



DESIGN AND INSTALL GUIDE

GENERAL PRODUCT OVERVIEW

Phoenix Panels® is a fabricator of pressure-equalized, rainscreen wall systems. Phoenix Panels system is comprised of ACM (Aluminum Composite Material) attached to a unique, patented aluminum extrusion. These exterior wall panel materials are a protective layer for the building's waterproofing membrane. While the exterior wall panel is designed to discourage the penetration of water, some water is expected to enter the cavity behind the panels. When this happens the weather resistant barrier is designed to keep the water out and any water in the panel cavity will drain out weep holes in the panel system.

PRE-INSTALLATION PREPARATION

Panel Layout and Sequence

The installer will need to develop a written plan or drawing that illustrates the panel installation sequence. This plan will be reviewed with Phoenix six weeks prior to fabrication of panels. ACM panel system designs require certain panels to be installed before others. There are start and stop conditions, and particular attention should be paid around doors, windows, penetrations, and other openings. Large projects will require a plan for areas to be measured and fabricated in phases.

Substrate Review

Check the building substrate for plumbness and squareness. This is important to ensure the panels line up properly on the grid lines as well as the windows, doors, corners, and other transitional areas. Substrate that is not plumb, will require shims spaced as required to achieve a plumb and square surface.

Measuring to Order

1. Locate a base control line (starting elevation and angle benchmark) to keep the panel system level and square.
2. Installer should verify the panel reveal joint dimension to ensure the specified design is met in the panel layout and dimensioning.
3. Measure the first panel and enter dimensions on the panel fabrication layout document provided with the shop drawings (**Note: Final dimensions must be entered on the electronic copy of the fabrication form in decimal inches format.**) After measuring the area to receive panels, check the dimensions before proceeding to the next elevation.
4. ACM Material finishes are directional. The installer needs to consider this when laying out the installation sequence. All panels will need to be installed in the same direction unless otherwise noted on the shop drawings. (Direction will be indicated on shop drawings and marked on each panel as fabricated.)

DELIVERY AND HANDLING

Delivery

Upon arrival of your order inspect each panel and wall accessory, and document any damage to panels, packaging, or accessories. If there are any signs of damage, note this on the bill of lading at the time of the delivery. Failure to do so can make it difficult to file a freight claim. Send a list of damaged materials to Phoenix Panels® and contact your Phoenix Panels® representative for further instructions.

Handling and Storage

ACM Series panels should be transported using Phoenix Panels® standard pallets. Banding materials should be removed upon delivery. Lift the panels from each stack individually, taking care not to scratch or damage any adjacent panels when removing panels from the stack. Panels can be sorted vertically on a flat surface free of debris, or kept on pallets with supports at 12 inches on center or less. All horizontal surfaces, including panels and pallets, should be covered with a clean membrane or board to protect the panels from damage. Unwrapped stacks should be covered with plastic sheeting in order to minimize damage from dirt and moisture.

Panels need to be stored in an area to protect them from the elements. Conditions for proper storage need to be cool, ventilated, and dry. Avoid storing panels in direct sunlight and in high temperature conditions. The protective film on the panels will become difficult to remove and may leave adhesive on the panel surface due to exposure to sunlight and high temperatures.

INSTALLATION

1. **First Panel** - Proper mounting of the first panel helps with the alignment of adjacent panels. Begin by setting the starter track true to line and plane. Ensure the first panel is seated properly into the starter track. This is critical and will establish an accurate starting point.
2. After the first panel is installed, continue with adjacent panels in the same manner along the control line(s). Verify the panel's spacing often. Phoenix Panels® recommends using shims between panel faces to achieve the design spacing. If panels are installed with incorrect spacing, they will likely need to be re-adjusted to align properly.
3. **Panel clips and fasteners** - Need to be installed to meet design and engineering requirements. Fasten the clip firmly to the sub-structure, tightening the fasteners no more than a half turn beyond snug. Be careful not to over-torque the fasteners, this may result in the fastener shearing and can strip the framing. The fastener size and spacing must be in accordance with the engineering requirements for the specific project.

