Introduction:

Ridge Corporation Freight Wing Aeroflex 2 aerodynamic side skirts may be installed on any standard 48' to 53' straight frame dry van or refrigerated trailer. Because trailer cross member, landing gear and axle slider locations vary, the product can be customized during the installation process to fit specific trailer configurations. Refrigerated trailers also require customization to facilitate access to TRU tanks. If installing on a refrigerated trailer, review the instructions on page 12-13 of this manual. The installation process outlined by this manual is the same for any trailer configuration. However, please note that the exact position of the product on the trailer will vary based on the trailer configuration. The drawings/photos included in this manual and represent a typical installation on a 53' van trailer.

Comment [SG1]:

Comment [SG2]:

************READ ALL INSTRUCTIONS THOROUGHLY BEFORE BEGINNING**************

Following each step is important to avoid potential injury or death and/or property damage during both the installation process and the subsequent use of the product. The installation involves the use of equipment such as power tools. Follow all instructions and warnings for any equipment used, and OSHA guidelines for lifting and safety. Ridge Corporation is not responsible for any injury, death or property damage caused during installation or due to incorrect product installation.

Tool List:

(Supplied by Installer)

- ☐ **Pneumatic or battery powered drill**
- ☐ **Pneumatic or battery powered impact wrench**
- ☐ **1/2" deep socket**
- ☐ **21/64" drill bit (preferred) or 5/16"**
- ☐ **1/2" wrench**
- ☐ **Ratchet (tie down) strap**
- ☐ **C-clamp or vise grip**
- ☐ **Torx T40 wrench or driver**

You may need:

- ☐ **a hand jig or circular saw (for trailers less than 53' or long slider configurations)**

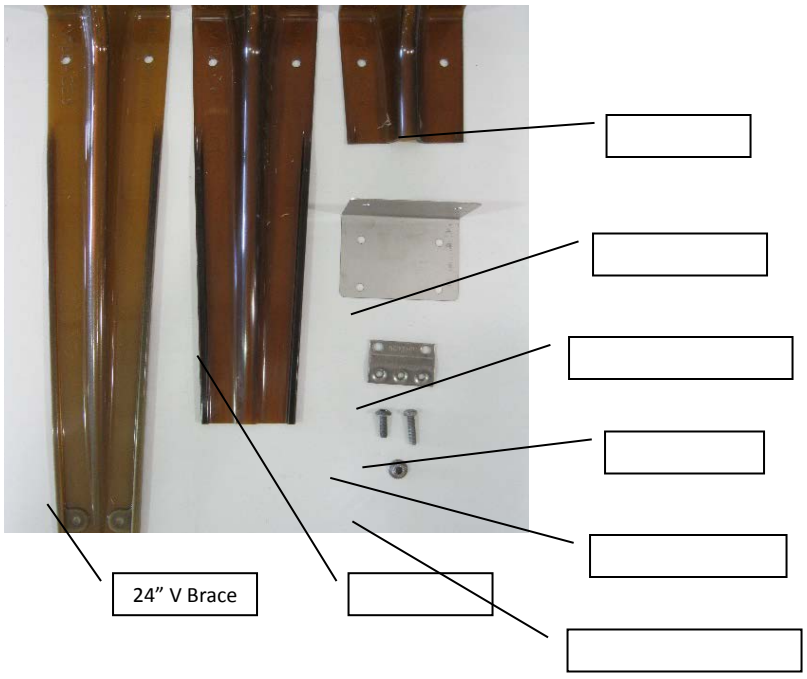
For Reefer installations only:

- ☐ **6" to 8" hole saw**
- ☐ **2" to 3" hole saw**

Please contact Ridge Corporation with any installations questions or comments at 614-421-7434.

