



ASSEMBLY MANUAL OF ARCHED METAL BUILDINGS

INSTRUCTIONS FOR THE CONSTRUCTION OF BUILDING
AND WATERPROOFING SYSTEMS



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⚠ IMPORTANT NOTICE:

READ THESE INSTRUCTIONS IMMEDIATELY AS SOON AS YOU RECEIVE YOUR BUILDING COMPONENTS AND AGAIN BEFORE AND DURING ASSEMBLY.

If you have any questions about the assembly of your building, do not go ahead. Please contact the Technical Support Department at +35722488999. You have your order number ready so that we can serve you better.

Your order number can be found:

On the invoice, On the quote, and In the bottom right corner of your blueprints (construction drawings)

Note in the line below the order number and model of your building for future reference.

STORAGE INSTRUCTIONS

To prevent any staining or discoloration of your building components during storage, follow the instructions below:

- ✓ Store the components in a closed, dry and well-ventilated area.
- ✓ Remove the straps from all bundles and pallets so that air circulates freely around each component.
- ✓ Do not allow moisture to remain on or between any metal component prior to construction.

Important:

An acrylic coating has been applied to the steel from the factory, which provides additional protection during transportation and storage.

This coating protects the steel for a short time if you store the components outdoors.

It is recommended to store indoors to avoid discoloration and deformation.

Notes for outdoor storage:

If it is absolutely necessary to store the components outdoors, follow these additional protection measures:

- ✓ Place a waterproof film or plastic cover on the ground.
- ✓ Do not place the components in vegetation, as moisture can cause corrosion.
- ✓ Remove the straps and separate all components with wooden slats so that they do not come into contact with each other.
- ✓ Make sure that no water or moisture builds up on or inside any accessory.
- ✓ Do not simply cover the pallets with pvc nylon, as moisture can become trapped and cause damage due to condensation.

⚠ WARNING:

If two wet metal sheets come into contact, white, gray, or black deposition (known as a wet storage stain) may appear on the surface of the steel. Following the above instructions will prevent such stains, which are not covered by the warranty. We are not responsible for any damage that occurs to the parts after they have been shipped from our warehouse, including stains or discoloration from poor storage. Therefore, it is in your best interest to adhere to the above instructions and take all necessary preventive measures. Storage stains are not removable and can only be covered with paint.

INSURANCE & CONSTRUCTION PERMIT

Inform your insurance company about the purchase of your building. Adjust your insurance policy before starting construction. It is also good practice to add additional coverage for the construction period (Construction Works Insurance).

→ This will protect you and your investment in the event of an unforeseen problem during the assembly of the building.

Obtaining a Construction Permit

Contact the local authorities (Department of Town Planning or Building) before starting construction.

Make sure the building complies with all local building regulations.

Obtain all necessary permits before the construction of the building begins.

⚠ WARNING: Your building will not reach the intended load strength until it is fully assembled and in accordance with approved drawings.

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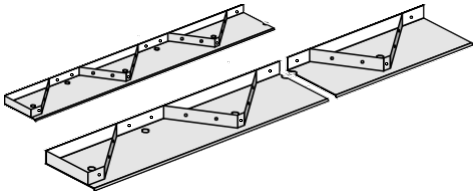
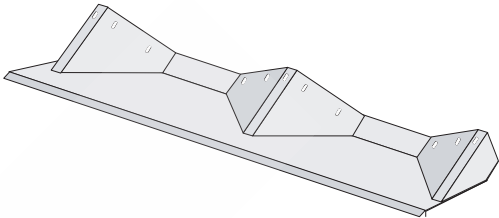
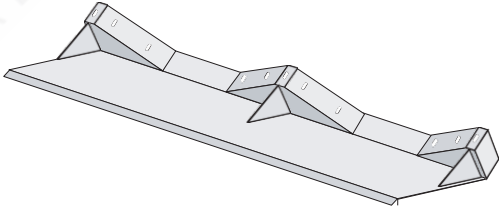
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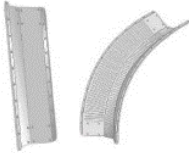
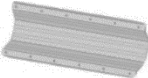
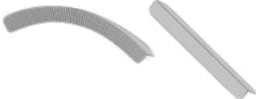
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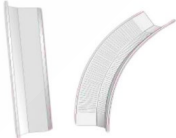
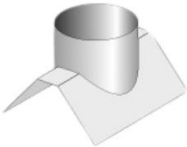
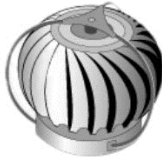
1. METAL BASES (INDUSTRIAL TYPE)

DESCRIPTION	3D
Standard Industrial Arch Connector (For Models A and S)	
Standard Industrial Arch Connector (For models B and Q)	
Standard Industrial Roof Connector	

2. PIECES OF ARCHED METAL BUILDING

Description	3D
Standard Arch Panel	
Standard Edge Wall Panel	
Standard Connector	
Arch strap	
Standard Outer Curve Angle	
Standard Internal Curve Angle	
Foam	

3. ARCHED METAL BUILDING ACCESSORIES

Description	3D
Connection arm – tie down bracket	
Anchorage base for the front of the corner arches – tie down bracket	
Skylight	
Standard Turbine Ventilation Adapter	
Standard turbine ventilation	

4. INTRODUCTION

You will find warnings and notes at various points in these instructions. These are intended to assist you in the safe and proper construction of the building. Please read carefully and follow the instructions contained in the warnings without derogations.

⚠ WARNING:

- Work safely. Take all the necessary protective measures to avoid accidents during the assembly of your building.
- **Make sure that all people working or near the construction site are using appropriate protective equipment.**
Example Work Gloves, Safety Goggles, Safety Boots, Protective Helmets, Seat Belts (where required), Fireproof Suit (where required)
- Safety standards vary from site to site and region. Make sure you and your team know and adhere to the applicable safety measures.

Your safety and the safety of your team is of the utmost importance and is your sole responsibility.

We recommend that you purchase insurance coverage before starting the assembly of your building.

- The building does not acquire maximum load strength until it is fully assembled and completed.
- Extreme weather events or incorrect assembly techniques can cause serious property damage and/or injury to individuals.
- Special care is required when unloading and storing components, in order to avoid injuries and damage to the building elements.

i Note:

- Carefully check the components of your order upon receipt by comparing them with the Shipping Note.
- If any parts are missing, damaged, or do not match your order, please record it immediately on the Shipping Note.
- This manual is provided for reference only. It contains general instructions and suggestions for assembling your building.
- The manufacturer of the building bears no responsibility for the erection or assembly of your building.
- Some images in this manual are general illustrations and may not exactly correspond to the product you purchased.

4.1. EQUIPMENT & TOOLS

The tools and equipment listed below are essential for the assembly of a standard building. Additional tools may be required to install optional components or facilitate the assembly process.

No tools are provided with your building.

✂ NECESSARY EQUIPMENT (where applicable – refer to methodologies):

- ✓ Protective helmets, work gloves, safety glasses, safety boots, seat belts and other personal protective equipment
- ✓ Heavy ropes (length and strength depend on the size of the building)
- ✓ Extendable Stairs, Rope Stairs, Folding Stairs
- ✓ Scaffolding – Scaffolding
- ✓ Scissor lifts
- ✓ Wooden beams for temporary support
- ✓ Boom Lifts
- ✓ Whooping crane
- ✓ Arc Fixing Agnle Support
- ✓ Arch Lifting Bases

🔧 NECESSARY TOOLS:

- ✓ Tape Measure (15m or 30m and 5m)
- ✓ Level & laser level
- ✓ Wrenches, nuts & ratchets
- ✓ Weight and string for vertical alignments (alternative to laser level)
- ✓ Iron pins (zoubas) & S-type hooks
- ✓ Jigsaw, metal cutting scissors, reciprocating saw & precision jigsaw
- ✓ Electric drill (10mm minimum) with adjustable speed & suitable drills Cordless impact screwdriver, electric or pneumatic

4.2. FOUNDATION, STRUCTURAL SUPPORTS & WALLS

i Note:

Before receiving the structural components of your building, you should have received a set of technical drawings (blueprints).

If you have received more than one set of technical drawings, please contact the Technical Support Department at +357 22488999.

If you have not received, cannot find or do not understand the drawings, DO NOT PROCEED WITH THE Assembly. Contact the Technical Support Department at +357 22488999

Unless you have informed us that you are using a pre-existing foundation, the technical drawings we provide to you include:

- Dimensions of concrete bases and slab
- Locations and specifications of anchor bolts and reinforcement
- Acceptable Ground Conditions and Concrete Strength Requirements

The design of the foundation shown in the plan is the minimum configuration required, as soil conditions and foundation requirements vary depending on the construction site and may require adjustments to our design.

If you wish to use the foundation we propose, it should be checked by a local engineer or competent authority to confirm that it meets local requirements and that the soil is suitable for its application.

If you have informed us that you will be using a pre-existing base, this will be noted in your technical drawing. In this case, the foundation design we provide is intended only for dimensional guidance and for the precise placement of the anchor bolts.

We will also have provided you with the reaction loads of the arcs, which you must hand over to your engineer to confirm that the proposed foundation is suitable for your building.

STRUCTURAL SUPPORTS & WALLS

In most of our buildings, structural supports and walls are not necessary.

Exceptions are T- and R-type buildings or variations thereof. In this case, the supports and/or walls will be depicted in your technical drawing.

If we have not designed your structural supports or walls, we will have provided you with the reaction loads of the arcs, which you must deliver to a local mechanic to ensure that the walls or supports are designed correctly.

If we have designed your structural supports or walls, we recommend that they be checked by a local engineer to confirm that they meet local specifications.

⚠ If your order and drawings do not state that you are using a specially designed foundation, we assume that you are following the design of our foundation.

In this case, contact Technical Support (+357 22488999) immediately to confirm that your building components are suitable for a special design and, if necessary, obtain the load reactions for your engineer.

⛔ DO NOT PROCEED WITH ASSEMBLY IF YOU HAVE NOT RECEIVED APPROVAL FOR YOUR FOUNDATION.

If your designs explicitly state that the foundation will be designed by others, we consider that you will not follow our design. In this case:

- Confirm that the building components are compatible with the foundation you will be using.
- Hand over the reaction loads of the arcs to a local mechanic to confirm that the foundation and structural supports are suitable.
- We are not responsible for damage that may arise from the assembly of our building on foundations or supports that differ from our own design.

If you plan to follow our recommended foundation plan, ask a local engineer or competent authority to confirm that:

- ✓ The design meets local requirements
- ✓ The erection point is suitable and compatible with the design

Once the design is approved, ensure that all specifications are met, including the following:

- ✓ Grade and dimensions of concrete slab
- ✓ Concrete slab quality (level)
- ✓ Steel Reinforcement
- ✓ Anchor bolts Tie-down brackets where applied
- ✓ Sealing & mortar

STANDARD FOUNDATION (TROUGH-STYLE/KEYWAY)

If you have not ordered special support bases or if a different foundation design has not been specified in your order and drawings, our recommended solution is the standard trough-style/keyway foundation.

The dimensions of the proposed foundation, the specifications of the reinforcement, the acceptable ground conditions and the minimum concrete requirements are described in detail in your drawing.

⚠ WARNING:

- Please refer to the technical drawing for exact dimensions and specifications.
- If you are using J-type anchor bolts, these must be placed in the positions specified in the drawings BEFORE the concrete begins to thicken or mature.

ANCHOR BOLTS & MOORING BRACKETS

- When erecting each arch, it must be secured to the foundation with an anchor bolt and a tie down bracket.
- The arc panels are attached to the brackets with 12mm diameter fasteners.
- 12mm diameter connections are used ONLY at these points.

Fixing the Arcs:

- ✓ Arcs Anchored at every point where they overlap with the adjacent arc and in the center of the panels.
- ✓ The anchor bolts are placed along the foundation inside the trough.
- ✓ The exact specifications and locations of the anchor bolts and tether studs are specified in the drawings.

Models Q&B:

- Field bending is required to match the angles at the base of the arches.
- Field drilling may be required to drill holes in the arc panels to properly adjust the tie down brackets.
- Use the existing openings of the supports as guides for drilling the arcs.

End Walls:

- ✓ The panels of the end walls must also be fixed to the foundation with an anchor bolt and a support bracket. The supports are placed on the inner side of the panels of the end walls.
- ✓ The fixing is done through holes that must be drilled in the cavities of the panels (field drilled).
- ✓ Refer to the drawings for the exact locations of the anchor bolts.

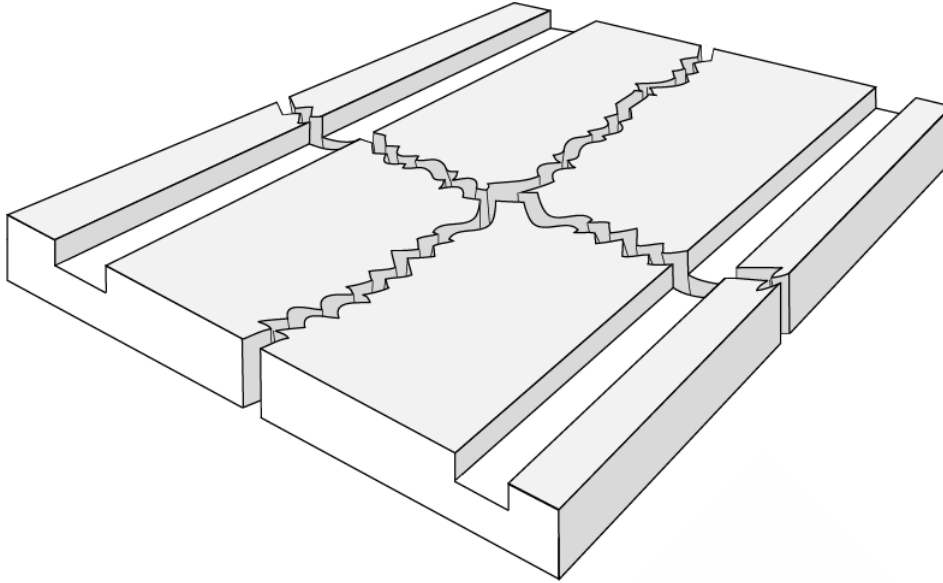
i Note:

Anchor bolts should be purchased from a local supplier. Refer to the technical drawings for the correct sizes and specifications of anchor bolts and lashing brackets.

⚠ WARNING:

- Anchor bolts must be installed as specified in the technical drawings.
- Anchor bolts are ESSENTIAL, even when base connectors are used.
- These components ensure that the building is properly fixed to the foundation during and after construction.
- Anchor bolts and support brackets help prevent arches and end walls from tipping over from strong winds.
- They are necessary for the building to achieve the load resistance specified in the drawings after the completion of assembly.
- Refer to the drawings for the exact dimensions, specifications, and locations of anchor bolts and lashing brackets.

- **FIGURE 2: STANDARD FOUNDATION (NO END WALLS)**

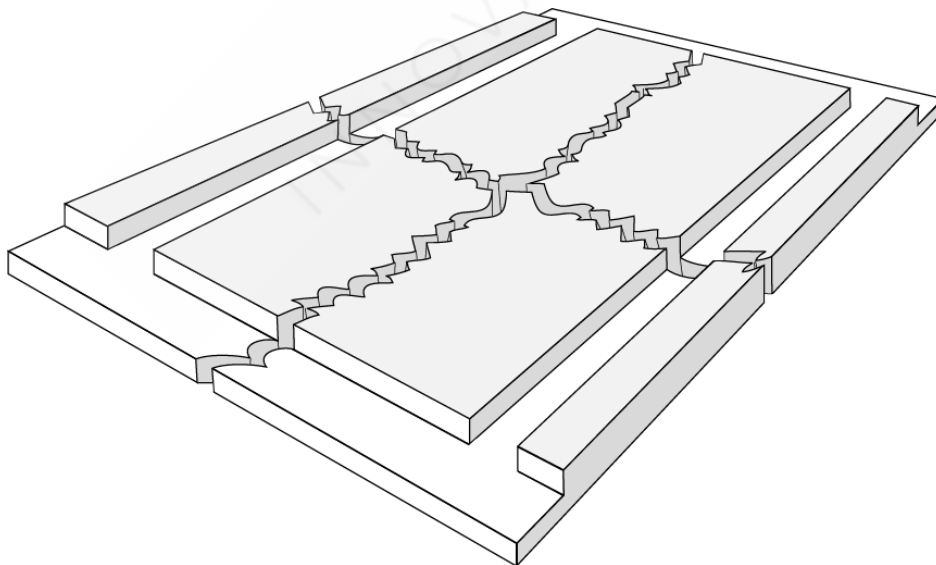


⚠ WARNING:

Please refer to the technical drawings for the exact dimensions and specifications.

If J-bolts are used, they must be placed in the locations indicated in the drawings before the concrete begins to thicken or harden.

- **FIGURE 3: STANDARD FOUNDATION (WITH END WALLS)**

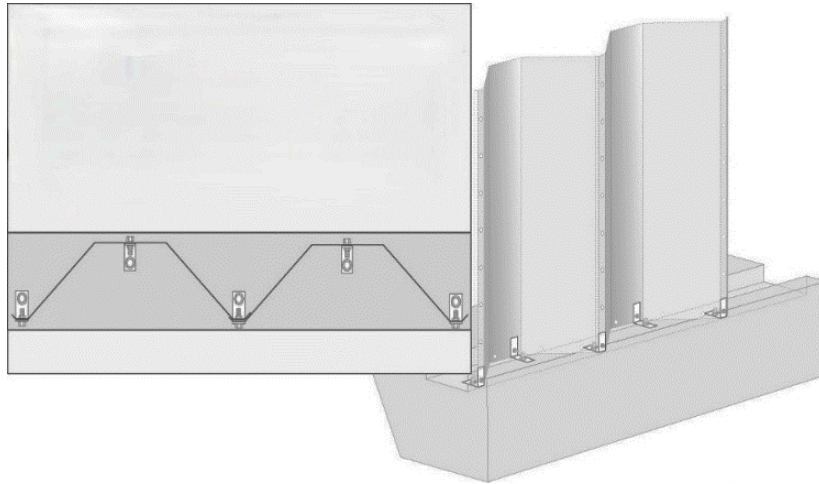


⚠ WARNING:

Please refer to the technical drawings for the exact dimensions and specifications.

If J-bolts are used, they must be placed in the locations indicated in the drawings before the concrete begins to thicken or harden.

◦ **FIGURE 4: STANDARD ANCHOR BOLTS & LASHING BRACKETS (ARCHES)**



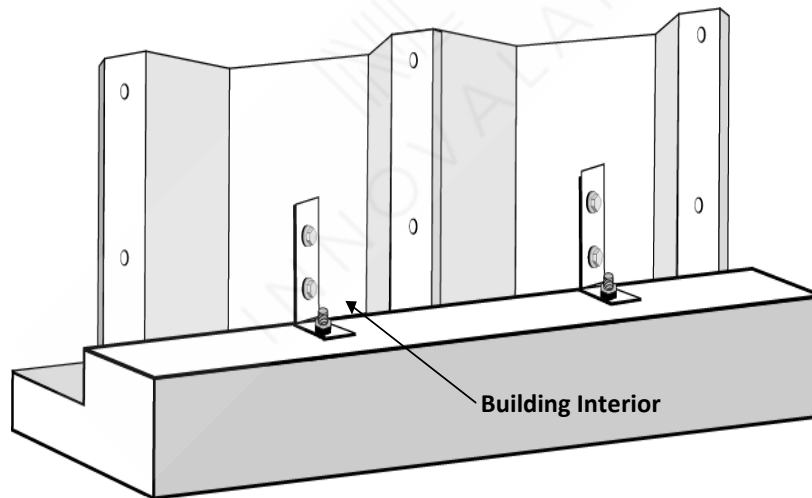
⚠ WARNING:

Tie-down brackets are not included in the building supply unless ordered separately. However, they are always necessary for the safety of the construction. If they have not been ordered, you must use a corresponding or better method of anchoring the building to the foundation.

i Note:

Pay attention to the instructions shown in the figure above for the correct installation of the lashing brackets.

◦ **FIGURE 5: STANDARD ANCHOR BOLTS & SUPPORT BRACKETS (END WALLS)**



⚠ WARNING:

Each arc and panel of the end walls must be anchored to the foundation.

NOTE:

Many customers prefer to use epoxy anchors, expansion anchors, or wedge anchors, which are installed after the concrete has set, instead of J-bolts or lag-bolts.

4.3. FOUNDATIONS FOR USE WITH INDUSTRIAL BASE PLATES

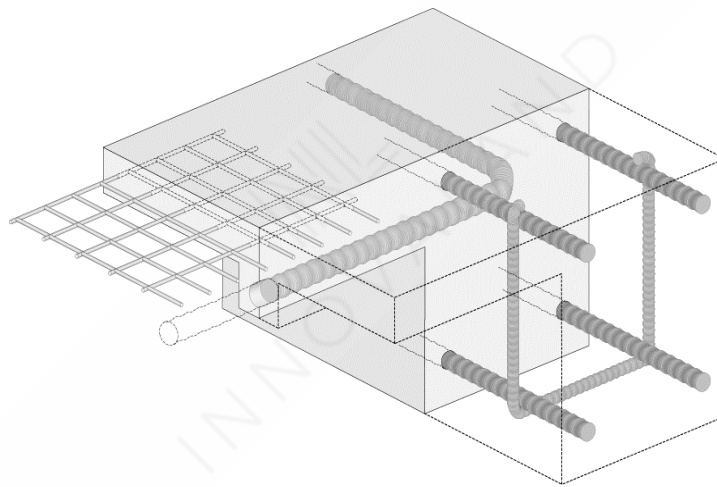
Industrial base plates are used to securely fasten the arches and end wall panels to the foundation, without the need for a keyway or the use of tie-down brackets.

