January 28, 1991

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To: Parkland Estates Homeowner's Association
Re: Standard plans for common area aircraft hangers.

Dear Member:

Enclosed you will find blueprints, construction sequence and detail sheets for construction of post-frame buildings. These apply specifically to the above hanger building.

Building dimensions: 45' wide x 40' long x 14' eave height.

Roofing, siding and trims: 29 guage White pre-painted steel

Doors: 40' x 12' clearance bifold door.
3' x 6'8" walk door, no windows.

Light panels: 4' sidelite panels along the top of 2-40' sidewalls.

Insulation: 2" poly/faced fiberglass, roof only.

This is the standard building agreed upon by your Homeowner's Association. There are several options available:

Concrete: 4" slab on grade is recommended. 3000psi concrete with fibermesh, appropriate control joints and surface sealer. 4' x 45' approach at bifold entrance.

Doors: 4' x 6'8" walk door, with window options.
Multiple leaf sliding doors vs bifold door.
Multiple overhead doors, with swing up side tracks, vs. bifold doors.

Windows: Single and double glazed: a large variety of styles and sizes.

Insulation: Additional roof and wall insulation is available in poly/faced fiberglass and foil faced foam sheets.

Pricing and ordering: I will be available to meet with you to discuss building plans. I can then provide current pricing for your project, as well as offering "turn key" construction service.

Since I buy my building packages from Stockyard's Lumber in Adams City, I have provided Dan Jordan a copy of the building specifications. If you are interested in constructing your own building, you can contact him directly at (303) 287-8081.

Thank You,

Ron Wood

Ron Wood
for Wood Metal Construction, Inc.
Enclosures

CONSTRUCTION SEQUENCE FOR POST-FRAME BUILDINGS

It is recommended that you use this sequence, plans and material list together to compliment each other during your construction.

These items are included in your package: Blueprint of the floor plan, elevations and framing cross section of the building. This print, plus the site plan, are required for submittal to your building department for permits. Also included are copies of construction details and consumer information from various manufacturers.

The following description of the building process is just one way of proceeding. These suggestions are just that. Suggestions. We have developed these proceedures over years of construction experience. Our priorities are safety, quality, appearance and efficiency. We sincerely hope these suggestions help in your construction project. In providing this construction sequence, we do not accept any laibility for injury or construction quality.

If you are considering constructing a post-frame building yourself, it is assumed that you have the general building skills and tools that are necessary.

1. Complete the necessary site preparation. drainage, wind, access and other factors determine the amount of site preparation necessary. Normally, the building pad surface is composed of 3/4" roadbase gravel spread level to a depth of 4" or more. For economy sake, addition fill required is usually composed of structural fill dirt. This must be spread, leveled and compacted prior to roadbase gravel preparation.

If you plan to pour a concrete slab in the building, if will be necessary to strip off the organic layer of soil before placing any fill material. Failure to do so will create voids under the fill dirt as the sod decomposes.

The building pad should extend about 2' beyond each wall of the building. This extra material will come in handy when backfilling the skirtboard and finish grading.

2. Building layout. Investing time here will pay off many times in completing later construction tasks. Please refer to floor plan included with your blueprints.

Construct 4 sets of "batter boards" for setting grade and dimensioning the building on the pad. This requires 4-2" x 4"-8' studs and about 30-1"x2"x24" wooden stakes.
Cut the studs in half, and nail the two halves together in a right angle with 2 16d nails. Fit the boards flush.

Using a 100' steel tape, use 4 stakes to identify the four corners of the building. Drive the stakes in temporarily. Measure the diagonals to make sure the stakes are set square. Lay the four batterboards on the ground, about 3 feet to the outside of the corner stakes. Drive 3 stakes into the ground, next to the batterboards, one each about a foot from the ends and one close to the corner.

Now you are ready to set the elevation of the building. For this, you will need a builder's site level and measuring stick. Set up the level outside the building, if possible. Start out by shooting the existing grade at the four corners of the building. Normally, the batterboards will be set at a level about 5" above this grade. This will be the top of the 2"x8" CCA treated skirtboard. This allows about 2" to be buried and 5" above grade. With a 4" concrete slab poured against the skirtboard, about 1" of the skirtboard will be useable for interior wall nailing above the slab.