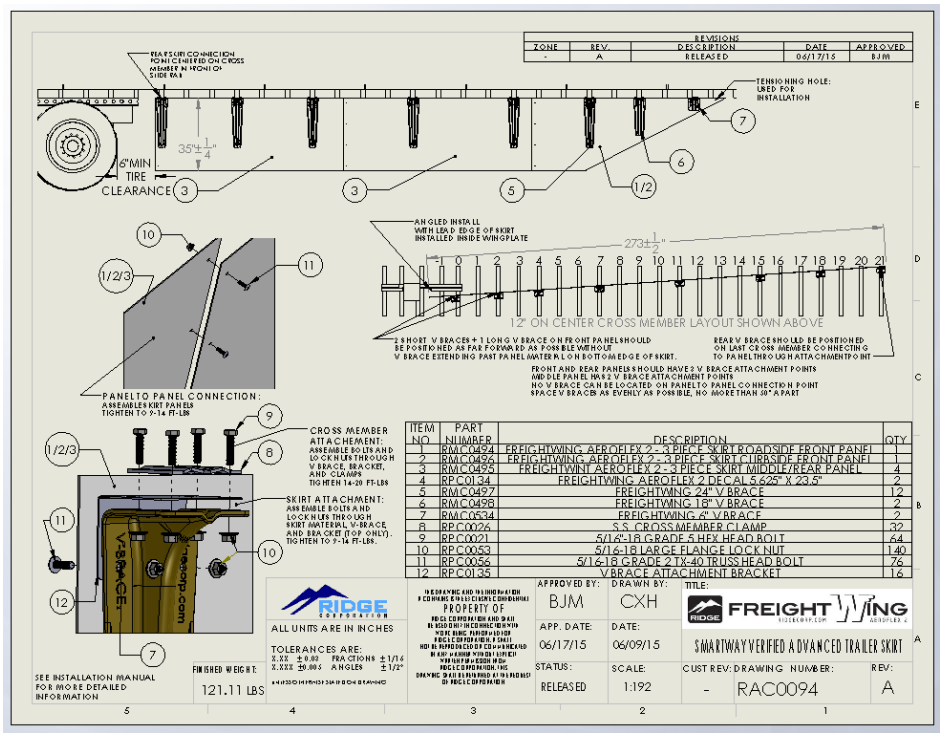
Bill of Materials:

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	RMC0494	FREIGHTWING AEROFLEX 2 - 3 PIECE SKIRT ROADSIDE FRONT PANEL	1
2	RMC0496	FREIGHTWING AEROFLEX 2 - 3 PIECE SKIRT CURBSIDE FRONT PANEL	1
3	RMC0495	FREIGHTWINT AEROFLEX 2 - 3 PIECE SKIRT MIDDLE/REAR PANEL	4
4	RPC0134	FREIGHTWING AEROFLEX 2 DECAL 5.625" X 23.5"	2
5	RMC0497	FREIGHTWING 24" V BRACE	12
6	RMC0498	FREIGHTWING 18" V BRACE	2
7	RMC0534	FREIGHTWING 6" V BRACE	2
8	RPC0026	S.S. CROSS MEMBER CLAMP	32
9	RPC0021	5/16"-18 GRADE 5 HEX HEAD BOLT	64
10	RPC0053	5/16-18 LARGE FLANGE LOCK NUT	140
11	RPC0056	5/16-18 GRADE 2 TX-40 TRUSS HEAD BOLT	76
12	RPC0135	V BRACE ATTACHMENT BRACKET	16



Installation Layout and Prints:

Ridge Corporation provides installation prints for standard or specific trailer configurations separately from this standardized manual. The submission or exchange of engineering data outlining the relevant trailer dimensions is required to complete a custom installation print. The standard layout drawing for a typical 53' dry van is illustrated below. Note the installation may require customization for different trailer configurations. If necessary please refer to the layout drawing to identify the basic components and parts referenced in the installation instructions.



Installation Instructions:

You can expect the installation procedure to take approximately 2 to 3 man hours depending on experience for standard dry van trailers. Before getting started, take a look at the tool list on page 1 to

make sure you have the necessary tools and equipment. If you have questions or if we may be of any assistance during installation or at any time, please contact us.

1. **Prepare the trailer for installation:**
   Remove or relocate any items (for example tire carriers or chain hangers) that may interfere with mounting the skirt. It is typically easiest to reinstall any items after installing the skirt. Note that lights typically do not need to be removed/relocated with the Aeroflex 2 product.

2. **Assemble the fairing panels:**
   a. Identify the panels for the road and curb sides of the trailer, and lay them on the ground in order by each side of the trailer, as pictured for the road side. Each side has three panels, a rectangular middle and rear panel, and a triangular front panel. All of the panels have a protective plastic film on the outer surface only. **The film side must face upward** when positioned on the ground. Note the rectangular middle panels are symmetrical, and can be used on either side, however the decals on the rear panels will define curb and road side panels when they are properly positioned in the rear/upper corner as illustrated.

   b. Peel back the protective film from the fastener holes on the sides of the panels. Note the film can be removed entirely if preferred during this step, however removing the film later can help to keep the panels clean.

   c. Overlap the panels and align the fastener holes. The rear side of the front panel must overlap (be placed on top of) the front side of the middle panel, and the rear side of the middle panel must overlap the front of the rear panel.

   d. Insert a thruss head (rounded) bolt into the top hole of each overlap and hand tighten a flange nut on the rear side. Then hand tighten fasteners in the remaining three holes.

   e. Tighten the top bolt (only) with a T-40 torx wrench and impact wrench with ½" socket. **Tighten to 14-20**

ft/lbs. Do not tighten the other bolts (it is easier later in the install, and it can help the fairing align if they remain loose).


