



# Composite Shiplap Side Wall Repair Procedure for Box Truck

Technical Bulletin

January 2023

**Background:** Box truck side walls are commonly fabricated using composite shiplap side wall panels (CSSW Panel) attached to galvanized steel Z-posts with structural adhesives. In service, it is not uncommon for box truck side walls to become damaged from being “topped” or impacted directly to the side wall requiring panels to be replaced. The removal and replacement of the damaged side wall panels are typically done using traditional repair methods which can be slow and tedious.

In collaboration with leading truck leasing companies, 3M has been bringing repair solutions to the box truck and semi-trailer industry that can reduce unit downtime without compromise to the quality of the repair. This takes innovation, creativity, and a willingness to try a new or different approach. Yesterday’s repair methods will not meet today’s needs.

**Solution:** This bulletin outlines a suggested repair procedure utilizing 3M™ VHB™ Commercial Vehicle Tape CV62F (VHB CV62 or VHB Tape) in place of 2-part liquid adhesives and foam tape systems. 3M assisted in the development of this composite shiplap side wall panel (CSSW Panel) repair system, understanding the need for a durable, long-lasting repair that can be completed easily and quickly with minimal skill and labor.

The use of the VHB Tape to bond new CSSW Panel(s) to new and existing CSSW Panel(s) can reduce repair cycle time and allows the truck/trailer to be returned to the rental fleet faster to generate revenue. Operators appreciate the cleanliness and simplicity of the overall panel repair process with VHB Tape as compared to a panel repair using a two-part liquid adhesive.

## Composite Shiplap Side Wall Repair Procedure:

The following is a high-level overview of the composite shiplap side wall (CSSW) repair procedure. *Always follow the specific procedures as defined by the manufacturer of the box truck or fleet operator and/or supplier of the composite shiplap side wall panels.*

- 1. Removal of Damaged Panel(s):** Remove damaged CSSW Panel(s), posts and top/bottom trim following instructions provided by the truck manufacturer or fleet operator. Remove the adhesive and/or tape residue from shiplap skin and core of the undamaged CSSW panel(s) with an oscillating tool and/or right-angle grinder with coated abrasive (180 grade).
- 2. CSSW Surface Preparation:** Prepare the shiplap skin and core on both sides of the replacement CSSW panel and the existing or intact CSSW panels.
  - 2.1 Scuff:** Lightly abrade the shiplap skin and core skin (both edges) with 3M™ Scotch-Brite™ Hand Pad 7447 Pro (3M 7447, 7/8” x 9”). Use 3-4 passes with firm pressure and long strokes. Simplify the process by utilizing a custom-made abraded device or 3M can provide or suggest L-abraders.

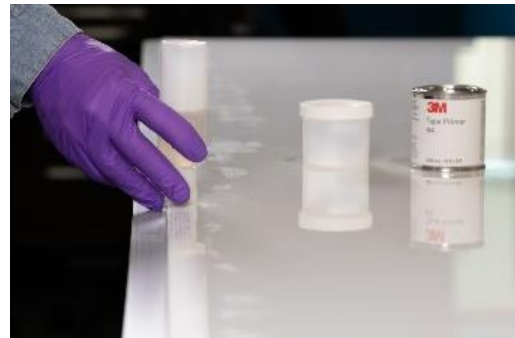


**3M Technical Bulletin**  
Composite Shiplap Side Wall Repair Procedure for Box Truck

**2.2 Clean:** Remove dust and debris from the abraded bond area with isopropyl alcohol and water (50-70% IPA) or acetone on a clean wetted disposable paper towel, wiping in one direction.



**2.3 Priming:** Prime the bond area with the application of 3M™ Tape Primer 94 (P94) with a brush or dauber bottle with edge guide cut to 1/8" length. Allow the primer to dry prior to application of VHB Tape.



### 3M Technical Bulletin

#### Composite Shiplap Side Wall Repair Procedure for Box Truck

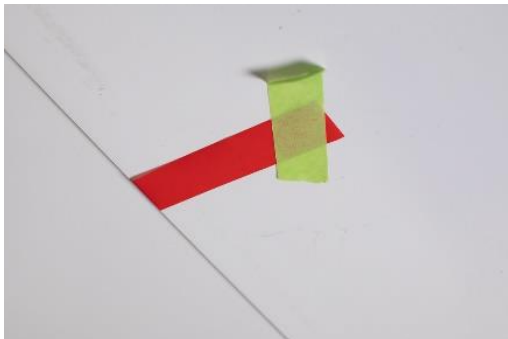
- 3. Apply VHB Tape:** Apply VHB CV62 (1" wide) to the prepared shiplap skin on both sides of the replacement CSSW panel and existing CSSW panel. Apply the VHB Tape to within 1/16" from shiplap edge. Do not allow the VHB Tape to ride up onto the core edge or extend beyond the shiplap skin edge. If this occurs, cut excess out with a sharp, thin-blade utility knife, and remove excess. Remove any air bubbles by slitting through the VHB Tape lengthwise with a sharp utility knife.



Apply pressure (>15 psi) with a rubber roller starting in the middle and working to the outside (2 passes minimum). Make certain the shiplap skin is supported. 3M suggests utilizing a V300 laminate roller from Beno J. Gundlach Co.



