

CSI MASTERFORMAT SECTION 04240

FIBER REINFORCED AERATED CONCRETE UNITS

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes: FlexCrete Aerated Concrete Wall System, including:
 - 1. Fiber Reinforced Aerated Concrete blocks.
 - 2. Thin Bed Mortar.
 - 3. Mechanical Fasteners
 - 4. Approved mortars, surface finishes and ancillary products.
- B. Related Sections: Coordinate AC construction system work with related work.

1.02 REFERENCES (INDUSTRY STANDARDS)

- A. General: Manufacturer to provide reference standards listed below for use of Fiber Reinforced Aerated Concrete panel.
 - 1. American Society for Testing and Materials (ASTM):
 - I. ASTM C 140-02a – Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
 - II. ASTM C 469-64 – Standard Test Method for Static Modulus of Elasticity and Poisson’s Ratio of Concrete in Compression.
 - III. ASTM C 42 / C 42M-99 – Standard Test Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
 - IV. ASTM C 177-97 – Standard Test Method for Steady State Heat Flux Measurements and Thermal Transmission Properties by Means of Guarded-Hot-Plate Apparatus.
 - 2. ASTM E119-00 – Standard Methods of Fire Tests of Building Construction and Materials.
 - 3. UBC 21-17 – Test Method for Compressive Strength of Masonry Prisms.
 - 4. ICC Evaluation Services, Inc. Legacy Report ER-5766.

1.03 DEFINITIONS

- A. Terms: Terms of the following as referenced:
 - 1. FRAC blocks: Fiber- reinforced Aerated Concrete.
 - 2. FRAC block: Nominally rectangular face unit, 8” x 24”.
 - 3. AC: Aerated Concrete.
 - 4. AC Wall Construction System: Combination of Fiber- reinforced Aerated Concrete blocks and approved mortar bonded together at all vertical and horizontal joints.
 - 5. Strength Class: Classification that defines the physical properties of FRAC blocks, designated as Class 30 and Class 35.

1.04 REQUIREMENTS AND PERFORMANCE

- A. Performance Requirements: Conform to manufacturer's standards and recommendations.
- B. Performance Requirements Criteria:
 - a. FRAC blocks: Refer to ICC Evaluation Services, Inc. *Legacy Report ER-5766* for allowable values and/or conditions of use concerning materials presented in this document..

1.05 SUBMITTALS

- A. Product Data: Manufacturers product data for AC Construction System.
- B. Samples: Typical FRAC block.
- C. Quality Control Submittals:
 - 1. Test Reports: Copies of fire certification tests.
 - 2. Certificates: From FlexCrete Building Systems, LC prior to delivery of blocks to Project Site. Include on each certificate: Signature of authorized officer of manufacturing company, name and address of Contractor, project location, product identification number, and procedures in accordance with ICC ES-5766 to which certificate applies.

1.06 QUALITY ASSURANCE

- A. Regulatory Requirements: Fiber- reinforced Aerated Concrete Panels shall comply with the following:
 - 1. ICC Evaluation Services, Inc. - Legacy Report ER-5766
- B. Manufacturer Qualifications: Furnish FRAC Panels from FlexCrete Building Systems, LC and one licensed production facility.
- C. Installer Qualifications: Engage an AC manufacturer – listed Installer who has the necessary tools, equipment and experience in FlexCrete and/or other AC system handling, placement and installation.
- D. Project site mock-up: Erect at project site a mock-up for approval.
 - 1. Erect sample unit construction with FlexCrete FRAC blocks.
 - 2. Orient mock-up as directed by Architect and indicate the following if applicable:
 - I. Bonding and mechanical fastening.
 - II. Control joint with joint sealant installed.
 - III. Workmanship.
 - IV. Flexible flashing detail.
 - V. Exterior surface finish.

3. Prepare a sample at least 14 days prior to commencement of work. Should sample be disapproved, prepare additional sample until approved.
4. Maintain sample throughout work as standard FRAC block work sample. Do not destroy sample until directed by Architect.