Advantages of using docking stations:

- They significantly reduce the cost and complexity of the foundation.
- They simplify the building construction process.
- They eliminate the need for a keyway and tie-down brackets.
- They reduce the size of standard foundation bases, making the foundation more compact.
- They are essential if you plan to move your building in the future, as they do not require grout.
- They increase the interior height of the building, offering more available space.

⚠ WARNING: Please refer to the technical drawings for exact dimensions and specifications.

° **FIGURE 7: CROSS-SECTION OF A STANDARD FOUNDATION WITH AN INDUSTRIAL BASE PLATE**



⚠ WARNING: Please refer to the technical drawings for exact dimensions and specifications.

4.4. ADDITIONAL INFORMATION ON INDUSTRIAL BASE PLATES

For specifications and dimensions of the foundation, including requirements for the ground, concrete, reinforcement and positions of the anchor bolts, refer to the technical drawings in consultation with the local engineer.

FOUNDATION SUMMARY

When completed, the foundation must be flat, rectangular and constructed to the correct dimensions, either according to the study of your independent engineer, or according to the proposed foundation design stated in the technical drawings.

WARNING:

 Check if your foundation is rectangular:

- ✓ Measure the diagonal distance from one corner of the foundation to the opposite corner.
- ✓ Then measure the diagonal on the other side.
- ✓ If the two measurements are the same, then the foundation is rectangular. Otherwise, the foundation is not rectangular and must be repaired before construction begins.

WARNING:

It is crucial that the foundation is flat, rectangular and built with the correct dimensions.

Any defect in the foundation can seriously affect the structural integrity and assembly process of your building. If you use a keyway foundation, your foundation is not considered complete until the building is grouting where applicable. Your building will not be able to withstand the loads mentioned in the technical drawings until the foundation is fully completed, including mortar sealing. The grouting process takes place after the completion of the construction of the building and the relevant instructions are included later in this manual.

The continuation of this manual assumes that your foundation has been built correctly.

If you have any questions about the foundation, please consult your engineer or contact the Technical Support Department.

5. INDUSTRIAL BASE PLATES

Once the foundation is complete, install the industrial base plates according to your technical drawings.

✂ If the foundation is constructed correctly, the industrial base plates should be aligned exactly as depicted in the drawings.

⚠ **WARNING:**

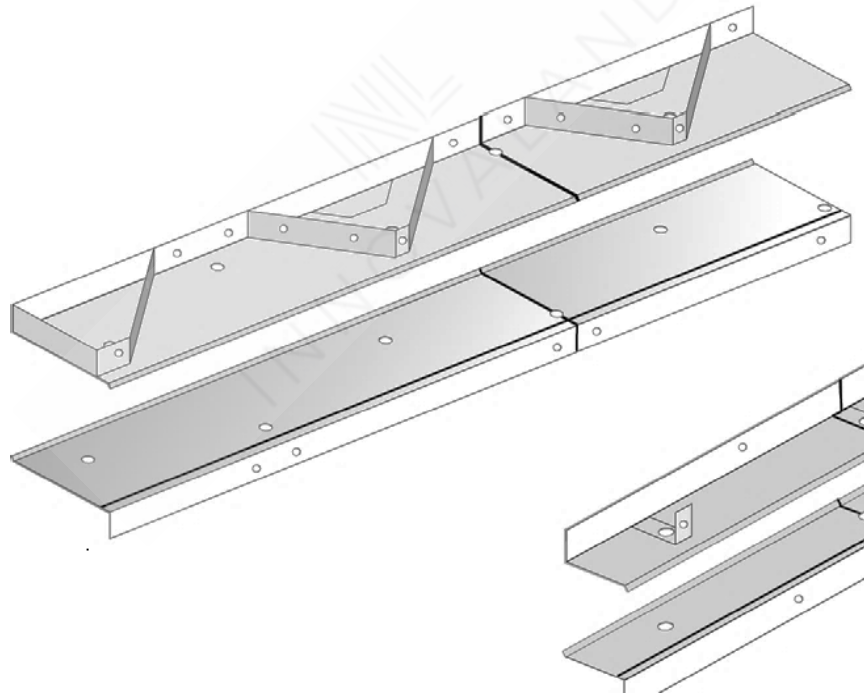
- ✓ If they do not align correctly, DO NOT PROCEED.
- ✓ Double-check all dimensions and configure the foundation where needed.
- ✓ If you can't determine the cause of the problem, contact Technical Support.

Once you confirm that the metal industrial base plates are installed exactly as in the drawings, they are ready for installation.

WATERPROOFING THE INDUSTRIAL BASE PLATES

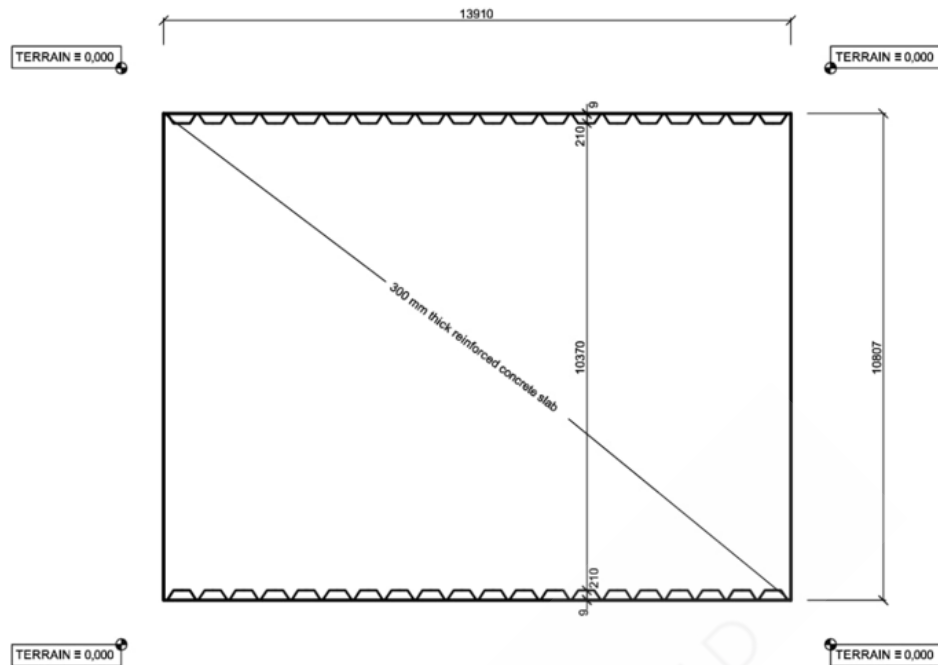
To reduce the possibility of leaks, the connection between the bases and the concrete should be sealed with mastic preferably based on MS POLYMER.

° **FIGURE 9: INDUSTRIAL BASE PLATE SEALING**



5.1 INSTALLATION OF INDUSTRIAL BASE PLATES

Example of construction drawings



Installation of Metal Bases in the Foundation based on the above drawings.

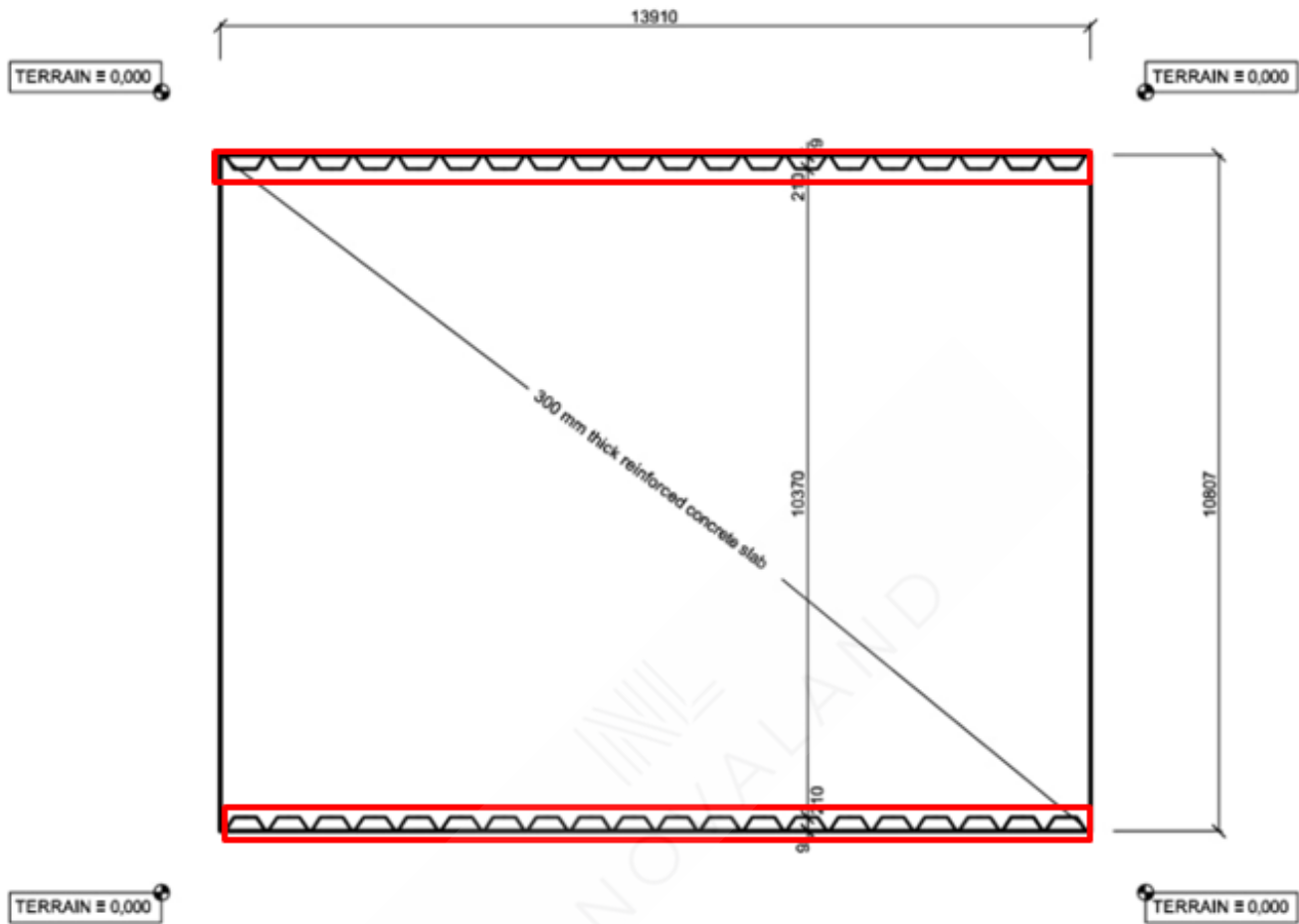
✿ Check if the foundation is rectangular:

1. The dimensions of the foundation must be **13,910 mm long × 10,807 mm wide**, according to the technical drawings
2. Measure the **diagonal from one corner to the other**.
3. Repeat on the **other side**
4. If the two diagonals are **exactly the same**, the foundation is **rectangular**. Otherwise, a correction must be made **before the assembly** begins.

✿ Foundation Surface Inspection and Installation of Foundations

1. Visual inspection: The surface of the foundation must be smooth and aligned along its entire length.
2. Marking Points
With a marker (white or red), mark the beginning and end of the foundation in the length of 13,910 mm.
3. **Laying the cord in width**
Insert the cord to a width of 10.807 mm. Measure a distance of 22 cm from each end. The distances from the cord to the surface of the foundation must be the same on both sides. **Check that the cord is completely horizontal/in the correct alignment**
4. Cords along the length
Install cords on both sides along the 13,910 mm, at a distance of 22 cm inwards from each end of the foundation. The cords must be of good quality, well stretched and aligned. **Check that the cord is completely horizontal/in the correct alignment**

- Leveling check at the points where the metal bases will be placed: With the cord as a reference point across the width, check whether the foundation is flat along the entire length of 13,910 mm, making measurements every 1 to 1.5 meters. The surface should be uniform and without ripples or elevation deviations. In case deviations from alignment or flatness are found, please contact Technical Support immediately.



- Symmetry check**

The distances from the cords must be the same on both sides of the foundation, where the base plates will be installed.

Check every 1 meter that the width of the laces is the same. **Note** The correct width must be 10,370 mm. Check and the diagonals of the laces along that they are the same.

- Installation of base plates. If all of the above are correct, temporarily mount all mounts and align them parallel to the cords along the 13,910 mm. Temporarily and securely fasten the mounts.
- Recheck.** Check every 1 meter that the width of the base plates is the same. **Note** The correct width must be 10,370 mm. Check and the diagonals of the bases along that they are the same.
- Marking of punch holes. With a marker, mark the puncture points. Secure the mounts with temporary nails.
- Drill with a minimum depth of 20 cm, according to the technical specifications of the anchors.
- Place the anchors without tightening them.
- Check internal diagonals. Measure the internal diagonals and make sure they are the same to ensure the correct geometry.
- Width control every 1 meter.
Every 1 meter, measure the distance from inside to inside the bases. The distance should be 10,370. Tighten the anchors to 70% of the final torque to allow for slight adjustment if necessary.

⚠ WARNING:

The foundation as well as the installation of bases is the most important part of the assembly.

🔧 A surveyor is recommended for the above checks.

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5.2. SEALING WITH MS POLYMER MASTIC ON INDUSTRIAL BASES

- ☑ When using Industrial mounts, you must apply sealant (mastic) to the underside of all components and to the joints where they are adjacent to each other.
- ☑ Make sure that the layer of sealant (whip) is uniform and has been applied correctly along the entire length.
- ☑ In addition, you need to apply sealant (mastic) to all joints where the arcs and panels of the end walls meet the INDUSTRIAL BASE PLATES.

⚙️ GENERAL RULES FOR THE APPLICATION OF SEALANT MASTIC

Make sure that the sealant (mastic) is applied evenly and fully covers the compounds.

The sealant must be fully in contact with the concrete and seal the joints.

Do not allow the sealant (mastic) to interfere with the prefabricated holes in the joint.

Make sure that a continuous layer of sealant (mastic) is applied between the industrial base plates and the concrete to prevent water from penetrating under the joints or into the joints where the individual sections meet.

At a later stage, you will need to apply an additional layer of sealant (mastic) to all joints where the arcs and panels of the end walls meet the INDUSTRIAL BASE PLATES.

⚠️ WARNING:

The sealant (mastic) is extremely strong and dries very quickly. Be very careful when fitting the components, as you will have very limited ability to reinstall or correct after application.

If you have chosen to use expansion bolts or epoxy anchors after the concrete has set, now is the time to install them. You must install anchor bolts according to the specifications stated in your technical drawings, through each corresponding anchor hole in the industrial base plate. The square washer should be placed under the nuts (and common washers, if any) supplied with the anchor bolts. Anchor bolts must be installed according to their manufacturer's specifications.

NOTE:

⚙️ If you have purchased access door frames from us and already know where to install them, DO NOT install anchor bolts in these locations, as they will need to be removed or cut later.

⚙️ If your mounts have two pre-drilled holes on the outer side of each arc per side, you need to use the square washers with the notches in these positions.

Once the metal industrial base plates have been properly installed, sealed and anchored, you can start erecting the arches.

⚙️ There are cases where the mounting brackets may need to be screwed 80% only (temporarily during erection)

5.3. ARCHES

The arches of your building are the main structural elements of the structure, acting as the side walls, roof and structural supports of the building.

⚙️ Each arc must be assembled to the ground, lifted and placed on the foundation or INDUSTRIAL BASE PLATES, and then fixed to an adjacent arc.

⚙️ IMPORTANT: Constantly check the arches to make sure they are vertical, rectangular and in the correct dimensions (width, height and length) as stated in your technical drawings.

START OF WORK

Please confirm the following before starting construction:

- ☒ That the workplace is clean and safe.
- ☒ That the foundation is flat, rectangular and constructed according to the correct dimensions.
- ☒ That you have all the necessary tools, equipment and sufficient manpower.
- ☒ That all those who work or are on the construction site use safety helmets, safety boots, safety glasses, work gloves and any other necessary personal protective equipment correctly.
- ☒ That those who work at height also use harnesses.
- ☒ That there is an adequate power supply for your power tools.
- ☒ That you and your team have fully read and understood these guidelines.

 If any of the above conditions are not met, **DO NOT** proceed with assembly until the issues are fixed.

WORKPLACE CONFIGURATION & PREPARATION

There must be two large, free areas at both ends of the construction site.

- ☒ The free distance must be at least 1.5 times the height of the building.
- ☒ There must also be at least 3 meters of free space along each side of the foundation.

If you have ordered only one final wall with an opening, start construction on the side of the building where the opening will be located.

-  Gather your team and make sure they know who is giving the instructions.
-  Explain that the task must proceed smoothly and correctly.
-  If any questions arise, these must be clarified before construction continues.
-  Above all, emphasize safety and make sure that safety equipment is used properly at all times.

i Note:

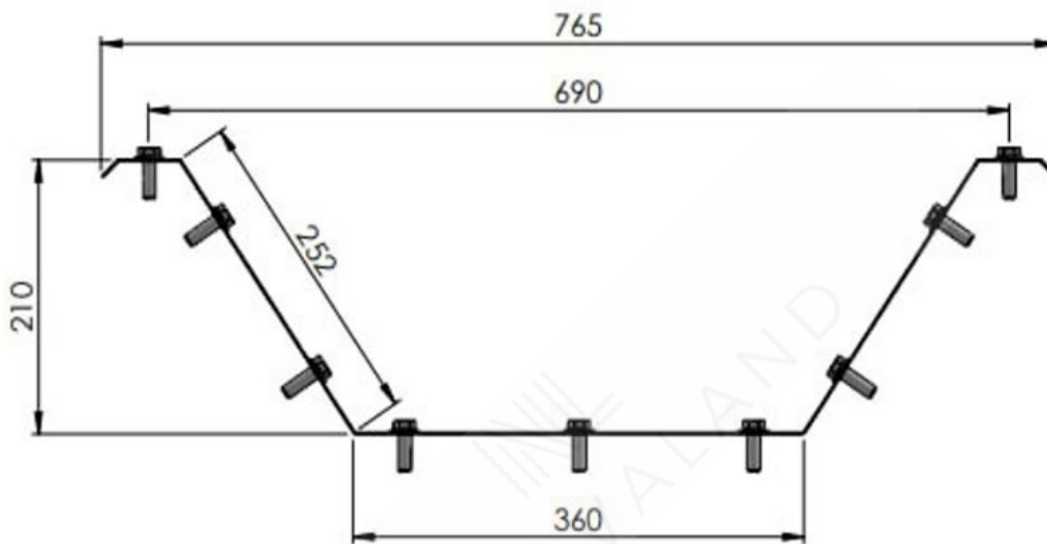
If possible, erect the arches contrary to the direction of the prevailing winds in your area – from the leeward side to the windward (usually from south to north). This will help to better seal the building, as the overlapping of the arches will follow the direction of the winds and prevent the penetration of water, wind and snow.

5.4. PANEL TYPES

The **arc panels** are the primary components of the main assembly of our structures. Manufactured with precision trapezoid steel technology, each panel interlocks securely to form the **structural frame, roof, and walls** of the building simultaneously.

The arc panels are not just a part of the building — they are the **building itself**.

◦ **FIGURE 12: PANEL TYPE (TYPE I)**



5.5. ARCH PANEL DIMENSIONS

ARC MODELS

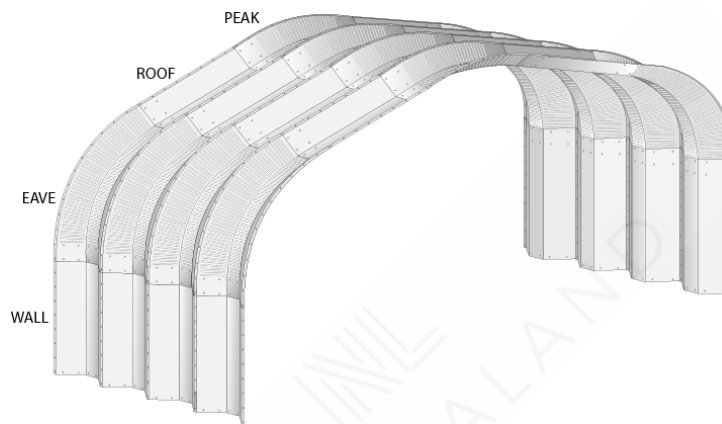
The main models we offer are: A, Q, S, and B, as well as the special models R and T. The model of your building is mentioned in your Invoice, Quote and technical drawings.

THE MODEL A

It consists of straight wall panel, curved edge panels, straight ceiling panel, and curved top panel.

The illustration below shows a typical Model A building.