Transfer this grade to the stakes driven next to the batter-boards. Attach the batterboards to the stakes with 6d duplex nails or 1 1/2" drywall screws. Align the marks on the stakes with the top of the batterboard. Make sure the stakes are still firmly in the ground. Now, double check the grade one more time. Everything level? Good.

Start laying out the walls of the building with nylon mason's line. Drive a stake 3-4 feet outside the batter-board, in line with the building wall and string the line over the board to the next batterboard and stake and tie it. Make sure it is fairly tight. Adjust this line over the batterboards till it fits the edge of the building pad. Now, set up the next string line at the next most important wall at a right angle to the baseline. Using the 100 foot steel tape, square these two lines using a 3/4/5 right triangle. From the line's intersection, measure and mark 15' 0". Mark off 20' 0" on the other string. Now, measure between these marks. If your lines are square, it will measure 25' 0" and will be a right angle. When square, put a small nail on each side of the string into the batterboard to hold the strings in place. Set the other two strings, measure and set the nails. To check for square, measure each diagonal. If they are the same, the lines are square!

Check the lines as they fit the building pad. Check the setbacks. Everything O.K? Tighten all strings and recheck your batterboard grades one more time with the level.

Hint. When using the 100 steel measuring tape, measure from the one foot mark. Just make sure you compensate by adding one foot to the dimension.

Now you are ready to set the hole locations. For this, use brightly colored plastic strips about 3" long attached to a 16d nail. We use survey tape, but any plastic cut into 2" x 3" pieces will do. Make a mark on your hammer handle at 4 1/2" inches from the hammer end. This is the measurement of the center of the post hole from the string line. 1 1/2" of framing plus 1/2 of the 6" CCA treated post is the center of the hole. Lay the hammer on the ground at the corners and set the nail with flag at 4 1/2" from each string and tap it into the ground. The intermediate posts are usually set on 8' centers. At this point, check your floor plan for dimensioning column centers and lay them out.

Hint: Since it is very hard to move holes, a fair degree of accuracy is desirable here. Measure twice, dig once, O.K?

3. Drilling Holes: We recommend you use a professional caisson driller unless you have the proper equipment to drill a hard bottomed, 16" diameter hole. A 40' x 48' building with 4' deep holes costs under $200.00 to hire, including machine operator and helper.

Remove the strings and set aside before drilling holes. If you are burying the posts 4' deep, make a mark on your shovel handle at 4', so you can check the depth as you go. Shovel the dirt out of the way of the string line.

Reset the string lines and recheck grades and squareness. Tamp the hole bottoms, adding soil, if necessary, to bring your holes to depth. Mark your tamper with tape or magic marker to the string line.

4. Set the building posts. We use a 6' spirit level with plastic offsets. Make a mark 1 1/2" from this block on the bottom of the level. You will be setting your posts plumb, 1 1/2" from the string line.

Pick thru the posts and select the best for the corners and door openings. If you have a curved post, try and use it in the least visible location. Bury the bad end if you can. Place 12 uplift spikes in the bottom of the post, 4-5 inches from the bottom, 3 on each face. Leave about 3 inches of nail exposed.

Depending on the length of the posts, you may need a boom truck to set the posts. Be careful! When you have the post standing in the hole, balance it while holding the level with the mark above the string. Move the post until the 1 1/2" mark is on the string and the post is plumb. Hold that pose while carefully pouring a sack of drymix concrete around the post. Shovel a little dirt into the hole and begin gently tamping. Try not to move the post out of alignment. Add more soil and gravel and continue tamping. Fill and tamp in lifts of about 5-6 inches. Leave a slight depression at the top. When the framing is complete, you will water the holes to set up the concrete. Don't do it now, though, until you are done moving and working with the frame. At that time you will also retamp the soil in the holes.

We usually set the corner posts first. After setting the corner, attach the 100' tape to the first post with a small nail. Use the tape to check the centers on your post placements. Layout the two eave walls first, from the same end. Pay close attention to overhead and sliding door openings. They need to be very accurate.

A note here about building inspections: The first inspection on a post frame building occurs after the holes are drilled. You will want to call the day before you drill for the hole inspection. You may be able to set some or most of the posts before that inspection if you get permission first.

