

SECTION 03440

REINFORCED AUTOCLAVED AERATED CONCRETE PANELS

Date: 01-08-18

SECTION REQUIRES EDITOR TO MAKE SELECTIONS - GENERALLY SELECTIONS ARE PRECEDED BY **. SPEC EDITOR TO DELETE INAPPROPRIATE INFORMATION.

PART 1 - GENERAL

SELECT APPROPRIATE SECTIONS FOR BELOW; DELETE OTHERS

1.01 SUMMARY

- A. Section includes, but is not limited to: Design, fabrication, transportation, and erection of reinforced Autoclaved Aerated Concrete (AAC) structural ** floor, ** wall, ** and roof ** panels.
- B. Related sections:
 - 1. Section 01630: Product Substitution Procedures.
 - 2. Section 03200: Concrete Reinforcement.
 - 3. Section 03300: Cast-in-Place Concrete.
 - 4. Section 03541: Gypsum Underlayment.
 - 5. Section 04070: Masonry Grout.
 - 6. Section 04210: Brick.
 - 7. Section 04240: Autoclaved Aerated Concrete Units.
 - 8. Section 07600: Flashing and Sheet Metal.
 - 9. Section 07840: Firestopping.
 - 10. Section 07920: Joint Sealants.
 - 11. Section 08110: Steel Doors and Frames.
 - 12. Division 9: Finishes.

1.02 REFERENCES

- A. Standards of the following as referenced:
 - 1. American Concrete Institute (ACI).
 - 2. ASTM.
 - 3. Underwriters Laboratories, Inc. (UL).

1.03 DEFINITIONS

- A. Terms:
 - 1. Reinforced AAC panels: Reinforced Autoclaved Aerated Concrete panels.
 - 2. Strength Class: Classification that defines the physical properties of the AAC, designated as AC4, AC4.4 or AC6.

1.04 SYSTEM DESCRIPTION

- A. Design requirements:
 - 1. Basic reinforcement requirements: Reinforce for handling/transportation loads and design loads indicated in Contract Documents.
 - 2. Maximum deflection:
 - a. Floor panels:
 - 1) Live load: L/360.

- 2) Dead plus live load: L/240.
- b. Roof panels:
 - 1) Live load: L/240.
 - 2) Dead plus live load: L/180.
- c. Wall panels; wind load: L/240.
3. Design for structures supporting AAC roof, floor, and wall panels: L/360 maximum total deflection.

1.05 SUBMITTALS

- A. Quality control submittals:
 1. Certificate from the AAC manufacturer indicating AAC product is manufactured in accordance with ASTM C 1693-11, and ASTM C 1694-09. (these ASTM specs supersede ASTM C 1452).
- B. Shop drawings (if applicable)
 1. Indicate loads used for the design of reinforced AAC panels.
 2. Indicate dimensions of panels, arrangement of joints, reinforcement, and erection details. Include location of openings fabricated in panels.
 3. Identify reinforced AAC panels with mark used on shop drawings. Identifying marks shall be located on surfaces not visible in installed configuration.
 4. Indicate Strength Class.

1.06 QUALITY ASSURANCE

- A. Furnish reinforced AAC panels from single manufacturer.
- B. Mock-ups:
 1. Build a mock-up as directed by Architect.
 2. The following items are to be approved:
 - a. Mortar joints.
 - b. Control joint complete with joint sealant.
 - c. Workmanship.
 - d. Reinforcement, if required.
 - e. Flashing.
 - f. Exterior finishes.
 - g. Interior finishes.
 3. Prepare mock-up at least 14 days prior to beginning AAC unit work. Should mock-up be disapproved, prepare additional mock-ups until approved by Architect.
 4. Maintain mock-up throughout work as standard of AAC unit work. Do not destroy mock-up until directed by Architect.
- C. Pre-installation conferences:
 1. Prior to installation of reinforced AAC panels, schedule and hold a pre-installation conference to review Scope of Work.
 2. Attendees shall include a representative from each subcontractor involved with reinforced AAC panels and adjacent construction material installation.
 3. Notify Architect at least seven days prior to meeting.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Packing and shipping:
 1. Transport and handle reinforced AAC panels with equipment designed to protect panels from strain, warping, cracking, chipping, or staining.
 2. Placing reinforced AAC panels in direct contact with earth is prohibited.

