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Dublin Product Update

Sutphen Sales Meeting
September 21, 2016

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Agenda

- Coffin Box Enhancements
- NFPA Compliant Bucket
- New Design Tools
- SPH Enhancements
- SP Enhancements
- Looking Forward

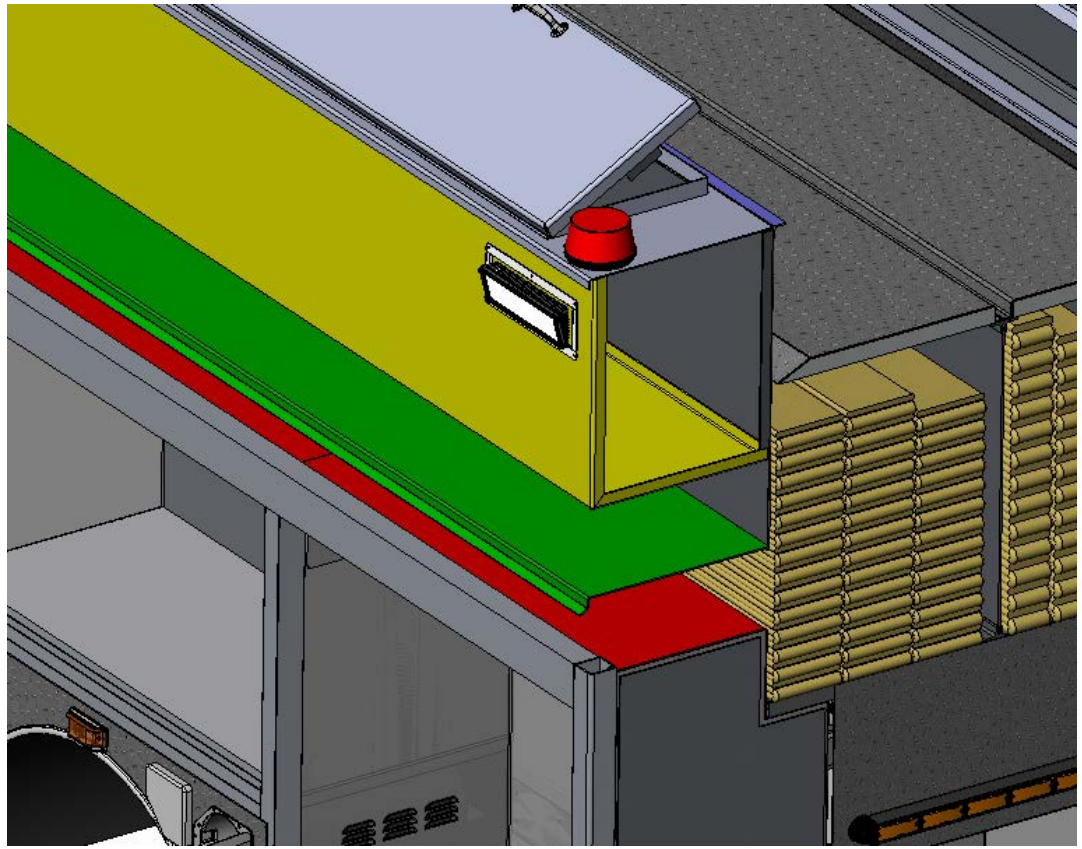
Coffin Box Enhancements