3. **Assemble the V Braces:**
   a. Gather a V-Brace and V-Brace bracket, two cross member clamps, and hex head bolts and flange nuts as illustrated below.

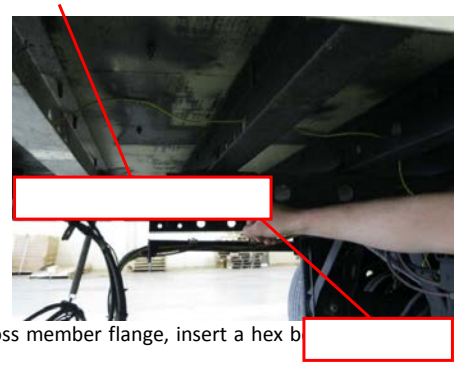
   b. Place the V-Brace bracket on the top of the V-Brace and align the four holes on the top of the bracket with the slotted holes on the top of the brace. Insert two bolts into one clamp (so the heads are adjacent the lower side of the joggled bend) and then through the bracket and V-Brace (on either side). Insert ONE bolt in the other clamp, and then through the bracket and brace (on the other side as illustrated), with the bolt oriented towards the bend in the bracket. Hand tighten three nuts on the bolts. Repeat this process for all of the V-braces.

4. **Determine the mounting/rear position of the fairing:**
   Properly positioning the AeroFlex fairing on the trailer is important for aerodynamic effectiveness and unobstructed operation of the trailer. Because trailers have different axle and slider configurations, the position of the fairing can vary. In general, the rearward edge of the fairing determines its overall position. The rearward edge should be as close to the tires as possible but must leave enough room for sliding tandems to move into their most forward position, with a minimum of 6" of clearance to the tires. At the rearward edge, the fairing is flush with the trailer wall. The fairing is then mounted in a straight line

and at an angle, so the forward tip is just inside (1-2 inches) the landing gear legs or any obstructions created by the landing gear structure (wing plates, leg supports, etc).

a. Identify the trailer cross member best suited to start mounting the rearward V-Brace and corner of the fairing. Typically, this will be the cross member directly forward of the welded stop or bar in the slider rail as illustrated below. Make sure there is at least 6" of clearance from the stop bar to the cross member selected. If there is not at least 6" clearance, use the next cross member forward. Note on some trailers with variable cross member height (typically reefers), the cross member identified may be shorter than more forward cross members. A short cross member can still be used for mounting, but may require you to drill a new mounting hole in the panel (see reefer instructions p12-13). Also confirm the mounting position will provide adequate access to any trailer components, such as slider pin pull mechanisms (if needed move the starting position forward one cross member).

5. Install the rear V-Brace:



a. Place a V-Brace on the cross member selected in step 4. Position the assembled brace (see step 2) with the metal bracket outward and in line with the side rail as illustrated below. Slide the cross member clamp with both bolts in place over the flange of the cross member. Then rotate the other clamp into position over the cross member flange, insert a hex b and hand tighten a nut.

b. Clamp the brace to the cross member by holding the bolt with a ½" wrench and tightening the nuts with an impact wrench and ½" socket. Before tightening, make sure the metal bracket is approximately centered on the V-Brace, so the holes in the outer face of bracket and brace are aligned. The outer face of the bracket should be aligned with the inside edge of the side rail, so that the bracket is slightly inset from the side of the trailer (approximately 1/8" to 1/4"). When positioning/aligning the brace, it can help to partially tighten nuts first so that small adjustments can be made. Once positioned, fully tighten the nuts. **Torque to between 14 and 20 ft-lbs**.