◦ **FIGURE 13: ANATOMY OF A TYPICAL MODEL A BUILDING**

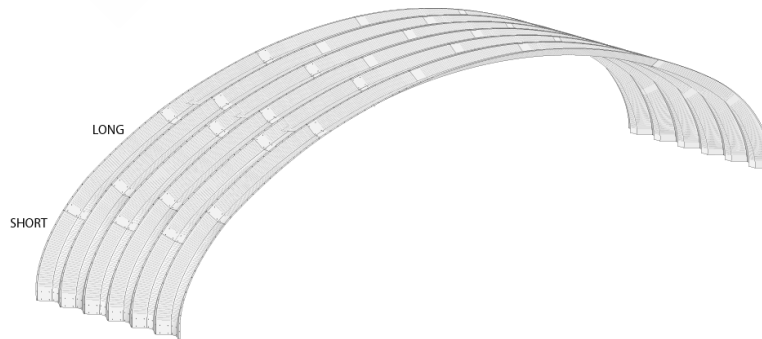


MODEL Q

This model is semicircular or elliptical. All the panels that make up the arc are curved with the same radius.

The illustration below shows a typical Model Q building.

◦ **FIGURE 14: ANATOMY OF A TYPICAL MODEL Q BUILDING**



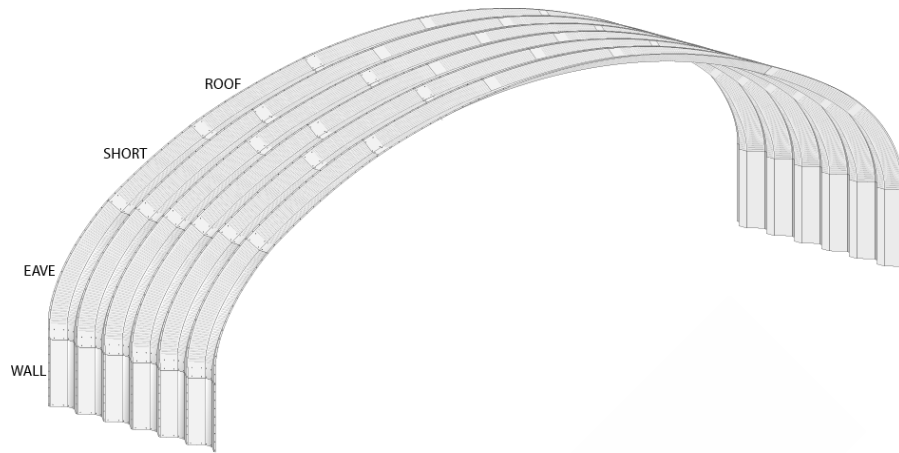
THE R MODEL

This special model is mainly used for housing applications. Usually, but not always, it is based on the same design principles as Model Q buildings. It is installed on concrete walls or on a metal frame, which has been designed either by us (as shown in your technical drawings) or by your independent engineer, using the arc forciers provided in the drawings.

THE S MODEL

It consists of straight wall panels, strongly curved edge panels, and less curved ceiling panels. The illustration below shows a typical Model S building.

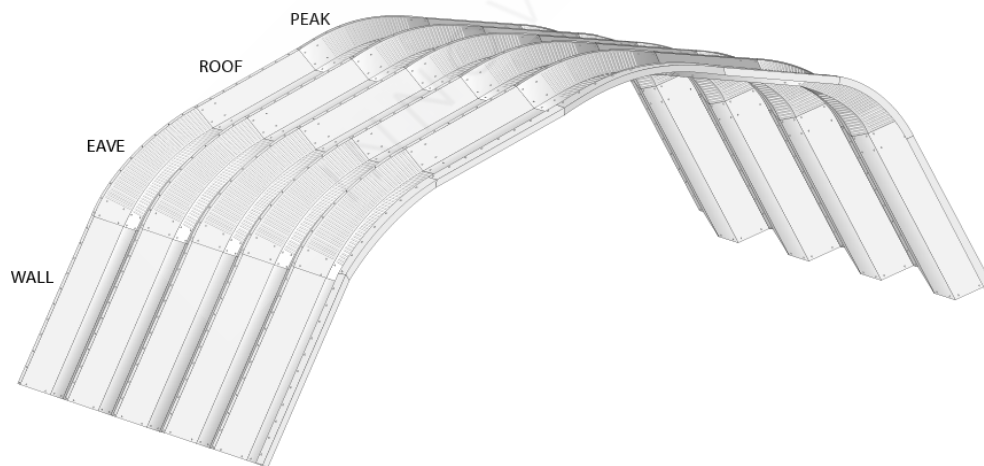
◦ **FIGURE 15: ANATOMY OF A TYPICAL MODEL S BUILDING**



THE B MODEL

This model is essentially a variant of the Model A. Unlike Model A, Model B has sloping (rather than vertical) wall panels. The illustration below shows a typical Model B building.

◦ **FIGURE 16: ANATOMY OF A TYPICAL MODEL B BUILDING**



6. ARC ASSEMBLY

- ✂ The assembly of your building begins by assembling the arc panels to the ground.
- ✂ Fasten the arc panels together according to the arc profile shown in your technical drawings. Pay special attention to ensure that panels with similar length and shape, but different thickness (where indicated), are installed in the correct positions (where applicable).

Our panels in special designs may be sealed for easier reference (in most cases they are not sealed).

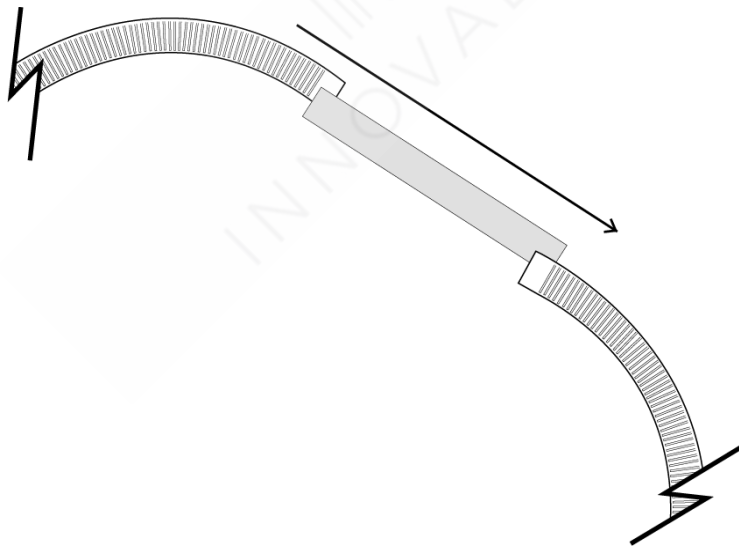
- ✂ The arc panels are screwed together from end to end and overlapped by two rows of bolt holes.
- ✂ The fasteners (bolts) must remain loose (only by hand) at this stage to allow for alignment and the necessary adjustments.

⚠ WARNING:

Refer to the arc profile in the technical drawings to determine the correct position and length of each panel. If you can't locate or identify these designs, or if you have any questions, DON'T PROCEED. Contact Technical Support immediately. Incorrect placement of arc panels can lead to manufacturing defects and severely affect the strength and structural integrity of your building, especially if your building consists of panels of different thicknesses.

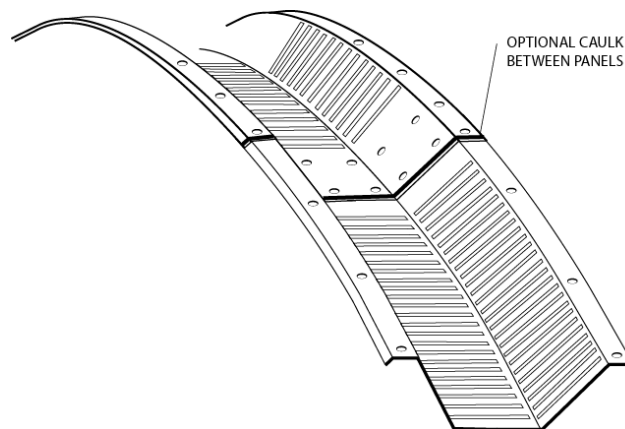
We are not responsible for any damage that may occur due to incorrect installation of the arc panels. Make sure that the coating of the panels is such that water flows towards the outside of the arch and does not penetrate the interior of the building. When properly constructed, the arches will be watertight. However, sealant can be used between the panels as an optional option.

◦ **FIGURE 18: CORRECT PANEL COATING**



Sealant (mast) between the arc panels is usually not recommended or necessary. If you choose to use sealant during the construction of your building, it should be applied at this stage to the places where the panels overlap. Make sure that the sealant (mastic) line is applied evenly and completely and that it does not interfere with the pre-drilled bolt holes.

◦ **FIGURE 19: OPTIONAL SEALANT BETWEEN PANELS**

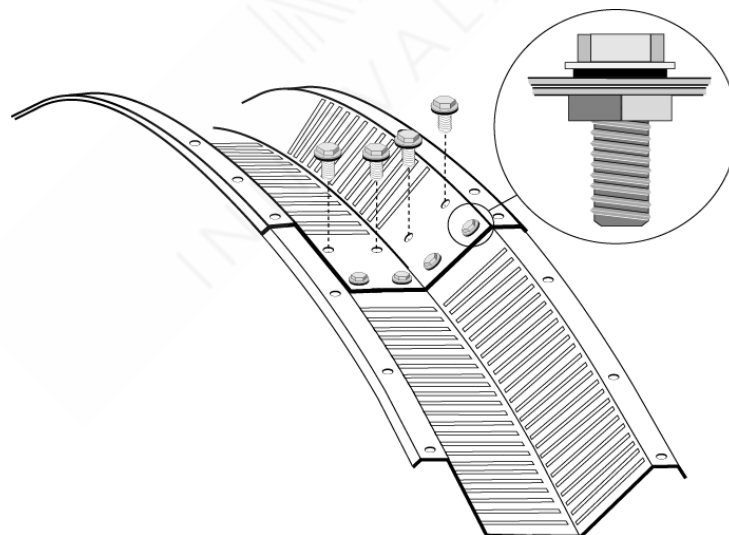


⚠ WARNING:

The sealant is highly adhesive and solidifies very quickly, limiting or making it impossible for any adjustment of the panels. If you decide to use a sealant (mastic), be very careful that the parts applied with it are installed correctly the first time. The use of sealant (mastic) is optional and is at your own risk.

✂ At this point, install all the bolts that connect the panels to each other, except those along the upper ridge of the panel. The bolts should only be tightened by hand at this stage to allow the necessary adjustments

◦ **FIGURE 20: PANEL CONNECTION**



⚠ WARNING:

When the arches are assembled, they are ready to be lifted and placed in place. Special care must be taken when erecting the first arch, as the arches alone are very flexible and difficult to control. Deformation of the arc should be avoided. We recommend fixing the curved corners to the first arc before lifting to increase the rigidity of the arc (where applicable).

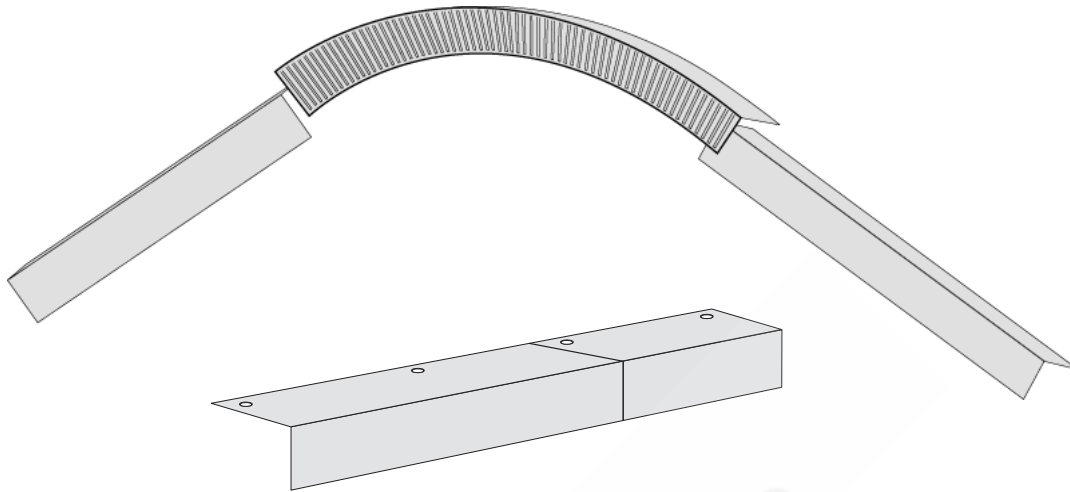
INSTALLATION OF CURVED CORNERS

Curved corners (also known as finishing corners or framing brackets) are used for two purposes such as connecting the end walls to the arches and finishing the open ends of the arches.

Curved corners are shaped in a similar way to arc panels, i.e. they can be straight or flexible to match the contour of the corresponding arc panels.

Normally, curved corners only overlap one bolt hole

◦ **FIGURE 21: CURVED CORNERS**



✂ If you have been supplied with additional lengths of curved corners, they can overlap more than one hole or be cut on the spot. Make sure you have additional lengths available before any cutting and only cut off the unnecessary amounts.

There are two types of curved angles:

Outer curve angles.

The outer curved corners have a wider rim than the inner ones, but otherwise they are similar.

✂ The outer curved angle is fixed to the outside of the arc, while the inner curved angle is normally fixed to the inside.

Please refer to the following shapes for more details.

A final wall supplied by Innovaland requires the use of both external and internal curved corners.

i Note:

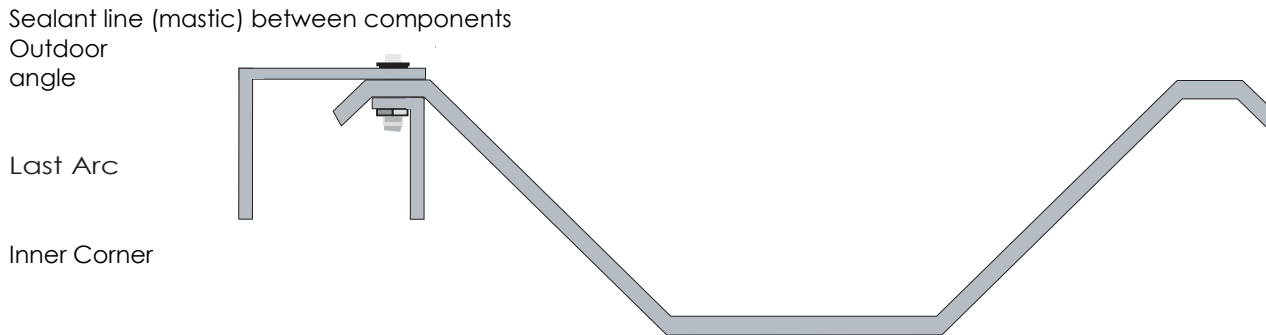
If you are installing a non-Innovaland final wall, then curved corners are optional. You can order them specifically to cover the joint between your arches and wall. In this case, either an outer or an internal curved angle can be used – there is no need to combine both.

⚠ WARNING:

Curved corners are NOT designed to carry a load. If you are installing your own wall, this must be fully supported.

✂ To reduce the possibility of leakage, a continuous line of sealant (mastic) must be applied between the outer edge of the corner and the arc panel (optional).

◦ **FIGURE 22: CROSS-SECTION OF A STANDARD CURVED ANGLE**



ERECTION OF THE ARCHES

Preparing for the Lifting of the Arches

- ✂ When lifting the arches into place, special care must be taken to avoid twisting (warping) or deformation of the arc.
- ✂ Lifting the arches manually, instead of using a crane or boom truck, will help prevent this deformation.
- ✂ However, in large buildings, this type of equipment can be useful or even necessary, and if used, it must be operated exclusively by a qualified operator.
- ✂ As an alternative, the arches can be lifted into sections or even assembled piece by piece if you prefer.

For information on these alternative methods, please contact the Technical Support Department or see some of the methodologies below.

- ✂ You will need one or more scaffolding and adjustable screws at the top with 2 wooden beams at the top to hold the building and prevent damage. Also you need to make sure that the scaffolding is fixed to the ground to avoid accidents.
- ✂ They should be placed at the end of the building from where the construction will begin.
- ✂ If a scaffolding is to be used, it must be centered on the foundation.
- ✂ If additional scaffolding is used, it must be evenly distributed.
- ✂ If your arches are large enough or heavy, you may need more than one scaffolding.

⚠ WARNING:

Do not try to lift weights that exceed the limits of your endurance.

Anyone working on scaffolding, stairs or generally at a height must use safety equipment, including safety harnesses, at all times.

Everyone on the construction site must use personal protective equipment, including: Safety boots with a steel toe, Work gloves, Goggles, Safety helmets.

6.1. LIFTING THE FIRST ARC

The number of people required to erect the arches depends on two factors:

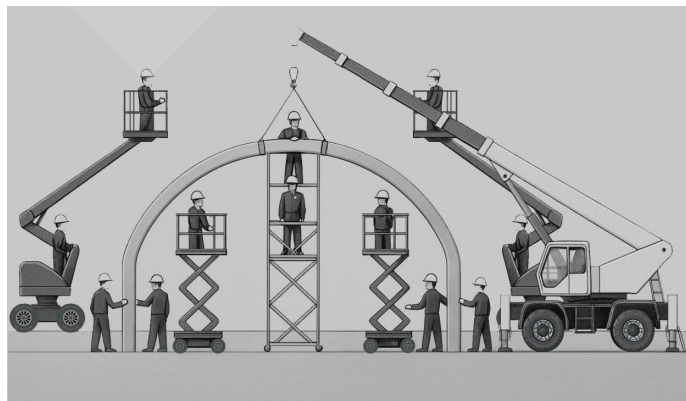
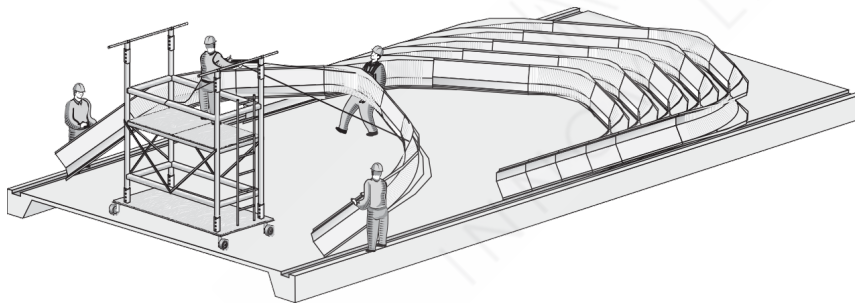
1. The size of the building.
2. The experience and skills of the crew.

- ✖ At this stage, your first arc should be fully assembled on the ground, according to the arc profile.
- ✖ If you have procured the curved finish corners, they should be installed and sealed (must).
- ✖ You will need "S" type hooks, made of a 10 mm diameter rod. "S" hooks are used to help lift the arches upright.
- ✖ These hooks must be securely fastened to ropes and inserted into the holes of the arc panels.
- ✖ The larger and heavier the arc, the more ropes with "S" hooks will be needed.
- ✖ The ropes should be placed at several points along the arc to distribute the weight evenly and to prevent the arc from falling or deforming.
- ✖ One or two people, mounted on each section of scaffolding, will use the ropes and "S" hooks to pull the arches upright.
- ✖ Make sure that the ropes and "S" hooks are properly positioned and will not be obstructed by scaffolding or support mechanisms.
- ✖ The load on the ropes and hooks must be balanced. Also keep in mind that experienced workers can comfortably pull 50-60KG each.
- ✖ The scaffolding must be firmly anchored to prevent tipping over during the lifting process.
Place one or two people on each leg of the arc. These will help lift the arch and guide it through the foundation groove (or industrial base plates).
- ✖ Make sure that one end of the arc is not ahead of or below the other when lifting.
- ✖ They will help lift the arc manually, and when the arc reaches a height beyond their own range, they can use wooden planks to push the arc upwards and help people with the scaffolding.

⚠ WARNING:

If your crew cannot erect the arc safely, as described above, DO NOT proceed.

◦ FIGURE 24: LIFTING THE FIRST ARCH



- ✖ When everyone is in place, carefully lift the arc to an upright position.

WARNING

If you notice deformation when lifting the first arc or if the arc is too heavy to be lifted safely, **DO NOT PROCEED.**

OPTIONS TO FOLLOW IN CASE OF DIFFICULTY:

- ✂ You may need additional members in your group and/or more scaffolding and ropes.
- ✂ Alternatively, you may need a crane, a lifting arm or a "scissor lift" type lifting platform.
- ✂ In case a crane or hoist arm is to be used, the handles must be attached to the arc at multiple points in order to distribute the weight evenly. To reduce the risk of damage, DO NOT attach the equipment directly to the arc. Instead, securely attach thick steel corners or "U" profiles along the arc at various points and then adjust your equipment there.
- ✂ If required, the arc can be lifted into multiple sections or even piece by piece. In this case, the sections of the arc should be reinforced as they are installed to prevent them from falling, causing damage, or injuring people.

6.2. PLACEMENT OF THE FIRST ARC

- ✂ Once the first arch is in an upright position, it must be properly placed inside the foundation groove or support base.
- ✂ If you have purchased our industrial base plates, the arc holes must be aligned with the first row of pre-drilled holes in the mounts.
- ✂ Refer to your engineer's technical drawings or study to determine the exact position of the first arc in relation to the foundation.