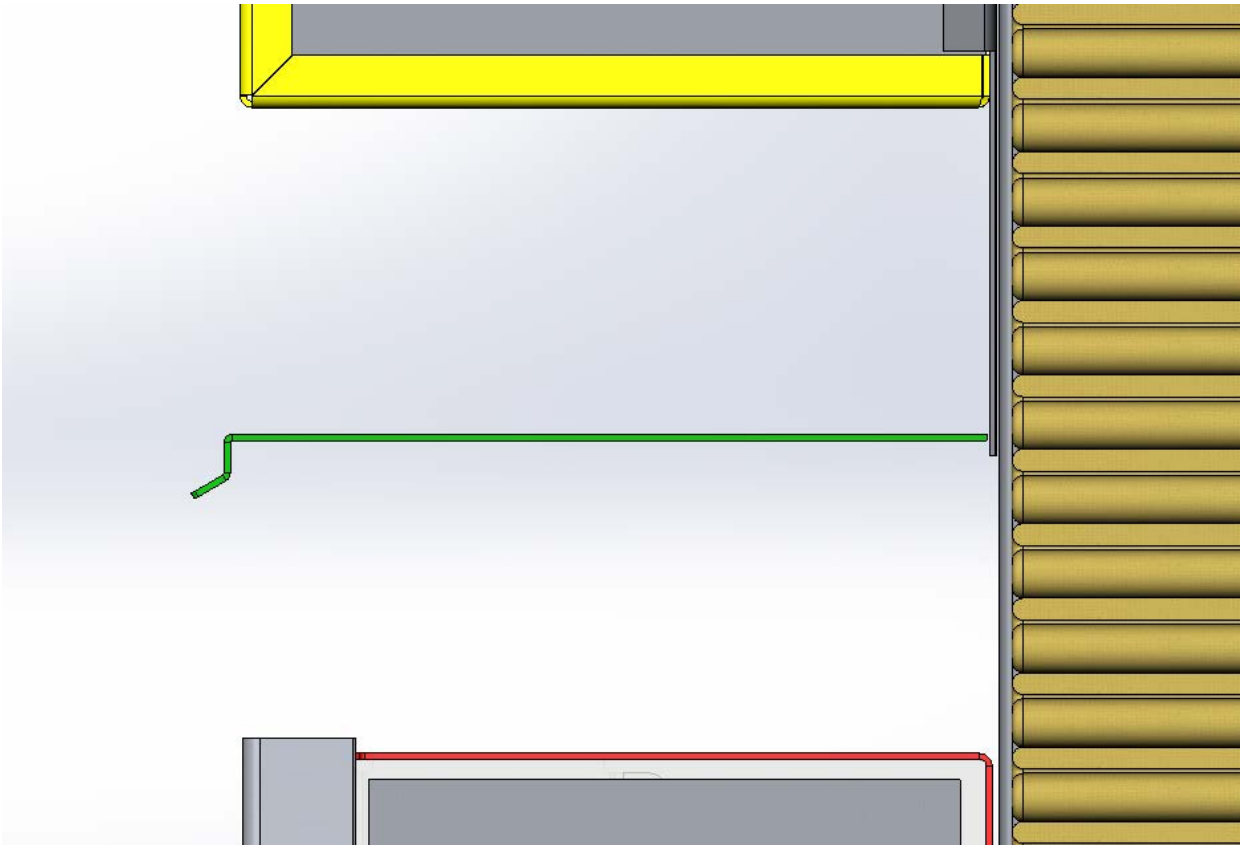
Finished trucks with the previous coffin box design.

- Seam present from the stack up of parts.
- Originally designed to be assembled off the truck and then installed on the truck as single unit.
- Four (4) layers of material between the coffin and the body compartments.
- Transition of the body corners from body to coffin are not clean and very visible.

