



American Fiber Cement Corporation

SECTION 07450

MINERAL-FIBER-REINFORCED CEMENTITIOUS PANELS

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**** NOTE TO SPECIFIER ** American Fiber Cement Corporation, Fiber reinforced cement building products.**

**This section is based on the products of American Fiber Cement Corp., which is located at:
6901 S. Pierce St. Suite 180**

Littleton, CO 80128

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American Fiber Cement Corporation was founded to supply the finest fiber reinforced cement building products for today's innovative construction professionals. These materials encompass a myriad of disciplines and applications including commercial, residential, industrial and agricultural.

PART 1 GENERAL

1.1 SECTION INCLUDES

**** NOTE TO SPECIFIER ** Delete items below not required for project.**

- A. Fiber cement panels of the following types:
 - 1. Through color high density fiber cement panels: Patina, Patina Inline, Patina Rough, Solid, Transparent
 - 2. Surface colored high-density fiber cement panels: Cover, Deco
 - 3. Natural color high density fiber cement panels: Minerit HD (Raw)
- B. Cladding attachment system.

1.2 RELATED SECTIONS

**** NOTE TO SPECIFIER ** Delete any sections below not relevant to this project; add others as required.**

- A. Section 05400 - Cold-Formed Metal Framing.
- B. Section 06100 - Rough Carpentry.
- C. Section 07210 - Building Insulation.

**** NOTE TO SPECIFIER ** American Fiber Cement Corp. recommends water resistive barrier Fassade S as manufactured by Delta.**

- D. Section 07250 - Air Barriers.

1.3 REFERENCES

**** NOTE TO SPECIFIER ** Delete references from the list below that are not actually required by the text of the edited section.**

References are product specific. See specific product in Part 2 to see which testing applies.

- A. ASTM - ASTM International:
 - 1. ASTM C1185 - Standard Test Methods for Sampling and Testing Non-Asbestos Fiber-Cement Flat Sheet, Roofing and Siding Shingles, and Clapboards.
 - 2. ASTM C1186 - Standard Specification for Flat Fiber-Cement Sheets.
 - 3. ASTM E84 - Surface Burning Characteristics of Building Materials.
 - 4. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750-degree C. Determination of Non-Combustibility.
- B. CEN - European Committee for Standardization:
 - 1. EN 12467 - Fiber Cement Flat Sheets-Product Specifications and Test Methods.
 - 2. EN 13501 - Fire Test to Building Material.
 - 3. EN 20105 - Test for Color Fastness.
 - a. Part A02 Grey Scale.
- C. ULC - National Standard of Canada
 - 1. CAN/ULC S102 - Surface Burning Characteristics of Building Materials and Assemblies
 - 2. CAN/ULC S114 - Standard Method of Test for Determination of Non-Combustibility in Building Materials
- D. ICC – International Code Council
 - 1. ICC-ES Evaluation Report: ESR-3863 Cembrit Fiber-Cement Façade Panel System
- E. IAPMO - The International Association of Plumbing and Mechanical Officials
 - 1. IAPMO-UES Evaluation Report: 553 Cembrit Fiber-Cement Façade Panel System
- F. Materials and Equipment Acceptance (MEA) - New York City Department of Buildings Division.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300 - Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings: Provide detailed drawings of non-standard applications of fiber cement materials which are outside the scope of the standard details and specifications provided by the manufacturer.

**** NOTE TO SPECIFIER ** Delete if attachment system not part of this section scope.**

- D. Attachment System Engineered Drawings:
 - 1. Provide engineered design for attachment and back-up framing to support exterior cladding.
 - 2. Provide static calculations verifying sizing of members, attachment devices and fasteners to support the exterior cladding with a safety factor required by Authority Having Jurisdiction (AHJ).
 - 3. Provide Installation drawings and details.

**** NOTE TO SPECIFIER ** Delete selection samples if colors have already been selected.**

- E. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- F. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum of 2 years experience with installation of similar products.
- B. Color Evaluation: Insignificant change after 3000 hours of QUV test (EN 20105).

**** NOTE TO SPECIFIER ** Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.**

- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Finish areas designated by Architect.
 - 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
 - 3. Remodel mock-up area as required to produce acceptable work.