E. Pre-installation conference:

1. Prior to installation of FRAC blocks, conduct a pre-installation conference to review Scope of Work.
2. Attendees shall include a representative from each subcontractor involved with FRAC block installation and finish, and with the installation of any adjacent and/or related materials/components.
3. Architect shall coordinate and attend meeting.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Like all other construction materials, FlexCrete is susceptible to damage if mishandled. Less handling means lower potential for damage. In some instances, damage may occur from shipping.
1. Unload pallets using pallet forks (either on a forklift or crane-mounted).
 2. Block storage areas should be accessible to delivery trucks and convenient to material staging areas. If possible, drop-deliver materials right to the material staging areas.
 3. Blocks should always be stored away from construction activities on flat areas that are not susceptible to standing water, erosion or settling. Placing AC units in direct contact with soil is prohibited.
 4. Keep AC materials covered until ready for installation to protect from chipping, staining and mechanical damage.

1.08 PROJECT CONDITIONS

- A. Weather restrictions during construction:
- a. Cold Weather Installation Restrictions: Place AC material when temperature of surrounding air is 40°F and rising. Placing materials when temperature has dropped below this level and temperature of FlexCrete units is below 40°F is prohibited unless approved precautionary measures have been taken.
 - b. Hot weather precautions: When ambient temperature is over 90°F with a 10MPH wind or exceeds 100°F, do not spread mortar beds more than 8'-0" ahead of block installation. Under these conditions, FlexCrete units must be installed within 2 minutes of spreading mortar bed.

- c. Consult Manufacturer for recommended procedures in temperatures exceeding the lows and highs mentioned above.

1.09 SCHEDULING OTHER CONSTRUCTION ACTIVITIES

A. Loading of FRAC unit walls or pilasters should be done only after the following:

1. For uniform floor and/or roof loads: 12 hours, minimum.
2. Concentrated loads: 72 hours, minimum.

B. Coordination of other construction activities to be built into walls:

1. Includes work required for chasing and routing in connection with work done by other trades.
2. As walls are completed, coordinate chasing and routing with electrical, plumbing and other trades.
3. Request that relevant trades mark required chasing and routing locations, including required depth.
4. Back filling of all chasing and routing with FlexCrete Patch Mortar.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

A. Manufacturers:

1. FlexCrete Building Systems, L.C.; 3801 North Capital of Texas, E240-134, Austin, TX 78746; Tel: 512-692-6838; Fax: 512-692-2982.
2. Palestine FlexCrete, L.P.; 2500 W. Reagan, Palestine, TX 75802; Tel: 903- 729-2217; Fax: 903-724-5021
3. Navajo FlexCrete Building Systems, Inc.; 1950 Industrial Dr., Page, AZ 86040; Tel: 928-608-4801; Fax: 928-608-4802.
4. Substitutions: No substitutions permitted.

2.02 FRAC UNITS

A. FRAC Blocks

1. Composition: Aerated Concrete mixture consisting of fly ash and Portland cement with proprietary activators and poly-fibers.
2. Nominal dimensions: FRAC Precision Blocks: 4”; 6”; 8”; 10”; 12” nominal widths by 8” nominal height by 24” nominal length. Strength Class 30 and 35. Also offered with a 3” dia. Core suitable for housing vertical reinforcement rods.
3. Nominal dimensions: FRAC Mega blocks: 4”; 6”; 8”; 10”; 12” nominal widths by 16”; 24” nominal heights by 24”; 48” nominal lengths. Strength Class 30 and 35.
4. Lintel “U-block” units: Same dimensions as wall units.
5. Precast, prestressed concrete High-Strength Lintels manufactured by Cast-Crete (www.cast-crete.com). P.O. Box 24567, Tampa, FL 33623; Tel: 800-999-4641.

- B. Fire Ratings: In accordance with Intertek Spec Direct, per ASTM E-119.
- C. Product Testing: refer to Legacy Report ER-5766 by ICC Evaluation Services, Inc.

2.03 ACCESSORIES

- A. Acceptable Mortar Materials:
 - 1. AC Mortar: FlexCrete Thin Bed Mortar.
 - 2. AC Mortar: FlexCrete Thin Bed Mortar.
 - 3. If necessary, use type “M” or Type “S” mortar, per ASTM C270, for leveling course only. Use thin bed mortar for all horizontal and vertical joints.
 - 4. If cement grouting is indicated in project drawings: use fine aggregate per ASTM C 404, size No. 1; coarse aggregate per ASTM C 404, Size No. 89.
- B. Related Accessories:
 - 1. Joint sealant: Elite Cement Products Inc.; 4235 Buford Hwy. Duluth, GA 30096. Tel: 678-206-0242. Or, as specified in Joint Sealants Section.
 - 2. System fasteners: Approved fasteners for use in FRAC and Aerated Concrete. Consult with FlexCrete Building Systems, L.C. for recommended type and source.
 - 3. Tension tie-downs: Go-Bolt, Inc. (www.go-bolt.com), Deland, FL or equivalent.