Coffin Box Enhancements

Multiple layers of material between the coffin box and body compartments





Coffin Box Enhancements

New Coffin Box Design

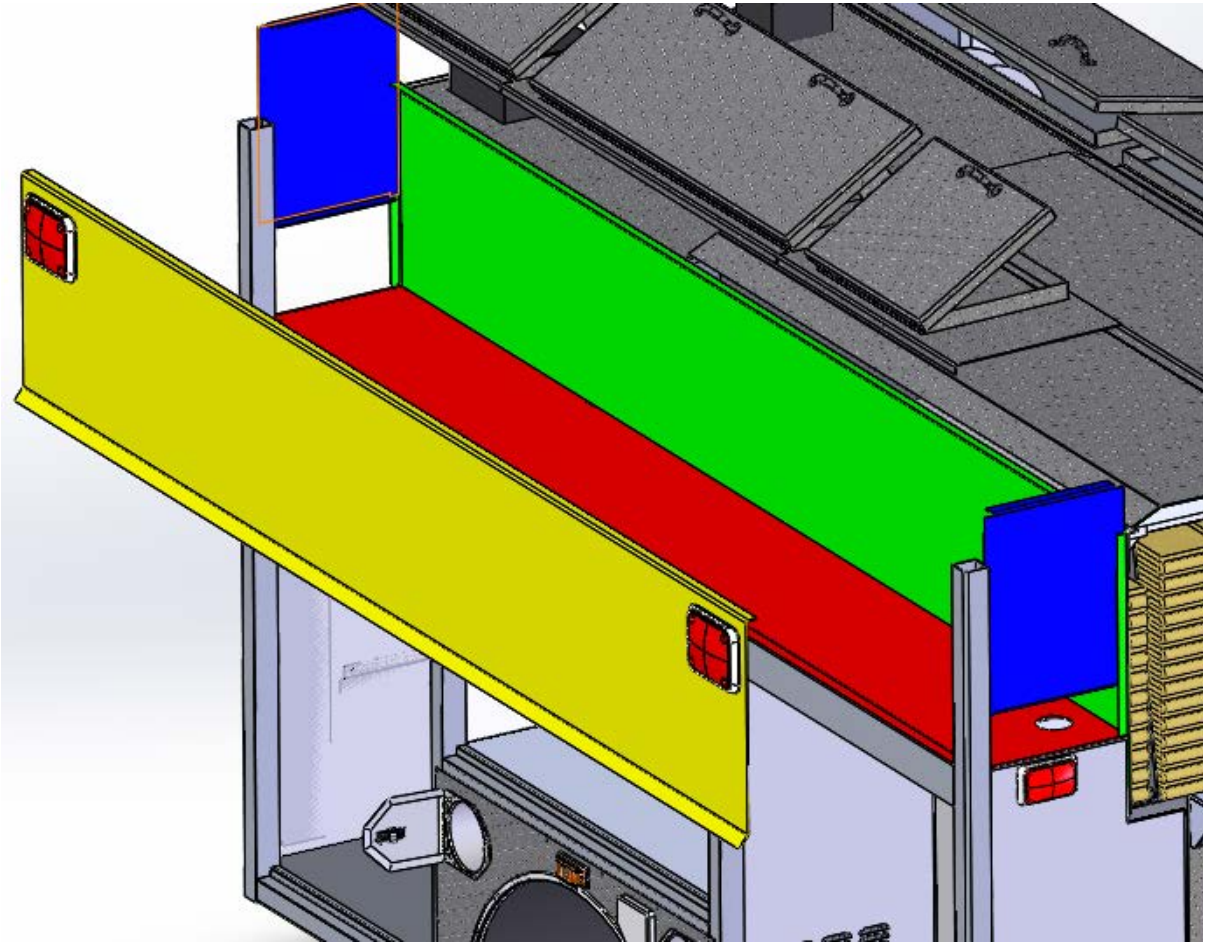
- Seam between the body and coffin box is no longer visible.
- It was determined that assembling the coffin compartments off the truck was causing improper fit when trying to install. Coffin boxes were not being assembles as originally designed.
- Material stack-up between the coffin compartment and body compartments is now one (1) layer.
- The corner transitions from body to the coffin box are clean as the body extrusion extends up into the coffin box.