Once all the posts are set, stretch the strings tight and recheck the grade on your batterboards. Use a 20 d screw shank nail to mark the location of the string line on each post. Be sure to correct for string sag by placing the middle post nails first. The building will follow this line all the way to the roof. Get down and sight the line before continuing. O.K?

This is a good time to look at the building with a critical eye. Measure from post to post, all four building faces. Do all the posts line up? Posts can be moved by digging out, rocking, prying and retamping. Measure posts from top to string line. Any too short for the sidewall dimension? It's easier to fix it now, than when the framing is on.

At this time, remove the batterboards and strings and clean up the site of rocks, dirt and debris.

5. Attach the sidewall and endwall girts. Check your print to see notes on storypole dimensions. A storypole is a 2"x4" as tall as the sidewall of the building. It is used as a measuring stick. Transfer the measurements to the storypole. Set the bottom of the storypole on the nail at the bottom of the column. Place a 20d nail in the column at each mark on the story pole. Mark the notch at the top of the post and the cut off location. These nails are tools for locating the girts, and can be used to partially support the girt prior to nailing. Drive them in straight and far enough to help support the girt during placement, but not so far that it's difficult to pull them later.

The most accurate way of framing is to start on the eave walls, placing the top wall girt first. This is not the eave board, but the second to the top piece of wall framing. You will need a scaffold, 16' long, high enough to reach this height which will support 2 people. A wheeled unit for all terrain is ideal.

Attach the 100' steel tape at this girt line on the corner post. Try to duplicate the layout spacing and order of your post setting process. Attach the first girt at the corner post, then mark the girt at the 8' on center location and nail the girt to the second post. Mark the third post dimension and attach. We use 3 20d ring shank galvanized nails at each connection. Try not to split the lumber. Pull the locator nail after attaching the girt to the post and move on.

After attaching the top wall girt, the lower girts can be placed. Stagger the joints for greater wall strength and straigtness. We often trim excess girt length after nailing. If you have the equipment and feel comfortable cutting materials in place, it speeds up the operation.

Note: If your building is 40'0" long from post to post, it needs to be the same at the top. Use the 100' tape to insure that this is the case. If your building width is 40'0" post to post, and the trusses measure 40'0", the endwall frames need to be the same. Hint: We usually leave the framing off of one endwall to allow forklift access while setting trusses. If you are going to hire a crane to set trusses, you can frame the endwall now, since you will be setting the trusses over the top of the building.

At this time you may want to notch the posts to accept the trusses. If you have secure footing on a good scaffold, a sharp chainsaw can be used. Bear in mind, please, that safety is utmost here. Don't try to notch a post over your head with any power tool! Check your truss design and installation information. If the bearing area per truss end is 7.5 square inches or less, you may single notch the post measure the notch at 1 1/2" in width, mark all lines clearly and remove that material. A smooth finish helps the truss to seat and bolt up well.

We like to install the CCA treated skirtboard before installing the lowest girt. It's easier to shovel and swing a pick without the lower girt being in the way. Remove enough soil under the nails to slide the skirtboard in. Use 4 20d screw shank galvanized nails per pattern. You may want to trim the ends prior to nailing CCA skirtboards.

Backfill and rake everything smooth and take a break to admire your work!

Now, install the diagonal wall bracing of your choice. Most building packages use a 2"x4" or a 2"x6" nailed diagonally on the inside of the wall girts, from the skirtboard to the eave board or the girt below the eave board. You can install a temporary bracing system if you like, but permanent bracing is necessary before sheeting the building.

6 Prepare trusses: Depending on the size of the structure, you may need lifting equipment. A forklift or a small crane work well for this operation. Make sure the equipment is rated to safely lift the loads, and follow all safety rules. Follow the lifting instructions included with the truss information package.

Check your plans for layout of purlins and lower cord bracing. Most buildings will use 2"x6" purlins on 24" centers. Measure 5" down from the peak and mark the x on the upper side. Install the joist or saddle hanger there. Joist hangers are used on the end wall trusses and saddle hangers are used on the intermediate trusses.