1.6 FABRICATION, DELIVERY, STORAGE, AND HANDLING

- A. All cladding materials to be finished and fabricated in the United States with backup inventory in residence in the United States to support job in-progress.
- B. Store products in manufacturer's unopened packaging until ready for installation in accordance with manufacturer's recommended guidelines.
- C. All cladding materials to be fabricated to end use panel sizes with holes drilled in manufacturer's fabrication facility. Shop drawings are to determine panel sizes. Shop drawings through the manufacturer are recommended. If outsourced, manufacturer must be consulted.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.8 WARRANTY

- A. Warranty: Manufacturer warrants that its products are manufactured in accordance with its applicable material specifications and are free from defects in materials and workmanship.
 - 1. Only products that are installed and used in accordance with applicable manufacturer's instructions and specifications are warranted.
 - 2. The warranty is applicable only to claims made in writing and received by the manufacturer within thirty days after the defect was discovered and within ten years after the date of the shipment of the product by the manufacturer.

PART 2 PRODUCTS

2.1 MANUFACTURER/SUPPLIER

- A. Basis of Design: AFC Cladding Fiber Cement Panels by American Fiber Cement Corp.; 6901 S. Pierce St. Suite 180, Littleton, CO 80128. ASD. Toll Free Tel: (800) 688-8677 ext.

102. Tel: (303) 978-1199. Fax: (303) 978-0308. Email: danglada@afcccladding.com. Web: <http://www.americanfibercement.com>.

**** NOTE TO SPECIFIER ** Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.**

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 01600 - Product Requirements.

**** NOTE TO SPECIFIER ** Delete if not required.**

2.2 THROUGH COLOR HIGH DENSITY FIBER CEMENT PANELS

A. Through Color High Density Fiber Cement Panels:

**** NOTE TO SPECIFIER ** Patina is a fully compressed, autoclaved, fiber, cement sheet. The color is through-out the sheet. Natural color differences, possibly accentuated by the orientation of the sheet and the effects of light and moisture, are possible. The sheet becomes a little lighter with aging. The surface of the sheet is characterized by fine sanding lines. Applications include exterior facades, fascias, soffits and interior cladding. Delete if not required.**

1. Product: Patina as manufactured/supplied by American Fiber Cement Corp.

**** NOTE TO SPECIFIER ** Delete application not required.**

- a. Application: Exterior.
- b. Application: Interior.
- c. Thickness: 5/16 inch (8 mm).
- d. Finish: Through-colored, muted, matte finish with a unique weather-proof treatment which makes it resistant to staining and surface dirt.

**** NOTE TO SPECIFIER ** Delete colors not required.**

- e. Color: P 020 (Granite).
- f. Color: P 050 (Graphite).
- g. Color: P 070 (Flint).
- h. Color: P 222 (Pearl).
- i. Color: P 313 (Tufa).
- j. Color: P 323 (Magma).
- k. Color: P 333 (Adobe).
- l. Color: P 343 (Ruby).
- m. Color: P 545 (Sand).
- n. Color: P 565 (Amber).
- o. Color: P 626 (Emerald).
- p. Physical Characteristics: ASTM C1185/C1186, EN 12467 'Fiber-cement flat sheets'.
 - 1) Density Dry: greater than 1475 kg/m³.
 - 2) Bending strength at with grain: 22 MPa.
 - 3) Bending strength at across grain: 35 MPa.
 - 4) Modulus of elasticity at with grain: greater than 12 GPa.
 - 5) Modulus of elasticity at across grain: greater than 14 GPa.
 - 6) Durability classification (EN 12467): Category A.
 - 7) Strength classification (EN 12467): Class 4.
 - 8) Fire reaction (EN 13501-1): A2-s1-d0.
 - 9) Warm water test: Ok.
 - 10) Soak dry test: Ok.
 - 11) Freeze thaw test: greater than 100 cycles.
 - 12) Thermal conductivity e: 0.37 W/mK.
- q. Fire Testing:
 - 1) ASTM E84
 - 2) ASTM E136

- 3) CAN/ULC S102
- 4) CAN/ULC S114
- 5) EN 13501-1
- r. ICC-ES Evaluation Report:
 - 1) ESR-3863 Cembrit Fiber-Cement Façade Panel System

**** NOTE TO SPECIFIER ** Patina Rough is a fully compressed, autoclaved, fiber, cement sheet. The color is through-out the sheet. Natural color differences, possibly accentuated by the orientation of the sheet and the effects of light and moisture, are possible. The sheet becomes a little lighter with aging. The surface of the sheet is characterized by its tough textured finish. Applications include exterior facades, fascias, soffits and interior cladding. Delete if not required.**

- 2. Product: Patina Rough as manufactured/supplied by American Fiber Cement Corp.