- 4. CSSW Panel Installation:** Remove 4-5" of the red protective tape liner and secure to panel (on backside of shiplap skin) with masking tape. Complete this at both ends of each VHB Tape strip. This will allow easy removal of the protective tape liner. Place the replacement CSSW panel into position and adjust as needed to get the cores to contact full length. Clamp or stake the panel at the top and bottom rails with a #12x1" screw or fastener to the left and right of the overlap seam. *This helps to stiffen wall panel prior to pressure application.* Remove the red protective liner from the VHB Tape by gently pulling the liner at a 90° angle to the seam starting at the top and stopping at the panel mid-point and then from the bottom to the mid-point.



### 3M Technical Bulletin

#### Composite Shiplap Side Wall Repair Procedure for Box Truck

**Note:** If the red protective tape liner becomes difficult to remove, use a vacuum cup to pull the panel out and reduce the pressure allowing the liner to be easily removed without stretching or tearing.



- 5. Pressure Application:** Apply pressure (>15psi) to the bonded panels, with roller or other means, on both sides of the shiplap seam (inside and externally).



- 6. Trim Attachment:** Attach top/bottom trim and if appropriate, front and/or rear corner posts to the CSSW in accordance with the manufactures' specification.

**Materials:** The following materials and suggested tools are used to replace a composite shiplap side wall (CSSW) panel(s) on a box truck unit.

- 1. 3M™ VHB™ Commercial Vehicle Tape CV62F:** 3M™ VHB™ Commercial Vehicle Tape CV62F (VHB CV62 or VHB Tape) is a 0.062" thick, conformable tape with a multi-purpose acrylic adhesive, providing excellent adhesion to medium to high surface energy substrates. VHB CV62 (1" wide) is used to bond and seal the composite shiplap panels.

VHB Tapes are fully cured, closed cell, double-sided acrylic adhesive tapes that both bond and seal. They are unique viscoelastic materials with energy absorption and stress-relaxation properties. These tapes are designed to replace welds, mechanical fasteners, and liquid adhesives. Since 1980, VHB Tapes have been used for side wall panel and roof attachment on commercial vehicles such as trailers, truck bodies, ambulances, fire trucks, buses, and rail cars.

- 2. 3M™ Tape Primer 94:** A primer that greatly enhances bond performance, accelerating the bond build rate of the VHB CV62 tape (less than 15 minutes to ultimate strength at room temperature depending on conditions) and allowing application of the VHB Tape at lower temperatures (potentially down to 50°F)
- 3. 3M™ Scotch-Brite™ Hand Pad 7447 Pro:** The 3M™ Scotch-Brite™ Hand Pad 7447 Pro (3M 7447) is a non-woven abrasive product with a very fine grade aluminum oxide that imparts a fine scratch/finish on the prepared surface. The 3M 7447 is used to prepare the surface prior to the application of P94.

### 3M Technical Bulletin

#### Composite Shiplap Side Wall Repair Procedure for Box Truck

4. **3M L-Abrader:** The 3M L-Abrader is designed to hold a strip (7/8" x 9") of 3M 7447 to allow quick/easy abrasion of the bonding surfaces and provides a very consistent finish. *Note: The edge guide of the 3M L-Abrader must be cut to allow the tool to contact the painted surface of the forward panel without interference from the shiplap edge.*
5. **V-300 Laminate Roller from Beno J. Gundlach, Co.:** VHB Tape is a pressure-sensitive adhesive (PSA) which require pressure (>15 psi) to facilitate wet-out of the adhesive onto the first substrate and to the bonded components.
6. **Disposable Brush or Dauber Bottle:** A disposable brush or dauber bottle with felt applicator tip (21BF bottle, felt tip (32DF) with a 22A docking station) is used to apply a thin layer of P94 to the CSSW bond area. 3M suggests utilizing dauber bottles from Designetics®.
7. **Oscillating Tool:** An oscillating tool with a thin, flexible blade (e.g., FEIN flexible scraper blade PN 63903165210, Equalizer® Talon™ blade PN 51844, or similar) is used to cut apart damaged composite shiplap panels and remove cured adhesive or tape residue from the undamaged panels.

**Safety and Handling:** Use proper personal protective equipment as recommended by your on-site safety plan. Consult the SDS for each component to determine the appropriate levels of protection. It is suggested that you consult your local air quality regulations to be sure the cleaner is compliant. When using solvents be sure to follow the manufacturer's precautions and directions for use when handling such materials.

**Environment:** The workplace should be free from excessive dust, dirt, and other airborne contaminants. Dust, dirt, oils, etc., that may interfere with the ability of the VHB Tape and 3M EST from forming a good bond to the surface. The workplace must be at a minimum temperature of **50°F** or above and free from sources of wide temperature variations such as open loading doors. All materials (tape, primer, FRP and aluminum panels, etc.) must be at or above the suggested minimum application temperature of **50°F**. Materials stored outdoors must be brought indoors and conditioned for a minimum of 12 hours or until it is verified that the substrates are at or above the minimum temperature requirement. Once the repair is made, the unit should be allowed to dwell for a minimum of 1 hour at **50°F** before being placed into service.

## 3M Technical Bulletin

### Composite Shiplap Side Wall Repair Procedure for Box Truck

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