6.3. FIXING THE FIRST ARC

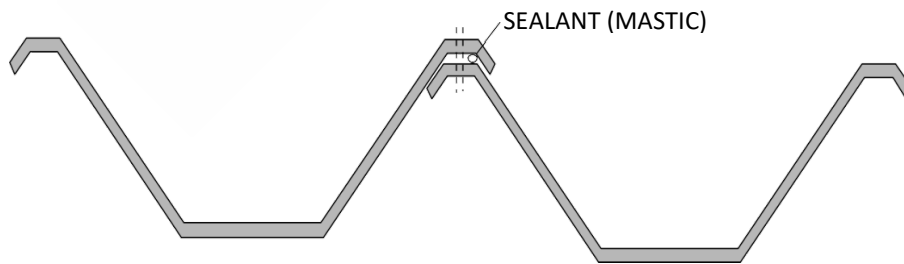
- ✂ After the first arch is placed in place, it must be secured with support ties on scaffolding and on stakes placed on the ground.
- ✂ This will create a stable anchor point, from which the erection of the remaining arches will continue.
- ✂ Support the arch so that the side walls are vertical and the arch is correctly positioned in height and width.

6.4. LIFTING THE REMAINING ARCS

If you decide to apply sealant (mastic) between the arcs, it must be applied around the edge of the second arc and subsequent arcs, before they are lifted into place.

However, the use of sealant is normally not necessary.

◦ FIGURE 25: SEALANT (MASTIC) BETWEEN THE ARCS



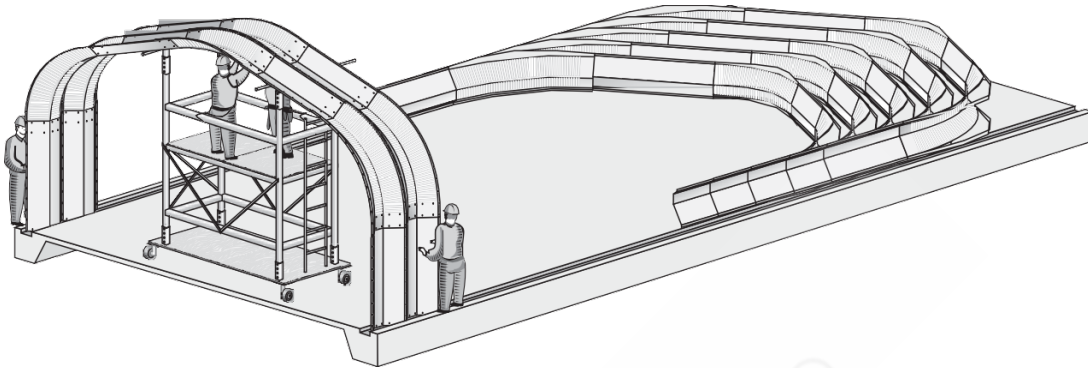
i Note:

The sealant (mastic) is highly adherent and dries very quickly, providing little or no room for post-application adjustments. Make sure that the sealant is applied continuously (without gaps) and that it does not interfere with the pre-drilled holes of the arc panels. Applying sealant between arcs is usually not necessary. The use of a sealant is at your own risk.

✂ LIFTING THE REMAINING ARCHES

- ✂ The second arc is lifted in the same way as the first and then placed on top of the edge of the first arc.
- ✂ Insert a bolt into every third or fourth hole along the ridge OR insert all bolts and nuts into all holes in the arc where they overlap.
- ✂ Do not fully tighten the bolts at this stage.
- ✂ The bolts should remain loose (tightened by hand only) until all the arches have been erected. This will allow you to correct any deviations in the width, height, or length of the arches after they have been erected.
- ✂ If necessary, you can use iron drift pins to align the holes when inserting the bolts.
- ✂ ⚠ You should not need to tear or lengthen your holes to align you. Proper use of iron pins will allow you to move and align the arcs without causing damage to the panels.

◦ **FIGURE 26: LIFTING THE REMAINING ARCHES**



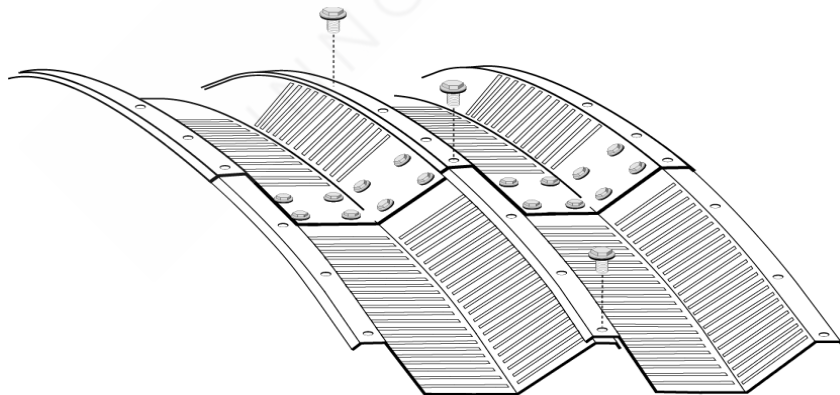
i Note:

All bolts must remain loose (tightened by hand only) until all arches are erected.

⚠ WARNING:

All arches must be reinforced with temporary supports, as described below, until the construction of the building is fully completed, including grouting, where required.

◦ **FIGURE 27: ARC-TO-ARC CONNECTION DURING CONSTRUCTION**



✂ FIXING THE ARCHES TO THE FOUNDATION

After each arch has been erected, it must be attached to the foundation with tie-down brackets or directly to the metal base connector.

- ✂ You will use the M10 bolts to connect the arc panels to the attachment base or attachment brackets. The bolts on the bases will tighten slightly. After the end of the assembly they will tighten completely.

⚠ WARNING:

Arches are particularly vulnerable to wind damage during assembly.

During assembly, make sure there are adequate temporary anchors that secure the building to the foundation and the supports to your scaffolding.

✂ If the unfinished building remains unattended for an extended period of time, or if there is a possibility of strong winds during construction, the arches must be securely anchored to the foundation.

✂ In extreme cases, it may be wise to install and tighten all bolts connecting the erected arches. These extra bolts should be removed and the remaining bolts loosened once construction continues.

Anchor bolts and supports are used to anchor the building to the foundation during assembly and to prevent the arcs from tipping over by winds. They are also necessary to achieve the load strength of the building, as specified in the technical drawings, after the completion of the construction.

Proper anchoring of the arches is critical to prevent them from tipping over in strong winds or lifting them from the foundation grooves before mortar fixing.

✂ If you are not using our base plates, tie down brackets are a must.

✂ Although anchor bolts and tie down brackets to your building are not included, they are essential.

7. BUILDING DIMENSIONS AND SHAPE CHECK

✂ As the assembly of the arches progresses, the dimensions of the building must be checked repeatedly.

✂ In particular, the length must be confirmed to ensure that the arches do not expand or shrink (accordion effect).

✂ The distance from the centre of the bolt hole of a single arc to the centre of the corresponding hole of the adjacent arc shall be 69 cm for Type I panels.

✂ The width and height of the arcs will affect this dimension.

✂ The center-to-center distance along the arches should be controlled on both sides of the building and at the top.

✂ If the building begins to move forward, it must be adjusted by pushing the sections of the arches from inside the building.

✂ A few people can move up to five arcs to realign the building (depending on the size and thickness of the building as well as the abilities of your team).

✂ If the arcs can't move enough, you'll need to remove arcs until the correct position is reached.

✂ The shape of the building should also be monitored to confirm that the walls (if any) are vertical and symmetrical.

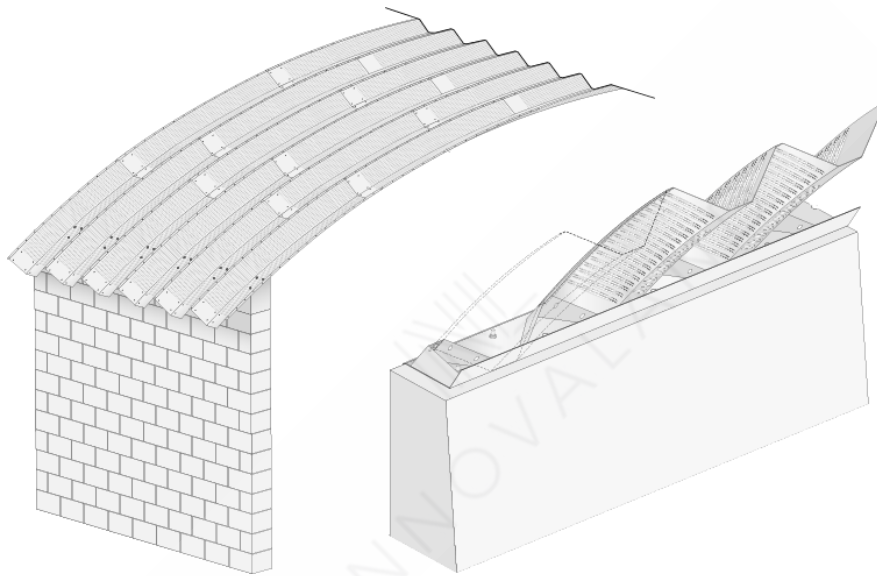
8. ERECTION OF ROOF SYSTEMS

- A Roof System or Model R is essentially a variant of one of our basic models, designed specifically for ceilings. In this case, the arches will be fixed to walls or steel beams.
- If we have designed the structural supports for your roof system, it is necessary to follow our design as stated in your technical drawings. Normally, we design structural supports only when we supply them.
- If we have not designed the structural supports, we will have provided you with the reactions of the arcs to your technical drawings. This information must be delivered to a local engineer so that they can design the brackets for you.

i Note:

We are not responsible for your engineer's work. Any deviation from our specifications can affect the stability of your building.

° **FIGURE 29 : CEILING SYSTEM**



9. START OF CONSTRUCTION OF A ROOF SYSTEM

Start by constructing the foundation and concrete walls or metal structural framework, according to our technical drawings or the study of your engineer. If you use metal beams and columns, we recommend that they be reinforced before and during the erection of the steel arches to prevent them from shifting or falling during construction.

The structural frame must be securely fixed and fully tightened before the arches are erected.

The next step is to attach the arch connector to the walls or metal frame.

There are two types of metal bases for this purpose:

1. For cases where the arc ends on the beam or wall.
2. For cases where the arch protrudes beyond the beam or wall.

Follow the technical drawings to attach the metal base to the beam or wall, a process usually done with anchor bolts, lag bolts or welding.

Make sure the joints are properly sealed with sealant (mastic) to reduce the likelihood of leaks.

The rest of the assembly of the roof system is similar to the assembly of any of our standard buildings. The only difference is that the arch is fixed to the metal base on the beam or wall instead of the foundation.

⚠ WARNING:

Make sure that the metal structure or wall design that we have proposed or that your independent engineer has designed is fully and correctly implemented. We are not responsible for any design by another engineer or for any problems arising from non-compliance with our own specifications. Confirm that the metal structure or concrete walls are statically adequate and suitable before the erection of the arches begins. Do not erect our building on any wall unless our technical drawings specify the use of walls or include load reactions and indicate that the foundation must be designed by a local engineer.

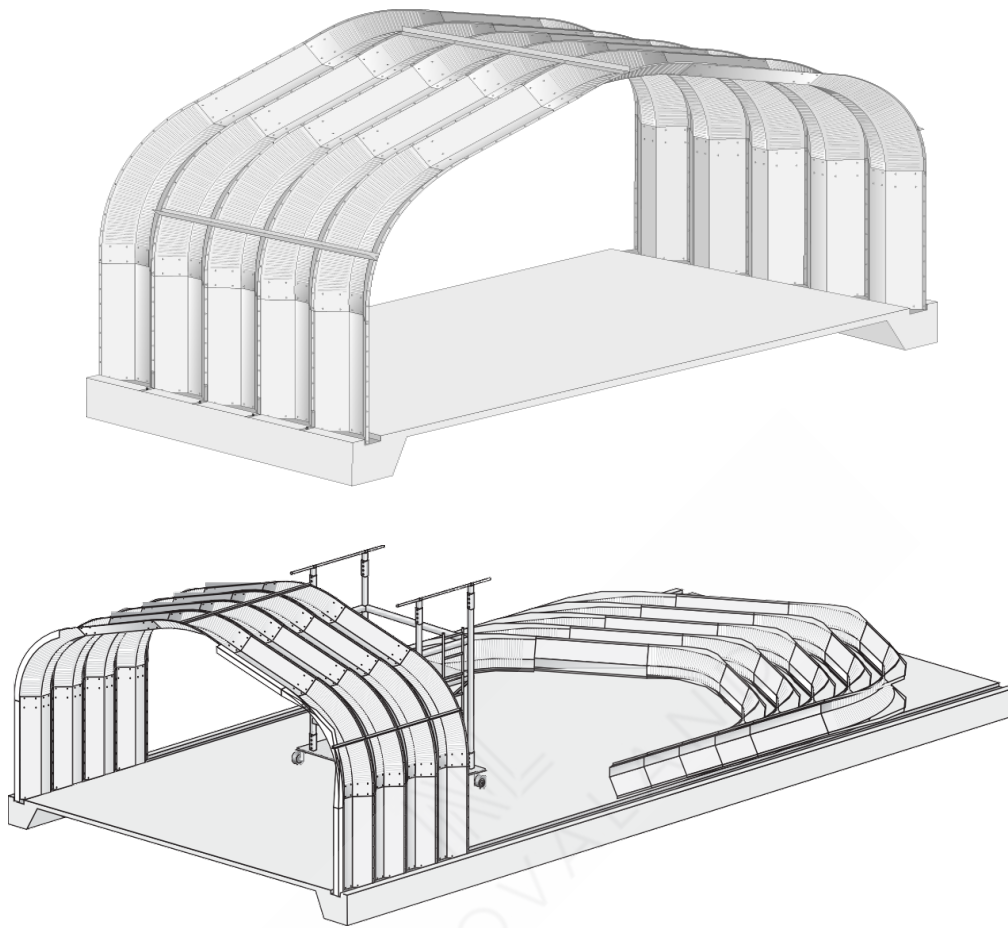
🔗 ARCH STRAPPING GUIDES

- 🔗 Arc metal brackets are a temporary guide that we provide as an aid in maintaining the correct center-to-center distances of the arcs and end wall panels.
- 🔗 The metal brackets are metal corners measuring approximately 4 cm x 4 cm which are ordered separately (request it from the sales manager).
- 🔗 They are several meters long and include pre-drilled holes with distances of 69 cm from center to center for the Type I panel.

⚠ WARNING:

- 🔗 Make sure you use the correct holes in the metal corners.
 - 🔗 It can be helpful to mark the right holes to avoid mistakes.
- 🔗 Arc Metal Brackets must be used at least three points on the arcs:
- ☒ At the top or center of the building.
 - ☒ At the points of connection with the edges (eaves) on both sides of the building.
- 🔗 Normally, you will need at least six pieces of retaining strap with your 300cm long building.
- 🔗 If you don't have enough metal brackets to cover the entire building, you can gradually move the guides from the previous arches to the next ones during the erection of the arches ("leap-frog" method).

◦ **FIGURE 30: TEMPORARY ARC METAL BRACKETS**



⚠ WARNING:

Arch metal brackets are only used as a guide – they are not designed to provide structural support to the building and may cause excessive snow accumulation.

✂ Once all arches have been erected, the metal brackets must be removed and stored.

REINFORCEMENT OF THE ARCHES

✂ It is extremely important to support and maintain the correct shape of the building when erecting the arches. This will make it easier to erect the subsequent arches, and the reinforcements used to maintain the shape will help support the arches throughout the assembly.

✂ The center of the foundation must be located and marked.

✂ With the help of the laser, adjust the center of the arc (peak) to be located just above the center of the foundation.

✂ Reinforce the arc on the eave panels to maintain this position.

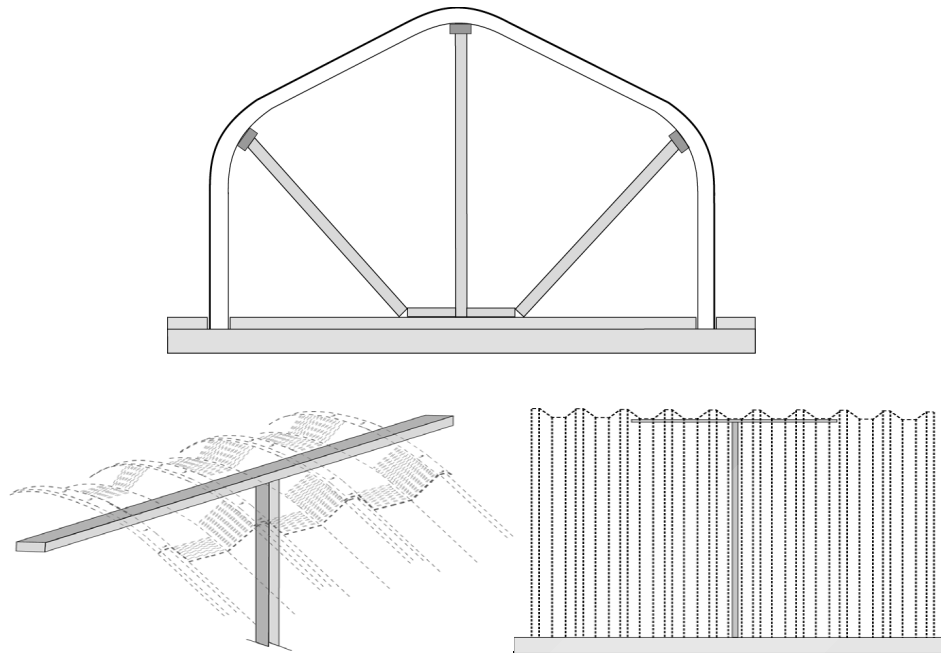
✂ The arch must also be reinforced at its top to maintain the correct height.

✂ Reinforcements can be made using appropriately sized timber, connected to form a "T" type structure or alternative scaffolding, and adjusted to the height with wooden scaffolding screws on top. (see below the Methodologies section) or screws with wood on top (as used in formwork) for slabs

✂ . These reinforcements must be placed every 3 meters along the entire building.

✂ Refer to your technical drawings for the exact height and width of the building.

◦ **FIGURE 31: TEMPORARY ARCH SUPPORT**



⚠ WARNING:

Arches can collapse if they have not been properly reinforced during the assembly of the building.

SIDE OPENINGS

Not all buildings have side openings.

Window frames are not considered side openings in the context of this section of the manual.

If you have ordered a side opening, this will be listed on your order and reflected in your technical drawings.

We offer various types of side openings, depending on the size and model of your building, as well as the size and style of side opening you have ordered.

For information specific to your side opening, please refer to your technical drawings.

⚠ If you have any questions, DO NOT proceed with the assembly. Contact the Technical Support Department.

As mentioned above, there are several types of side openings, each of which requires its own installation method. The instructions below are general and apply to most side openings.

i Note:

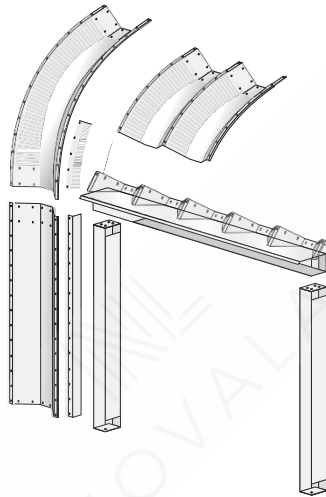
In addition, there must be at least two arches between the side opening and any other opening on the same side of the arch.

If the location of the side opening is specifically specified in your technical drawings, you can NOT change it.

INSTALLING SIDE OPENINGS

- ✚ Erect the arches of the building according to the previous instructions. And before all the bolts are tightened, start installing the side openings
- ✚ Make sure the temporary supports are in place throughout the building.
- ✚ Remove the arcs that will make the opening as well as the arcs above the opening.
- ✚ Start with the inner columns and then with the beam.
- ✚ The columns are fixed to the foundation with expansion bolts. Make sure they are parallel and the width is equal to the opening
- ✚ Fix the curved corners on the sides of the arc (Do not tighten completely).
- ✚ Cut the curved corners on the spot (field cut) so that they fit just below the canopy beam.
- ✚ The columns and beam must be plumb and the opening squared before tightening the bolts that secure the frame. Tighten the 16 mm diameter concrete bolts with a torque of 200 Nm.
- ✚ Proceed to install the metal base on the beam.

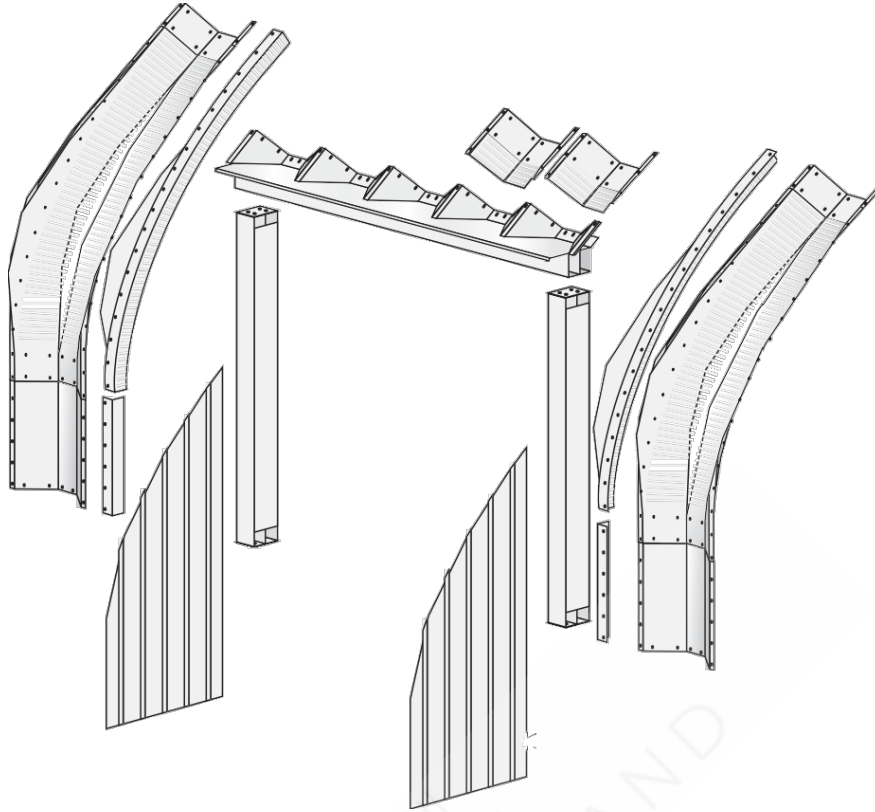
◦ **FIGURE 32: SIDE OPENING ON A STRAIGHT WALL**



COMPLETING THE OPENING

- ✚ Erect the arches above the opening, then tighten all the bolts on the arc panels and arcs.
- ✚ Apply sealant (mastic) around the perimeter of these panels.