**** NOTE TO SPECIFIER ** Delete application not required.**

- a. Application: Exterior.
- b. Application: Interior.
- c. Thickness: 5/16 inch (8 mm).
- d. Finish: Through-colored, muted, tough textured finish with a unique weather-proof treatment which makes it resistant to staining and surface dirt.

**** NOTE TO SPECIFIER ** Delete colors not required.**

- e. Color: P 020 (Granite).
- f. Color: P 050 (Graphite).
- g. Color: P 070 (Flint).
- h. Color: P 222 (Pearl).
- i. Color: P 545 (Sand).
- j. Physical Characteristics: ASTM C1185/C1186, EN 12467 'Fiber-cement flat sheets'.
 - 1) Density Dry: greater than 1300 kg/m³.
 - 2) Bending strength at with grain: 25 MPa.
 - 3) Bending strength at across grain: 36 MPa.
 - 4) Modulus of elasticity at with grain: greater than 13 GPa.
 - 5) Modulus of elasticity at across grain: greater than 15 GPa.
 - 6) Durability classification (EN 12467): Category A.
 - 7) Strength classification (EN 12467): Class 4.
 - 8) Fire reaction (EN 13501-1): A2-s1-d0.
 - 9) Warm water test: Ok.
 - 10) Soak dry test: Ok.
 - 11) Freeze thaw test: greater than 100 cycles.
 - 12) Thermal conductivity e: 0.4 W/mK.
- k. Fire Testing:
 - 1) ASTM E84
 - 2) ASTM E136
 - 3) CAN/ULC S102
 - 4) CAN/ULC S114
 - 5) EN 13501-1
- l. ICC-ES Evaluation Report:
 - 1) ESR-3863 Cembrit Fiber-Cement Façade Panel System

**** NOTE TO SPECIFIER ** Patina Rough is a fully compressed, autoclaved, fiber, cement sheet. The color is through-out the sheet. Natural color differences, possibly accentuated by the orientation of the sheet and the effects of light and moisture, are possible. The sheet becomes a little lighter with aging. The surface of the sheet is characterized by its linear grooved pattern. Applications include exterior facades, fascias, soffits and interior cladding. Delete if not required.**

- 3. Product: Patina Inline as manufactured/supplied by American Fiber Cement Corp.

**** NOTE TO SPECIFIER ** Delete application not required.**

- a. Application: Exterior.

- b. Application: Interior.
- c. Thickness: 3/8 inch (9.5 mm).
- d. Finish: Through-colored, muted, matte finish with milled linear grooves and a unique weather-proof treatment which makes it resistant to staining and surface dirt.

**** NOTE TO SPECIFIER ** Delete colors not required.**

- e. Color: P 020 (Granite).
- f. Color: P 050 (Graphite).
- g. Color: P 070 (Flint).
- h. Color: P 222 (Pearl).
- i. Color: P 545 (Sand).
- j. Physical Characteristics: ASTM C1185/C1186, EN 12467 'Fiber-cement flat sheets'.
 - 1) Density Dry: greater than 1300 kg/m³.
 - 2) Bending strength at with grain: 26 MPa.
 - 3) Bending strength at across grain: 37 MPa.
 - 4) Modulus of elasticity at with grain: greater than 17 GPa.
 - 5) Modulus of elasticity at across grain: greater than 17 GPa.
 - 6) Durability classification (EN 12467): Category A.
 - 7) Strength classification (EN 12467): Class 4.
 - 8) Fire reaction (EN 13501-1): A2-s1-d0.
 - 9) Warm water test: Ok.
 - 10) Soak dry test: Ok.
 - 11) Freeze thaw test: greater than 100 cycles.
 - 12) Thermal conductivity e: 0.4 W/mK.
- k. Fire Testing:
 - 1) ASTM E84
 - 2) ASTM E136
 - 3) CAN/ULC S102
 - 4) CAN/ULC S114
 - 5) EN 13501-1
- l. ICC-ES Evaluation Report:
 - 1) ESR-3863 Cembrit Fiber-Cement Façade Panel System