Measure from the heel of the truss to the mark at the peak and divide that distance into as many equal spaces as necessary to arrive at your purlin spacing. Mark your lower cord spacing per truss details. Bear in mind the endwall column spacing. You may be able to use those columns to begin your lower cord bracing. Install the joist hangers and/or saddle hangers. Fill all holes with proper joist hanger nails. Try to lay the trusses flat when unloading. Keep them laying flat when handling. Follow the truss lifting instructions carefully!

7. Installing trusses: We prefer to pre-cut purlins and lower cord bracing several bays ahead, prior to lifting trusses. Hopefully, your framing is accurate and allows all purlins to be cut to the same dimension. Cut the purlins at least 1/8" short to allow for saddle hanger steel thickness.

Hint: On larger buildings, we often sheet the gable end trusses with siding prior to installation. With steel siding, use a piece of Z trim, about 6" from the bottom of the truss. The end wall siding, installed later, will slide under this Z trim.

Before lifting gable end trusses, install 2-2"x6" bearing blocks between the top girt and the truss bearing. Use 4-20d galv nails.

Lift the truss carefully into place and secure with 4-20d galv. screw shank nails at each post intersection, top and bottom cord. Since the gable end posts extend up into the upper cord of the first truss, there may be interference with the joint hangers. You can either cut the posts off slightly below these hangers, or leave the hangers off until and truss is hung and then attach the joist hangers to the post. Install cable bracing sufficient to straighten top and bottom cords of the first installed truss, and to protect from wind damage. We use Steel T-fence posts in the ground inside and out, hopefully out of the way of future operations. Once you get several trusses installed, the first truss gets much more difficult to straighten.

Set the second truss into the notch and nail it to the post with 4 screw shank nails. Keep the nails away from the center, since you are going to drill a bolt hole later. If the truss is a single ply, use 20 d galv nails. If the truss is a double ply, use 60d galv nails. You may want to pre-drill your trusses on the ground if they are two ply, for ease in nailing.

Install the first bay purlins, starting from the bottom row. Fill in all spaces and all joist hanger nails now. When you get to the top of the first row of purlins, release the crane lifting hook. Fill in the lower cord braces. Install the end bay X-bracing above each lower cord brace. Check plumb on the end wall framing and truss and correct if necessary. Install a 2"x6" temporary knee brace from the bottom of the 2nd post, up to the lower and upper cord of the truss. This provides temporary lateral bracing during constuction and will make you feel much more secure while up top. Do this on every truss installation for safety.

Continue on with this technique of truss installation. We like to fill in the lower cord bracing every 2-3 trusses. This gives us a chance to check plumb on the truss and to keep the truss system rigid.

Note: If you are paying crane rental, you may be tempted to speed up the process to save money. This will probably work on a small building, but I have seen many disasters resulting from this technique on larger buildings.

Prior to lifting the last truss, set up string lines and 1-1/2" blocks on the outside of the truss, along the top cords and the bottom cord. This will help in straightening the roof system later. Set and nail the truss. Attach a temporary purlin at the peak. Install the middle one or two lower cord braces, measuring to the stringline to keep the gable straight. Now, adjust the temporary purlin until the truss is straight. Fill in the remaining purlins and lower cord braces, measuring back from the string lines. Install the truss X-bracing.

Drill one 1/2" hole thru the post and heel of each truss. Install the 1/2" bolt sets with cast washers and tighten.

Install the eave boards now. Use a straight edge to align this board with the other roof purlins. You may want to just tack the boards up temporarily, then sight along them to make sure you have a good line. This will be the line your steel roofing and siding follows, so do good work. Go back and nail each board with 3-4 20 d galv. nails. A nice touch is to rip these boards along one side at 18 degrees (4/12 angle) for solid roof bearing.

Set up a string line on one eave of the building with 1 1/2" blocks. Use this line to straighten the building. If the building is fairly plumb and straight, you may be able to use a 2"x6" to push the post back plumb. Otherwise, use a come-a-long with a cable. First, release the temporary knee-bracing. Staighten each post and re-attach the temporary knee brace.

Stand back and look at it. Straight? Plumb? No nails standing proud? Good! Measure and cut the first knee brace. Try it. Does it fit and look good? Use it as a pattern and cut and install the rest. Use 4-16cc nails in top and bottom cord and 4-20 d galv in the column.

