

Standard Specification For Installation of ARMOROC PANEL™ For Roofs

SECTION 06100

1. GENERAL

1.01 SUMMARY OF WORK

- A. Materials shall be **ARMOROC PANEL™** Cement Bonded Particle Board (CBPB) as distributed by Ameriform, LLC, or one of their approved distributors.
- B. All **ARMOROC PANEL™** shall be selected from the manufacturer's load tables to carry the project live load design over a maximum of 24 inches on center support spacing while limiting deflection to a maximum of L/240 as determined by project architect & engineer.
- C. **ARMOROC PANEL™** to be of minimum thickness 5/8" (16mm), 4'x8' (1220mm x 2440mm), and fabricated with tongue & grooved edges on the 8' long dimension of panels for structural, load bearing applications. Tongue & grooved edges optional for non-load bearing applications. Further details in Section 2.01.B
- D. Compliance with applicable building codes for wind, snow, seismic, uniformly distributed live-loads and other loading requirements shall be determined by the project architect and engineer.
- E. **ARMOROC PANEL™** shall have the following minimum mechanical properties:
 - 1. Density: Minimum 62.4 lbs/ft³ per ISO 8335
 - 2. Modulus of Elasticity: Minimum 435,000 psi per ISO 8335
 - 3. Shear Strength: Minimum 1305 psi per ISO 8335

1.02 DESCRIPTION OF ARMOROC PANEL™

- A. **ARMOROC PANEL™** is a structural cement bonded particle board (CBPB) that is mechanically fastened to the top of roof framing members as a substrate.
- B. **ARMOROC PANEL™** is load-bearing and shall have a finished roof applied over it.

1.03 PERFORMANCE REQUIREMENTS

- A. Surface burning characteristics: **ARMOROC PANEL™** shall be Class A in accordance with ASTM E84 / UL 723 having achieved 0 flame spread and 0 smoke development indices.
- B. Armoroc has passed the modified ASTM E136 for a minimum duration of ten minutes.

1.04 SUBMITTALS

- A. Submit to the project architect or design professional a copy of **ARMOROC PANEL™** product and installation specifications and one product sample measuring 3” x 3” minimum.

1.05 QUALITY ASSURANCE

- A. Contractor shall have successfully installed roof-sheathing products of a similar type as this project. These past projects shall have resulted in construction with a record of successful in-service performance.
- B. At frequent intervals during construction, the job site will be visited by the owner’s representative, general contractor or construction manager to confirm that **ARMOROC PANEL™** is being installed per this specification.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. **ARMOROC PANEL™** as distributed by Ameriform LLC is normally delivered to site in factory crates bound with plastic sheet protection, wooden edge protection, and wooden dunnage to facilitate forklift handling.
- B. **ARMOROC PANEL™** shall be stored indoors on leveled dunnage not exceeding 32” on centers. If temporarily stored outdoors boards must be elevated above ground, in an area where the material will not be sitting on mud, snow, wet conditions where moisture can soak into the board. Material must be protected from the elements including rain, snow, ice, etc with adequate waterproof covering such as a waterproof tarp. Stacking of pallets should always be on solid stable base and never be stacked higher than 5 pallets high. Acclimatize **ARMOROC PANEL™** by storing on site not less than three days prior to installation
- C. All materials supplied by others shall be delivered and stored according to their instructions.
- D. Deliver, store & handle materials to prevent breakage, warping or damage caused by moisture.
 - 1. When transporting loose **ARMOROC PANEL™** panels by truck they must be laid flat and fully protected against edge damage and protected from weather with waterproof covering.
 - 2. When hand carrying single **ARMOROC PANEL™** panels they must be carried on edge with the short side held vertically.
- E. Damaged or deteriorated materials shall be removed from the premises.
- F. Prior to installing panels, be sure to inspect for damage / deterioration of any kind. If there are concerns regarding the condition of the panel contact your local rep to confirm the panels are acceptable to begin installation.
- G. Material Safety Data Sheets shall be available for all materials.

1.07 PROJECT CONDITIONS

- A. Steel framing to receive **ARMOROC PANEL™** shall be structurally sound, free from bows, twists or other malformations and in general compliance with local building code requirements. Damaged framing shall be replaced before installation of **ARMOROC PANEL™**.

- B. During installation of **ARMOROC PANEL™** the temperature shall be at least 0° F during installation if mechanically fastened. If adhesive is being used temperature shall be at least 40° F and remain at this temperature or higher for at least 24 hours after installation, unless the adhesive manufacturer will permit the use of its product at a lower temperature. Finished roofing shall not be applied over **ARMOROC PANEL™** that is wet, frozen or contains frost.

1.08 SEQUENCE AND SCHEDULING

- A. Sequence the installation of **ARMOROC PANEL™** with related work specified in other sections to ensure that the roof assemblies are protected against damage or abuse during and after construction.
- B. Provide sufficient labor and equipment to properly install all materials.