**** NOTE TO SPECIFIER ** Solid is a fully compressed, air-cured, fiber cement sheet that is through-colored and finished with an acrylic coating. Panels installed on projects from the early 1990's still retain their structural integrity and original appearance. Solid (formerly Zenit) has been used in a wide range of building types: public, commercial and residential. Delete if not required.**

- 4. Product: Solid as manufactured/supplied by American Fiber Cement Corp.

**** NOTE TO SPECIFIER ** Delete application not required.**

- a. Application: Exterior.
- b. Application: Interior.
- c. Thickness: 5/16 inch (8 mm).
- d. Finish: Through-colored, baseboard fully covered with matching acrylic coating.

**** NOTE TO SPECIFIER ** Delete colors not required.**

- e. Color: S 030 (Mercury).
- f. Color: S 070 (Orcus).
- g. Color: S 101 (Pluto).
- h. Color: S 131 (Juno).
- i. Color: S 151 (Pallas).
- j. Color: S 191 (Erebus).
- k. Color: S 212 (Luna).
- l. Color: S 282 (Saturn).
- m. Color: S 334 (Jupiter).
- n. Color: S 353 (Mars).

- o. Color: S 515 (Venus).
- p. Color: S 525 (Triton).
- q. Color: S 606 (511 Rhea).
- r. Color: S 616 (513 Ceres).
- s. Color: S 656 (505 Terra).
- t. Color: S 676 (516 Castillo).
- u. Color: S 747 (503 Neptune).
- v. Color: S 757 (515 Mimas).
- w. Physical Characteristics: ASTM C1185/C1186, EN 12467 'Fiber-cement flat sheets'.
 - 1) Density Dry: 1770 kg/m³.
 - 2) Bending strength at with grain: 39.0 MPa.
 - 3) Bending strength at across grain: 24.8 MPa.
 - 4) Modulus of elasticity at with grain: greater than 16.3 GPa.
 - 5) Modulus of elasticity at across grain: greater than 13.8 GPa.
 - 6) Durability classification (EN 12467): Category A.
 - 7) Strength classification (EN 12467): Class 4.
 - 8) Fire reaction (EN 13501-1): A2-s1-d0.
 - 9) Warm water test: Ok.
 - 10) Soak dry test: Ok.
 - 11) Freeze thaw test: greater than 100 cycles.
 - 12) Thermal conductivity e: 0.5 W/mK.
- x. Fire Testing:
 - 1) ASTM E84
 - 2) ASTM E136
 - 3) CAN/ULC S102
 - 4) CAN/ULC S114
 - 5) EN 13501-1
- y. IAPMO-UES Evaluation Report:
 - 1) UES- 553 Cembrit Fiber-Cement Façade Panel System

**** NOTE TO SPECIFIER ** Transparent is a fully compressed, air-cured, fiber cement sheet that is through-colored and finished with a transparent acrylic coating. Panels installed on projects from the early 1990's still retain their structural integrity and original appearance. Transparent (formerly True) has been used in a wide range of building types: public, commercial and residential. Delete if not required.**

5. Product: Transparent as manufactured/supplied by American Fiber Cement Corp.

**** NOTE TO SPECIFIER ** Delete application not required.**

- a. Application: Exterior.
- b. Application: Interior.
- c. Thickness: 5/16 inch (8 mm).
- d. Finish: Through-colored, fiber cement board with a semi-transparent surface treatment.

**** NOTE TO SPECIFIER ** Delete colors not required.**

- a. Color: T 020 (Mediterranean).
- b. Color: T 030 (Olympus).
- c. Color: T 101 (Arabian).
- d. Color: T 111 (Kilimanjaro).
- e. Color: T 161 (Denali).
- f. Color: T 171 (Etna).
- g. Color: T 242 (Antarctic).
- h. Color: T 252 (Blanc).
- i. Color: T 262 (Sahara).
- j. Color: T 373 (Kalahari).
- k. Color: T 383 (Vesuv).

