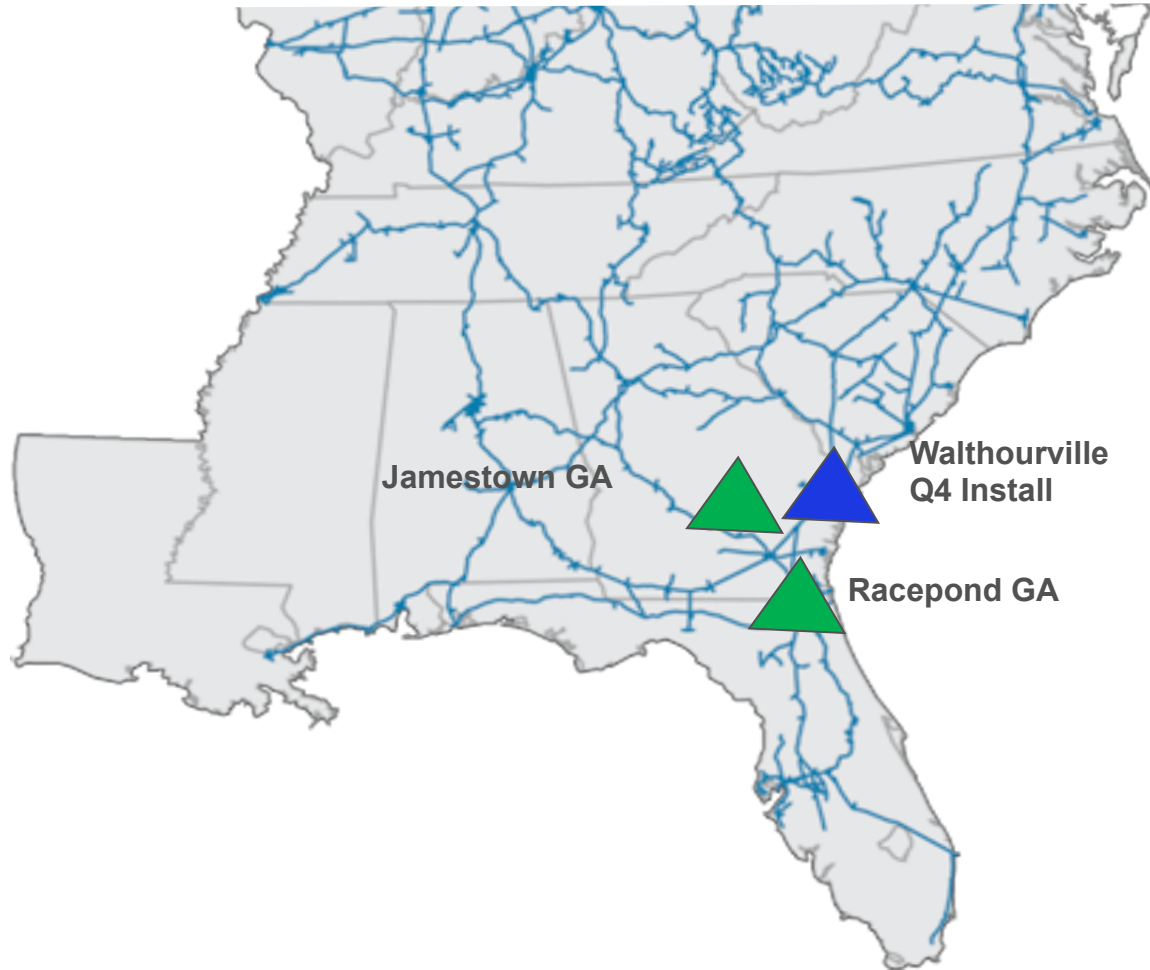
TRAIN INSPECTION PORTAL

- Machine Vision System captures entire train
- 23 cameras surround the train
- Images are captured **at track speed**
- Algorithms process the images
- Mechanical is alerted to issues
- Algorithms include:
 - Missing components
 - Bottom outlet valves
 - Open box car doors
 - Brake piston engaged
 - Hazmat placard identification