6. **Check distance to landing gear and customize fairing length if needed:**
   The overall length of the Aeroflex fairing can be customized to fit different trailer configurations, such as 48' trailers and reefers with extended tandem slide rails. This step is not necessary for most standard 53' van trailers.

   a. Measure the distance from the rear edge of the V brace installed in step 5 to the rear edge of the landing gear leg. If the distance is 270" or more, the standard fairing will fit without customizing length. If less than 270", proceed to the next step to customize fairing length.

   b. Measure and mark the same distance identified in the previous step along the fairing from the rear edge. Use a square ruler to mark a vertical line at this point. Cut the tip off the fairing with a hand jig or circular saw along the line. Then drill a new ratchet strap tensioning hole with a ½" drill bit in the top/front corner, approximately 1.5" from the top and new forward edge of the panel.

7. **Attach the rear/upper corner of the fairing panels to the rear V brace:**
   a. Bolt the top/rear corner of the panel to the top/rear hole in the V-Brace with a thruss head bolt and lock nut. Before lifting it is helpful to position the assembled fairing panels on the ground so the rear corner is under the V-Brace and the tip is angled away from the trailer. Note in some cases, if the V-Brace and metal bracket are not well aligned, it may be necessary to clean the upper/rear hole in the brace with a 21/64" or 5/16th drill bit.

Secure the bolt with a T-40 torx wrench and impact with ½" socket. **Torque to 14-20 ft-lbs.**


8. Tension the fairing panels with a ratchet strap:

Hanging the fairing in tension with a ratchet strap helps to insure the panels stay flat during the installation and positions the fairing for the following installation steps. Most any ratcheting tie down strap with metal hook ends can be used to complete this step.

a. Adjust the ratchet strap to have approximately 4 feet between hooks. Place one hook in the tensioning hole in the forward tip of the fairing.

b. Pull the tip of the fairing panel into a position under the trailer just inside the landing gear wing plate. Connect the other side of the ratchet strap to the bottom of a cross member in front of the landing gear legs and approximately in line with the inside edge of the landing gear leg.

c. Crank the ratchet to pull the panel into position and put tension on the panel. When properly positioned the fairing should leave 2-3" of clearance to any landing gear structure or components as illustrated. Adjust the location of the strap on the cross member if needed to position the fairing. The fairing will typically pass behind any turn lamps on the trailer, but make sure adequate clearance is provided (in some cases lamps may need to

be relocated). Once positioned, tension the ratchet strap until the forward top edge of the fairing hangs approximately 3" below the cross members.

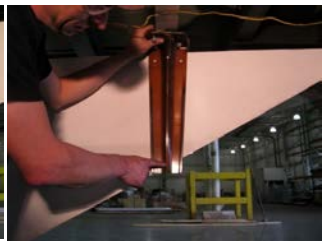



9. Remove the protective film from the panels:

a. Peel off the clear protective film from the outside surface of the panels (if not already completed).

10. Position and install the medium length V brace at the front of the fairing:

a. Identify an 18" (medium) length V Brace and assemble per step 2. Position the brace on a cross member as far forward as possible as illustrated in the left image below, without the brace hanging off the forward edge of the panel as illustrated in the right image below. Align the brace with the panel, and secure the brace on the cross member (using the same procedure as step 5).

11. Attach the fairing panel to the medium brace:

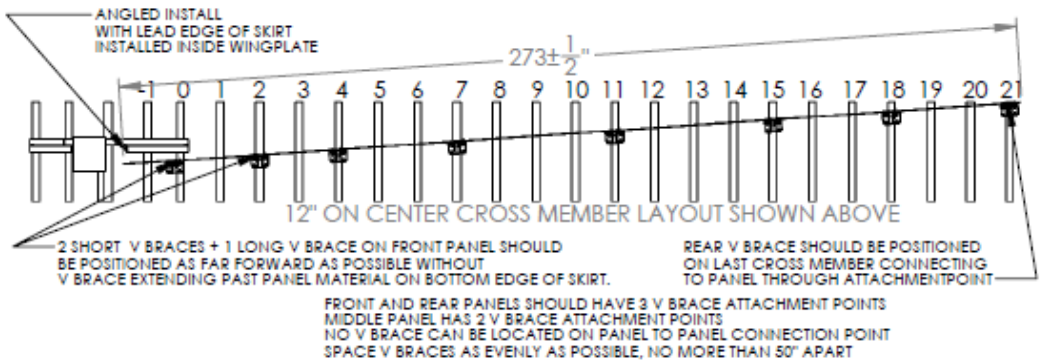
a. Lift the fairing panel upward so that the top edge is adjacent the bottom of the cross members at the medium length V-Brace. Leave a small gap of approximately 1/4" between the top of the panel and the bottom of the cross member. Use a c-clamp or vise grip to clamp the panel to the top of the brace in this position. Drill through the top two holes in the V brace and through the panel with a 5/16" bit.

