

AWNING & SIGN STAPLING Reference Manual

**A step by step guide for attaching fabrics to awning
and sign face frames using the stapling process.**



Milliken Matched Component Staple System





STAPLING REFERENCE MANUAL

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This section contains explanations and clarifications that should be considered before starting fabrication of frames and fabric insertion when using the "Milliken Matched Component Staple System".

Tools

To ensure quality and efficiency you need the proper tools to do any project right. Certain tools and parts have been classified as ESSENTIAL to provide users with the best prospects of solid fabrication results.

ESSENTIAL TOOLS

- | | |
|--------------------------------------|-----------------------------------|
| 1 Milliken Staple Gun | 4 Two-Flute Aluminum Router Bits |
| 1 Milliken Hand Held Air Hammer | 1 Razor Knife |
| 30 Milliken Fabric Tensioning Clamps | 1 Sharp Scissors |
| 1 Milliken Router Guide Plate | 1 Modified Tip Needle Nose Pliers |
| 1 Aluminum Blade Chop Saw | 1 Small Tip Screw Driver |

IMPORTANT TOOLS

- 1 Milliken Motorized Production Rack
- 1 Milliken Motorized Bender

ESSENTIAL PARTS

- Milliken "Z" Installation Clips
- Milliken Galvanized or Stainless Steel Staples
- Milliken Color Plus Vinyl Insert
- Milliken Fast Clips

OTHER STANDARD SHOP TOOLS

- Air Compressor
- Air Regulator(s)

45 DEGREE ANGLE CUTS **HORIZONTAL EXTRUSION JOINTS**

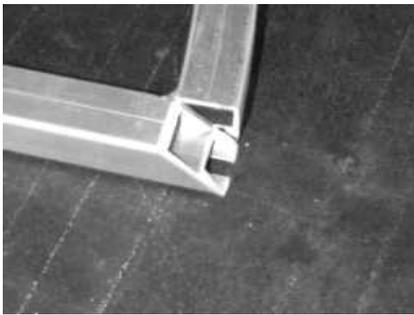
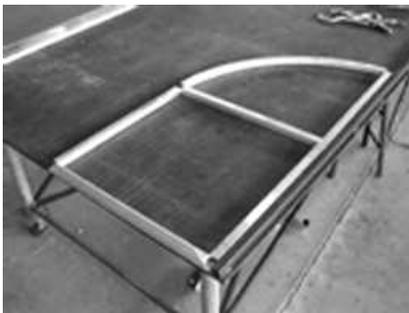


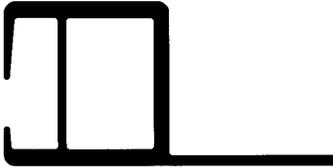
Photo at left details procedure for joining horizontal frame members. All joints should be 45 degree angled, NOT SQUARE EDGED at joining point.

TRUSS FABRICATION **BUILT FLAT ON STEEL TABLES**

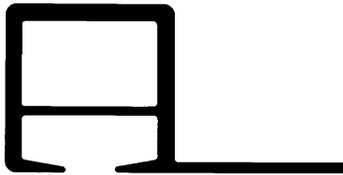


All trusses should be built in advance of final frame assembly. It is recommended that trusses be built separately on a 1/4 inch steel table top. See detail in photo at left. There is no simpler, faster or more cost effective way to build this main component of awnings and signs.

**USE OF MP2A OR MP2B
SELECTION CRITERIA**



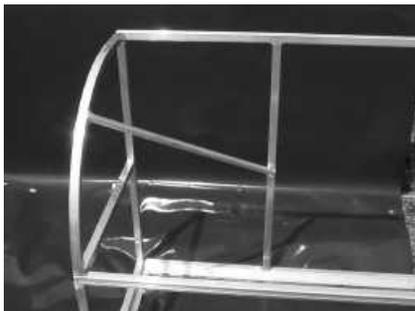
Drawing at left is MP2B, used as the bottom structural bar surrounding the bottom perimeter of an awning or sign structure. This extrusion provides a flange for eggcrate support (a light diffuser panel) in the bottom of the structure. The inner flange holds the eggcrate in position. A reason to use this eggcrate support versus the other available extrusion (MP2A) is that it has a front slot that is set up so that a fabric valance can be installed and will hang down in line with the rest of the awning face.



Drawing at left is MP2A, with the slot at the bottom. This bottom position for fabric attachment is believed to be advantageous because it improves the smooth line of the fabric and does not reveal any vinyl insert on the front face of the awning or sign. Fabric attachment is concealed under the structure.

AWNING SECTION JOINING PROCEDURE

Noted here is an important fabrication procedure particularly for awning sections that join, one to another in a series, side by side.

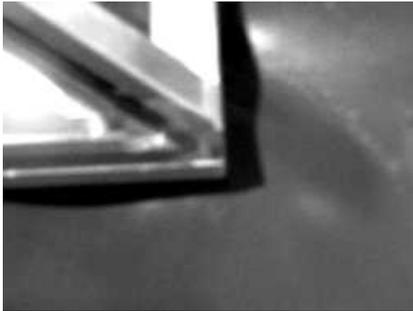


The angled support bar (often referred to as a “kicker”) is important because it overcomes the stress placed upon the radius end bow when fabric is tensioned from side to side.

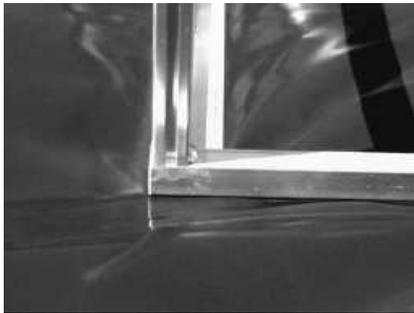
By using this technique in all awnings, it assures a plum and square end of fabric structures every time.

ALUMINUM FRAME ROUTING AND GRINDING

The photos below show the frame as it is constructed in the fabrication process. As a principle, it is almost always necessary to open the two slots, to provide for later vinyl insertion, during fabric insertion.



The next photo reveals the slot opened on the side wall. One wants to think of it as a “river” and the “tributaries” that flow into one another.



Featured in this photo is an example where one would not open the slots where two frame members join. In this instance, the bottom bar of the awning, around the bottom perimeter, has the fabric stapling slot facing down. The top vertical slot is never connected to the bottom slot in this instance. Vinyl insertion stops abruptly at the end of the vertical slot.

SPECIAL TOP OF DOME FABRICATION PRINCIPLE



Photo at left shows dome construction technique at top of awning prior to fabric insertion. A top triangular finish-up point to which fabric bows extend and end, is much easier to build than bringing all bows to a single point at the top of a dome.

The triangular top structure is then covered with a single piece of fabric. Photo at left provides a view of a completed dome top with the triangular section. An alternative to the “triangle” is a radius top frame member that achieves the same result.

BASIC STAPLING PRINCIPLE

Think of covering the *top* of a table, that is a “plane”. If the table has sides and one wants to cover the *sides*, that is a different “plane”.

The principle here is that a single piece of fabric is to be cut so that it will cover an individual plane. This is why we use one piece of fabric is used on the face of a sign or the deck of an awning, and another separate piece for the sides, etc.