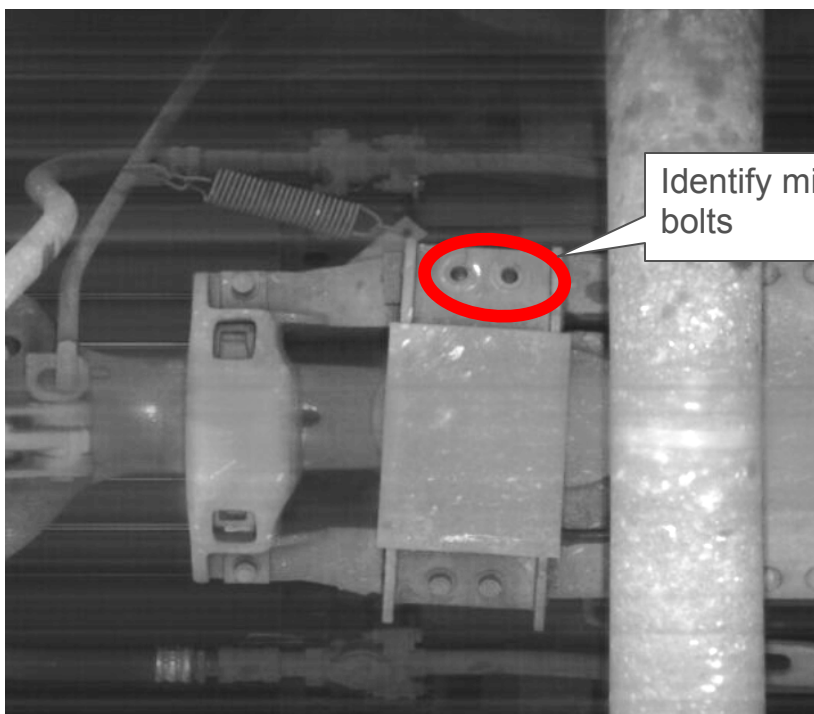
TRAIN INSPECTION PORTAL LOCATIONS



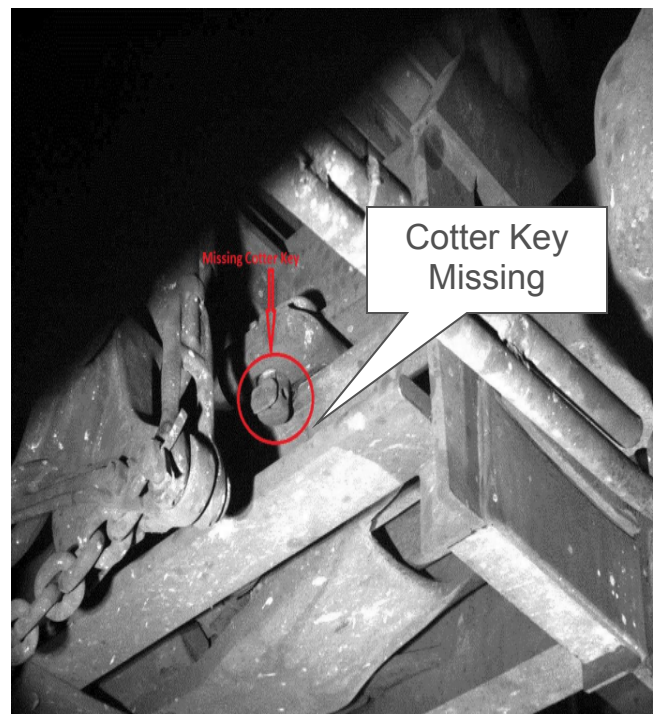
- **Start Big:** *Rice Yard in Waycross is the largest hump yard on the CSX network.*
- *2600-2800 cars are sorted every day.*
- *Automated train inspections will allow cars to get sorted without delays.*



WHAT CAN THE CAMERAS SEE?