- B. Storage and protection:
 - 1. Store to protect from strain, warping, cracking, chipping, or staining.
 - 2. Store in same position as transported.
 - 3. Store on firm, level, smooth surface.
 - 4. Place so identification marks are easily discernible.

1.08 PROJECT CONDITIONS

- A. Cold and hot weather installation practices for panels installed utilizing thin bed mortar joints:
 - 1. Cold weather precautions for AAC panel work:
 - a. When temperature of AAC panel is below 20°F, do not install panels.
 - b. Remove visible ice on AAC panel prior to installation.
 - c. Heat mortar sand or mixing water to produce mortar temperatures between 40°F and 120°F at time of mixing. Maintain mortar temperature above freezing until placed.
 - d. Ambient temperature requirements:
 - 1) Between 25°F and 20°F: Use heat sources on both sides of AAC panels under construction. Install wind breaks when wind velocity is in excess of 15 mph.
 - 2) Below 20°F: Provide enclosure for AAC panels under construction. Use heat sources to maintain temperatures above 32°F within enclosures.
 - e. Daily mean temperature requirements:
 - 1) Between 40°F and 32°F: Protect completed AAC panels from rain or snow by covering with weather resistive membrane for a minimum of 24 hours after construction.
 - 2) Between 32°F and 25°F: Completely cover completed AAC panels with weather resistive membrane for a minimum of 24 hours after construction.
 - 3) Between 25°F and 20°F: Completely cover completed AAC panels with insulating blankets or equal protection for a minimum of 24 hours after construction.
 - 4) Below 20°F: Maintain AAC panel construction above 32°F for 24 hours after completion by enclosure with supplementary heat, electric heating blankets, infrared heat lamps, or other acceptable methods outlined to Architect.
 - 2. Hot weather precautions for AAC panel work:
 - a. When erected in ambient air temperature of 100°F or ambient air temperature of 90°F with wind velocity in excess of 8 mph, implement the following:
 - 1) Spreading mortar beds more than 4'-0" ahead of AAC panels is prohibited.
 - 2) Installing AAC panel more than two minutes after spreading mortar is prohibited.

1.09 SEQUENCING AND SCHEDULING

- A. Loading AAC wall panels is prohibited prior to the following:
 - 1. Uniform floor or roof loads: 12 hours, minimum.
 - 2. Concentrated loads: Three days, minimum.
- B. Construction activities coordination specified in other Sections for work built into panels:
 - 1. Work required under this Section includes chase and routing coordination with construction activities specified in other Sections.
 - 2. As panel installation is completed, coordinate with work required in other Sections for chases or routing areas required in AAC panels for electrical, plumbing, and other items.
 - 3. Request relevant construction activities to mark actual routing or chase locations; include required depth.
 - 4. Filling in chases and routed areas specified in other Sections.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers:

1. Acceptable manufacturer: AERCON Florida LLC.; 3701 C.R. 544, Haines City, FL 33844; Telephone: (863) 422-6360; Fax (863) 422-6361.

TYPICALLY, USE BELOW IF CLOSED SPEC

2. Substitutions for products listed are prohibited.

USE THIS SUBPARAGRAPH FOR ALLOWING SUBSTITUTIONS WITHOUT NAMING OTHER MFRS.

3. Products of other manufacturers similar in type, quality, and performance are acceptable, subject to compliance with specified ** requirements.
** requirements and submission of required data indicated in Product Substitution Procedures section.

2.02 MANUFACTURED PANELS

A. Reinforced AAC panels:

1. Composition: Autoclaved aerated concrete mixture consisting of quartz sand, lime, cement, proprietary additives, water, and reinforcement.

SELECT APPROPRIATE THICKNESS(ES) AND USE; DELETE OTHERS; SEVERAL DIFFERENT WALL THICKNESSES REQUIRE MULTIPLE SELECTION.