1.09 PRODUCT WARRANTY

- A. **ARMOROC PANEL™** is warranted by the manufacturer for a period of 10-years from date of material purchase to be free from defects in workmanship and materials under normal use. Refer to product warranty for complete terms.

2. PRODUCTS

2.01 MATERIALS

- A. Roof Framing: Cold formed steel with minimum G-40 galvanized coating, minimum 20 gauge meeting AISI and ASTM specifications and requirements for use in a structural roof system. Follow steel framing manufacturer's installation instructions. Confirm that all fasteners scheduled for attachment into roof framing / decking are compatible with the framing/decking being specified.
- B. Roof Sheathing:
 - 1. For applications where **ARMOROC PANEL™** is designed as the structural load bearing roof deck:
 - a. With a roof slope of 4/12 or greater select a minimum 16mm (5/8") thick **ARMOROC PANEL™**.
 - b. With a roof slope less than 4/12 select a minimum 19mm (3/4") thick **ARMOROC PANEL™**.
 - c. Panels shall be 4'x8' dimension, sealed, and fabricated with tongue & groove edges on the 8' dimension.
 - 2. For applications where **ARMOROC PANEL™** is installed over an existing structural decking such as corrugated metal decking or plywood, acting solely as a nail-base, select a minimum 16mm (5/8") thick **ARMOROC PANEL™** in 4'x8' (1220mm x 2440mm) dimension, as distributed by Ameriform LLC unless otherwise noted.
- C. Adhesives: Use PEMCO 5100 non-flammable, solvent free, zero V.O.C., polyurethane adhesive as manufactured by Alpha Systems, Inc., Elkhart, IN or equal. Available for purchase through Ameriform, LLC. Follow manufacturer's installation instructions.

- D. Fasteners: Use corrosion resistant self-countersinking head screws such as Grabber Part No. CHS8200JBW, or equal. Fasteners to be minimum #8 diameter with self-drilling points. Length of fastener to equal 2-1/2 to 3 times the board thickness. Available for purchase through Ameriform, LLC. Follow manufacturer's installation instructions.

3. EXECUTION

3.01 FRAMING

- A. Roof trusses, joists and/or other roof framing components must be designed to meet the strength and deflection criteria as determined by project architect & engineer and specified in the contract documents.
- B. The attachment flange or bearing edge shall be a minimum 2" wide, or doubled up at **ARMOROC PANEL™** board edges.
- C. Metal framing shall be spaced a maximum of 24" on centers.
- D. All blocking or bridging must be installed prior to the installation of **ARMOROC PANEL™**.
- E. Framing must be of good quality, free of bows, twists or other malformations.

3.02 STRUCTURAL PANEL SHEATHING APPLICATION

- A. Panels shall be cut to size with a circular saw equipped with cement cutting blade and a dry dust collection device or a water-dispensing device that limits the amount of airborne dust. Wear safety glasses and a NIOSH approved dust mask when cutting the panel. Collected dust shall be disposed in a safe manner and in compliance with local, state and federal ordinances.
- B. **ARMOROC PANEL™** shall be installed with the long edges perpendicular to the framing. Panels may be installed with either surface against the framing.
- C. Plan the layout so first and last panel rows are a minimum 24" wide. Place each panel across three or more supports. Cut panel to length as needed to ensure butt ends are centered on the framing member.
- D. Use of adhesive at all board joints is recommended for all roofing applications where **ARMOROC PANEL™** is designed as the structural load bearing roof deck with a slope less than 4/12 to enhance the connection strength of adjacent **ARMOROC PANEL™** panels. Use of adhesive remains optional for: (1) applications where **ARMOROC PANEL™** is designed as the structural load-bearing roof deck with a slope of 4/12 or greater and (2) all non-structural applications. Follow adhesive manufacturer's product and installation instructions. Carefully apply a 1/4-3/8" diameter bead of adhesive to the joint of the installed panel. Only apply enough adhesive to bond the edges of the panels being joined.
- E. Fasten each panel to metal framing after it has been placed using the following fastening schedule:
 - 1. Fastener placement shall be a maximum of 12" on center along all supports at panel joints and edges.
 - 2. Fastener placement shall be a maximum of 16" on center along all supports in the field of the panel.
 - 3. Fastener placement shall be a minimum 3/4" from all panel edges.

4. Fastener placement shall be a minimum 2" from all panel corners. Off-set fasteners to avoid 45 degree fastener placement at board corners.
 5. Begin fastening at one end and fan out across the panel. Do not fasten all the corners first.
 6. Drive fasteners so the heads are flush with the surface of the board.
- F.** After installing one complete row of panels begin the next row. Install all rows in a running bond pattern so that end joints fall over the center of the framing members and are staggered by at least two supports from where the end joints fall in the adjacent rows. For applications using panels fabricated with tongue & groove edges, slide panels together so that the tongue of the panel being installed fits into the groove of the installed panel.
- G.** Cutouts in the panels should be made before installing the panel whenever possible. If a cutout is required after the panel is installed, set the depth of the saw blade to ensure that the framing is not scored. Continuous structural perimeter support such as blocking, bracing and bridging is required at all cutouts and/or penetrations larger than 3" in either direction.