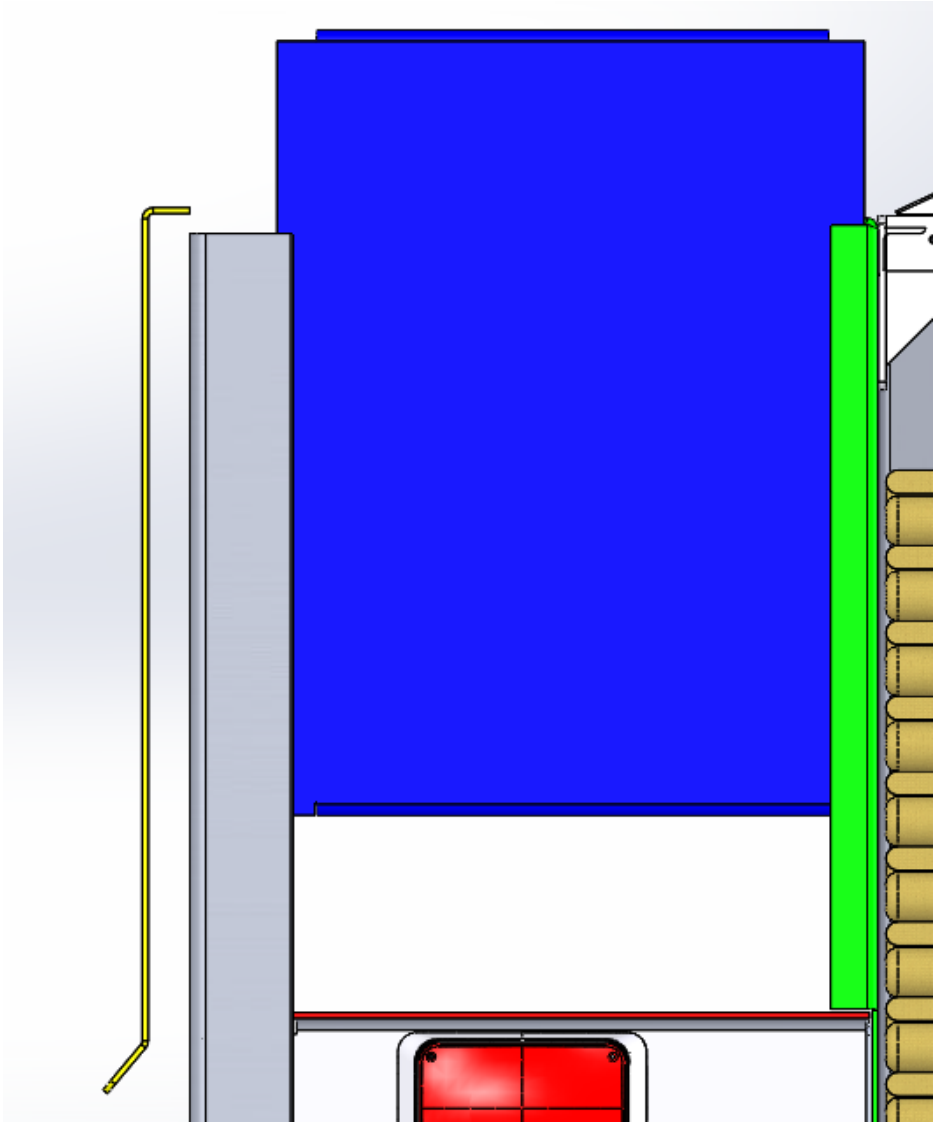
Coffin Box Enhancements

Finished truck with redesigned coffin box.

Coffin Box Enhancements

Reduction of parts and layers between the coffin compartment and body compartments





Coffin Box Enhancements

Access Door Latches

- The move has been made to use the push button door latches in place of the T-Handle latches.