Using this principle, it makes it easy to deduce the amount of fabric required to do the job (for estimating purposes) and for placement into the structure during production.

FABRIC INSERTION PRINCIPLE

It is the objective of every panel inserted into a single plane of an individual structure, **to move the excess fabric into the corners of the panel.**

This is usually accomplished by starting the clamping and/or stapling process in the center of the structure and continuing to the outer corners, alternating sides.

It is always a good idea to staple any given side of a structure no closer than about 3” from the corner. This permits adjustment in the corner for excess fabric when the adjacent and the adjoining fabric panel is stapled in. It assures some “elbow room” to finish the corner tightly, by being able to pull fabric from both directions to make a neat corner, without excess fabric bulging out.

PRESSURE REGULATOR REQUIREMENT

The air pressure regulator is a key tool that is necessary in all stapling operations. Air pressure for the stapling gun can be regulated to approximately 40 psi and the air hammer uses approximately 90 psi.

It may take more or less than these “psi” levels. Some experimenting may be required to find the exact pressure for the particular gun or hammer being used.

STAPLING GUN PRESSURE SUGGESTION

When inserting the stapling gun into the staple slot, ready to fire the first staple through the fabric, do not apply heavy physical pressure to the nose of the gun. Apply medium pressure. Too much pressure may cause the staple to blow through the fabric.

ROUGH CUT FABRIC PANELS

It is not necessary to cut fabric panels exactly to size. Fabric panels can be oversized with excess fabric that can be trimmed off during the fabric insertion process.

Cutting fabric panels to exact size (roughly 6” larger on all sides) may be desirable where it is possible to split a 60” fabric panel into two or three panels.

FABRIC TIP - ACRYLIC - END OF THE “BAG AND SAG”

Since the introduction of acrylic awning and boat fabric, awning manufacturers have found that regardless how tight one tensions acrylic fabric in a structure, it almost always bags and sags in wet weather and dewy mornings, but usually assumes a taut appearance when the sun hits the surface later in the day.

Milliken found a way to eliminate this negative in most instances.

The fabric is cut into ready-to-install panels and soaked in a water trough for about 16 hours overnight. The fabric is then inserted “wet”, which puts the fabric into the frames at its maximum stretch point. Thereafter, since the fabric is uniquely tensioned in 360 degrees in the Milliken frame structures, it usually stays taut in any kind of weather.

This element can help separate one local company from the rest of the crowd in the marketplace. It is another key, distinctive feature of the Milliken System.

STAPLING BETWEEN FABRIC TENSIONING CLAMP JAWS

One of the great benefits of the fabric tensioning clamps is that they not only tension the fabric in the slot, but they also permit stapling of the fabric in and around the jaws of the clamps.

Another benefit of using the clamps is that all fabric panels can be held in place and the fabric quality checked for appearance before firing the first staple. This is not always the case, but it is often a benefit to be able to tension fabric to this extent before stapling.

Fabric tensioning clamps are absolutely essential tools that are used every day in awning or sign construction processes.

TENSIONING FABRIC AT LOWER FRONT BAR

Examples are exhibited in the stapling manual that show adding a fabric tensioning clamp in the center of the bottom horizontal bar in many awning and sign systems.

This first clamp should be placed in the center of that horizontal bar if there is a vertical truss bow at that position.

If no vertical truss bow is located at the dead center of the structure, then add the first clamp to the right or left of center where the nearest vertical truss bow is located.

USE OF SCISSORS VERSUS RAZOR KNIVES TO TRIM FABRIC

The general rule is that razor knives can be used for most fabric trimming operations.



The exception to the “rule” occurs when trimming fabric from one panel, where fabric has already been installed in an adjacent panel.

In this photo one can see the above described situation, WHERE THE USE OF SHARP SCISSORS IS THE ONLY ACCEPTABLE

WAY TO REMOVE EXCESS FABRIC.

When fabric is trimmed with scissors there may be extra fabric left protruding from the slot. This is not a problem because the minor extra fabric protruding from the slot will be pounded into the slot when the Color Plus Vinyl Insert is installed. No fabric ends will be visible thereafter.

TUCK & FOLD CORNER TECHNIQUE

The purpose of the “Tuck & Fold” is to eliminate any possibility of any bare aluminum frame showing after all fabric is inserted.

This occurs at the bottom horizontal bar area, at the corner where the square slotted vertical extrusion joins the horizontal slotted extrusion at right and left corners. The horizontal extrusion has the staple slot facing down.



Featured at left is Step #1, making a horizontal cut on the excess fabric at the front corner.



Step #2 requires a vertical cut of the fabric at the same front corner.



Step #3 is the finished appearance of the tuck-and-fold operation. Fabric is folded and stapled into the frame. When the end panel is added to the end of the awning, that fabric panel will provide complete coverage of the aluminum frame. Quality appearance is the end result.

VINYL INSERT OVERLAP TECHNIQUE

This refers to the point at which two pieces of vinyl insert overlap one another.

The object of recognizing this situation, that is a common occurrence in every Milliken awning and sign structure, is to provide a visual appearance that does not show a noticeable bulge, where the two vinyl inserts intersect one another.

Both pieces of vinyl insert which intersect another piece of vinyl insert are trimmed on the underside, at the point of overlap. The resulting appearance is one that is esthetically desirable and attractive and the overlap is hardly detectable.



Noted in the first photo is the trimming procedure at the end of a piece of vinyl insert, to prepare to be overlapped. Cutting back 1" on the underside and trimming that section off is the basic starting point for an overlap.



The second photo shows the appearance of the vinyl insert after alteration.



Before the vinyl insert is placed in the slot in anticipation of overlap, it should be trimmed to extend over the slot that it is abutting but no further (approximately 1-inch).

FABRIC ADJUSTMENT PROCEDURE AFTER STAPLING

On occasion, there may be the need to adjust the staples due to there being a fabric bulge in a particular area or, more generally, where the fabric does not exhibit a drum-tight-fit-and-finish.

The technique to follow is simple: using a razor knife, cut along one side of each of the staples in the affected area. This will cause the fabric to release. Retension the fabric properly and then staple the fabric into place again.

The old staple holes in the fabric will not be visible, as they can be found even further outside the VO area.

Another method of removing small wrinkles or excess fabric bulges is to use a heat gun. When this process is used, it must be done carefully by moving or rotating the gun so that the heat (1) does shrink the fabric

GRAPHICS



Graphics can be installed before or after inserting fabric into a frame. In the event graphics are installed prior to the fabric insertion, one must consider the be aware of the positioning of the graphics with consideration of the amount of fabric required to facilitate the normal stapling process.

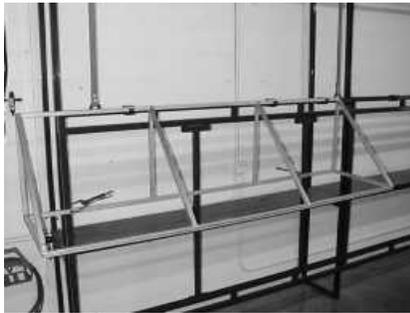
Frames can be marked at the center point as well as the fabric marked at the center point. This will provide accurate positioning. See the example at right of lining up center points for graphics positioning.