- l. Color: T 505 (Mojave).
- m. Color: T 515 (Gobi).
- n. Color: T 626 (Sonoran).
- o. Color: T 737 (Caribbean).
- p. Physical Characteristics: ASTM C1185/C1186, EN 12467 'Fiber-cement flat sheets'.
 - 1) Density Dry: 1770 kg/m³.
 - 2) Bending strength at with grain: 39.0 MPa.
 - 3) Bending strength at across grain: 24.8 MPa.
 - 4) Modulus of elasticity at with grain: greater than 16.3 GPa.
 - 5) Modulus of elasticity at across grain: greater than 13.8 GPa.
 - 6) Durability classification (EN 12467): Category A.
 - 7) Strength classification (EN 12467): Class 4.
 - 8) Fire reaction (EN 13501-1): A2-s1-d0.
 - 9) Warm water test: Ok.
 - 10) Soak dry test: Ok.
 - 11) Freeze thaw test: greater than 100 cycles.
 - 12) Thermal conductivity e: 0.5 W/mK.
- q. Fire Testing:
 - 1) ASTM E84
 - 2) ASTM E136
 - 3) CAN/ULC S102
 - 4) CAN/ULC S114
 - 5) EN 13501-1
- r. IAPMO-UES Evaluation Report:
 - 1) UES- 553 Cembrit Fiber-Cement Façade Panel System

2.3 SURFACE COLORED AND TEXTURED HIGH DENSITY FIBER CEMENT PANELS

**** NOTE TO SPECIFIER ** Delete if not required.**

A. Surface Colored and Textured High Density Fiber Cement Panels:

**** NOTE TO SPECIFIER ** Cover is a fully compressed, air-cured, gray fiber cement sheet that is finished with an acrylic coating. Panels installed on projects from the early 1990's still retain their structural integrity and original appearance. Delete if not required.**

1. Product: Cover as manufactured/supplied by American Fiber Cement Corp.

**** NOTE TO SPECIFIER ** Delete application not required.**

- a. Application: Exterior.
- b. Application: Interior.
- c. Thickness: 5/16 inch (8 mm).
- d. Finish: Classic, natural gray baseboard fully covered with an opaque, water-based acrylic coating which is resistant to moss, algae, staining and surface dirt.

****NOTE TO SPECIFIER** Delete colors not required.**

- e. Color: C 010 (Stockholm).
- f. Color: C 020 (Vilnius).
- g. Color: C 040 (Sofia).
- h. Color: C 050 (Berlin).
- i. Color: C 060 (Helsinki).
- j. Color: C 160 (London).
- k. Color: C 210 (Nuuk).
- l. Color: C 300 (Milan).
- m. Color: C 360 (Copenhagen).
- n. Color: C 380 (Lyon).
- o. Color: C 390 (Istanbul).
- p. Color: C 450 (Amsterdam).

- q. Color: C 530 (Rome).
- r. Color: C 540 (Kiev).
- s. Color: C 550 (Athens).
- t. Color: C 560 (Bonn).
- u. Color: C 570 (Barcelona).
- v. Color: C 600 (Prague).
- w. Color: C 610 (Lisbon).
- x. Color: C 630 (Geneva).
- y. Color: C 640 (Hamburg).
- z. Color: C 650 (Madrid).
- aa. Color: C 670 (Dublin).
- bb. Color: C 730 (Oslo).
- cc. Color: C 760 (Naples).
- dd. Color: C 770 (Riga).
- ee. Physical Characteristics: ASTM C1185/C1186, EN 12467 'Fiber-cement flat sheets'.
 - 1) Density Dry: 1770 kg/m³.
 - 2) Bending strength at with grain: 39.0 MPa.
 - 3) Bending strength at across grain: 24.8 MPa.
 - 4) Modulus of elasticity at with grain: greater than 16.3 GPa.
 - 5) Modulus of elasticity at across grain: greater than 13.8 GPa.
 - 6) Durability classification (EN 12467): Category A.
 - 7) Strength classification (EN 12467): Class 4.
 - 8) Fire reaction (EN 13501-1): A2-s1-d0.
 - 9) Warm water test: Ok.
 - 10) Soak dry test: Ok.
 - 11) Freeze thaw test: greater than 100 cycles.
 - 12) Thermal conductivity e: 0.5 W/mK.
- ff. Fire Testing:
 - 1) ASTM E84
 - 2) ASTM E136
 - 3) CAN/ULC S114
 - 4) EN 13501-1
- gg. IAPMO-UES Evaluation Report:
 - 1) UES- 553 Cembrit Fiber-Cement Façade Panel System