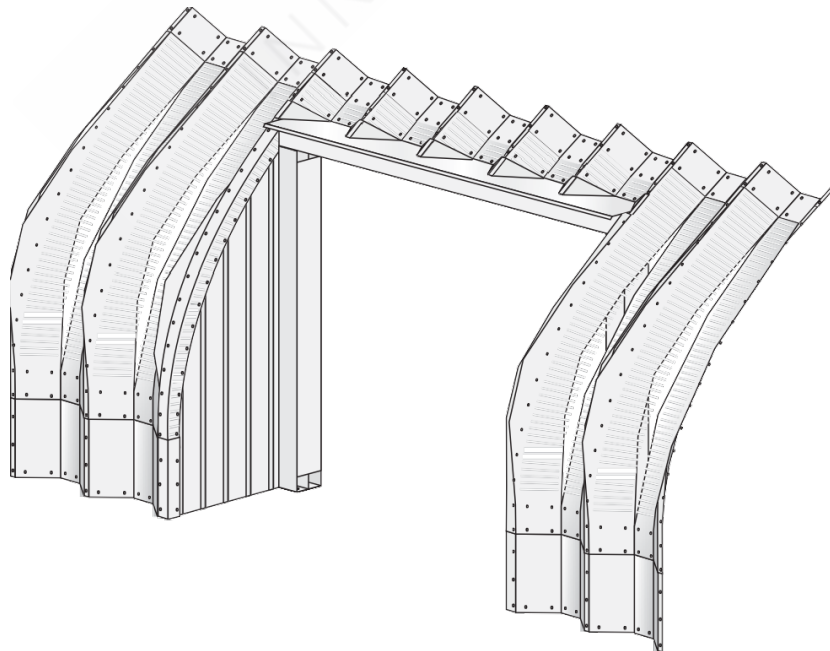
◦ **FIGURE 33: DETAILED REPRESENTATION OF THE INTERIOR SIDE OPENING**



i Note:

Enclosure panels are not supplied by our company, they are ordered by 3rd parties. Attach the enclosure panels to the outer columns, meshes and curved corners using self-drilling screws to complete the opening.

◦ **FIGURE 34: INTEGRATED INTERNAL SIDE OPENING**



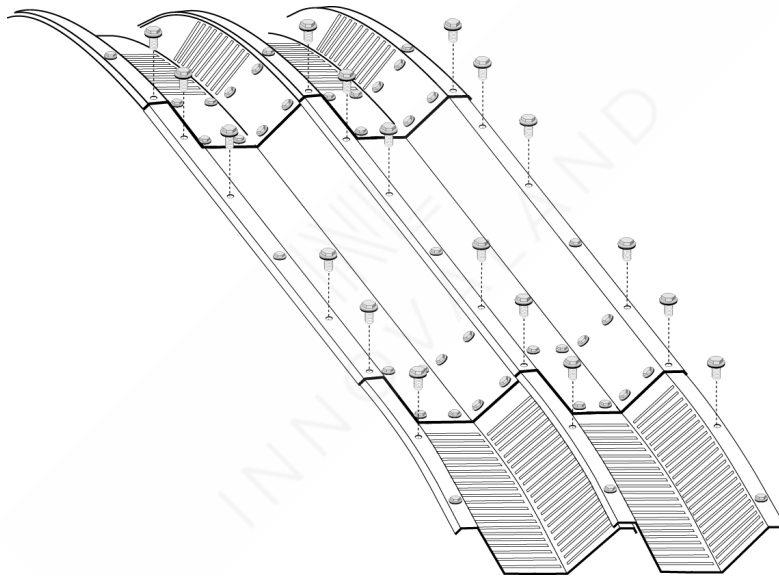
COMPLETION OF THE ARCHES

- ✂ After all the arches have been erected and the building has been checked according to the technical drawings to confirm that the length, width and height are correct and that the walls are vertical, you can proceed to complete the assembly of the arches.
- ✂ Insert bolts into all the empty holes of the arches, then tighten all the bolts.
- ✂ Start tightening the bolts from the bottom of the lower arc panels and continue upwards to the top of the building.
- ✂ The bolts must be tightened with a torque of 14-16 Nm. The sealing washers are compressed to create a watertight seal. Overtightening the bolts can damage the washers and cause leaks in the building.
- ✂ After the bolts are installed in all the empty holes and tightened properly, remove all temporary arc metal brackets from the building.
- ✂ Install and tighten the bolts on all remaining blank holes in the arches.

⚠ WARNING:

Ensure that the arcs are securely reinforced and that appropriate safety equipment is used when installing and tightening the bolts. The building will not meet the load resistance specifications unless all bolts are installed and tightened correctly.

◦ **FIGURE 40: INSTALLING THE REMAINING BOLTS**



LEAK AVOIDANCE

When manufactured correctly, the arcs do not leak, even without the application of sealant (mastic) between the panels and/or arcs.

- ✂ To reduce the likelihood of leaks, make sure that the following are adhered to:
 - ✓ Your panels are not damaged.
 - ✓ Do not lengthen or tear any of the bolt holes.
 - ✓ The bolts are properly tightened.
 - ✓ The bolts are not overtightened so as not to damage the sealing washers.
 - ✓ The panels overlap correctly.
 - ✓ The arches overlap correctly, taking into account prevailing winds and rain.
 - ✓ All accessories, including curved corners, skylights, ventilation adapters, door and window frames, are properly sealed with sealant (mastic).

ARC ERECTION ASSEMBLY SUMMARY

Regardless of the manufacturing method you choose, we recommend that the following instructions are ALWAYS followed:

- ✂ All joints (overlaps) must be properly overlapped to ensure proper water drainage.
- ✂ If a sealant (mastic) is used, make sure it is applied carefully to the joints and joints.
- ✂ The starting point for the erection of the arches depends on the direction of the prevailing winds.
- ✂ All arches must be securely attached to the foundation with anchor bolts and mounting brackets or base plates.
- ✂ The arches must be reinforced during assembly to maintain the correct height and shape, as well as the vertical placement of the walls.
- ✂ Use the metal brackets to maintain the correct center-to-center distance on the arc panels and remove them once the arcs have been erected.
- ✂ All bolts must remain tightened by hand only until all arches are erected and the dimensions of the building are confirmed.
- ✂ Place all bolts along the joints where the arches overlap
- ✂ After all the arches have been erected and the dimensions of the building have been confirmed, tighten the bolts with a torque of 14-16Nm and remove the retaining straps and internal reinforcements.
- ✂ Make sure curved corners are installed at each end of the building (where applicable).

➤ **IMPORTANT:**

If you follow the procedures above, the arches will be properly aligned, properly placed, secure in foundation, and placed at the right height, width, and shape.

This is necessary to achieve the required load resistance of the building and to facilitate the correct installation of the final walls.

⚠ **WARNING:**

Any mistakes in the assembly of the arches will negatively affect the static strength of the building and will likely require adjustments or modifications in order to install the final walls. **DON'T GO ANY FURTHER.** Contact Technical Support.

10. STANDARD WORK SCHEDULE

- ✂ Before the Arrival of the Assembly Workshop (10 days in advance)

Manager: Foreman

Step 1: Have carefully read the technical assembly guide and technical drawing. And ask questions or clarifications to Innovaland's technical support. Also to communicate the assembly guide to the workers who will be working so that they can read it carefully before starting the assembly.

Step 2: Checking Diagonals according to the Technical Drawings
Measurement and confirmation that the dimensions of the foundation are in accordance with the technical drawings.

Step 3: Check Alignment and Smooth Surface
Confirmation that the foundations are aligned and have a smooth surface at the points where the metal bases or arch supports will be installed.

Step 4: Inspection of Lifting Equipment and Scaffolding
Check that all scaffolding and lifting platforms are available and functional.
Confirmation of the installation location of the scissor lifts and other equipment.
Provide instructions on the exact type of scaffolding, including height, width, and assembly points, to ensure that they are properly installed when assembling the building.

Step 5: Site Access Analysis

The foreman must study the layout of the construction site for the entry and exit of vehicles and machinery. Planning of parking spaces for forklifts, cranes and trucks.

Step 6. Certification that there is sufficient space around the construction site for safe assembly, according to the requirements of the technical assembly guide.
Check that the construction site and the perimeter area are clear of obstacles that may hinder the assembly process.

Step 7. Note of preliminary assembly area of the arches.

Step 8. Confirmation that the building components are on site and that there is a triple-printed technical drawing in a distinct form and size.

Step 9. The appropriate tools and accessories are available as provided in the technical assembly guide and technical drawings. See the list of necessary tools and equipment etc

Step 10. Selection of the Methodology for the erection of the arches and its disclosure along with the work schedule to the site managers and to the Safety and Health Officer for confirmation (where applicable)

First Assembly Day

Manager: Foreman

Step 1: Make sure that all workers have carefully read the technical assembly guide twice. And ask if they have any questions or clarifications. And that he will give instructions and not to execute something without his prior approval and if something for any reason does not go smoothly inform him immediately.

Step 2: Organizing Components

With the help of all workers to confirm that all components are present on the construction site before the start of work. Separation and sorting according to the assembly plan

Step 3: To appoint Two qualified persons who will assign them under the direction of the Contractor to place the metal bases or supports near the foundation according to the technical drawings.

NB: At this stage, these people will place the metal bases near the foundation

Step 4: At the same time, give instructions with his guidance to the rest of the workers to start assembling arches. The first arc should be done with the full supervision of the foreman to ensure that it will be properly assembled.

NB: All screws must be installed on the belly of the panel and tightened by hand.

Step 5: Then the foreman together with the skilled workers will have to install the metal bases and supports. In case an alignment cord needs to be inserted to make sure that they will be installed correctly.

Checking the correct installation of metal bases

- After installation, it should be confirmed that the bases are parallel to each other. The check that they are parallel should be done every 1.5 meters approximately.
- The diagonals should also be made sure after the completion of the installation of the bases.

Step 6. In the event that the work of installing the metal bases or supports is finished, all workers will have to help in assembling the arches.

Step 7. The foreman should confirm the plan for the erection of the arches. All the lifting equipment should be checked that they are on the construction site, make sure that all the lifting machinery, crane scaffolding are in the correct positions for the next day of erection of the arches.

Next Assembly Day(s)

Manager: Foreman

- Step 1:** Make sure that all workers have read the technical assembly guide again and carefully twice. And ask if they have any questions or clarifications before erecting the arches.
- Step 2:** To prepare the lifting equipment for the crane. To install the metal brackets on the panels with skilled workers. (Where applicable)
- Step 3:** Give the appropriate instructions for the erection of the first arches. He should appoint the appropriate people in the appropriate positions.
- Step 4:** Erection of the first arch.
NB: All screws must be installed on the belly of the panel and tightened by hand.
- Step 5:** Erection of the Second Arch.
NB: All screws must be installed on the arc overlay and tightened by hand.
- Step 6:** Erect the arches. Make sure that every 3 arches you maintain the height, width and length. If not, correct and move on to the next ones.
- Step 7:** Complete the Erection of all the arches.
- Step 8:** Check the final dimensions of the building.
- Step 9:** Start screwing with a torque of 14-16 NM from bottom to top on each side until you end up at the top.
- Step 10:** Follow the building's completion list to be ready for delivery.
- Step 11:** Final Walls – Openings. Refer to the installation guide.

11. FINAL WALLS

This section is about the end walls

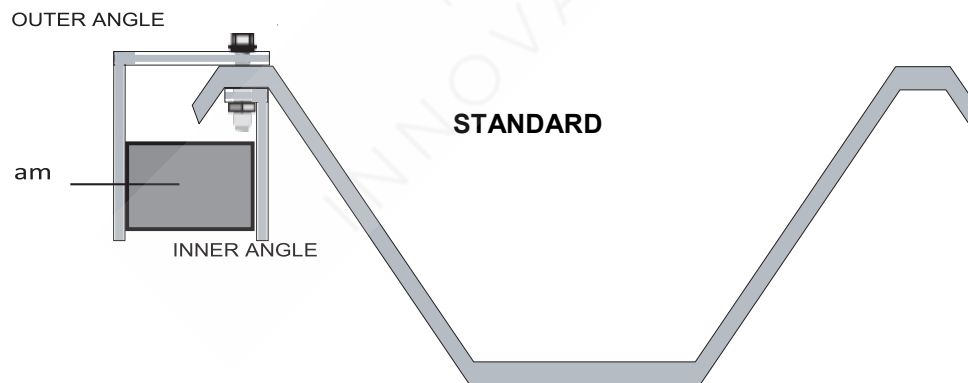
- ✂ The final walls are installed after all the arches have been erected and all the bolts on the arc joints have been tightened. The arches must be correctly placed, secured to the foundation and formed to the correct profile before the installation of the final walls.
- ✂ Internal and external curved corners must also be installed.
- ✂ The first step in installing any type of end wall (either solid or opening) is to mark the line of the center of the building at the curved corners and foundation. Use this reference point to correctly position the end wall panels.
- ✂ Arc retaining straps are used during the construction of the end walls to maintain a stable 69cm center-to-center distance between the corrugated panels of the end walls.
- ✂ If you have purchased finished walls from the same material as the arches, the center-to-center distance will be 69 cm like the type I panel.
- ✂ As with arcs, do not fully tighten the bolts on the end wall panels until all the panels are installed, the end wall is vertical and horizontal, and the openings, if any, are squared.

11.1. FOAM STRIPS – Optional

The foam strips are sourced from the local market. Talk to your local dealer for more information.

Place the foam in place between the inner and outer curved corners around the arc, before installing the end wall panels. Foam strips seal the corrugated panels of the end walls at the curved corners, preventing water and air from penetrating.

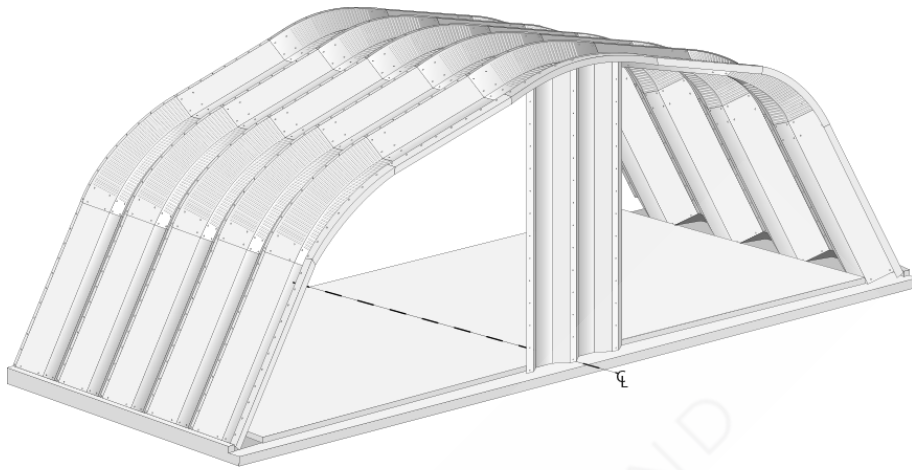
◦ **FIGURE 41: FOAM STRIPS**



INSTALLATION OF SOLID FINAL WALLS

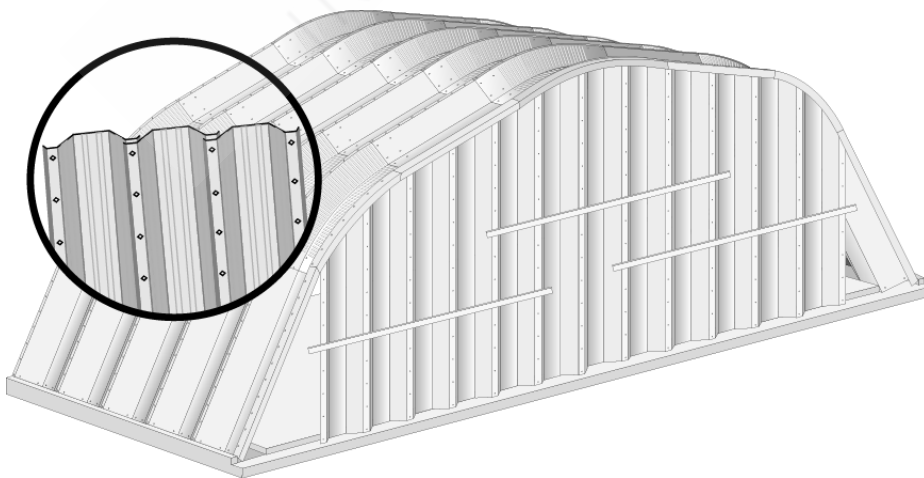
 After the foam strip is installed, install the 2 center taller panels of the end wall first between the inner and outer curved corners. The panel coating should be facing outwards, away from the building. The panels of the final wall are symmetrical to the line of the center of the building. The center line determines the point at which the center bolt holes of the first two (higher) panels of the end wall are located, where they overlap.

◦ **FIGURE 42: INSTALLATION OF CORRUGATED PANELS ON A SOLID END WALL**



 Then install the remaining end wall panels, working in the correct order outwards, towards the side walls. Use the arc metal brackets to maintain the correct center-to-center distance between the bolt holes of the adjacent end wall panels.

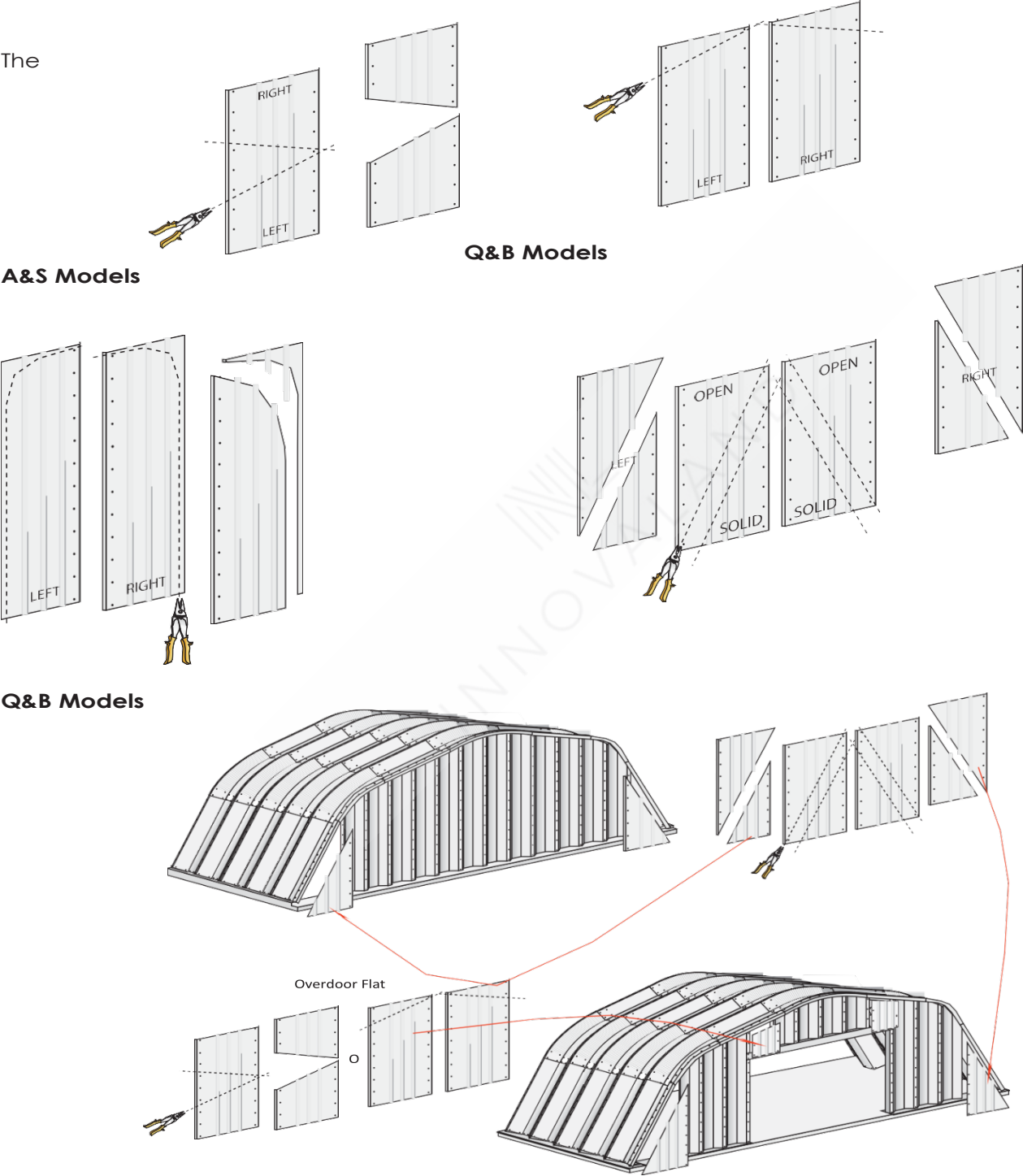
◦ **FIGURE 43: USE OF SUPPORT STRAPS ON THE END WALLS FOR CORRUGATED PANELS**



✂ The last panels to be installed are the corner panels. These are flat steel panels that bridge the gap between the last trapezoidal panels of the end wall and the arches. To avoid damage during transportation, these flat panels have not been cut in advance. When completing the final wall, each of these flat panels must be cut to fill the gaps.