The following illustrations and text in the *Milliken Stapling Reference Manual* are presented as a guide to assist awning/sign and display fabricators with fabric insertion and other related techniques.

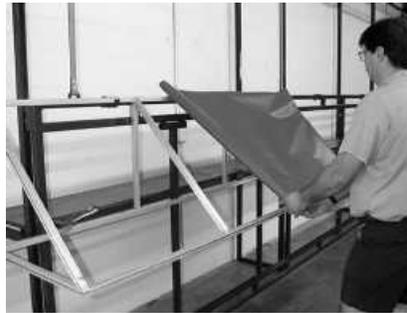
Milliken does not warranty or guarantee success by following these techniques, but Milliken does state to users of the manual that the featured techniques have been found to be the most efficient and fastest way to produce high quality products.

Traditional Style Awnings

Review the Milliken Stapling Instruction section “Before You Start” prior to beginning to follow the photo and written instructions in this section.



1. Traditional awning frame exhibited.



2. Clamp fabric at top on one end of awning.



3. Clamp fabric at other end of awning.



4. Staple from center to right and then to left.



5. Clamp fabric on side.



6. Add additional clamps. Repeat same step on other side, leaving 6” of unstapled fabric at bottom of side.



7. Trim off excess fabric if required.



8. Clamp at the center bottom of awning.



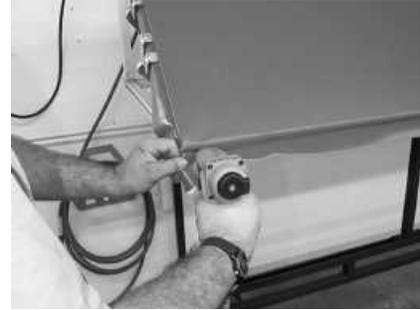
9. Add clamps from center right and then center left.



10. Clamp entire bottom of awning, then staple.



11. Finish stapling side, bottom.



12. Remove clamps then finish stapling.



13. Trim off excess fabric. Repeat this step on other side.



14. Trim off excess fabric on bottom front of awning.



15. Clamp fabric at back of end panel (do not staple). Staple from center up then center down.



16. Trim off excess fabric from bottom of end panel that may interfere with clamping.



17. Clamp bottom and staple fabric.



18. Retension back if required and staple.



19. Using scissors, trim off excess fabric. Repeat steps 15-19 on other side.



20. If fabric valance is required, locate center line mark on valance and frame.



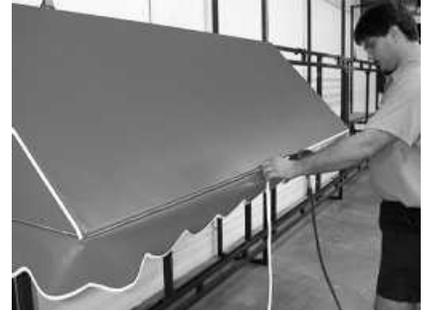
21. Hand tension and staple at center, left and right. Add one or two temporary staples at corner. Repeat on other side.



22. Finish stapling of valance from center to right and then center to left.



23. Staple side valance area from front to back. Repeat on other side.



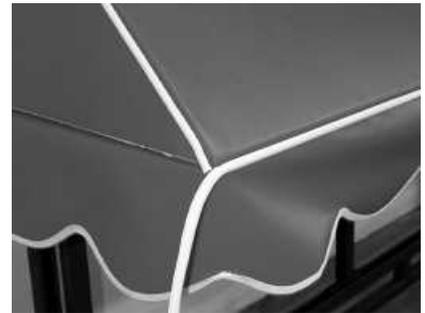
24. Begin installing vinyl insert on front of awning.



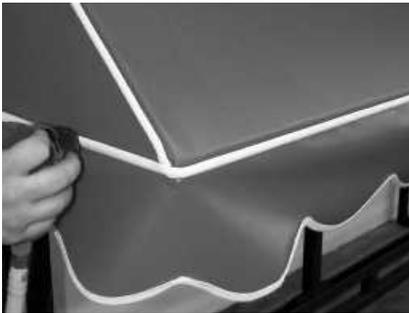
25. Trim vinyl insert for crossover at bottom of awning as shown.



26. Install vinyl insert from top of side panel to bottom of awning, trimming end for overlap. Repeat step on opposite side.



27. Overlap bottom piece of vinyl insert continuing around corner.



28. Note quality finished appearance of vinyl insert crossover. Finish vinyl insert installation.



29. Cut vinyl insert in preparation for overlap.



30. Install vinyl insert to top of awning.



31. Trim and install vinyl insert (same as step 25).



32. Completed tradition style awning with valance.

Traditional Style with Sign Band

Review the Milliken Stapling Instruction section “Before You Start” prior to beginning to follow the photo and written instructions in this section.