**** NOTE TO SPECIFIER ** Deco is a fully compressed, autoclaved, fiber, cement sheet with an acrylic paint coating. Sanding lines along the surface of the sheet are visible through the paint creating a smooth yet natural look. Delete if not required. (Maximum panel width is 1170mm (46")).**

2. Product: Deco as manufactured/supplied by American Fiber Cement Corp.

**** NOTE TO SPECIFIER ** Delete application not required.**

- a. Application: Exterior.
- b. Application: Interior.
- c. Thickness: 5/16 inch (8 mm).
- d. Finish: Autoclaved baseboard with sanding grain lines covered by an opaque, water-based acrylic coating which is resistant to moss, algae, staining and surface dirt.

****NOTE TO SPECIFIER** Delete colors not required.**

- e. Color: D 030 (Fossil).
- f. Color: D 100 (Charcoal).
- g. Color: D 190 (Carbon).
- h. Color: D 212 (Cirrus).
- i. Color: D 330 (Sienna).
- j. Color: D 350 (Chestnut).
- k. Color: D 555 (Aspen).

- l. Color: D 562 (Wheat).
- m. Color: D 600 (Sage).
- n. Physical Characteristics: EN 12467 'Fiber-cement flat sheets'.
 - 1) Density Dry: greater than 1250 kg/m³.
 - 2) Bending strength at with grain: 25 MPa.
 - 3) Bending strength at across grain: 35 MPa.
 - 4) Modulus of elasticity at with grain: 16 GPa.
 - 5) Modulus of elasticity at across grain: 18 GPa.
 - 6) Durability classification (EN 12467): Category A.
 - 7) Strength classification (EN 12467): Class 4.
 - 8) Fire reaction (EN 13501-1): A2-s1-d0.
 - 9) Warm water test: Ok.
 - 10) Soak dry test: Ok.
 - 11) Freeze thaw test: greater than 100 cycles.
 - 12) Thermal conductivity e: 0.37 W/mK.
- o. Fire Testing:
 - 1) ASTM E84
 - 2) ASTM E136
 - 3) EN 13501-1
- p. ICC-ES Evaluation Report:
 - 1) ESR-3863 Cembrit Fiber-Cement Façade Panel System

2.4 ESR-3863 Cembrit Fiber-Cement Façade Panel System NATURAL COLOR HIGH DENSITY FIBER CEMENT PANELS

A. Natural Color High Density Fiber Cement Panels:

**** NOTE TO SPECIFIER ** High density facade boards are extremely well suited to both new buildings and the renovation of old buildings. Heavy Duty is a safe construction material for facades, balconies and for agricultural construction. The board's smooth, natural gray and even-quality surface allows effective staining or painting if desired. When being installed in an exterior rainscreen application, surface treatment is required, but in all other applications, surface treatment is optional.**

- 1. Product: Minerit HD (Raw) as manufactured/supplied by American Fiber Cement Corp.

**** NOTE TO SPECIFIER ** Delete application not required.**

- a. Application: Exterior.
- b. Application: Interior.

**** NOTE TO SPECIFIER ** Delete two of the next three paragraphs.**

- 2. Finish: Field painted per exterior finish schedule.
- 3. Finish: Raw.