◦ **FIGURE 44: CUTTING CORNER PANELS AND FLAT PANELS ON SITE**

FLAT SHEET METAL



i Note:

The cutting of the corner and flat panels is carried out on site (field cutting) to ensure their precise application to the final wall.

The corner panels bridge the gap between the last corrugated panels of the end wall and the arches.

Flat panels are used to fill gaps in the connections and ensure the completion of the final wall.

Make sure that all cuts are made precisely, according to the dimensions specified in the technical drawings.

Use the right cutting tools for clean edges and proper fit.

CUTTING AND ADJUSTING FLAT PANELS

When cutting the flat panels, place each panel on the end wall and curved corners, aligning the bolt holes.

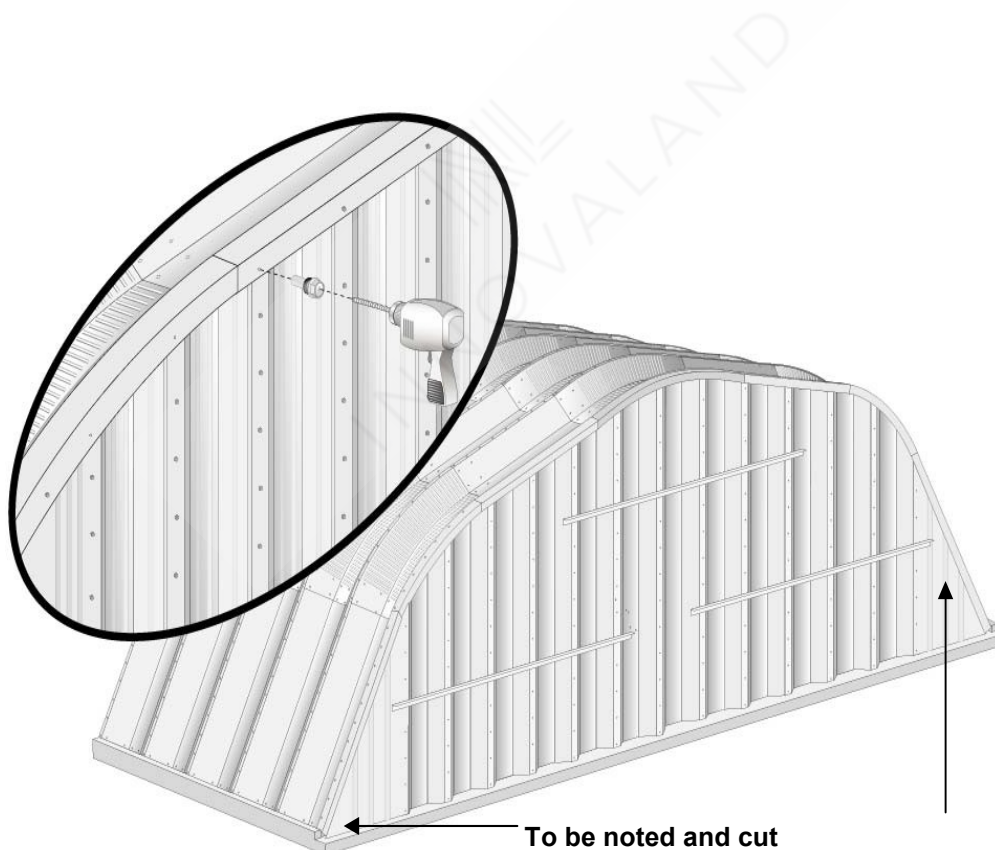
Mark the panels and cut them to fit properly, using metal shears or a cordless tool specific for sheet metal.

Make sure to leave a small gap (about 2.5 cm) for the foam strips to hold.

NOTE:

Do not discard residue after cutting the flat panels. Depending on your building's specifications, you may need to cut more than one piece from each panel. If your panels are nested, cut the larger pieces first. If you have any questions or concerns about the above information, please contact Technical Support before proceeding with cutting.

◦ **FIGURE 45: FIXING THE PANELS OF THE FINAL WALL AT THE CURVED CORNERS**



11.2. FIXING THE FINAL WALL PANELS TO THE CURVED CORNERS

- ✂ After all the panels of the final wall have been installed, make sure that the wall is vertical and that the correct center-to-center distance has been maintained. The final wall must then be fixed at the curved corners.
- You need to drill 12 mm diameter holes on site (field-drill) through the outer curved corner at the tops of the final wall panels.
 - In addition, drill holes in the inner curved corner inside the valleys of the final wall panels. Fix the curved corners to the end wall panels using the supplied bolts.
 - The corner panels must be fixed to the outer curved corner through holes to be drilled on site, approximately every 20-25 cm along the outer edge of the panel.
 - After the end wall panels are fixed to the curved corners, install all remaining bolts between the end wall panels, removing the temporary end wall metal brackets as you encounter them. The bolts must be tightened with a torque of 14-16 Nm

11.3. FIXING THE PANELS OF THE FINAL WALL TO THE FOUNDATION

- ✂ After installing each panel of the final wall, it must be securely attached to the foundation with anchor bolts and tie-down brackets or to the metal INDUSTRIAL BASE PLATES through the pre-drilled holes.
- If no industrial base plates have been purchased, a bolt hole must be drilled on the spot in the belly of the final wall panel so that it can be attached to a metal bracket. For the final walls, the tie-down brackets are placed inside the building, in the center of each panel of the final wall. Refer to your technical drawings for the exact locations of the anchor bolts.

⚠ WARNING:

Although anchor bolts and attachment brackets are not usually supplied with your building, they must be installed if you have not purchased our industrial base plates. They are essential to anchor your building to the foundation and prevent the end walls from toppling over or being lifted by strong winds during construction.

11.4. INSTALLATION OF END WALLS WITH FRAMED OPENINGS

If you have ordered framed openings, you will have been provided with the steel building components for the framing of a standard sliding door.

As doors vary from manufacturer to manufacturer, you are responsible for fitting the door to our system or vice versa.

✂ For end walls with framed openings, the center line of the opening in the foundation must first be determined and noted. From this point, measure half the distance of the width of the opening to the left and right of the centerline. This will indicate the position where the edges of the end wall panels are placed on each side of the opening.

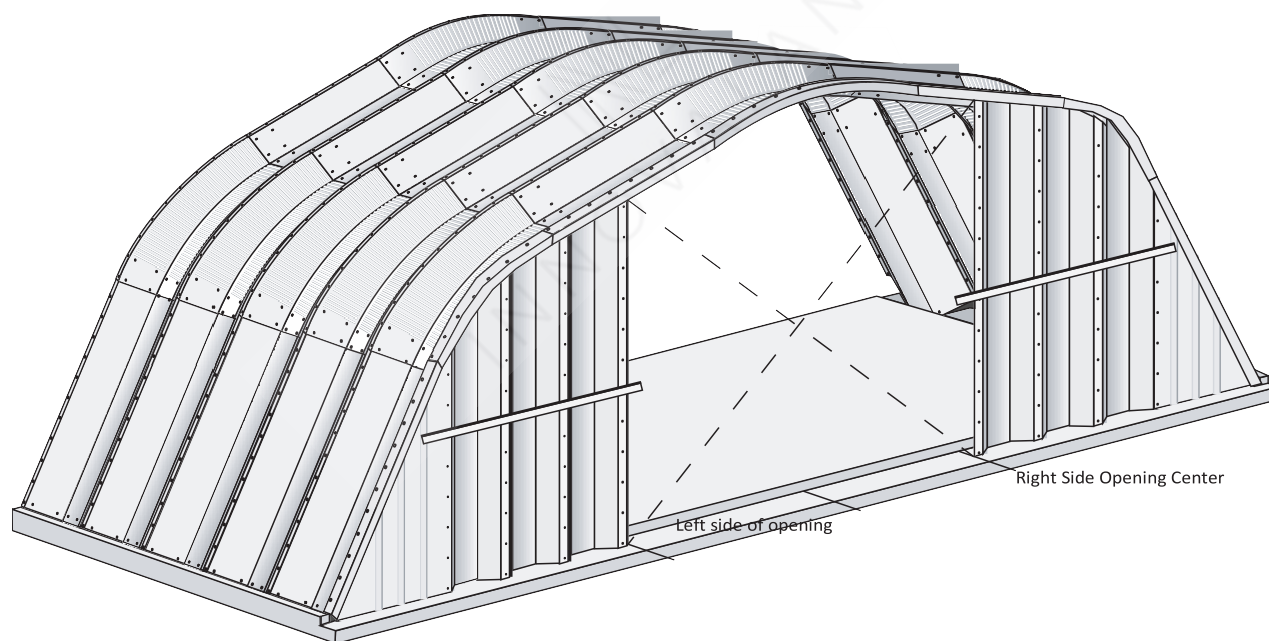
✂ After these first panels are installed, install the remaining end wall panels and flat corner panels, starting from the sides of the frame facing out, as described above for solid end walls.

⚠ Do not fully tighten the bolts at this stage only by hand.

Use the end wall metal brackets to maintain the correct center-to-center distance between the end wall panels, as described above.

If there are multiple framed openings on the same end wall, repeat the process for each opening.

◦ FIGURE 46: INSTALLATION OF THE PANELS NEXT TO THE OPENING



ADJUSTING AND FIXING THE PANELS TO CREATE A SQUARE OPENING

The panels must be adjusted so that the resulting opening is squared.

The distance between the panels must be parallel from the top to the base of the opening.

The diagonal distance, from the top of one panel to the base of the opposite panel, must be equal on both sides.

After the opening is squared and in the correct dimensions, tighten all the bolts and fasten the end wall panels to the curved corners and foundation, as described above for solid end walls.

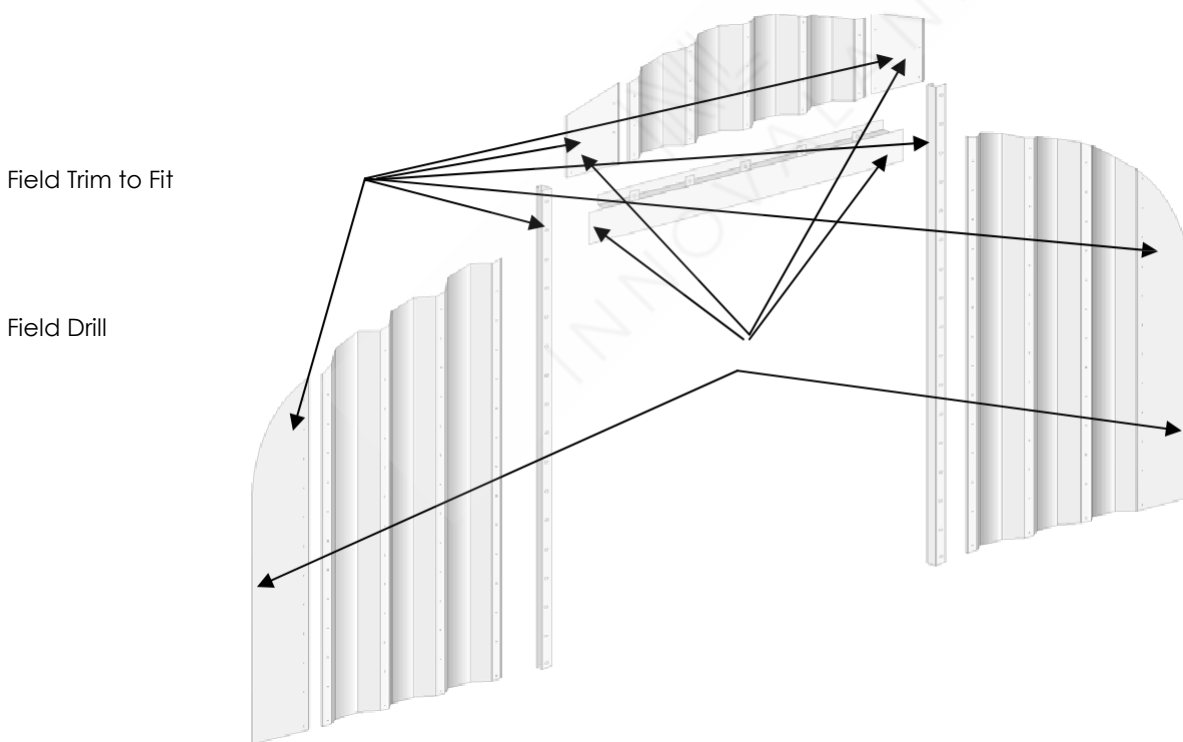
Once you have confirmed the correct size, location and shape of the opening, proceed to install all the remaining bolts and tighten them with a torque of 14 -16 Nm

Remove the temporary end wall support brackets as you go.

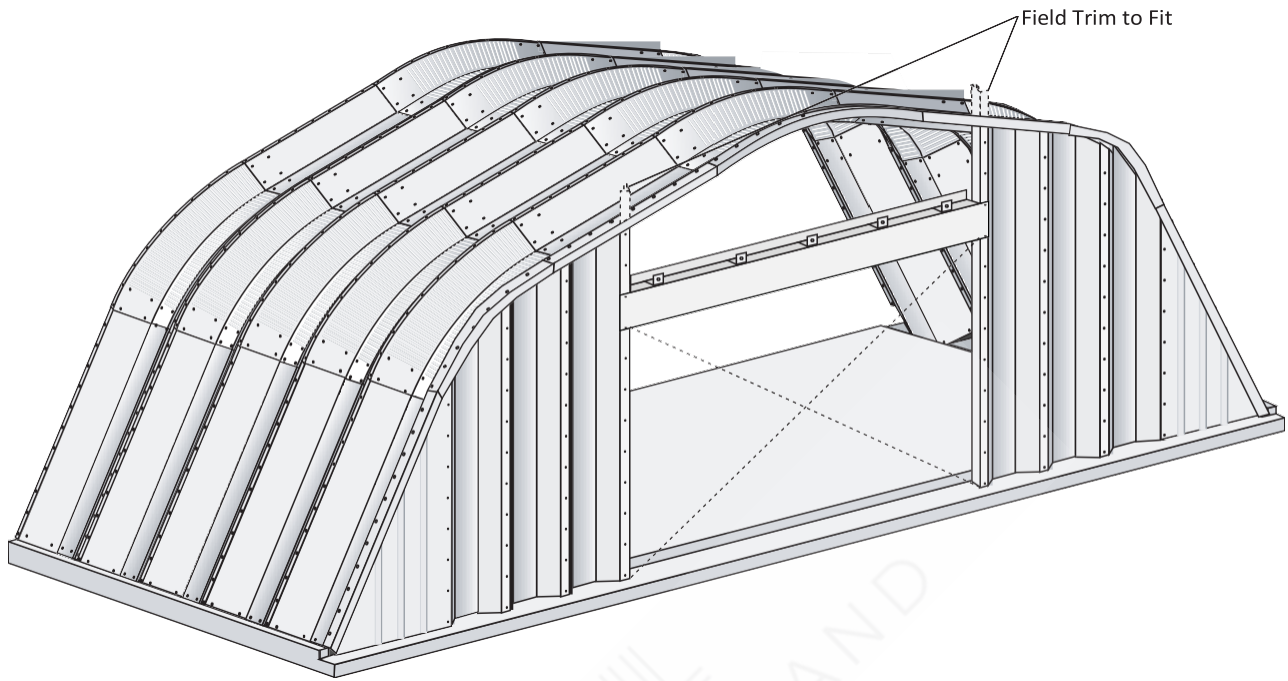
11.5. INSTALLATION OF VERTICAL REINFORCEMENTS AT THE DOOR OPENING

- A vertical reinforcement is provided for each side of the opening in the final wall.
- This reinforcement is screwed onto the final wall panel located next to the opening.
- Place the reinforcement upright, against the end wall panel.
- The reinforcement is provided longer than the required length. Place it in place and mark it about 2.5 cm below the ridge of the arc. Cut the reinforcement at this point.
- Place the reinforcement between the inner and outer curved corners at the top and fix it to the adjacent panel of the end wall by mounting the fasteners.
- Repeat the process for the opposite side of the opening.

◦ **FIGURE 47: DETAILED REPRESENTATION OF THE FINAL WALL WITH A FRAMED OPENING**



◦ **FIGURE 48: INSTALLING THE DOOR FRAME**



INSTALLATION OF DOOR FRAME AND PANEL ABOVE THE DOOR

Step 1: With the reinforcements in place, position the connector beam so that the bottom of the beam forms a squared opening, with the height specified in your technical drawings.

Step 2: Drill two holes on the spot through the tabs on each side of the connecting beam, towards the end wall panel and the column and fasten with bolts.

Step 3: If the door opening is wider than 2.8m, the connecting beam can be provided in two sections. The two beams are connected to each other by a splice plate, which is factory-welded to one of the sections of the beam.

Step 4: Place the second door connector inside the base plates and fasten with bolts through the holes to be drilled in place.

INSTALLATION OF PANELS ABOVE THE DOOR

After the connecting beam has been fixed in place, proceed to install the end wall panels above the door.

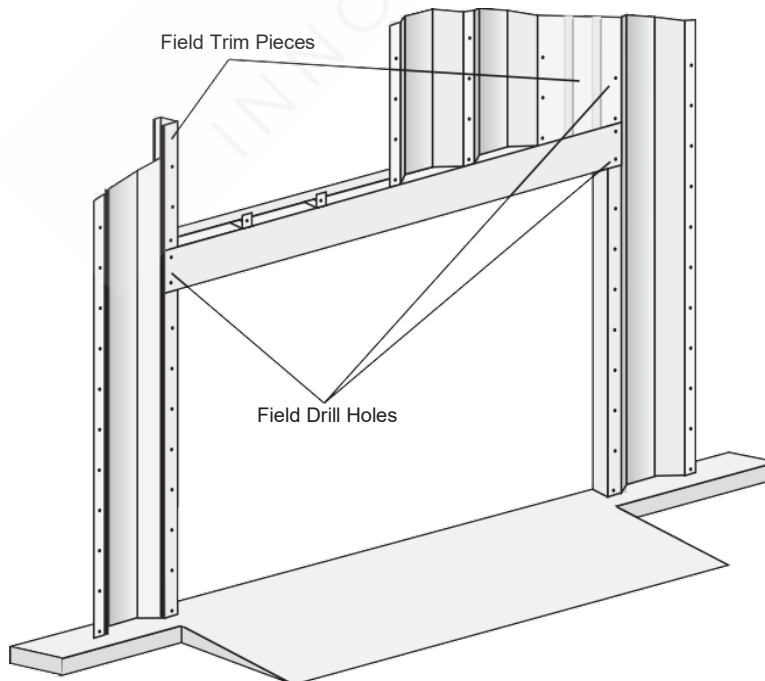
These panels are installed in the same way as the rest of the end wall panels, except that the underside of these panels is fixed to the metal base of the connecting beam. Start from the center of the opening and work your way out. The flat panels above the door are placed in the outer corners of the opening.

The high side of the flat panel above the door is screwed to the last panel of the end wall above the door, while the low side is attached to the end wall panel and the column next to the opening. The bolt holes on the low side of the flat panel will not align with the existing holes in the end wall panel (and in the amplifier), so they need to be drilled in place.

Use the flat panel holes as a guide and drill through the end wall panel and the amplifier.

After all the panels are placed above the door, tighten all the bolts and fasten the end wall panels and flat panels to the outer curved corner.

◦ **FIGURE 49: INSTALLATION OF END WALL PANELS ABOVE THE DOOR FRAME**



11.6 FIXING THE END WALL PANELS TO THE CURVED CORNERS

After all the panels of the final wall have been installed, make sure that the wall is straight and vertical and that the correct center-to-center distance has been maintained.

Next, the panels of the final wall must be fixed to the curved corners. You will need to drill 12 mm diameter holes on site (field-drill) through the outer curved angle on the tops of the overlapping panels of the final wall.

Also drill holes through the inner curved angle into the cavities of the end wall panels.

Fix the curved corners to the end wall panels with the bolts provided.

The corner panels must be fixed to the outer curved corner through holes to be drilled in place, approximately every 23 cm around the outer edge of the panel.

11.7 FIXING THE FINAL WALL PANELS TO THE FOUNDATION

After each end wall panel has been installed, it must be securely attached to the foundation with anchor bolts and tie-down brackets or to the industrial base plates, using the pre-drilled holes.