1. Completed traditional with sign band awning.



2. Clamp fabric at right and left at top of awning.



3. At the top of the awning, staple from center to left then from center to right.



4. Finish stapling top of awning, pulling excess fabric by hand toward outer edge of awning.



5. Clamp fabric on side.



6. Add additional clamps. Repeat same step on other side. Leave 6” of unstapled fabric at bottom of side.



7. Trim off excess fabric that may interfere with clamping.



8. Clamp at center of awning.



9. Place one clamp on right and left side of the awning front to tension fabric from side to side.



10. Add additional clamps, from center to left and then center to right.



11. Staple fabric as shown.



12. Trim off excess fabric. Repeat this step on other side.



13. Trim off excess fabric.



14. Note frame and fabric are marked for center to assure control of graphic panel positioning.



15. Staple center then clamp at left top of panel and right top of panel.



16. Staple from center to right and then center to left.



17. Clamp sign band at bottom on both sides.



18. Add additional clamps to each side (do not staple).



19. Trim off excess fabric that might interfere with clamping.



20. Clamp at center bottom of awning.



21. Place one clamp on right and left side at bottom of sign band to tension fabric.



22. Clamp entire bottom of awning, from center to right and then center to left.



23. Staple fabric as shown.



24. Trim off excess fabric.



25. Staple both sides of sign band.



26. Cut fabric horizontally as shown to prepare for tuck and fold.



27. Cut excess fabric off vertically as shown, tuck and fold fabric and staple. Repeat steps 26-27 on other end.



28. Clamp side fabric at back (do not staple).



29. Staple from center up, then from center down.



30. Staple fabric from left to right using hand tensioning.



31. Clamp bottom of awning.



32. At bottom of back side, cut fabric horizontally as shown to prepare for tuck and fold.



33. Cut fabric vertically as shown, then tuck and fold and staple.



34. At bottom front of side, cut fabric horizontally at level of bottom bar. Prepare for tuck and fold.



35. Cut fabric vertically as shown.



36. Tuck and fold, add tensioning clamps to bottom side bar and then staple from front to back of awning.



37. Remove clamps and trim off excess fabric as shown.



37. Adjust clamps to assure smooth fit of side panel, then staple.



39. Trim off excess fabric as shown.



40. Using scissors, trim off excess fabric as shown. Repeat steps 28-40 on other side.



41. Install vinyl insert along bottom as shown.



42. Continue installing vinyl insert and trim as shown.



43. Install vinyl insert along top front as shown.



44. Prepare vinyl insert for overlap.



45. Install vinyl insert along side of sign band, starting from bottom to top.



46. Prepare vinyl insert for crossover at top back of side panel.



47. Install vinyl insert at top of awning.



48. Crossover vinyl insert as shown.



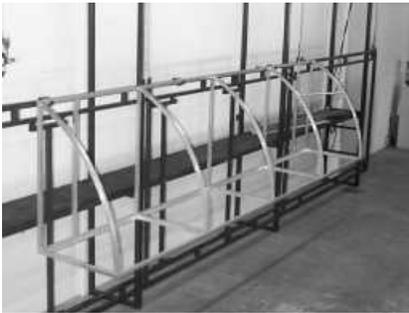
49. Finish installing vinyl insert as shown. Repeat steps 45-49 on other end.



50. Completed traditional style awning with sign band.

Convex Style Awning

Review the Milliken Stapling Instruction section “Before You Start” prior to beginning to follow the photo and written instructions in this section.



1. Convex awning frame exhibited.



2. Clamp fabric on each end of awning at top.



3. Add additional clamps on each end of awning (do not staple).



4. Staple from center to right, then center to left.



5. Trim off excess fabric that might interfere with clamping at bottom of awning.



6. Clamp at bottom center of awning. Be sure to clamp at bow.



7. Clamp entire bottom of awning, from center to left then center to right, then staple the bottom.



8. Staple left and right side of awning.



9. Trim off excess fabric. Repeat steps 8-9 on other end of awning.



10. Trim off excess fabric.



11. Clamp fabric at back of awning but do not staple at back.



12. Staple at center of radius.



13. Staple from the center up and then center down.



14. Clamp bottom of side panel.



15. Adjust clamps at back if needed to eliminate wrinkles.



16. Staple fabric at back of awning.



17. Staple bottom of side panel.



18. Using scissors, trim off excess fabric at the front radius. Complete steps 11-18 at other end of awning.



19. Trim off excess fabric at top of awning.



20. Add vinyl insert into all open slots. See vinyl overlap procedures in the "Before You Start" section.



21. Completed convex awning. (For additional detail on the convex, see following section "Convex Style with Sign Band".)

Convex Style with Sign Band

Review the Milliken Stapling Instruction section “Before You Start” prior to beginning to follow the photo and written instructions in this section.



1. Convex awning with sign band frame displayed.



2. Center fabric on frame. Clamp fabric at top, right and left side.



3. Clamp radius end from top to bottom (do not staple).



4. At the top of the awning, staple from the center to right and then center to left.



5. Clamp at center bottom of awning.



6. Place one clamp on bottom right and left of awning to tension fabric from side to side.



7. Finish clamping from top to bottom in vertical sign band area.



8. Staple clamped areas on side of awning.



9. Remove clamps and trim off excess fabric.



10. Cut fabric horizontally as shown. Repeat steps 6-10 on other side.



11. Retension center clamp, if required.



12. Retension fabric clamps at bottom right and left, if needed.



13. Clamp entire bottom from center to left and then center to right.



14. Staple bottom of awning.



15. Remove clamps and trim off excess fabric.



16. Cut fabric vertically as shown to prepare for tuck and fold.



17. Tuck and fold fabric.



18. Staple fabric as shown.



19. Clamp fabric at back of awning (do not staple back). Staple radius only, starting from center of radius up, then



20. Trim off excess fabric at bottom that may interfere with clamping.



21. Clamp bottom of awning.



22. Hand tension fabric, then staple from top to bottom.



23. Retension back, if needed, to eliminate any wrinkles.



24. Clamp bottom of side panel.



25. Staple back of awning.



26. Trim, then tuck and fold excess fabric at back corner (see 16-18 for details).



27. Retension bottom if needed to eliminate any wrinkles.



28. Trim off excess vertical fabric.



29. Trim fabric at front bottom as shown to prepare for tuck and fold.



30. Tuck and fold fabric and staple.



31. Continue stapling along bottom of side panel.



32. Using scissors, trim off remainder of excess fabric.



33. Trim off excess fabric at back of awning.



34. Trim off excess fabric at bottom. Repeat steps 19-34 on other side.



35. Install vinyl insert at bottom of awning.



36. Install vinyl insert as shown. It is possible to turn most corners without cutting the vinyl insert.



37. Trim vinyl insert as shown in preparation for overlap. Repeat steps 30-37 on other end.



38. Install vinyl insert on side of awning.



39. Install vinyl insert on top of awning.



40. Trim vinyl insert as shown to prepare for overlap. Repeat this step on other end.



41. Overlap vinyl insert as shown. (For further description on overlap technique see "Before You Start" section of this manual.)



42. Complete convex style with sign band. Add graphics if required. (NOTE: graphics can be applied before or after fabric insertion.)

Convex Style with Separate Colored Sign Band

Review the Milliken Stapling Instruction section “Before You Start” prior to beginning to follow the photo and written instructions in this section.



1. Convex with separate sign band frame exhibited.



2. Position fabric over frame. Clamp at top right and top left side.



3. Clamp radius end from top to bottom (do not staple).



4. At top of awning, staple from the center to right and then center to left.



5. Trim off excess fabric along bottom that may interfere with clamping.



6. Clamp at the bottom center of awning. Be sure to clamp at bow.



7. Clamp from center to left then center to right at bottom of awning.



8. Staple bottom of awning.



9. Staple clamped radius area.



10. Remove clamps then cut fabric horizontally as shown.



11. Trim off excess fabric. Complete steps 9-11 on other side.



12. Trim off excess fabric from bottom.



13. Trim off excess fabric on top.



14. Locate center line of sign band and add a few staples in center. Note center mark on fabric and frame.



15. Clamp fabric on each end of sign band at top.



16. At the top of the sign band, staple from center to right then center to left. Maintain uniform level top panel position.



17. Adjust clamp at top of sign band. Clamp vertical sign band area from top to bottom. Complete same procedure on other side of sign band.



18. Clamp at center bottom of awning.



19. Trim off excess fabric off from bottom that may interfere with clamping.



20. Clamp entire bottom of awning, moving from center to right and then center to left.



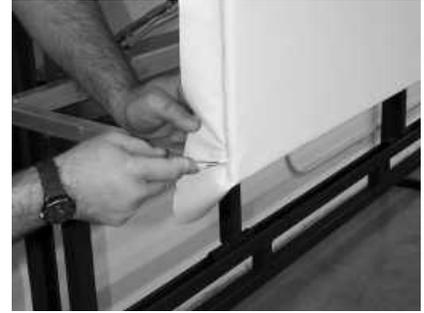
21. Staple bottom of sign band.