2.04 MIXES

- A. Mortar proportions:
 - 1. FRAC unit head and bed joint mortar. Mix per manufacturer’s mixing instructions. Use only FRAC thin bed mortar for head and bed joints in any FRAC unit walls.
 - 2. For leveling course: proportion materials by volume per ASTM C 270.
 - 3. TecnoCem USA; 222 Lakeview Ave.–Penthouse 5, West Palm Beach, FL 33401; Tel: 561-655-8962.
- B. Cement Grout proportions:
 - 1. Fine and Coarse Grouts: Materials should be proportioned by volume, per ASTM C 476.
 - 2. Slump: 8” to 11” measured per ASTM C 270.

2.05 SURFACE FINISHES

- A. Acceptable Base coat and Finish Manufacturers:
 - 1. Elite Cement Products, Inc.; P.O. Box 48823, Atlanta, GA 30362; Tel: 770-448-0856.
 - 2. Texas EIFS; 220 Burluson, San Antonio, TX 78202; Tel: 210-472-2935.
 - 3. TecnoCem USA; 222 Lakeview Ave.–Penthouse 5, West Palm Beach, FL 33401; Tel: 561-655-8962.

PART 3 - EXECUTION

3.01 PRE-QUALIFIED INSTALLATION CREWS AND TOOLS

- A. Project Contract Requirements: Comply with project contract requirements for pre-qualified installers and installation tools and equipment.

3.02 PREPARATION

- A. Protection:
 - 1. Protect partially completed walls with non-staining waterproof membrane until wall construction activities are completed.
 - 2. Keep FRAC units clean throughout project.
 - 3. Brace walls as necessary during construction.
- B. Cutting FRAC Units: Cutting of FR AC wall units on the jobsite is permitted.

3.03 INSTALLATION

- A. Protection:
 - 1. Lay FRAC units plumb, level and true.
 - 2. Lay units in running bond pattern, with 6" minimum head joint stagger.
 - 3. Cut FRAC units with manufacturer recommended hand saws or electric band saw, specially designed for cutting Aerated Concrete units.
 - 4. Install FRAC units for accurate spacing of surface bond patterns with uniform joint widths and for accurate location of opening, joints, returns and offsets. Install units to comply with specified construction tolerances, with courses spaced and coordinated with other construction. Fill in interior spaces around built-in items with fine grout or interior plaster. Fill in exterior spaces around built-in items with fine grout or stucco.
 - 5. Fill in hollow metal frames in FRAC unit walls with fine grout as walls are laid. Rake back ___" joint between hollow metal frame and adjacent FRAC units to receive sealant at butt type frames.
- B. Mortar Joints:
 - 1. Lay first course in full bed of leveling mortar in necessary thickness to level top of FRAC units. First course leveling mortar bed should be no less than 3/8 inch.
 - 2. Apply FRAC unit head and bed joints on full face of FRAC unit already laid.
 - 3. Make adjustments while mortar is still soft and plastic by tapping to plumb and bringing to alignment.
 - 4. Check each FRAC unit as laid, with mason's level for level and plumb with adjoining wall surfaces.
 - 5. Adjustments in areas where mortar has started to set are prohibited. If necessary, remove and replace mortar with fresh mortar to adjust.
 - 6. Keep bed and head joints uniform in width: 1/16", nominal.
 - 7. Avoid spreading mortar on exposed face of FRAC unit. Remove excess only after mortar has dried enough not to smear; only normal mortar droppings will be accepted on face of FRAC units.
 - 8. Tooling joints is not required.
- C. Control joints:
 - 1. Provide control joints, 1/2" wide unless indicated otherwise; rake out control joints to a depth of 3/4" while mortar is still plastic.
 - 2. Provide joints at 24'-0" O.O. unless otherwise indicated.

3. Leave joint open and clean for joint treatment in accordance with Division 7, Joint Treatment, by others.

D. Installation tolerances:

1. Maximum variation from plumb: __" in 10'-0", not to exceed 3/8" in 20'-0".
2. Maximum variation from level: __" in 20'-0", not to exceed __" in 40'-0".
3. Maximum variation in linear building line from location indicated: __" in 20'-0".

END OF SECTION 04225