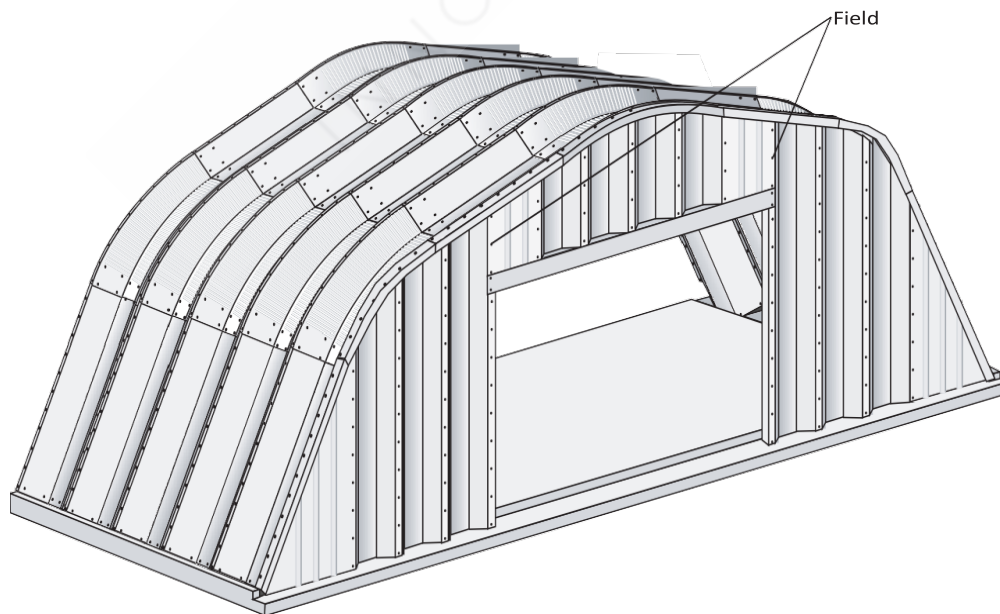
If no industrial base plate has been purchased, a hole in the bottom of the end wall panel will need to be drilled on the spot to secure it to a metal bracket.

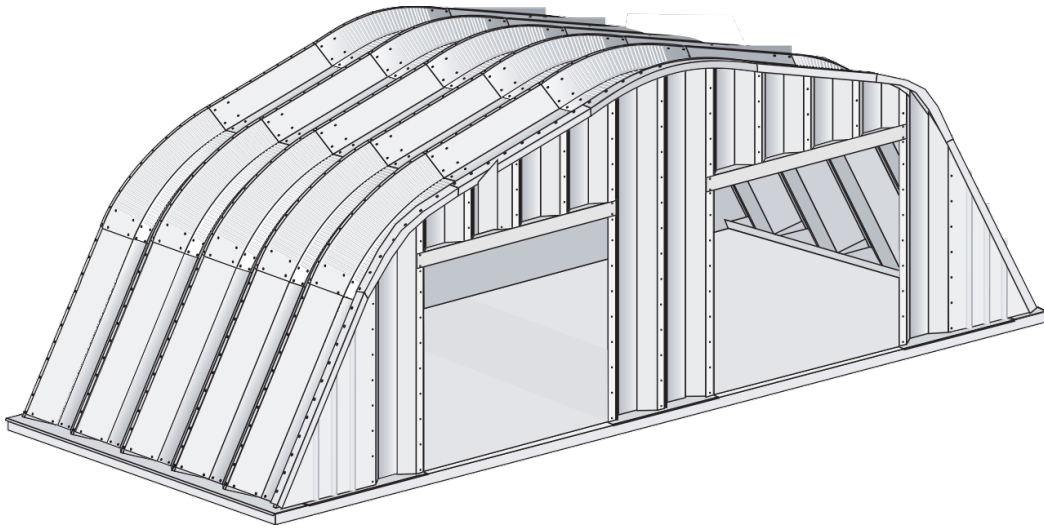
For the final walls, the tie-down brackets are placed inside the building, in the center of each panel of the final wall. Refer to the technical drawings for the correct positions of the anchor bolts.

⚠ WARNING:

Although anchor bolts and tie-down brackets are not usually included in the building supply, they must be installed if you have not purchased the base plates. These components anchor your building to the foundation and help prevent the end walls from tipping over or lifting from strong winds.

◦ **FIGURE 50: COMPLETED END WALLS WITH OPENINGS**





11.8 PARTITION AND RECESSED WALLS BY OTHERS

Walls can be installed inside the arches as partition walls or as recessed walls to create an arch overhang, if they have been ordered for these purposes.

The installation of partition or recessed end walls is similar to the installation of standard end walls (either solid or opening).

The only difference is that partition/interior walls are fixed to the arches with partition curve angles, which are usually fixed to the belly of the arc panels, instead of their edge.

To anchor the end wall dividers to the floor, an end wall base connector is usually used.

INSTALLATION OF A PARTITION WALL

Partition walls are usually placed in the center of the cavity of an arc.

A pair of curved spacer angles is overlapped through the bolt holes and fixed to the arc cavity through a single row of bolt holes, which you need to drill on the spot in the center of the arc cavity.

For arc panels with a straight wall and a straight roof, use the existing holes in the curved corners as guides.

For arc panels with a curved edge, curved roof and/or ridge, where the existing holes in the curved corners are aligned with a flat surface of the panels (between the ridges).

This ensures that the bolts are aligned and that the sealing washer fits correctly.

Fix the curved corners to the arc.

Where necessary, drill additional holes in place through the curved corners and arc panels (at the edges and ridge) to ensure the fittings are properly connected.

From three or more points along the arc, hang a plumb-bob from the bolts of the curved corners to the foundation and mark these points on the floor or alternatively use a laser level to show you the vertical.

Use a chalk to create an alignment line on the foundation.

Place the end wall mount connector in place, aligning the holes of the anchor bolts with the chalk line.

Mark the anchor bolt locations on the foundation, temporarily remove the connector and drill holes for the expansion bolts (not included).

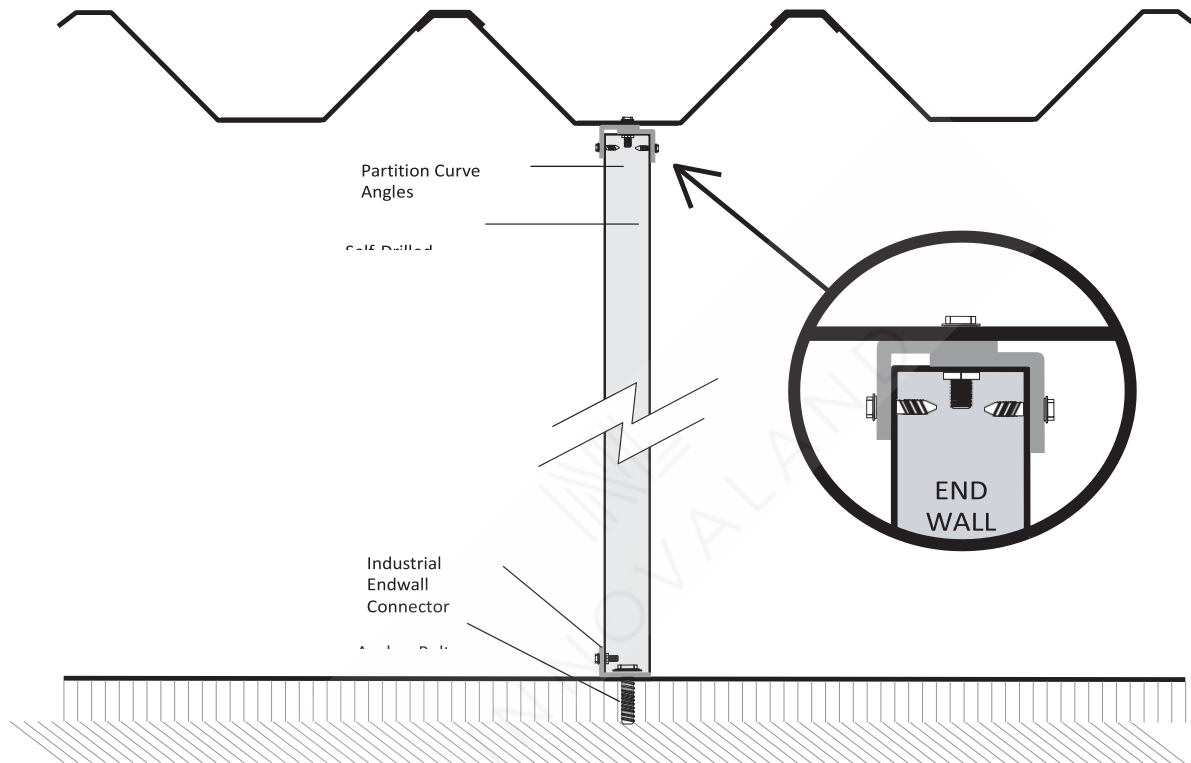
Install and secure the mount connector following the bolt manufacturer's instructions and proceed to install the end wall as you would with a standard end wall.

11.9 INSTALLATION OF SPECIAL DIVIDING CORNERS

If you are building your own partition or partition wall and have purchased partition corners, a variation of the standard curved partition angle is provided.

You can use one or more of these angles, in various configurations, to attach or seal your wall to the arch. Install the non-standard divider angles by following the same procedure described above for the standard divider angles.

◦ **FIGURE 60: CROSS-SECTION OF A CORRUGATED PARTITION WALL**



⚠ WARNING:

We are not responsible for final walls that we have not supplied, nor for their effect on our structural elements. Any such final wall must be fully self-supporting and must not exert any load on our construction.

12. ACCESSORIES

12.1. SKYLIGHTS

If you have purchased fiberglass skylights, the steel roof panels they replace the skylights will usually be included in your building.

If you have only purchased the skylights, you will need to remove the steel panels from the locations where the skylights will be installed in order to complete the assembly of all the arches.

⚠ WARNING:

Do not attempt to erect an arch containing a skylight. Skylights will break if they are installed in an arch before it is erected.

Only one skylight per ten arches of your building or one skylight per five arches should be installed if they are placed alternately from side to side.

As the erection of the arches progresses, you will need to remove the ceiling panel from the location where you plan to place the skylight.

First erect three to five arches beyond the scheduled skylight location before removing the steel panel. Do not install the skylights until all arches have been erected, temporarily leaving the steel panels outside.

To install the skylight, simply remove the corresponding arc panel from the desired position of the skylight.

Use the bolt holes of the removed panel as a standard and drill corresponding holes in the skylight.

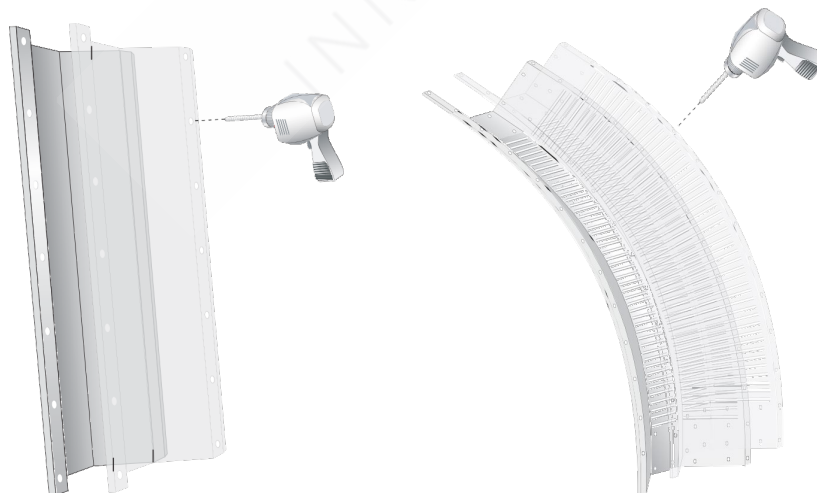
⚠ IMPORTANT WARNING:

Skylights can be quite fragile. Use special care not to twist the skylight and avoid cracking when drilling holes. After the holes have been drilled, place the skylight in place of the panel that was removed.

Make sure that the skylight is installed correctly to ensure smooth water drainage and prevent water from entering the building. You can consider applying sealant (mastic) around the skylight panel for extra sealing.

To reinforce the building in the locations where skylights are installed, place the removed panel in an adjacent arch, if a replacement panel is available.

◦ **FIGURE 74 SKYLIGHTS**



⚠ VENTILATION ADAPTERS & TURBINE VENTS

Ventilator adapters are intended to create moisture protection in arches and to provide a surface on which a turbine vent can be installed.

After determining the desired location of the vent, place the adapter on the arc ridge and mark the outline of the adapter hole on the arc panels.

Remove the adapter and cut a semicircular hole on each side of the arc panel gasket. Do not cut the ridge of the arc panels for the installation of the rotary ventilators.

Apply a line of sealant (mastic) around the two holes and place the adapter back in place, above the holes.

Drill a series of holes around the edge of the adapter and secure it to the arc panels with bolts.

After installing the ventilation adapter, proceed to install the rotary ventilator.

Place the rotary fan on the edge of the adapter. Apply sealant (mastic) around the rim at the point of contact.

Secure the rotary ventilator using several self-drilling screws (about one every 5 cm)

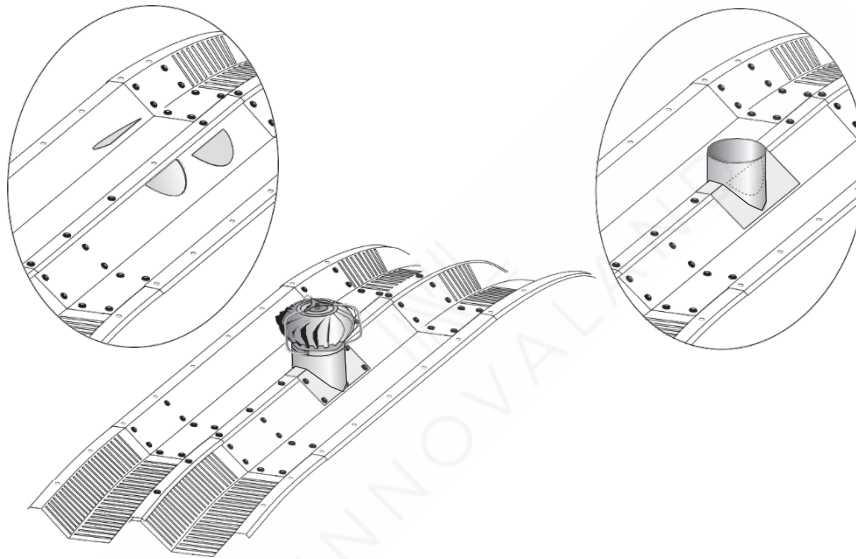
⚠ WARNING:

The number of ventilation adapters per building is limited to one adapter every ten arcs or one every five arcs when installed alternately from side to side.

i Note:

Ventilation adapters are designed and manufactured to be installed in the center of models S, Q as well as on the roof panels of models A, and B.

◦ **FIGURE 75: VENTILATOR ADAPTERS & TURBO VENTILATORS**



12.2 WINDOW FRAMES

With a special order we provide window frames for installation on both the end walls and the arches.

The installation of window frames is similar to the installation of openings, with the difference that the panels of the arches or end walls must be cut above and below the window frame.

Window frames must be installed after the completion of the construction of the arches and final walls.

WINDOW FRAMES AND VENTILATION BLINDS ON THE FINAL WALLS

The standard window frame for the end walls replaces a section of two adjacent end wall panels.

Special window frames will differ in the number of panels they replace, depending on the width of the window.

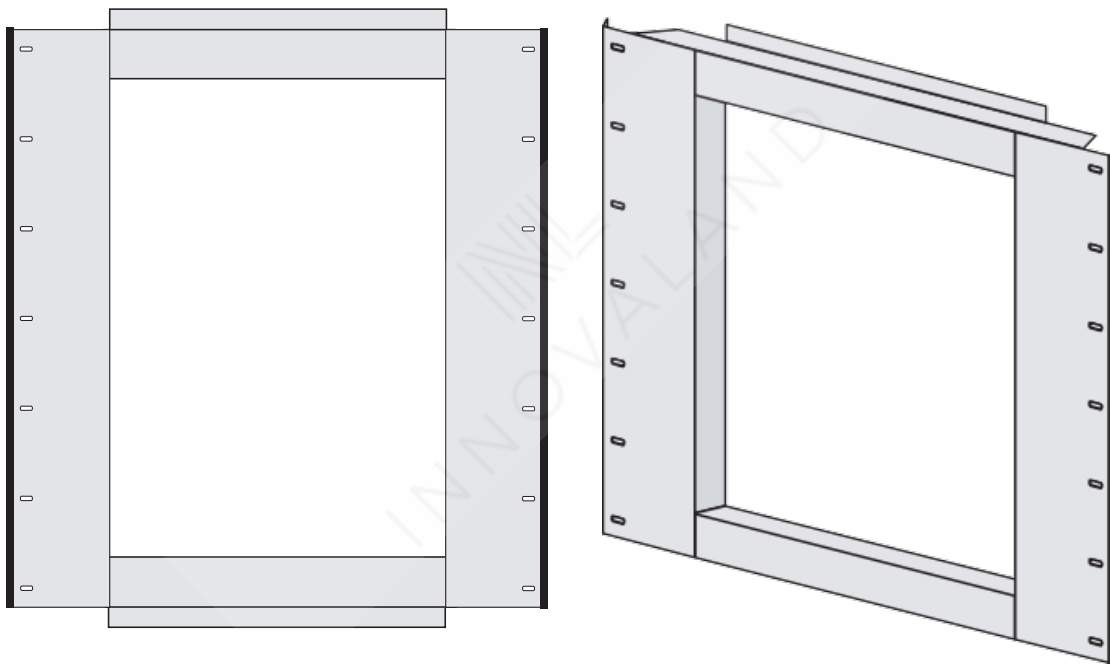
For special dimensions, measure the center-to-center distance between the bolt holes in the window frame width in centimeters and divide this dimension by 69cm to determine the number of end wall panels that need to be modified in order for the frame to be installed.

✦ Calculation Example:

If the distance between the bolt holes in the width of the window frame is 138 cm, then the frame replaces part of two end wall panels:

$$138 \text{ cm} \div 69 \text{ cm} = 2 \text{ end wall panels.}$$

◦ **FIGURE 80: WINDOW FRAMES ON THE END WALLS**



INSTALLATION OF WINDOWS ON THE FINAL WALLS

After the final wall is installed, select the window location and remove the required number of final wall panels. The window position must allow at least one (or more) end wall panels between the window frame and any other opening in the end wall.

Place the window frame in place within the opening between the end wall panels, at the desired height, and then fasten it with bolts. If necessary, you can drill additional holes in the end wall panels if the existing holes in the window frame do not align with the desired height of the window.

Measure the distance between the foundation (or connecting base) and the underside of the window frame. Note this dimension on the finished wall panels removed for the window frame and cut off the top part of the panels.

Reposition these panels under the window frame.

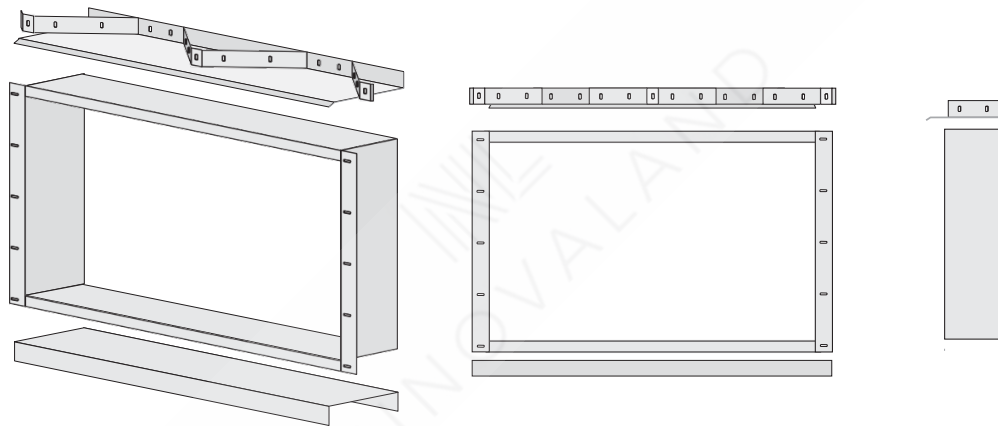
Measure the height of the window frame and transfer this dimension to the remaining portion of the cut panels of the final wall. Cut off the bottom of these panels, then reposition them above the window frame.

From inside the building, drill holes through the flange along the top and base of the window frame, into the cavity of the end wall panels and fasten it with bolts.

WINDOW FRAMES ON THE SIDE WALLS

Our window frames are specially manufactured for installation at a predetermined window height and location, which are specified in the building order before its production and shipment.

◦ **FIGURE 81: WINDOW FRAME ON SIDEWALL (FOR STRAIGHT WALL ONLY)**



INSTALLATION OF WINDOW SIDE FRAME

The standard 138 cm x 91 cm side window frame replaces part of the panels from two adjacent arches. For custom frame sizes, measure the center-to-center distance between the bolt holes along the frame.

For Type I panels, divide this dimension by 69 cm to determine how many arches need to be modified to install the frame.

Example:

If you have a Type I panel and the distance between the bolt holes along the frame is 138 cm, then the frame replaces a section of two arches.