22. Trim off excess fabric on bottom of sign band.



23. Staple fabric on left and right side of sign band.



24. Cut fabric horizontally as shown to prepare for tuck and fold.



25. Cut fabric vertically as shown.



26. Tuck and fold fabric, then staple.



27. Trim off excess fabric. Repeat steps 24-26 on other side.



28. Clamp fabric at back of awning (do not staple). Staple at center of radius.



29. On the radius, staple from the center up and then center down.



30. At bottom of side panel, trim off excess fabric that may interfere with clamping.



31. Clamp bottom side panel at front of awning.



32. Hand tension fabric, then staple front side adjacent to sign band.



33. Cut fabric vertically to prepare for tuck and fold, then staple back of awning.



34. Position clamp at bottom back of side panel.



35. At front of side panel, cut fabric horizontally as shown to prepare for tuck and fold.



36. At same corner, cut fabric horizontally as shown.



37. Tuck and fold, then clamp bottom of side panel at front (do not staple).



38. Add center clamp, then staple from center towards front and then center towards back.



39. Retension back for a perfect fit and finish, then staple.



40. Trim off excess fabric at bottom of side panel.



41. Trim off excess fabric at back.



42. Using scissors, trim off excess fabric adjacent to sign band and radius top. Repeat steps 28-42 on other side.



43. A tip for removing any small wrinkles in fabric is to carefully use a heat gun.



45. Install vinyl insert at top of sign band.



46. Straight cut vinyl insert as shown.



46. Cut away 1" of underside of vinyl insert to prepare for overlap.



47. Install vinyl insert along side. At the point it crosses the horizontal white vinyl insert, cut away bottom half of vertical vinyl insert for overlap.



48. Continue installing vinyl insert on side panel.



49. Cut vinyl insert and trim bottom half for overlap.



50. Install vinyl insert at back of awning.



51. Overlap vinyl insert at corner and continue down back of side panel. (See step 46-47 for more detail on overlap procedure.)



52. Install vinyl insert on bottom of awning. Repeat steps 45-52 on other side of awning.

Dome Style Awning

Review the Milliken Stapling Instruction section "Before You Start" prior to beginning to follow the photo and written instructions in this section.



1. Dome style awning frame exhibited.



2. Staple at center of radius, on one side of "pie".



3. Staple 3" at center of radius on other side of pie.



4. Continue stapling upward, alternating from side to side up the pie.



5. Finish stapling up to the top of the pie.



6. Continue stapling, alternating from side to side, down toward the bottom of the pie.



7. On right side, cut fabric horizontally as shown.



8. Cut fabric vertically as shown. The purpose of steps 7-8 is to provide a 1" overlap of fabric to right bottom side of pie to cover bare aluminum extrusion.



9. On left side, cut fabric horizontally as shown.



10. Cut fabric vertically as shown.



11. Tuck and fold fabric as shown.



12. Clamp center of pie.



13. Finish clamping pie, then staple.



14. Trim off excess fabric on bottom.



15. Trim off excess fabric on left side of pie.



16. Leave excess fabric, to avoid any metal showing (see steps 7-8).



17. Staple approximately 3" at center of radius on one side of the pie.



18. Staple approximately 3" at center of radius on other side of the pie.



19. Continue stapling, alternating from side to side up the pie.



20. Finish stapling up to the top of the pie.



21. Continue stapling alternating from side to side, down toward the bottom of the pie.



22. On left side, cut fabric horizontally as shown.



23. Cut fabric vertically as shown.



24. The fabric is prepared for the tuck and fold operation.



25. On right side, cut fabric horizontally as shown.



26. Cut fabric vertically as shown (see steps 8 and 16 for further explanation).



27. Trim off excess fabric that may conflict with clamping at bottom.



28. Clamp center of pie.



29. Add clamps to right and left, then staple bottom of pie.



30. Using scissors, trim off excess fabric on left side of pie.



31. On right side, trim off excess fabric with a razor knife.



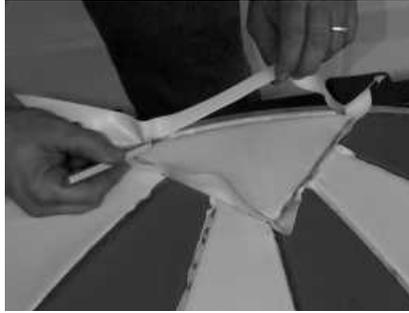
32. Shown above is triangular top frame construction on the dome for fabric insertion to promote water tightness.



33. After all the pies are stapled, begin stapling fabric in the triangle on top of the dome.



34. Finish stapling the triangular finish panel.



35. Using scissors, trim off excess fabric.



36. Install vinyl insert to bottom as shown.



37. Cut away 1" of bottom half of vinyl insert in preparation for insertion at top of awning adjacent to triangular finish panel.



38. Install vinyl insert, beginning at top of pie. The purpose of step 37 is to prepare for overlap of vinyl insert at top of dome.



39. Straight cut vinyl insert at bottom of pie where vertical slot ends.



40. Trim back side of vinyl insert, then cut to length. All vinyl insert that approaches finish panel must be prepared as described in step 37.



41. NOTE: Vinyl insert is 1/4" longer than the slot of the pie.



42. Install vinyl insert around finish panel. Note that vinyl insert overlaps protruding ends of pie vinyl inserts.



43. Trim back side of vinyl insert to prepare ends for overlap.



44. Install vinyl insert at back of awning.



45. Completed dome style awning.

Dome Style with Sign Band

Review the Milliken Stapling Instruction section "Before You Start" prior to beginning to follow the photo and written instructions in this section.



1. Dome style with a sign band frame exhibited.



2. Staple at center of radius, on one side of "pie". (The term "pie" is a section of a dome style awning resembling a "piece of pie".)



3. Staple 3" at center of radius on other side of pie.



4. Continue stapling from center upward, alternating from side to side up the pie.



5. Finish stapling up to the top of the pie.



6. Continue stapling from center downward, alternating from side to side, to the bottom of pie.



7. Trim off excess fabric that may interfere with clamping.



8. Clamp center of pie.



9. Finish clamping bottom of pie, then staple.



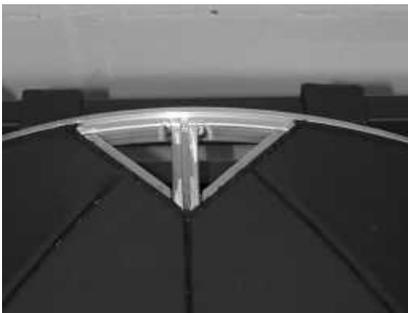
10. Trim off excess fabric at bottom of pie. See previous section, steps 7-8 & 16 for technique to avoid showing metal frame at bottom.



11. Trim off excess fabric on side of pie.



12. Trim off excess fabric on other side of pie.



13. Staple fabric into remaining pies following the technique in photos 2-12.



14. Begin stapling fabric in triangular finish panel as shown.



15. Trim fabric off and staple in other top triangle.



16. Line up center line mark of sign band panel and frame.



17. Staple approximately 4" on either side of center to begin attaching sign band.



18. Place one clamp on each top side of sign band.



19. Staple top of sign band, moving from center out on both sides.



20. Trim off excess fabric that may conflict with clamping.



21. Clamp at bottom center of the sign band.



22. Continue clamping from center to back on both sides. Staple fabric with the clamps in place.



23. Trim off excess fabric as shown.



24. Trim off excess fabric that may conflict with clamping.



25. Clamp fabric at back of sign band and then staple as shown.



26. Cut fabric vertically as shown to prepare for tuck and fold (see illustration of this technique in the "Before You Start" section).