8. Door and window framing:

Overhead doors: Measure from eventual slab height to the bottom of the opening, on the inside of the building. We like to notch the 2"x12" header into post for a flush fit. Measure approximately 11 1/2" up and 1 1/2" in. Cut out notch. Cut 2"x12" to fit and nail with 5-20d galv. Install a 2"x6" in line with the bottom edge of the 2"x12", on the outside of the building. Rip a 2"x6" to approximately 4 1/2" and cut to fit between outside 2"x6" and inside 2"x12". Nail flush with 16cc nails. For additional support, nail 4'+ piece of the same 4 1/2" ripped lumber from the middle of the header, vertical. Nail to all inside and outside framing. Then nail a 2"x6" over that, flush with the header. This stiffens the end wall door frame and gives the overhead door spring mounting bracket additional framing.

Sliding doors: Follow the plans for sliding door framing.

Windows: Measure the window rough opening and transfer dimensions to desired location on the building. Frame with 2"x6" lumber behind the girt framing. Fill in the spaces in the vertical girts and cut out the girt framing in the window opening. Level the window and attach to framing with galv. roofing nails or deck screws through the mounting fins. Caulk mounting fins before nailing to building.

Walk doors: The framing technique is the same for windows. Make sure the hinge side is a post, or a doubled 2"x6" and is plumb. Allow at least 1/2" over for rough opening. We like to dig in a 6"x6" CCA post for a threshold and attach it to the CCA skirtboard and the jamb framing. Use tapered cedar shims to adjust door to the opening and attach with enclosed screws. Note: Doors usually like to swing in. The most space efficient door placement is in a corner, swinging in to the wall. Place your electrical panel behind the door for added efficiency and access.

9. Prepare to install steel roofing: Once the roof deck is on, you're out of the rain and snow. Since the interior of the building is largely finished, you can move trim cartons, nails, and other materials and tools under cover. In addition, the roof provides diaphram strength to the building, making it much more rigid.

Leave all bracing cables in place until the roof and walls are installed. You may want to leave a few screws off where the cables exit, to make removal of the cable easier.

Shake out steel roofing and siding panels: Note: Steel bundles require special handling. Manufacturerer's handling instructions are attached to each bundle of steel or on the back of the color selection chart. After opening a bundle of steel, the wind can easily pick up a piece of steel and carry it away or ruin it. We recommend that you tie each bundle on both ends and the center with rope or wire so wind cannot get under the top sheet. Stacking materials on top of the sheet is not desirable. To keep the sheets clean, don't walk on them.

Important note: We have found it a common error for customers not to recognize the fact that steel rib panels need to be lapped properly. If you look closely at both edges of your panel, you will see that the ribs on the edges are not the same shape. One rib has a small groove in the side of it. This is the rib which must always be UNDERNEATH the rib on the opposite edge. See the diagram in the steel manufacturer's brochure which illustrates this very important point. Please find the two sheets labeled, "application aids", by American Building Components Company. This shows correct nail and screw installation.

Begin installing roof panels on the end away from prevailing winds. Let's assume you are not using roof insulation for now. There are many ways to get the roof sheet to and on the roof, but let's say right now, "be careful!" The steel edges are like razor blades. NEVER let the steel slide through your hands. Hold it like you mean it. The best crew size for installing roofing is three. One at the ridge, one on the scaffold below the eave and a ground person. The scaffold person is responsible for keeping the overhang consistent and coaching the others in "cheating" to keep the roof sheets aligned properly.

Position the first sheet flush with the gable truss framing and measure the overhang. Without gutter, we usually let the steel overhang the eave board by 6". With 5" K-style gutter, 1-1/2" or 2" is about right. Make sure that the roof steel covers the top purlin or extends past it by an inch or so.

Make your decision now as to top and bottom dimensions and overhangs. Screw the sheet down by using 1" minimum length neoprene washer screws in the flat next to the rib. Once several screws have been installed, you can mark the purlin locations on the roof panel with a faint pencil line. This will aid in accuracy in hitting the purlins with the screws.