Identify missing bolts



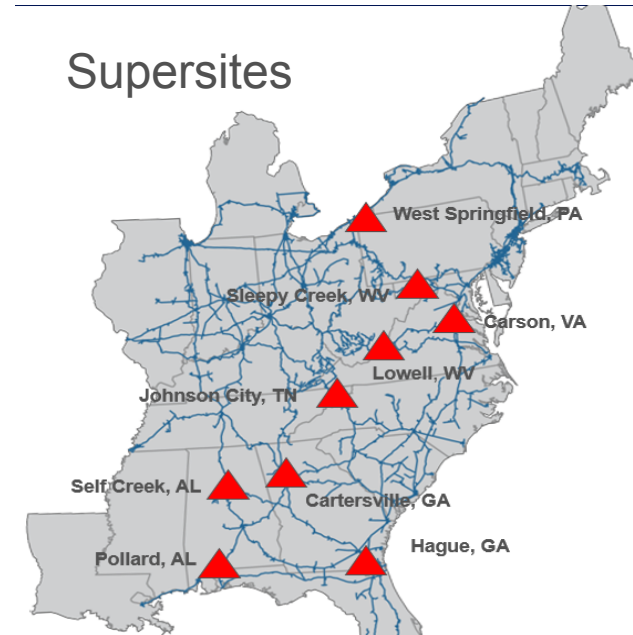
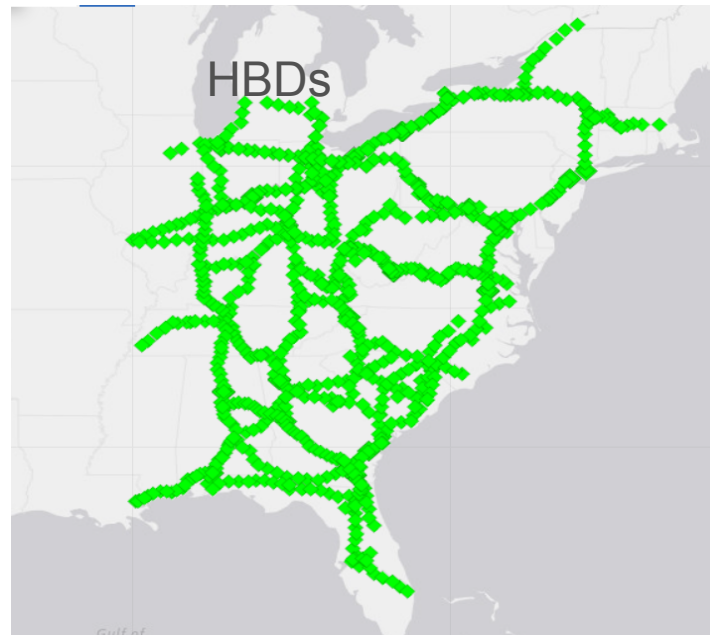
Cotter Key Missing

Missing Cotter Key



JOINT WAYSIDE DIAGNOSTIC SYSTEM - JWDS

- 1000+ wayside detectors located across CSX network
- 9 Supersites
- Analyzes 1.9M car / loco reads / per day
- Analyzes 7.5M wheel/bearing reads / per day
- 1 Trainset worth of data coming every 6 seconds to back office
- Algorithms perform predictive diagnostics before rail incidents occur



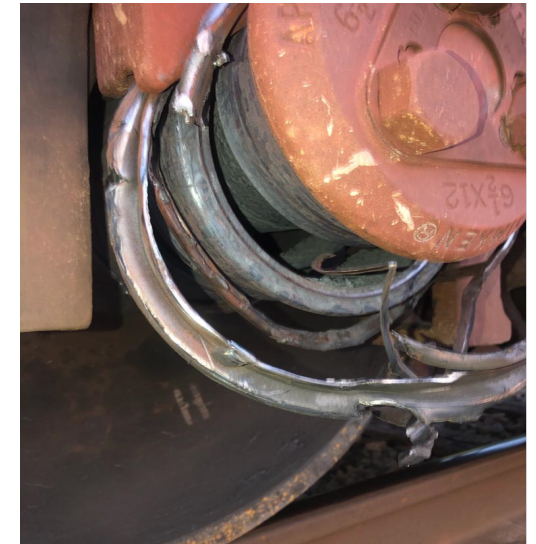
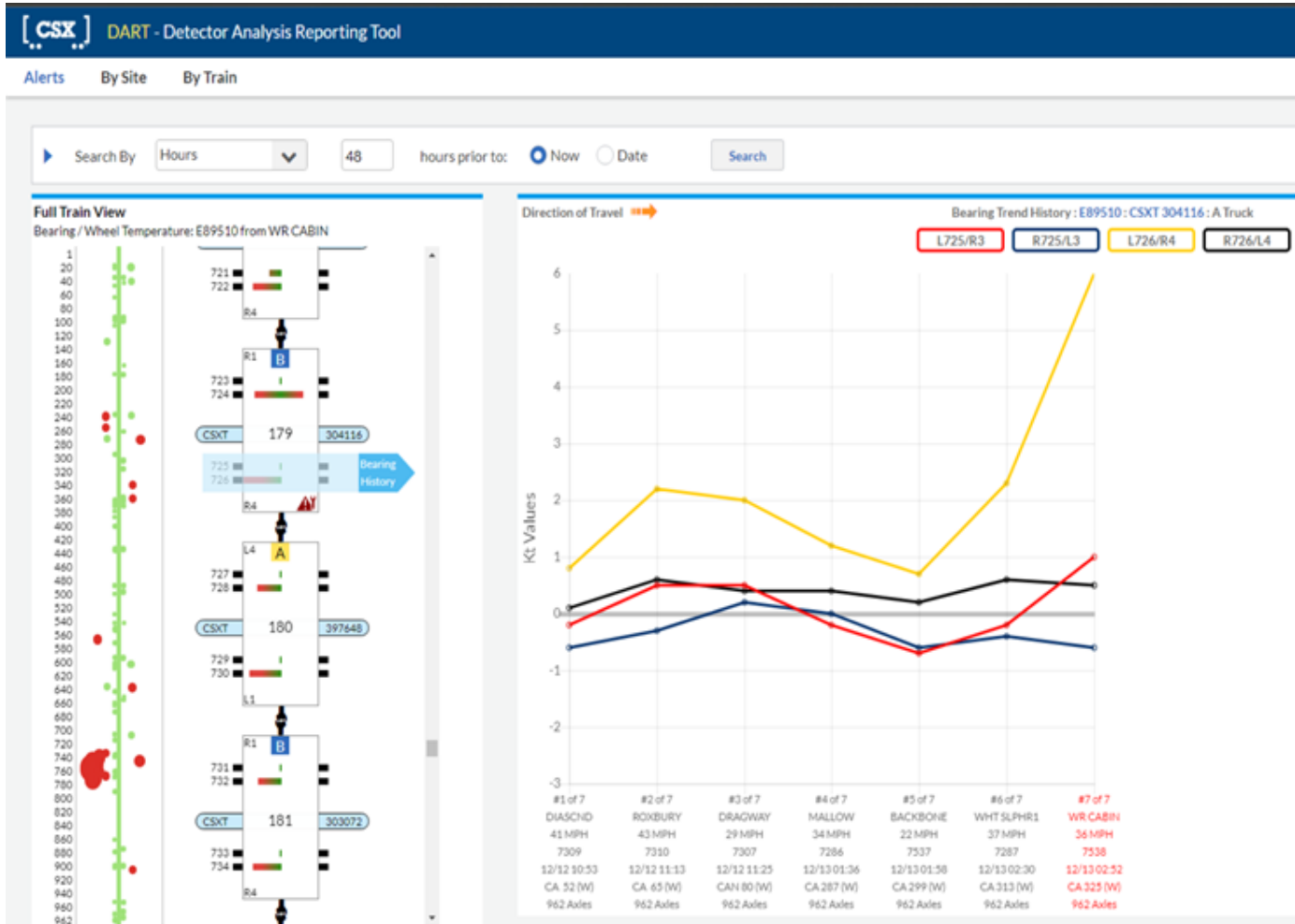