NOTES: Panel clips are made out of aluminum. A separation material should be used between dissimilar metals (the aluminum clip and steel framing) to prevent electrolysis. Clip fasteners must be coated or bi-metal to prevent electrolysis.

Panels are installed with splines to help interlock panels, keep water out, and hide fasteners. The length of the spline will vary dependent upon the panel layout.

Installation Tips

Directionality - Pay close attention to the direction of the material during installation. Most ACM material is directional and must be installed in one consistent direction. In order to maintain color and finish consistency across panels, each panel must course in the same direction. ACM materials have a protective plastic film adhered to the exposed side of the panel to protect the surface from marring. This protective film has arrows on it indicating which direction the finish was applied. Phoenix Panels® takes this into consideration during panel fabrication and can provide panel layout information in the drawings if this service is required. Remember, all panels need to be installed in the same direction throughout a project unless intentionally noted otherwise.

Cutting and Handling - ACM consists of two layers of .020 aluminum sandwiching a polyethylene (PE) core, or in some cases a fire-rated (FR) core. Both materials are fairly easy to cut and route. For straight cutting: use a circular saw with a fine-carbide tooth blade. For arches, holes, fine precision cuts, and other detailed areas, use a jig saw with a fine-tooth metal blade. For routing: use a standard router with a 110 degree "V" type router bit or a 3/8 inch "Core-Box" type-bit. For drilling: use a standard metal drill bit. To avoid scratching the panel finish, all cutting, routing, and drilling should be performed from the backside of the ACM material.

Leave the protective film in place until adjacent panels are installed, however, note that exposure to sunlight is not recommended as the protective film may become more difficult to remove the longer it is left in place.

DESIGN CRITERIA

Underlayment and Ventilation

Prior to installing the Phoenix Panels® system, verify the building is properly protected with a weather resistant barrier (WRB). Special attention should be taken at areas where the WRB is interrupted. Penetrations (interruptions) include but are not limited to openings and finish conditions; windows, doors, scuppers, electrical boxes, pipe penetrations, etc. The envelope does not rely on the face panel (Phoenix Panels®) for water tightness.

Ventilation spaces should allow for uninhibited vertical airflow. Phoenix Panels® Rainscreen system allows it to be fastened directly to the wall framing or furring strips. Achieving a ventilation compartment is accomplished by spacing the system from the wall. Without this essential spacing, the system will not breathe correctly and will likely trap water, condensation, or other moisture. For proper ventilation, the system must be installed with offset clips at every fastening point. The clips provide essential ventilation and will allow for minor adjustments to compensate for slight inconsistencies in the substrate.

Wind Load

Phoenix Panels® are designed and tested to withstand significant wind loads. The patented aluminum extrusion component is bonded to the aluminum composite panel with an acrylic adhesive. The panels and their respective sub-framing are not designed to contribute to the structural stability of the building.

Due to free-flowing air in the cavity behind the panels, the Phoenix Panels® system design requires a complete weather resistant barrier on any wall which it is installed. The integrity of the WRB design can be verified by water testing the walls after the WRB is

installed and prior to the application of the Rainscreen panel system. In the area where panels are being installed, the building envelop should be completely weather tight prior to the installation of the Phoenix Panels® system.

Fire Resistance

Phoenix Panels® ACM fire resistance ratings vary depending on the type of composite material selected. It is important to determine the proper class of material required for your project.

The design should consider any combustible material behind the cladding which may be exposed in a fire. It is the responsibility of the project designer to determine the combustibility of materials behind the cladding system and implement cavity barriers or other measures as required under relevant building regulations. Additional measures for ventilation may be required if a cavity barrier is created behind the Phoenix ® ACM system. Please contact your Phoenix ® representative for further information.

The Phoenix® ACM series Rainscreen system does not typically contribute to the fire resistance of any external wall or load bearing structure, though ACM material with a fire – rated core is also available.