Be careful not to overdrive the screws. Overdriving can cause the rubber washer under the head to mash out and deteriorate rapidly. 1-1/2" minimum neo washer screws must be installed in the high part of the rib where the panels overlap. Take special care not to overdrive fasteners so as to dimple or distort. A screw gun with adjustable clutch works better than a drill for this operation. The screw pattern at the eave is as follows: We use two screws in every flat plus one stitcher in the rib. This is technically more than is necessary, but it improves the appearance of the eave by keeping the roof sheet flat. It also seems to keep wind rattles and vibration down. At the top of the sheet, use a 1-1/2" galvanized roofing nail, one in each flat. Screws are a waste of money here and will interfere with the outside closure strip that installs under the ridge cap.

Once several sheets are installed on the roof and completely screwed down, you may want to stock the roof. Use heavy duty clamps to attach a 2"x4"-4' to the roof edge. Clamp at the rib overlaps. Now stock up to 10 sheets and clamp together at top and bottom in case of wind. Make sure the bottom 2"x4" is VERY secure. Also, pay attention to where the sheets bear on roof framing. The best place to stock roof sheets is over a truss.

Closure strip: If you are not insulating the roof, use inside closure under the roofing on top of the eave board. This can be installed as you lay the roof, or it can be shoved into the ribs from the inside after the roof is on. If you insulate the roof, you can delete the closure strip.

It is very easy to get out of square and alignment while installing roof sheets. Make sure that your overlaps are perfect! Don't cheat by misaligning the laps. There is a better way. If the measurement is running out at the bottom, it means the top of the sheet needs to be "squeezed". To do this, attach the top and bottom lap screw first. Then the person at the top of the sheet should pull the sheet up in the middle and attach the far edge of the sheet. The sheet bows up. Push the sheet down flat and nail or screw it down. The result is a sheet that is less than 36" coverage. The pattern on the bottom stays the same. Don't try and correct all in one sheet. Keep measuring and correcting as you go.

When you get within 15-20 feet of the end of the roof, measure from the roof framing back to the leading edge of the last roof sheet. The top and bottom of the sheet should measure the same distance. If not, squeeze top or bottom to gradually adjust. When doing this operation, it is important to first fasten top and bottom of the sheet and then fill in the other screws.

When you get to the last piece of roofing, hopefully you have calculated ahead and it is a full piece. If not, the sheet will have to be measured and ripped down to the proper dimension. Normally this is done on the ground. A power double cut tool is the best way to do this operation. Otherwise, you can use a carburundum blade to cut sheets lengthwise.

Snap a line, lay the sheet on the ground, put on your eye and ear protection, and lightly score the sheet. It isn't necessary to cut all the way through. Then take the sheet and bend it over at the score. Do this several times and the sheet will break. These edges are sharp, serrated and very dangerous. Please handle with care. A quieter and safer way to rip sheets is to score it with a SHARP awl or knife. Then bend back and forth to break the sheet. Renting a power double cut tool will make a much more professional job on roofing, siding, window and door cutouts, etc.

Before installing the last roofing sheet, please note: Notice the way the rake trim fits over the roof steel. Is there a rib between the edge of the trim and the edge of the building? If not, you will want to use a seamer tongs and bend 1" of the edge of the roof sheet back up at a 45 degree angle. If water gets under the rake trim, it will run down the roof sheet to the eave and stay out of the building. O.K? This bend will be covered by the trim, so it doen't have to be pretty, just functional.

After the roofing is installed, install the ridge cap and outside closure. You may want to measure and snap two chaulk lines where the ridge cap goes. Install the outside closure strips about 1/2" to 1" inside of the ridge, so it is not exposed to the weather. Most closure strip is self adhesive, so carefully install it along both sides. Install the ridge trim in the same sequence as the roof sheets. Begin installing ridge trim on the end away from prevailing winds. Be careful to not kink the trim. Don't screw the first rib of the roof on either end yet. This will happen after siding and rake trims are installed. Line up the ridge trims and check it with your eye. Chaulk lines work well also. Screw through the edge of the ridge trim, closure strip, roof sheet rib and into the top purlin.