TYPICAL CSX SUPERSITE (JOHNSON CITY, TN)





WHAT CAN THE DETECTORS FIND?





WHAT CAN THE DETECTORS FIND?





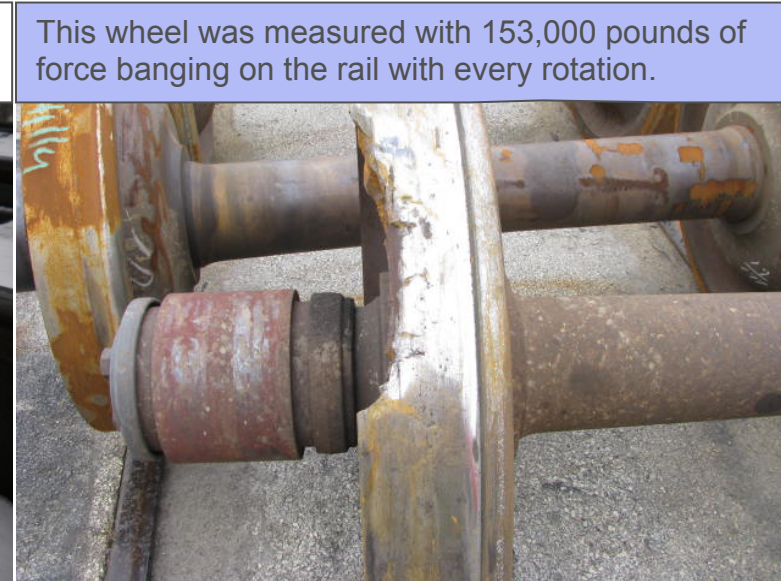
WHAT CAN THE DETECTORS FIND?

The WILD measures individual wheel weights and vertical forces to produce:

- Impacts
- Overload Conditions
- Imbalanced Loads (Side to Side or Front to Back)
- Total Weight of Car
- Out of Round wheels



Strain Gages to measure vertical & lateral forces



This wheel was measured with 153,000 pounds of force banging on the rail with every rotation.

Advancing initiatives

- **Howard Street Tunnel modernization project** in Baltimore and 20 other clearance projects in Maryland, Delaware and Pennsylvania
- **Expanded reach into Northeast markets** through the acquisition of Pan Am Railways



CSX