27. Trim off excess fabric as shown.



28. Install vinyl insert on bottom of sign band.



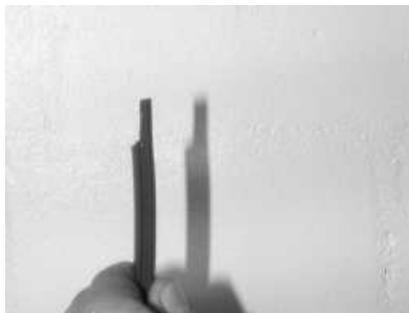
29. Install vinyl insert into slot of each individual pie and prepare at top for overlap wherever one piece of vinyl insert crosses over another.



30. To prepare for vinyl insert overlap, cut back or "notch" about 1" of bottom half to avoid bulge. Shown above is vinyl insert before alteration.



31. Above is vinyl insert after alteration. Use small wire cutter to cut away 1" of the bottom half.



32. Shown is example of vinyl insert after alteration for horizontal overlaps at top of sign band and other overlaps.



33. Add vinyl insert to top of sign band area. Use overlap technique described in steps 30-32 for smooth appearance.



34. Add vinyl insert at top triangular section. Cut bottom half away preparing for vinyl overlap. (See technique in "Before You Start" section for further description.)



35. Add vinyl insert to back bar radius.



36. Completed dome awning with sign band.

Retrofit Sign Face

Review the Milliken Stapling Instruction section “Before You Start” prior to beginning to follow the photo and written instructions in this section.



1. Retrofit sign face frame exhibited standing next to support stands.



2. Clamp retrofit sign frame to support stands.



3. Mark center point on fabric and on frame.



4. Clamp fabric onto frame at center point. Maintain even top fabric edge to assure perfect graphic positioning.



5. Clamp temporarily at extreme left and right top edge to provide side to side tensioning.



6. Staple from center to left, being careful to maintain even top fabric edge.



7. Staple from center to right, being careful to maintain even top fabric edge.



8. Clamp at bottom center of sign retrofit.



9. Trim off excess fabric that may interfere with clamping.



10. Clamp at extreme left and right bottom edge to provide side to side tensioning.



11. Clamp entire bottom of sign retrofit from center to left and then center to right.



12. Staple entire bottom as shown and remove clamps.



13. Clamp fabric at center on side of sign retrofit.



14. Finish clamping and staple (repeat this step on other side).



15. Trim off excess fabric even with top of slot as shown.



16. Cut fabric vertically to prepare for a tuck and fold procedure for a smooth appearance.



17. Tuck and fold fabric into corner and then staple. Follow same procedure at other 3 corners.



18. Trim off excess on all sides.



19. Begin installing vinyl insert starting at bottom center.



20. Continue installing vinyl insert in one continuous piece on all remaining sides.



21. Bring vinyl insert to closure at bottom of sign.



22. Backside of completed retrofit sign showing backset bars.



23. Front side of completed retrofit sign.

Sign Box or Box Style Awning

Review the Milliken Stapling Instruction section "Before You Start" prior to beginning to follow the photo and written instructions in this section.



1. Box style awning/sign frame exhibited.



2. Begin stapling at top back right corner.



3. Finish stapling at top back of awning.



4. Clamp at center front.



5. Clamp each top end.



6. Add additional clamps, working from center to left and then center to right, then staple front.



7. Hand tension and staple each end.



8. Trim off excess fabric from top, front and sides.



9. To install sign band, match up center mark on fabric with center mark on frame. Staple about 3" at center of awning to hold fabric in place.



10. Clamp each end near top of sign box to provide proper tensioning.



11. Staple from center to right and then center to left.



12. Clamp at bottom center of sign box.



13. Clamp each end near bottom of sign box.



14. Add additional clamps from center to right and center to left at bottom and then staple.



15. Remove upper and lower clamps at side of sign box and place clamp in center on both sides.



16. Add additional clamps on each side, working from center to top and center to bottom, and then staple.



17. Cut fabric horizontally and vertically to prepare for tuck and fold.



18. Tuck and fold and staple as shown.



19. Trim off excess fabric on all sides.



20. Staple fabric at back of panel on side vertical back bar.



21. Staple front of side panel from center to top and center to bottom.



22. Staple at top center and then center to left and center to right.



23. At back bottom area, cut fabric horizontally to prepare for tuck and fold.



24. At front bottom area, cut fabric horizontally for tuck and fold.



25. Clamp bottom of side area.



26. Add additional clamps and then staple.



27. Tuck and fold fabric at both corners and then staple. Above is finished appearance of proper tuck and fold.



28. Using scissors, trim off excess fabric as shown.



29. Trim bottom half of vinyl insert to prepare corner for overlap.



30. Shown above is appearance of vinyl insert prepared for overlap.



31. Begin installing vinyl insert at top of side panel as shown.



32. Continue installing vinyl insert along top of sign box.



33. Trim bottom half of vinyl insert to prepare for overlap.



22. Staple at top center and then center to left and center to right.



23. At back bottom area, cut fabric horizontally to prepare for tuck and fold.



24. At front bottom area, cut fabric horizontally for tuck and fold.



25. Clamp bottom of side area.



26. Add additional clamps and then staple.



27. Tuck and fold fabric at both corners and then staple. Above is finished appearance of proper tuck and fold.



28. Using scissors, trim off excess fabric as shown.



29. Trim bottom half of vinyl insert to prepare corner for overlap.



30. Shown above is appearance of vinyl insert prepared for overlap.



31. Begin installing vinyl insert at top of side panel as shown.



32. Continue installing vinyl insert along top of sign box.



33. Trim bottom half of vinyl insert to prepare for overlap.



34. Shown above is appearance of vinyl insert prepared for overlap.



35. Complete same vinyl insert installation procedure on other side of sign box.



36. Finish installing vinyl insert.



37. Completed sign box or box style awning.



Radius Marquee Style Awning

Review the Milliken Stapling Instruction section “Before You Start” prior to beginning to follow the photo and written instructions in this section.



1. Radius marquee frame exhibited and clamped to support stands.



2. Place clamps at center front and center back at center ridge of awning to provide temporary tensioning.



3. Begin stapling fabric in center of the center ridge. Staple forward and back from center.



4. Complete stapling as shown.



5. Clamp fabric at top of front radius, working from top center to bottom.



6. Clamp entire radius front and back. Adjust clamps as needed to eliminate wrinkles prior to stapling.



7. Staple both ends as shown.



8. Remove clamps.



9. Clamp at center ridge on right side of awning.



10. Add clamp at front and back of bottom to tension fabric.



11. Add additional clamps from center of forward and center back.



12. Staple as shown and remove clamps.



13. Trim off excess fabric.



14. Repeat steps 1-13 to install fabric on left side of marquee.



15. To install fabric in front radius, begin clamping on lower right front corner.



16. Add clamp at lower left corner.



17. Clamp fabric at bottom center of radius.



18. Hand tension and staple at top center.



19. Working from center to left, hand tension and add a few staples.



20. Working from center to right, hand tension and place a few staples.



21. Continue hand tensioning and stapling, alternating from right to left side until entire panel is stapled.



22. Retension fabric, adding clamps from center to left and then center to right, working fabric into corners.



23. Staple as shown.



24. Using scissors, trim off excess fabric along top and bottom.



25. Begin installing vinyl insert along top ridge as shown. Prepare ends for overlap. (See "Before You Start" section for description of overlap technique.)