3.03 CLEAN-UP

- A.** Left over material shall be removed from the job site.
- B.** Remove foreign material from roof surface, including dust.

3.04 SAFETY

- A.** To ensure safe conditions measures must be taken to properly educate and warn workers against abusive activity that can exceed the capacity of Armoroc during and after installation. Prior to starting work, education shall be issued by the purchasing party and installing contractor to all tradespeople installing Armoroc, including other tradespeople working on or around the Armoroc during and after installation, in a language they fully understand. Failure to warn and comply with these safety measures can cause failure of the Armoroc that may result in minor injury, serious injury or death. Measures include, but are not limited to:
1. Make sure panels are being installed properly.
 2. Avoid excessive impact loads caused by dropping heavy items such as masonry units, framing members, scrap material, tools, equipment, etc. Warn workers against jumping down onto the Armoroc from areas above such as platforms, scaffolding, ladders, etc. Such impacts can cause deforming marks, penetrations, or failure of the sheathing and will need immediate repair.
 3. Avoid excessive loads that exceed the capacity of the Armoroc such as stored building materials, scrap material, tool boxes, heavy equipment and vehicles.
 4. Avoid excessive concentrated / point loads that may be imposed by hoists, scaffolding, posts, ladders, stilts, stacks of masonry, etc. Take into account the weight of this equipment including that of the workers using it.
 5. Avoid excessive abuse in heavy lanes of traffic or areas subject to abuse such as around stairways, trash removal, loading areas, cart paths, main hallways, areas adjacent to masonry wall installations, etc. Excessive wear, gouging, impacts and scraping on the panel may compromise structural integrity or cause failure.
- B.** Protective measures may include (but are not limited to):

1. Avoiding abuse.
 2. Consult with the project engineer and project safety officer to review areas where these types of abuses may occur. Provide proper education and protection to all workers.
 3. Add extra protection to the Armoroc such as sacrificial layers of structural building panels like Armoroc / Plywood laid over multiple supports.
 4. Distributing heavy loads by using pallets or dunnage laid over multiple supports.
 5. Wear fall protection in areas prone to abuse, areas at hazardous heights, areas near or above hazards, and as required per applicable local, state or federal safety regulations.
- C. Project Engineer and Safety Officer must review and confirm that proposed measures comply with loading and safety requirements of the project and with applicable local, state and federal safety regulations.

3.05 ROOF FINISH

- A. Before the application of roof finish materials, ensure that all panels are properly installed with the fastener head driven flush or slightly below the surface of the panels. Fill all voids and depressions with compatible patching compounds.
- B. Roofing underlayment(s) and accessories such as flashing, vents, etc. shall be installed in accordance with each manufacturer's installation instructions.
- C. All materials coming into contact with **ARMOROC PANEL™**, including finishes, fasteners, flashing, vents, clips, accessories, etc. must be compatible with Portland cement and treated for corrosion resistance.
- D. Weight of roof finishing products and accessories must be considered when designing your **ARMOROC PANEL™** application, as determined by an architect and/or engineer.
- E. Roofing Shingles:
 1. Structural Decking with Roofing Nails: Use of galvanized roofing nails is acceptable for roofing shingle attachment in applications where a minimum 19mm (3/4") **ARMOROC PANEL™**, 4'x8' with T&G edges on long edges of the panel is designed as the structural roof sheathing.
 2. Structural Decking with Roofing Staples: Use of corrosion resistant, wide crown roofing staples is acceptable for roofing shingle attachment in applications where a minimum 16mm (5/8") **ARMOROC PANEL™**, 4'x8' with T&G edges on long edges of the panel is designed as the structural roof. Wide crown roofing staples shall be formed from a minimum 16ga wire with corrosive resistant coating. Staples shall not penetrate the backside of the **ARMOROC PANEL™**, and there shall be a 1/8" allowance between the tips of the staple and the bottom face of the **ARMOROC PANEL™** following penetration. For example, when applying a single layer of asphalt shingles to 16mm (5/8") **ARMOROC PANEL™**, use 1/2" long x 1" wide crown staple fasteners.
 3. Non-Structural Nail-Base: For applications where a minimum 16mm (5/8") **ARMOROC PANEL™**, 4'x8' is installed over existing structural decking such as corrugated metal decking or plywood, acting solely as a nail-base, use

of wide-crown staple fasteners and/or galvanized roofing nails is acceptable. Install in accordance with the specifications described in 3.05.E.1 & 3.05.E.2.

4. Follow the shingle manufacturer's installation instructions for number and placement of fasteners per shingle.
 5. Attach shingles using pneumatically operated tools and following tool manufacturer's instructions for operation.
 6. Do not overdrive fasteners.
- F.** For all other roofing systems follow manufacturers' installation instructions and contact your local representative for questions.

END OF SECTION