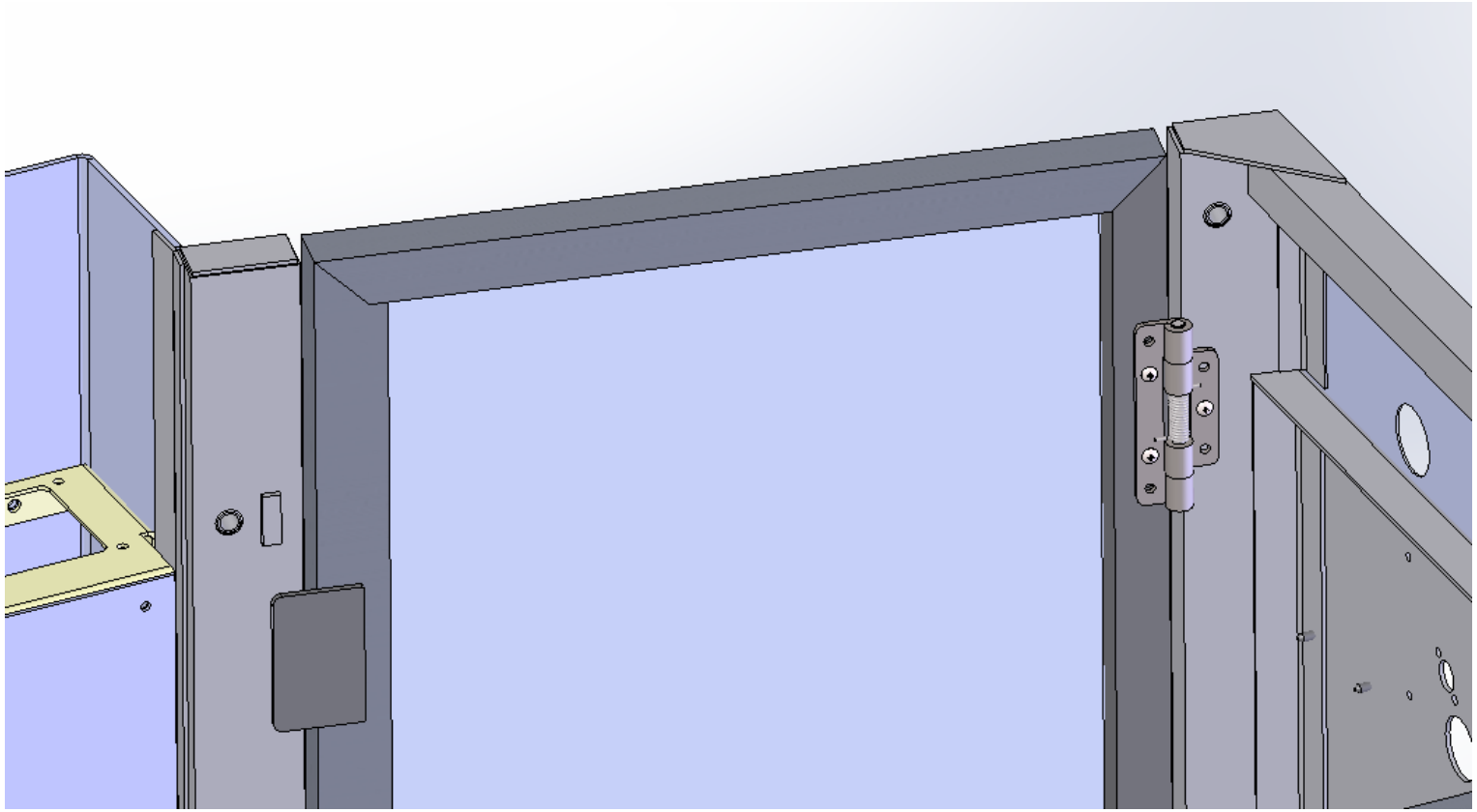
NFPA Compliant Bucket

Changes made for compliance:

- Spring loaded heavy duty hinges. The framework has aluminum inserts for a stronger fastening systems for hinge installation.
- The door and platform frame has additional strength through gusset additions as well as modifications to existing framework. These changes were minimal and the basic structure is intact.
- The framework was modified to allow the use of a thicker wall tubing as needed and tube sizes were increased to provide more strength in key places.

New NFPA Bucket Design Requirements:

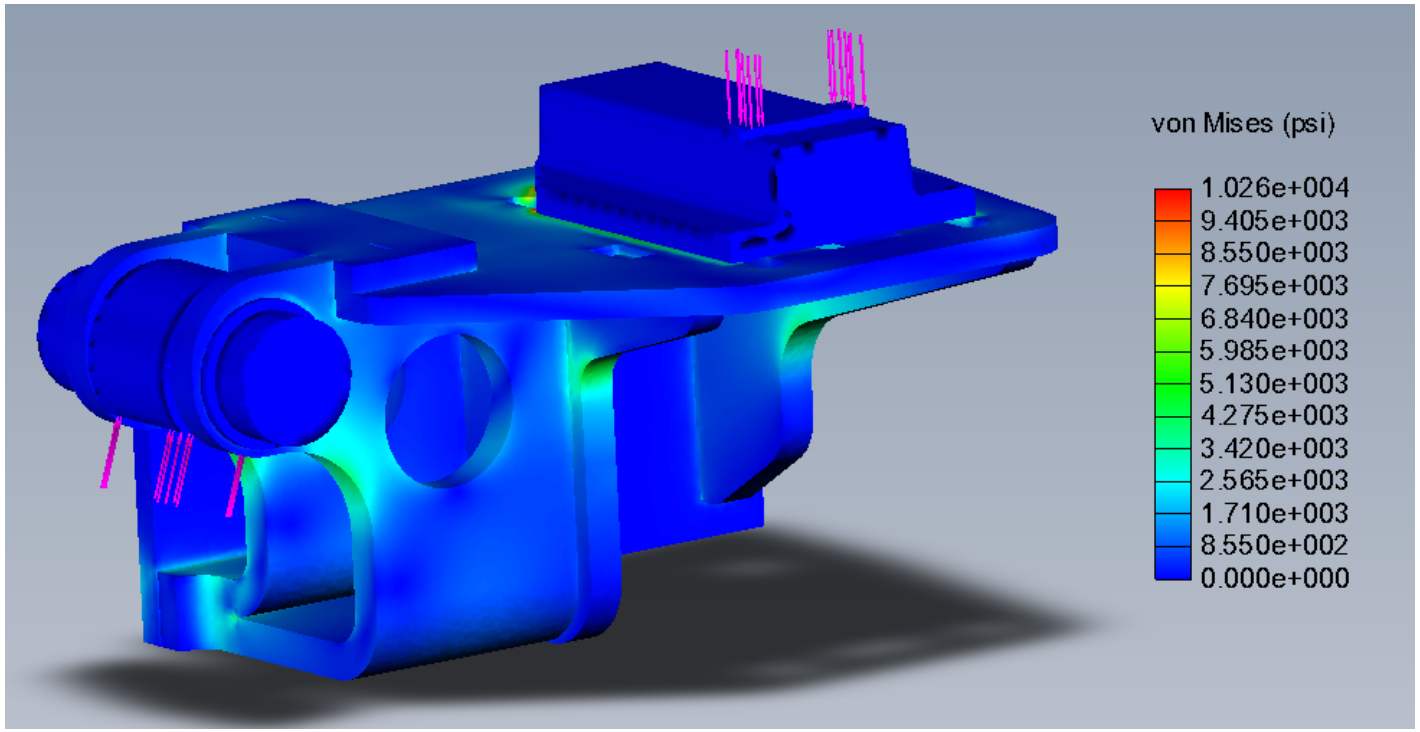
- 19.7.6.2.1 The continuous guard railing shall be capable of withstanding a force of 225 lbf (1000 N) applied at any point from any direction without permanent deformation.
- 19.7.6.2.6 Each gate shall be capable of withstanding a 1000 lb. force (4000N) applied at the least favorable position in the least favorable direction, without opening outward.



New Design Tools

Addition of SolidWorks Simulation

- Allow us to analysis static and dynamic loading of structures.
- Conduct analysis in the virtual world to test design features prior to prototyping.
  - Reduces prototype expenses
  - Shortens design time
  - Less physcial test cycles
- Conduct the following analysis:
  - Drop test
  - Thermal Structural
  - Vibration
  - Frequency
  - Linear Stress
  - Structural
  - Finite Element (FEA)



SPH Enhancements

New Option for Wheel Chock Storage:

- Location does not sacrifice compartment space.
- Better angle of departure.
- Easier to access.
- Exposure to road debris greatly reduced.
- Accessible regardless of the position of the fold down step.