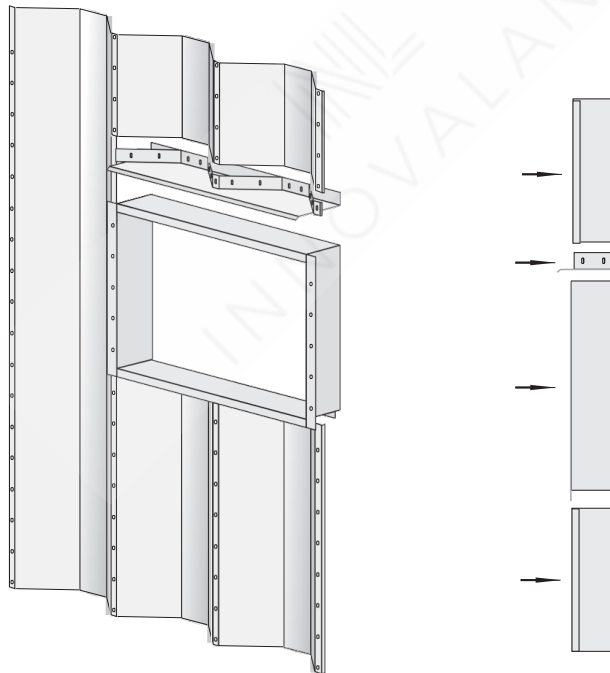
◊ $(138 \text{ cm} \div 69 \text{ cm} = 2 \text{ arcs})$.

INSTALLATION PROCESS

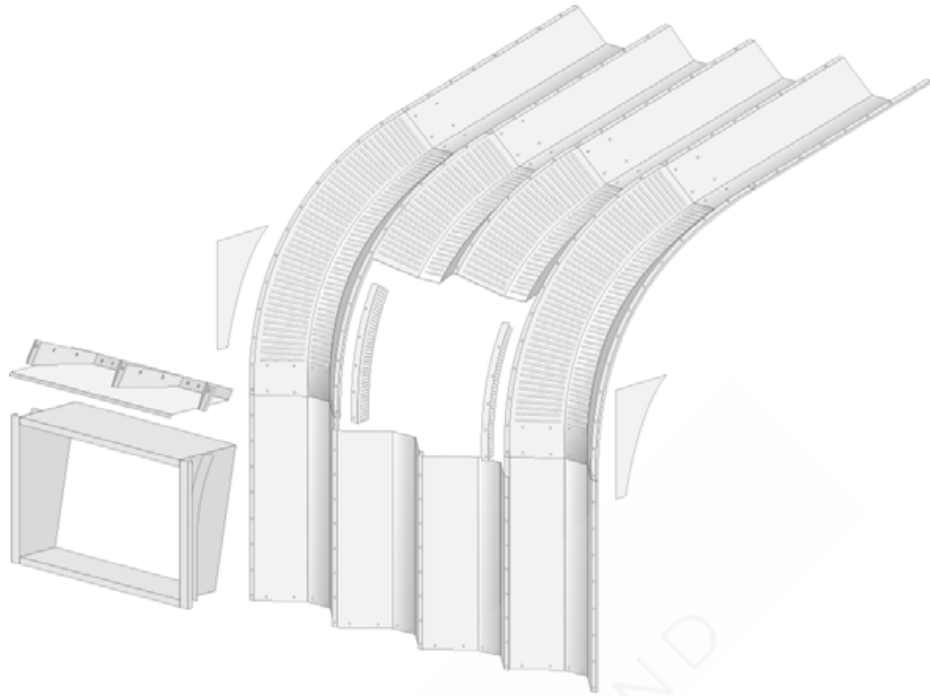
After all the arches have been erected, select the position of the window frame and remove the corresponding number of arc panels. If the location of the frame has been specified in the technical drawings, it must be installed exactly as depicted.

1. Place the window frame in place between the arc panels and adjust it so that its outer surface is plumb (vertical).
2. Fix the frame to the exact height indicated in the technical drawings.
3. If the height is not specified, the frame must be fully installed on the inline wall panel. If necessary, drill holes in the arc panels to align with the holes in the window frame.
4. Place the canopy in place above the window frame. If the canopy has a drip edge, it will protrude from the façade of the frame. If there is no drain overhang, apply a sealant (mastic) between the bottom of the canopy and the top of the window frame and secure it with self-drilling screws or bolts.
5. From inside the building, use a level to define the cutting line on an arch panel next to the canopy. Transfer this mark to the panels of the arches removed from the window position, then cut and reinstall the panels above the canopy.
6. Drill holes through the bottom of the panels in the flanges of the arch side of the canopy and fasten with bolts. To ensure tightness, apply sealant (mastic) between the canopy and the arc panels, as well as on the sides of the window frame and arches.
7. Measure the distance from the foundation or industrial base plates to the bottom of the window frame. Note this dimension on the wall panels removed to install the window and cut off their top. Reinstall the panels under the window frame.

◦ **FIGURE 82: INSTALLATION OF A SIDE WINDOW FRAME**



◦ **FIGURE 83: SIDE WINDOW FRAME WITH CANOPY FOR CURVED PANELS**



13. FIXING WITH MORTAR, SEALING & FINISHING THE BUILDING

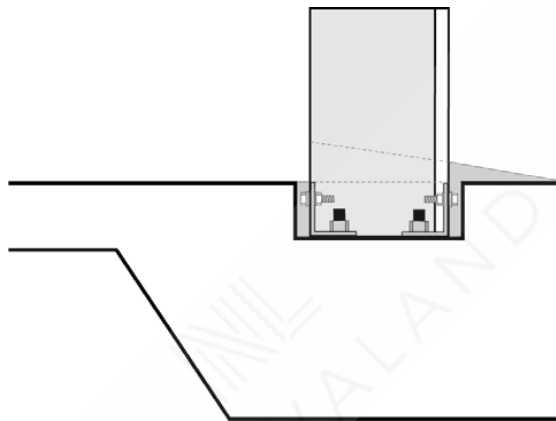
GROUTING FIXING THE FOUNDATION GROOVES

After the construction of the building is completed, it must be permanently anchored to the foundation with cement mortar (grout). The building does not reach its maximum load resistance until it is fixed to the mortar foundation and therefore is not considered complete until this process is carried out. It is extremely important to proceed with mortar fastening immediately after the assembly of the building is completed. The mortar fastening process is necessary for all buildings placed in typical trough-style foundations.

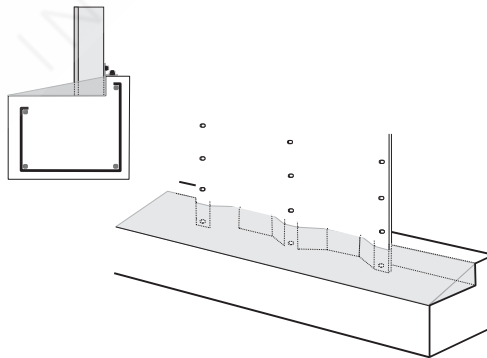
The arches and end walls must be sealed with mortar both on the inside and outside of the panels in order to ensure the correct anchoring of the building to the foundation. The mortar must have a slope of at least 2.5 cm so that water is removed from the building.

After the mortar is completely dry, we recommend applying a sealant (mastic) to the connection between the mortar and the steel panels to prevent moisture from penetrating the foundation.

◦ **FIGURE 84: MORTAR FIXING TO THE ARCHES**



◦ **FIGURE 85: FIXING THE FINAL WALLS WITH MORTAR**



⚠ WARNING:

Strong winds or the accumulation of snow and/or ice can lead to the collapse of the building if it is not properly completed, including mortar fixing, where industrial INDUSTRIAL BASE PLATES are not used. The mortar must not contain corrosive additives (such as calcium chloride), which are often added to cement to accelerate curing. Consult your cement supplier to ensure that the mixture does not contain corrosive additives.

13.1. SEALING THE BASE OF THE PANELS ON INDUSTRIAL INDUSTRIAL BASE PLATES (Optional)

If you have used industrial base connectors, it is important to go back and apply a thick, continuous line of sealant (mastic) to the base of all the panels of the arches and the end walls of the building, where they meet the plates of the connecting base.

The sealant must follow the corrugated shape of the panels to create a watertight connection at the base of the panels and reduce the possibility of leaks.

13.2. INSTALLATION OF WIND REINFORCEMENTS, ARC TIES AND VERTICAL REINFORCEMENTS

Depending on the building you have ordered and the geographical location of the construction site, you may have been provided with wind-bracing, arch ties, snow-bracing and/or end wall stiffeners.

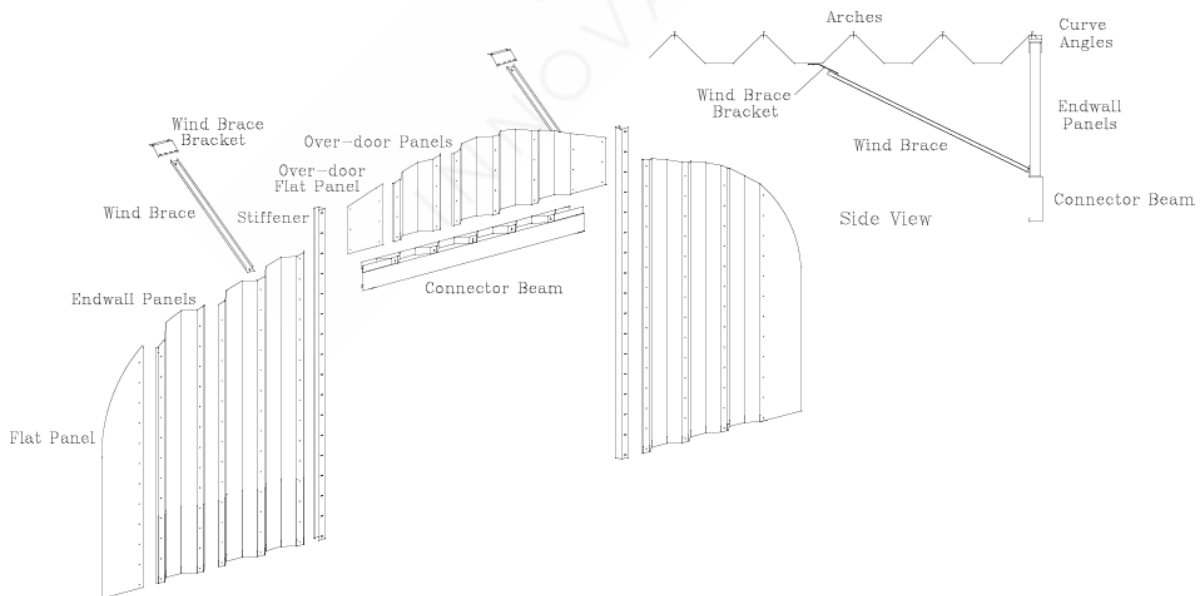
If this is the case, our technical drawing will indicate the exact locations where these components are to be placed.

If you have any questions about the proper installation of any of the above components, or if you have completed the assembly of the building and have surplus parts (in addition to spare bolts, nuts, cut sections, and temporary arc reinforcements), please contact our Technical Support and Engineering Department.

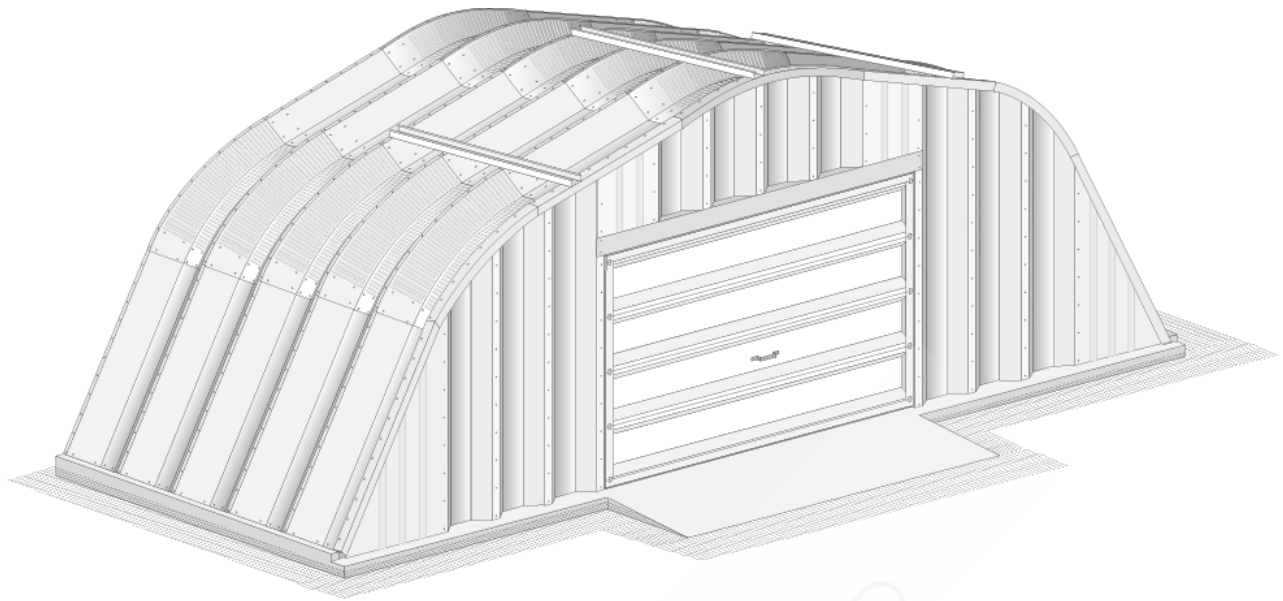
⚠ WARNING:

If your building has been delivered with wind reinforcements, arch anchors, snow reinforcements, or vertical finish wall reinforcements, it is absolutely critical that they are installed correctly.

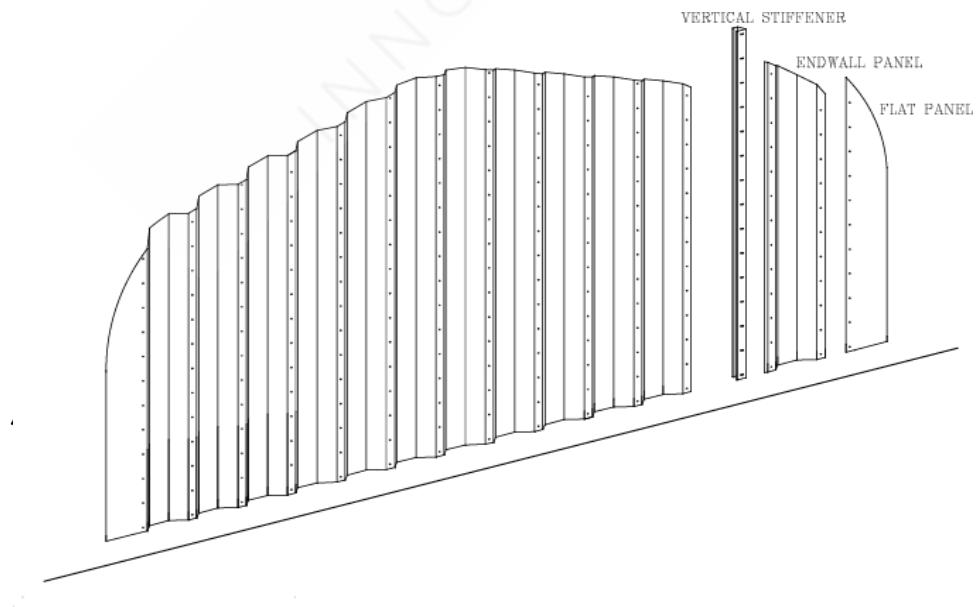
◦ **FIGURE 86: WIND-BRACING INSTALLATION**



◦ **FIGURE 87: INSTALLATION OF ARCH TIES**



◦ **FIGURE 88. VERTICAL REINFORCEMENT OF END WALLS**



COMPLETION OF THE BUILDING

At this stage, you need to confirm the following:

-  The foundation is correct.
-  The building is anchored according to the specifications of the technical drawings (anchor bolts, tie-down brackets, base plates, mortar, sealant, etc.).
-  All arches have been erected with the correct shape and dimensions.
-  All panels (including thickness) have been placed in the correct position and covered correctly.
-  All bolts have been installed and tightened correctly.
-  Curved corners and end walls have been installed, including any wind reinforcements or reinforcing end walls.
-  All accessories have been installed and sealed.
-  All reinforcing components for the end walls (as described in the technical drawings) have been installed (see section for wind reinforcements, arc bindings and vertical reinforcements).

Only if all the above apply can you remove temporary arc reinforcements, side span frame reinforcements or metal bracings, and temporary arc and end wall support straps.

At this point, the building is fully completed and ready to use!

⚠ WARNING:

Temporary arch support straps should be removed in snowy areas, as they may prevent the natural removal of snow from the building, causing damage. If you have any questions or concerns about the construction or condition of your building, contact the Technical Support & Engineering Department.

14. MAINTENANCE OF THE BUILDING & DAMAGE PREVENTION

If properly assembly and regularly maintained, your building can serve you for a lifetime.

14.1. AVOIDING DAMAGE TO THE BUILDING

Snow removal. Your building is designed for a specific snow load. However, it will not achieve its full strength if the construction and foundation are not completed properly (including mortar fastening and the use of tie-down brackets and anchor bolts). The design of the building was based on the conditions mentioned in your order, such as type of foundation, use of the building, exposure to winds, snow shading conditions, project location, soil and concrete specifications. If any of these parameters are not in line with our design criteria, or if the actual accumulation of snow and ice exceeds the predicted strengths, damage may occur. Remove snow from your building as soon as you notice accumulation. At the very least, remove as much snow as possible with a broom or shovel, without climbing the building.

⚠ WARNING:

Take all necessary precautions when removing snow to avoid injury.

14.2. DO NOT BURY THE BUILDING & DO NOT BURDEN THE STRUCTURE

Don't bury your building. We are not responsible for damages resulting from a building that has been buried, unless the building is explicitly designed for this use. Unless otherwise specified in the technical drawings, we have not designed the building for additional loads beyond the minimum weights, such as fiberglass insulation, light lighting, and electrical outlets and switches.

⚠ WARNING:

Do not bury your building or add additional loads that are not foreseen in our design.

14.3. PREVENTION OF CORROSION AND DISCOLORATION OF THE BUILDING

The construction materials are covered by a limited warranty from the steel production plant against corrosion due to oxidation. However, there are exceptions to this warranty that you should be aware of.

14.4. CLEANING OF THE BUILDING

After construction, you may notice dark residue on some panels. These are usually residues from the protective coating. For cleaning, use plain dishwashing detergent and warm water.

⚠ WARNING:

Use appropriate safety equipment when cleaning the building to avoid injury.

14.5. MOVING OR SELLING THE BUILDING

Your building is designed based on the specifications of your order, including location, use, wind exposure, etc. If you plan to move it, consult with the company from which you purchased it to confirm its eligibility for the new location.

⚠ WARNING:

Do not install your building in a different location without checking the construction conditions.

15. 30 DAYS WARRANTY FOR DEFECTS & DEFECTS

We replace any component purchased from us that was not loaded for delivery or was defective in material or workmanship. For this warranty to apply, the shortage or defect must be recorded in writing on the Bill of Lading and/or reported to us within thirty (30) days of delivery.

In the event of non-compliance with the above warranty, we will produce the replacement parts within a reasonable period of time and deliver them to the original shipping location, using a delivery method of our choice, at no cost to the customer. However, if, in the case of a shortage, the carrier has acknowledged receipt of the product alleged to be missing, our responsibility is limited to filing a claim against the carrier and recovering the damage.

This warranty is subject to the limitations and exclusions set forth below.

25-YEAR LIMITED WARRANTY FOR OXIDATION PERFORATIONS

Parts manufactured from Magnelis® steel will not be punctured due to oxidation within thirty (25) years from the date of shipment from our facilities, as long as they are exposed to normal atmospheric corrosion conditions.

This warranty does not cover parts that have been damaged, welded, or exposed to corrosive, aggressive, or other abnormal atmospheric conditions, including, but not limited to, the following:

- Areas exposed to corrosive chemicals, smoke, ash, cement dust or animal waste.
- Areas with runoff of lead or copper water.
- Areas in contact with wet insulation or other corrosive substances.
- Areas where the natural drainage of water has been prevented and the accumulation of water or debris has been allowed.

This warranty only applies to parts that are constantly in Europe and several other places around the world. Please contact your Sales Technician for more information.

16. LIMITATIONS & EXCLUSIONS

Warranties only cover the supply of spare parts for the missing, defective or damaged parts. In no event will we be liable for any labour costs or consequential damages related to any deficiencies, defects or damages.

For warranties to be valid, the claim for defect, defect or damage must be notified to us as soon as it is discovered. The customer must provide us with all the necessary information for the investigation of the claim, such as measurements, documents, photos, etc.

 **The warranty for damage from snow or wind does not apply in any of the following cases:**

- When the actual loads exceed the maximum strength of the building, as stated in the technical drawings.
- When the location of the building differs from the one stated in the order.
- When the building has not been constructed according to our approved design and instructions.
- When the wind and snow conditions differ from those taken into account in the design.
- When the ground or foundation deviates from our plans and specifications.
- When additional loads have been added to the building without our prior approval.
- When the building is connected to another structure or if some other structure has been attached to it and this information is not reflected in our drawings.
- When the damage comes from external interference (such as impacting another object) and not directly from wind or snow.
- When the customer has not confirmed the suitability of the construction with the local authorities prior to construction.
- When the customer has not properly maintained the building, including the removal of snow or other loads that exceed the design specifications.
- The above warranties are the only ones we provide and are in lieu of any other warranties, express or implied.



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