b. Insert thruss head blots into the two holes from the panel side, and secure lock nuts with an impact wrench and ½" socket while holding the bolts with T-40 Torx wrench. **Torque to between 14 and 20 ft-lbs.**

12. Determine the position of the other V-Braces and attach them to the trailer:

a. Identify a 6" (small) length V Brace and assemble per step 2. Position the brace on a cross member as far forward as possible, without the brace hanging off the forward edge of the panel (similar to step 10). On most trailers the small brace will be positioned on the second cross member in front of the cross member with the medium brace. Align the brace with the panel, and secure the brace on the cross member (same procedure as step 5). Note if the font of the panel is trimmed significantly to fit the trailer per step 6, there may not be room for the small front brace and its installation can be omitted.

b. Position and secure the remaining full length V-Braces (5 per side) with the same installation procedure. Install the most forward full length brace on the second cross member behind the medium/18" brace (skip one cross member). The exact position of the remaining braces is dependent on cross member spacing. Typical positioning for trailers with cross members on 12" centers is illustrated below. In general the V-Braces should be spaced as evenly as possible, with three braces on the rear panel (skipping two cross members between) and two on the middle panel (skipping three cross members between). Do not install braces over the panel overlaps, or leave more than 50" between braces.



13. Drill and bolt the top of V-braces to the panels:

a. Starting at the V-Brace closest to the rearward panel overlap, lift the fairing panel upward so that the top edge is adjacent the bottom of the cross members. Leave a small gap of approximately 1/4" between the top of the panel and the bottom of the cross member. Use a c-clamp or vise grip to clamp the panel to the top of the brace in this position. Note the panel may already be positioned if adequate tension is applied during ratcheting the panel. Drill through the top two holes in the V-Brace and through the panel with a 21/64" (preferred) or 5/16" bit. Insert thruss head blots into the two holes from the panel side, and secure lock nuts with an impact wrench and ½" socket while holding the bolts with T-40 Torx wrench. **Torque to between 14 and 20 ft-lbs**.

b. Drill through the top two holes in the remaining V-Braces and through the panel with a 21/64" (preferred) or 5/16" bit.

c. Insert thruss head blots into the holes from the panel side, and secure lock nuts with an impact wrench and ½" socket while holding the bolts with T-40 Torx wrench. **Torque to between 14 and 20 ft-lbs.**

14. Tighten the panel overlap bolts:

a. Tighten the lower three lock nuts/thruss head bolts previously placed at each panel overlap during panel assembly (step 2) with an impact wrench and ½" socket while holding the bolts with T-40 Torx wrench. **Torque to between 14 and 20 ft-lbs.**

15. Drill and bolt the bottom of the V-Braces to the panels:

a. Drill through the bottom two holes in all of the V-Braces, and through the panel with a 21/64" (preferred) or 5/16" bit.

b. Insert thruss head blots into the holes from the panel side, and secure lock nuts with an impact wrench and ½" socket, while holding the bolts with T-40 Torx wrench, **Torque to between 14 and 20 ft-lbs.**


16. Repeat the installation process on the other side of the trailer.

Note the installation process can be completed on both sides of the trailer simultaneously if multiple installers are working or if preferred.

17. Remove the ratchet strap(s) and re-install any items removed from the trailer to facilitate the install.

18. Inspection and Safety Check.

It is very important that every trailer is checked when the install is finished. Thoroughly inspect the completed fairing and make sure:

- ✓ There are four bolts connecting each V-Brace to the trailer.
- ✓ You did not leave any clamps, ratchet straps, etc. on the trailer.
- ✓ All fasteners are in place and have been adequately tightened per instructions.

Installations for Refrigerated Trailers:

The same basic process is used to install Aeroflex 2 Side Skirts on refrigerated trailers, however some customization is required. Some refrigerated trailers are equipped with taller 5" or 5.5" aluminum cross-members in the bay of the trailer, and standard 4" tall steel cross members above the landing gear and slider rails. If installing on such a trailer, and the rearward V-Brace position identified in step 4 uses a short/steel cross member, the upper/rear mounting holes in the panels must be relocated. Measure the height of the shorter steel and taller aluminum cross members to determine their height difference. The height difference is typically 1" or 1.5". Use a square to mark this height difference from the center of the Top/Rear hole in the rear corner of the panel, directly above the hole (so it is still 1.5" horizontally

from the rear edge of the panel). Drill a new mounting hole at the mark with a 21/64" (preferred) or 5/16" drill bit. Repeat on the other side of the fairing, and use these new holes to mount the panels to the V-Brace in step 7, and continue to follow the standard mounting instructions (the other panel holes are match drilled in the standard procedure, consequently any other odd cross member heights will not affect the installation).