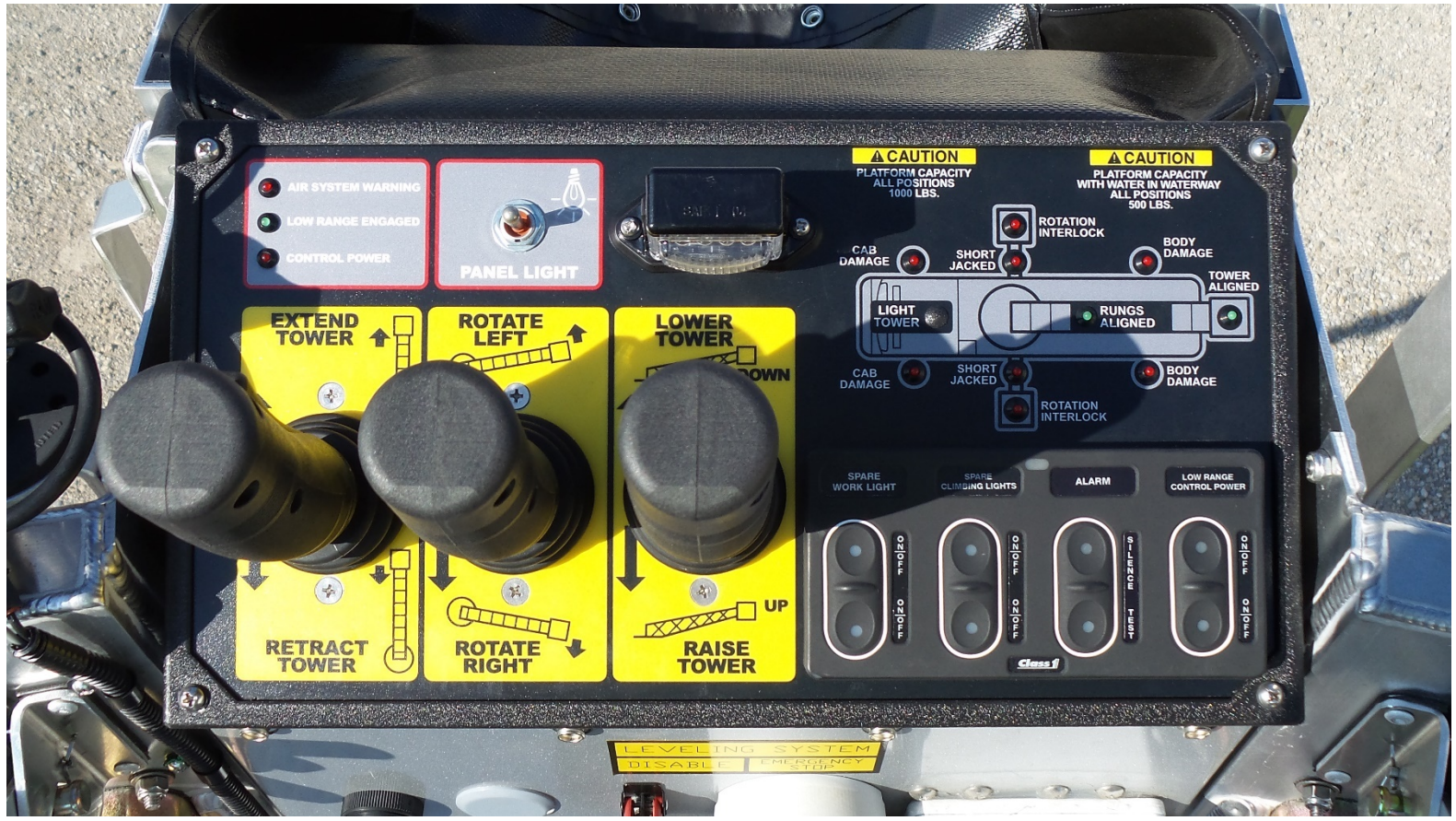
SPH Enhancements

Lower step built into the pedestal access steps for a cleaner appearance.

New aluminum slide out step under the pump panel to reduce corrosion.

SPH Enhancements

- New boom controls with a “dead man” switch to prevent accidental operation of the boom.
- Replaced current bucket leveling system with a new higher horsepower system to provide smoother bucket leveling operation.
- New greaseless sheave bearings for ease of maintenance.



SPH Enhancements

Mid-Mount Positioning of the Extend / Retract Cylinders

- Testing has shown that this position of the cylinder shows a marked improvement in the boom operation.

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SP95 Enhancements

- Converted cables to APEX wire rope
- Updated sheave beams
- Replaced greased sheave bearings with non-grease bearings
- Gearing up to convert the turntables from Perfection to Fairfield systems

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Looking Forward

- Aluminum hose bed doors and improving the lock mechanisms that hold the door open.
- Improvements to the hatch compartment designs for a cleaner look and install.
- Improved review processes to ensure accurate builds before the truck hits production
  - Shop Order Reviews
  - Engineering Design Reviews
  - Pre-Final Finish Reviews
- Feedback from the field

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QUESTIONS??