Use 1-1/2" or 2" inch neoprene washered screws. Put a screw in at the beginning on one side of the ridge trim, then another at the other end, same side, one or two ribs back from the end. Install the next ridge trim in the same way. Overlap the ridge trims at least one rib and try to get the laps to bear on a rib. When you get to the end, either cut off the excess ridge trim or overlap it back onto the last piece. Let the ridge trim extend 3-4 inches past the end of the building to be trimmed later.

The roof is done! Except for the rake trim, you won't have to get back up on the roof. Rain and snow make the roof slick and almost impossible to walk on. Dust settling on the roof will also make footing unsure, so be careful.

10. Roof insulation: Most commonly used roof insulation is 2" or 3" vinyl backed fiberglass. This material is available in 3', 4' and 6' widths and in cut to length rolls. Vinyl is installed facing inside the building. The vinyl extends past the fiberglass about 3" on each side, providing an overlap that creates a good vapor barrier.

Roof insulation is a very good product for enclosed buildings used to store equipment or workshop/ garages. It prevents the roof dripping condensation from a metal roof. The noise of rain and wind is lessened. And interior noise from motors and power tools is also quieted. We insulate the roofs of about 90% of the buildings we build. Even though there is an added material expense, plus some degree of difficulty installing, we feel it is worth it.

Roll out carefully, stapling the leading edge to the eave board. We usually order the roll long enough to cover both pitches of the roof in one piece. Leave the roll at the ridge framing while installing the roof steel. When you get one side installed, the insulation is ready to roll down the other side with no laps at the ridge. Stretch the insulation and staple the leading edges down. Try to keep it straight, smooth and well lapped. Staple the ends down and trim off any excess before installing the roof sheets.

After the first 4' piece of insulation is installed along with the first 3' piece of roof steel, you can use either 3' or 6' insulation widths thereafter.

Use your foot to compress the insulation under the roof steel while screwing the sheets down. It takes a bit of "feel" to get the hang of it. Although it may not be necessary, we like to extend the length of screws when using roof insulation. 1-1/2" in the flats and 2" in the ribs feels more substantial and costs very little.

11. Install steel siding trims. Base trim is first. Double check the length of the sidewall sheets. Allow about 1/2" extra length between the eave board and the base trim. Snap a chaulk line where the top of the base trim goes against the skirtboard. Nail the trim on with galv. roofing nails. Use your red and green (right and left handed) tin snips to cut the corners so that they fit well and have no sharp edges.

Trim around the overhead door frame. Install the vertical jambs first. If you have notched the header into the posts, only overhead door trim is necessary. Sheet D-18, overhead door jamb trim detail, shows door post trim and an additional 2"x6" nailed under the header. Try to get the trims to lay flat. Nail with neo washered nails, same color as trim with washers removed. Use the punch awl to start a hole before nailing or screwing. Install the horizonal piece of overhead door trim. Let the ends extend past about 1", so water runs off to the outside.

Trim around the walk door. Allow 1/4" of the door frame to show. Install the jambs first, then the head trim, same as the overhead door trim. Note: most windows are pre-trimmed. Otherwise, trim the bottom first, then the sidejambs, then the top.

Install the J trim at the eave board. Push the trim up against the roofing and nail every 2-3 feet with a galv. roofing nail. Run the J trim flush with the gable framing. It can be trimmed in place when the corner trim is installed.

12. Siding panels. Install panels in the same manner as on the roof. Laps should face away from prevailing winds. On the other hand, you might want to face the laps so they will be away from the area which you will most often look at or approach the building. Follow instructions for fastening as shown on the manufacturers installation instructions. CAUTION: Start square, check the first sheet with the level. Measure back from the far end of the building as soon as you can. Small errors tend to become large errors quickly.

Pre-drilling wall sheets: Pre-drill only as many sheets as you can install that day. The small steel shavings can rust and stain your panels if left for any time in the pile. Measure carefully and mark where your fasteners will hit on the flats and the overlapping rib. Align the sheets, noting the direction of laps. Drill with a 1/8" bit through all the sheets. This pre-drilling eliminates the need to use a chaulk line or a punch awl. It also speeds sidewall installation and improves quality and safety.

Note: Consider the wind. We like to sheet the two eave walls first, then the windward side, then the lee side. Try not to creat a sail which will trap wind in the building.