SELECT STRENGTH CLASS(ES) REQUIRED.

2. Nominal dimensions: **
 - a. Non-Load Bearing Wall panels, reinforced: **4" (100 mm) ** 6" (150mm) ** 8" (200mm) ** 10" (240mm) ** 12" (300mm) ** thickness by 24" (610mm) width; Strength Class ** AC4. ** AC4.4 ** AC6. **
 - b. Floor panels, reinforced: ** 6" (150mm) ** 8" (200mm) ** 10" (240mm) ** 12" (300mm) ** thickness by 24" (610mm) width; Strength Class ** AC4. ** AC6. **
 - c. Roof panels, reinforced: ** 6" (150mm) ** 8" (200mm) ** 10" (240mm) ** 12" (300mm) ** thickness by 24" (610mm) width; Strength Class ** AC4. ** AC6. **
 - d. Load Bearing Wall panels, reinforced: ** 6" (150mm) ** 8" (200mm) ** 10" (240mm) ** 12" (300mm) ** thickness by 24" (608mm) width; Strength Class ** AC4. ** AC6. **

- B. Fire ratings: In accordance with UL 263, UL 1479 and UL 2079.

2.03 ACCESSORIES

- A. Key joint and bond beam reinforcement: ASTM A 615, Grade 60; deformed type for #3 and larger bars; actual sizes indicated on Contract Drawings.
- B. Fasteners and Anchors: Compatible with AAC materials.
- C. Joint sealant: Elite Cement Products, Inc., Atlanta GA; Flex W or equivalent, or compatible with AAC materials.

- D. Headers and frames:
 - 1. Headers at penetrations in floor and roof systems: Designed and detailed by AAC Panel Manufacturer or Engineer of Record.
 - 2. Supplemental steel framing at openings in wall systems: Designed and detailed by Project Engineer of Record.

- E. Mortar materials, acceptable product: AERCON Thin Bed Mortar or thin-bed mortar for AAC masonry manufactured in accordance with ASTM C 1660-10; Leveling mortar for wall panel bearing: Type M or S (per Engineer of Record).

2.04 MIXES

- A. Grout proportions:
 - 1. Fine grout: proportion materials by volume in accordance with ASTM C 476.
 - 2. Slump: 8" to 11" measured in accordance with ASTM C 143.

2.05 FABRICATION

- A. Shop assembly:
 - 1. Fabricate reinforced AAC panels in accordance with approved shop drawings.

PART 3 - EXECUTION

3.01 ERECTION

- A. Reinforced AAC panel work:
 - 1. Follow approved shop drawings (if applicable) for installation of work.
 - 2. Set reinforced AAC panels plumb, level, and true to line within specified erection tolerances. Dimensional tolerances shall be non-cumulative.
 - 3. Secure reinforced AAC panels in place as indicated on approved shop drawings or project details (as applicable).
 - 4. Provide temporary bracing as required to resist construction loads, including wind.

- B. Building in other work:
 - 1. Install work of other sections required to be incorporated with reinforced AAC panels as work progresses; include anchors, and accessories. Space and align built-in parts; exercise care not to disturb other materials from position.
 - 2. Fill in interior spaces around built-in items with fine grout or interior plaster.
 - 3. Fill in exterior spaces around built-in items with fine grout or stucco.

- C. Floor and roof panels: Fill joints between reinforced AAC panels using reinforcing bars and grout, as specified on structural drawings. Mix and place grout in accordance with manufacturer's recommendations. Feather-out grout at joint irregularities.

- D. Cleaning and patching: Patch spalls and chips in reinforced AAC panels in accordance with AAC panel manufacturer's recommendations.

3.02 APPLICATION

- A. Erection Tolerances:
 - 1. Maximum variation from plumb: 1/4" in 10'-0"; not exceeding 3/8" in 20'-0".
 - 2. Maximum variation from level: 1/4" in 20'-0"; not exceeding 1/2" in 40'-0" or more.
 - 3. Maximum variation in linear building line from location indicated: 1/4" at base of wall.

END OF SECTION 03440