26. Continue installing vinyl insert along both end radii.



27. Finish installing vinyl insert along entire bottom of marquee, using one continuous piece.

Radius Marquee with Separate Colored Sign Band

Review the Milliken Stapling Instruction section "Before You Start" prior to beginning to follow the photo and written instructions in this section.



1. Radius marquee frame exhibited with backset front bar in sign band area. Marquee is clamped to support bars.



2. Begin clamping at center of radius.



3. Add additional clamps from center to top and center to sign band slot.



4. Finish clamping radius. Begin stapling at center of top ridge.



5. Complete stapling at top ridge, working from center to front and then center to back.



6. Staple both end panels, from center to top and center to sign band slot as shown, then remove clamps.



7. Place clamp at center at top of sign band area.



8. Add additional clamps from center to front and center to back.



9. Staple from center to front then center to back and remove clamps.



10. Trim off excess fabric on all sides.



11. Repeat steps 2-10 on other side of marquee.



12. Begin stapling sign band as shown with several staples at back, top of sign band.



13. Stretch fabric to front end of sign band, then add several staples.



14. Staple from center to right then left.



15. Clamp at bottom center of canopy.



16. Clamp each end of sign band.



17. Clamp entire bottom of sign band, starting at center to front then center to back.



18. Staple bottom of sign band, starting at center to front then center to back.



19. When approaching front or back corner, check fabric tensioning. Retension and clamp if needed.



20. Using scissors, cut fabric horizontally to prepare for tuck and fold.



21. Cut fabric vertically and tuck and fold at corner.



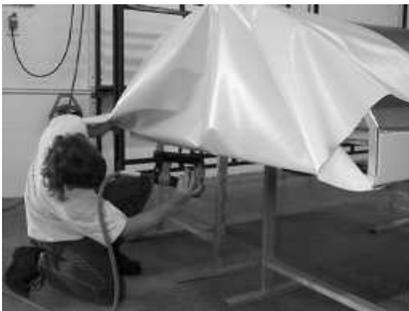
22. Trim off excess fabric on all sides of sign band.



23. Staple 3" at center top of radius for temporary support, and to provide stable temporary positioning of fabric face panel.



24. Staple entire bottom of face panel, moving from center to right and center to left.



25. Finish stapling bottom of face panel.



26. Using scissors, trim off excess fabric, following the radius outline (3" is all that is required for tensioning).



27. Carefully razor cut around top center staples to loosen fabric.



28. Hand tension and staple fabric as shown, starting at top center.



29. Hand tension and staple from top of center to left.



30. Hand tension and staple from top of center to right.



31. Cut fabric horizontally to prepare for tuck and fold at corner.



32. Cut fabric vertically as shown.



33. Tuck and fold fabric as shown then staple.

Radius Marquee with Separate Colored Sign Band



34. Using scissors, trim off excess fabric.



35. Begin installing vinyl insert along top center ridge.



36. Cut vinyl insert off.



37. Trim vinyl insert in preparation for overlap, cutting off bottom half 1" back to avoid bulge at overlap point.



38. Shown above is appearance of vinyl insert ready for overlap.



39. Install vinyl insert around radius.



40. At overlap point, cut away bottom half of vinyl insert about 1" to avoid bulge.



41. Install vinyl insert at top of sign band.



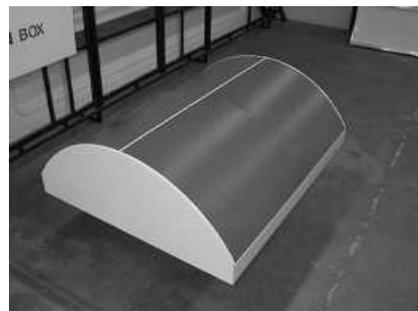
42. Cut vinyl insert off.



43. Prepare both vinyl insert pieces for overlap. See steps 38-41 above and follow same technique.



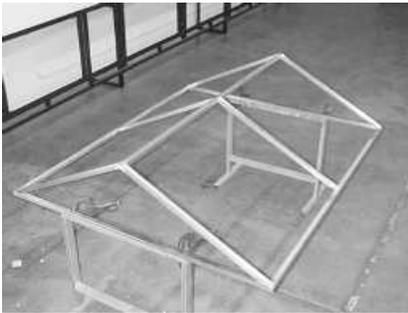
44. Overlap vinyl insert and finish installing on all sides of awning.



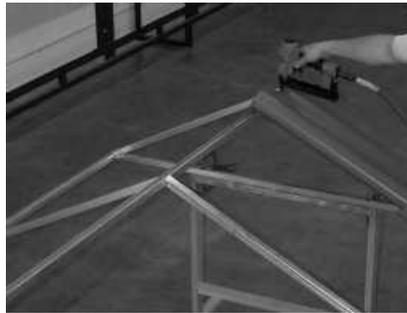
45. Completed radius marquee with separate colored sign band. Graphics can be applied before or after fabric attachment.

Gable Marquee Canopy

Review the Milliken Stapling Instruction section “Before You Start” prior to beginning to follow the photo and written instructions in this section.



1. Gable marquee canopy frame exhibited and clamped to support stands.



2. Begin stapling fabric at back of top ridge.



3. Staple along top ridge toward front, using hand tensioning.



4. Clamp at center side of gable at ridge point.



5. Clamp left and right end of gable just above corner for horizontal tensioning.



6. Add additional clamps from center to back and then center to right.



7. Staple as shown, working from center out to ends.



8. Clamp front and back of gable, beginning at top and working down to bottom.



9. Remove clamps and trim off excess fabric on front and back gable panels.

Gable Marquee Canopy



10. Trim off excess fabric off on all sides.



11. Repeat steps 2-10 on other side of gable.



12. To start sign band installation, staple approximately 3" of fabric on right bottom side of canopy.



13. Hand tension and staple approximately 3" of fabric on left bottom side of gable.



14. Staple bottom of sign band panel from center to left and then center to right.



15. Finish stapling bottom of sign band.



16. Hand tension and staple at top center ridge of gable.



17. Using hand tension, staple from top center to left side of gable.



18. Using hand tension, staple from top center to right side of gable.



19. Using scissors, trim off excess fabric.



20. Begin installing vinyl insert on top ridge and prepare front and back ends for overlap (see "Before You Start" section for further description of overlap technique).