End panels are "cut and fit" and generally take longer than the sidewalls. Angle of roof needs to be measured and sheets precut. Also door and window openings. No upper J trim is necessary on end walls, as the siding is covered by the rake trim later.

13. Skylites and sidelites: We like sidelites much better than skylites in the roof. They can't leak. The light coming into the building is from high and to the side instead of directly overhead. And you can't fall through a sidelite.

Skylites install in sequence. Overlap the sheet below and to the side. U.V. resistant silicon or buytl caulk should be used on horizonal laps. DANGER!!! Mark the skylites somehow so you won't fall through! Really.

Install the Z flashing on top of the sidewall panels. Install the J flashing under the roof panels. Remember that nailheads will show through the sidelite panels. We like to paint the framing behind the sidelite panels white, so they are less noticable. Large tinsnips work well for cutting panels. If your panels are all the same, you may be able to "gang cut" by using a jigsaw. Remember, the panels may vary in length, so measure first. We use 1" neo screws in the flats only, stitching the ribs at the very leading edge on the flat. At the bottom, over the Z trim, we use two screws on each flat to hold the bottom smooth. You may want to pre-drill the sidelite panels. A very light touch is necessary here!

Notes on closure strip: If you want a TIGHT building, use closure strip everywhere! You can closure the tops and bottoms of walls sheets and sidelite panels. In practice, this is time consuming and somewhat frustrating. We often cut the ribs from the closure and shove them into the ribs of the siding from the inside of the building after we're done. This seems to do a good job and is a lot easier.

Remove the temporary knee bracing and cable bracing now. The roof and wall sheets now provide diaphram strength to the building.

14. Install the outside corner trim. Take time to do a good job. Your corners need to be straight to look good and they are usually a contrasting or accenting color. Two people can better align corner and rake trims. Use a punch awl to start your screws. Align the trim screws with the wall screws.

15. Install the rake trim. This is extremely visible to Accuracy and care are important. This is usually the same shape as the corner trim. We overlap the roof sheet by 1/2" with the rake trim. Attach the top of the rake trim on every purlin, with a screw in the flat. Attach the rake trim through the lap ribs on the siding into the framing.

Punch or predrill holes first. Have someone on the ground help you align these trims. At the top, cut the face of the trim at pitch and fold the other side under. This will miter the joint. End caps are available to cover this joint, but we don't usually use them.

Construct and install your sliding doors, if any. Take care to install all bottom guides and latching systems. Keep the sliding doors completely open or completely closed. This must be done to avoid damage to your doors.

Install overhead doors, if any. Additional framing may be necessary to support the track ends and operator. We add 2"x6" lower cord braces with joist hangers for uniformity of appearance. Avoid wooden weatherstripping which must be painted. Plyco makes a white PVC/vinyl weatherstripping that works well, is easily adjustable and needs no coating. We subcontract overhead door installation. If you are going to install yourself, read instructions carefully. Torsion springs are dangerous.

At this point, depending on location, you will want to call your building department and schedule your final inspection. If you plan to pour a slab, ask whether they need to inspect prior to placing concrete.

Final backfilling: Avoid placing dirt against the steel siding or trims. This will quickly cause deterioration of the painted steel and rust will appear soon. On the eave walls, you may want to staple on a doubled layer of 6 mil black poly over the graded dirt. Then, cover this with cobble stones or heavy gravel. This acts as a gutter on the ground and carries most of the water away from the building edge. This moisture can wick under the skirtboard and wet the interior.

If you are going to pour a slab in the building, note the elevation of the door bottoms. Distance from grade to door bottom is slab thickness. Hopefully, you don't have to add or remove fill. Snap a chaulk line on the inside of the skirtboard at slab height. Square around the posts and mark with pencil. Nail 1/2" thick expansion joint material to the skirtboard and posts. This keeps any movement in the slab from affecting the building. You may want tape plastic to the interior walls to protect from splashing concrete.

Exterior walkways are treated the same way. Pour just under the base trim. You may want to caulk this area later to keep water out.

Give yourselves a pat on the back! You deserve it. Line up your help and take this photo opportunity.

Hopefully, this has been helpful in your project.

Sincerely,

Ron Wood
For Wood Metal Construction, Inc.