On most refrigerated trailers, there is adequate clearance for the skirt to pass in front of the fuel tank and behind the landing gear support, so that skirt can be installed with the standard procedure. Position the skirt panel to provide approximately 2" of clearance to the center of the tank (the filler neck and cap may be closer). If there is not clearance, the tank must be relocated (moved back) and the skirt installed normally to be in compliance with California/CARB specifications. Note in some cases the tank can be moved by loosening the band straps, adjusting the tank position, and retightening. The V-Braces in the forward portion of the skirt may need to be adjusted to avoid interference with the tank or the tank mounting bracket and hardware. If necessary, move the V-Braces to avoid the tank assembly (note the maximum spacing between V-Braces is 50").

MAKE SURE THE PANELS, V-BRACES AND ANY METAL HARDWARE ARE NOT TOUCHING THE FUEL TANK AND CAN NOT DEFLECT INWARD TO IMPACT THE FUEL TANK. ANY CONTACT CAN WEAR A HOLE IN THE TANK AND CAUSE A FUEL SPILL.

Once the skirt is installed, use a 6" to 8" (maximum) hole saw to place a clearance hole in front of the tank filling spout, and if necessary, a 2 to 3" (maximum) hole in front of the fuel tank gage (in some cases the gage will be below the angled forward edge of the skirt). To make the hole location precise, it can help to use a square ruler to take the vertical measurements from the cross members to the center of the filler and gage as illustrated below right (before panel installation). Then mark the panel at these measurements after installation using a square, in line with the center of the tank. Be careful not to hit the tank when drilling. If needed, remove the hardware connecting the panel to the forward V-Braces to gain adequate drilling clearance, and replace when drilling is complete.

Testimonials

Normandin Transit

"The Freight Wing Aeroflex has helped Normandin Transit raise our fleet fuel economy averages to levels that few if any other fleets can equal. We started adding these units a couple years ago and continue to expand the implementation as these skirts offer a very quick return on investment. The flexible panels will bend and drag over just about anything our drivers run into so we don't have to worry about damage. Normandin has tried other skirts, but the Freight Wing Aeroflex has been the most efficient and resistant product."

- Dave Rioux, Formateur- Fuel Manager, Normandin Transit Inc.

Frito Lay

"As part of our responsibility as an EPA SmartWay Partner, we wanted to implement a solution that would be instrumental in helping us reach our efficiency and environmental goals," "Freight Wing offers an attractive answer because it addresses greenhouse gas emissions, fuel efficiency, and the operating costs associated with ground freight transportation. We tested their products for over a year and have been impressed with the results."

– Steve Hanson, Fleet Sustainability Engineer, Frito-Lay

Hiner Transportation

"Hiner Transportation has worked for years with Freight Wing and they have always been a reliable supplier. We recently implemented a large percentage of our fleet with the new Aeroflex skirting and are really impressed with the new capabilities of this product. Thanks to Freight Wing for another job well done."

- Jared Riggers, Fuel & Service Program Director, Hiner Transportation

Advance Auto Parts

"With the never ending increases in fuel prices the Freight Wings have been a good investment. Not only did we receive an increase in our MPG it also adds to our image of working to be environmentally friendly. The original units installed at my location still look and work great and we have added additional units at some of our other locations."

- Rand Sayler Jr., DC11 Transportation Manager, Advance Auto Parts

Whole Foods

"Whole Foods grocery stores outfitted its entire trailer fleet with Belly Fairings at its Midwest Distribution center. "This product really helped. We heard from our drivers that they were experiencing increases in fuel efficiency of 4% to 5%."

- Steve Burse, Facility Team Leader, Whole Foods

J-Line Transportation

"Before using the product, we were averaging about 6.4 to 6.5 mpg and we raised this to 6.9 to 7.1. We had brought in some of the first Freight Wing flexible skirts for testing in 2005 and these units are still in great shape will probably last longer than the trailers we put them on. This summer, we added some of the new Aeroflex skirts and the evolution in this design has truly been remarkable."

- Rex Johnsonbaugh, Vice President, JLine Transportation