21. Prepare vinyl insert for overlap at top of sign band as shown above.



22. Install vinyl insert at top of sign band. Overlap horizontal piece at ridge point.



23. Using one continuous piece, install vinyl insert around bottom of gable, preparing vinyl insert for overlap at corners.



24. Shown above is view of both sections of vinyl insert that have been prepared for a smooth overlap at corners.



25. Finish installing vinyl insert in one continuous piece around perimeter of gable.



26. Completed gable marquee canopy.

Gable Marquee with Separate Colored Sign Band

Review the Milliken Stapling Instruction section "Before You Start" prior to beginning to follow the photo and written instructions in this section.



1. Gable marquee with sign band exhibited and clamped to support stands.



2. Begin stapling fabric as shown at the back of center ridge of gable.



3. Using hand tension to align fabric, finish stapling along top center ridge of canopy.



4. Clamp at center on side at the top of sign band frame. Place clamp at center ridge.



5. Clamp at front and back of the gable just above sign band for horizontal tensioning.



6. Add additional clamps at top of sign band from center out to front and center to back.



7. After all clamps are in place, staple as shown



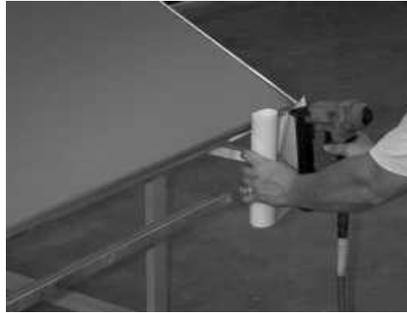
8. Clamp at center of front and back of gable, working from center to top and center to bottom of sign band.



9. Add additional clamps then staple front and back gable to the top of the sign band.



10. Trim off excess fabric on all sides.



11. Begin stapling of sign band at rear of gable, adding a few staples at top corner.



12. Stretch fabric to front end of canopy, then add several staples. Then staple from center to right then center to left.



13. Clamp at bottom center of sign band.



14. Clamp each end of sign band.



15. Clamp entire bottom of sign band, starting at center to back and then center to front.



16. Staple bottom of sign band as shown.



17. When approaching ends, check fabric tensioning and adjust clamp to retention if needed.



18. Staple ends as shown.



19. Using scissors, cut fabric horizontally to prepare for tuck and fold.



20. Then cut fabric vertically, tuck and fold at corner, then staple.



21. Trim off excess fabric. Repeat steps 18-21 on either side of sign band.



22. To begin attaching front sign band panel, staple approximately 3" on right bottom side of panel.



23. Hand tension and staple approximately 3" on left bottom side. Staple from center to right and then center to left.



24. Temporarily staple at top center ridge.



25. Using scissors, trim off excess fabric.



26. Using hand tensioning, staple from center of each side of gable, working up and then down.



27. Cut fabric horizontally to prepare for tuck and fold.



28. Then cut vertically for tuck and fold.



29. Tuck and fold then staple corner.



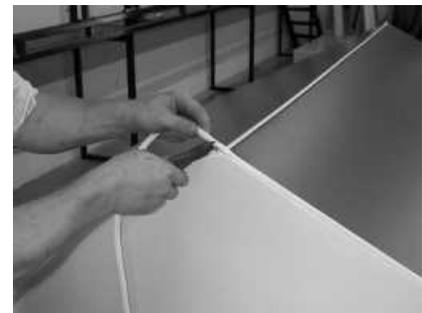
30. Trim off excess fabric on all sides.



31. Begin installation of vinyl insert at top ridge.



32. Cut to exact length at both ends.



33. Trim underside of vinyl insert to prepare ends for overlap.

Gable Marquee with Separate Colored Sign Band



33. Add vinyl insert to top of sign band.



34. Cut of to exact length.



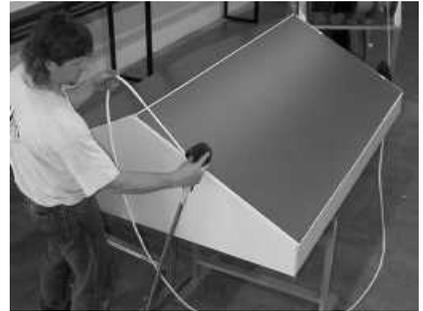
35. Cut and remove bottom half of vinyl insert to prepare for overlap.



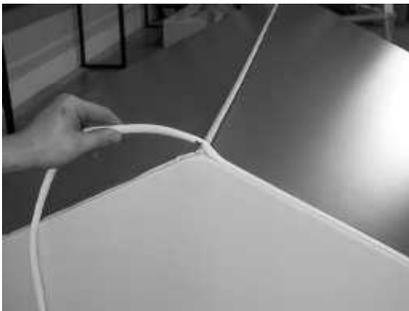
36. Install vinyl insert off from bottom corner of sign band going up. Trim backside of vinyl insert at overlap point.



37. Shown above is altered vinyl insert at overlap point.



38. Continue installing vinyl insert along the top of sign band end panel.



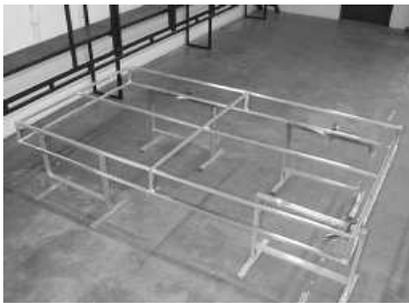
39. Vinyl insert fully prepared for overlap. Finish installing the balance of the vinyl insert on all sides, using same techniques as described in steps 32-40.



40. Completed gable marquee with separate colored sign band.

Patio Style Awning

Review the Milliken Stapling Instruction section "Before You Start" prior to beginning to follow the photo and written instructions in this section.



1. Patio style awning frame exhibited and clamped to floor support stands.



2. Begin stapling fabric as shown. First of two fabric panels is being installed.



3. Continue stapling from back to front.



4. Clamp at center of left side.



5. Clamp at top corner of awning. Place another clamp at back corner to tension fabric horizontally.



6. Clamp at front corner for proper tensioning.



7. Working from center to back and center to front, tension fabric with clamps.



8. Staple as shown.



9. Clamp at center back of awning.



10. Add additional clamps, working fabric out from center to corners.



11. Staple as shown.



12. Clamp at front center of awning.



13. Add additional clamps, working fabric out from center to corners.



14. Staple as shown.



15. Clamp at left side.



16. Clamp at right side.



17. Staple left and right sides as shown.



18. Trim off excess fabric.



19. Add temporary staples at top back to begin insertion of fabric side panel.



20. Add temporary staples at top front.



21. Using hand tension, staple from center to left, then from center to right.



22. Clamp at center right side on bottom.



23. Clamp at back side of awning on vertical frame member.



24. Clamp at front left side of awning on horizontal frame member.



25. Add additional clamps, working from center to right and then center to left.



26. Staple as shown.



27. Staple front and back ends. Hand tension front. Clamp tension rear.



28. Using scissors, trim off excess fabric.



29. Finish trimming off excess fabric on all sides.



30. Add vinyl insert on top right side.



31. Trim vinyl insert to prepare for overlap.



32. Continue installing vinyl insert.



33. Completed patio style awning.