**** NOTE TO SPECIFIER ** Delete thicknesses not required.**

- 4. Thickness: 5/32 inch (4 mm). For interior applications only.
- 5. Thickness: 1/4 inch (6 mm). For interior applications only. Requires minimum order.
- 6. Thickness: 5/16 inch (8 mm).
- 7. Thickness: 3/8 inch (10 mm).
- 8. Physical Characteristics: Properties based on 5/16 inch (8 mm) material. ASTM C1185/ ASTM C1186, EN12467 12467 'Fiber-cement flat sheets'.
 - a. Density Dry: 1800 kg/m³.
 - b. Bending strength at with grain: 26.0 MPa.
 - c. Bending strength at across grain: 22.0 MPa.
 - d. Modulus of elasticity at with grain: 21.0 GPa.
 - e. Modulus of elasticity at across grain: 20.0 GPa.
 - f. Water Absorption: 12%.
 - g. Thermal Conductivity: 0.48 W/mK.
 - h. Coefficient of Thermal Expansion: 0.008 mm/m°C

- i. Moisture Movement: 3 mm/m
- j. Surface Burning Characteristics, Class I.
- k. Flame spread - 0.
- l. Smoke developed < 10.
- m. Continuous Maximum Temperature: 105° C.
- n. Fire Testing:
 - 1) ASTM E84
 - 2) ASTM E136
 - 3) CAN/ULC S102
 - 4) CAN/ULC S114
 - 5) EN 13501-1

**** NOTE TO SPECIFIER ** Delete if not required.**

2.5 MISCELLANEOUS CLADDING MATERIALS

**** NOTE TO SPECIFIER ** Delete miscellaneous cladding materials not required.**

- A. Building Wrap: AFCC Building Wrap complying with local codes for product and installation requirements.
- B. Aluminum Joint Closures and Decorative Corner Profiles: Manufacturer's standard products as detailed. Maximum thickness of finishing profile to be 0.8 mm or 21-gauge.

2.6 ATTACHMENT SYSTEMS

- A. Attachment System, Steel Supporting Members:
 - 1. Product: "Hat" or "Z" profiles supplied by others.
 - a. Material: Steel, minimum 16-gauge, minimum G90 coating.
 - 2. UV Protective Membrane: As supplied by American Fiber Cement Corp.
 - a. For open joint ventilated rain screen systems.

**** NOTE TO SPECIFIER ** Delete if not required.**

- B. Attachment System, Aluminum Supporting Members:
 - 1. Product: "Hat" or "Z" profiles supplied by others.
 - a. Material: Aluminum - min. 2mm thickness.
 - 2. UV Protective Membrane: As supplied by American Fiber Cement Corp.
 - a. For open joint ventilated rain screen systems.

**** NOTE TO SPECIFIER ** Delete if not required.**

- C. Attachment System, Wood Supporting Members:
 - 1. Product: Wood profiles supplied by others.
 - a. Material: Pressure treated wood.
 - 2. UV Protective Membrane: As supplied by American Fiber Cement Corp.
 - a. For open joint ventilated rain screen systems.

**** NOTE TO SPECIFIER ** Delete if not required.**

- D. Attachment System, XKELEX Z19:
 - 1. Product: Perforated Horizontal Aluminum profiles supplied by AFCC.
 - a. Material: 6063-T5
 - b. Finish: Black Powder Coat or Mill Finish
 - 2. UV Protective Membrane: As supplied by American Fiber Cement Corp.
 - a. For open joint ventilated rain screen systems.

2.7 FIXING ACCESSORIES FOR ATTACHMENT SYSTEMS

**** NOTE TO SPECIFIER ** Delete paragraphs not required.**

- A. Rivets: Stainless steel Astro rivets (for use with metal supporting members).

1. As supplied by American Fiber Cement Corp.
- B. Rivets: Color-matched stainless-steel Astro rivets (for use with metal supporting members).
 1. As supplied by American Fiber Cement Corp.
- C. Screws: Stainless steel screws (for use with wood supporting members).
 1. As supplied by American Fiber Cement Corp.
- D. Screws: Color-matched stainless-steel screws (for use with wood supporting members).
 1. As supplied by American Fiber Cement Corp.

**** NOTE TO SPECIFIER ** American Fiber Cement Corp. recommends epoxy adhesive system Dynamic Bond as manufactured by Dynamic Bonding Systems. Dynamic Bond is used for concealed fastening. Dynamic Bond is a fast curing, permanently elastic one component adhesive/sealant based on MS-hybrid-polymers. Dynamic Bond is moisture curing, neutral polymerization, odorless, and has excellent adhesive power. Dynamic Bond is suitable for all attachment systems. Delete if not required.**

- E. Concealed Attachment, Epoxy Adhesive System: For concealed fastening of exterior cladding panels on ventilated rain screen constructions.
 1. Product: Dynamic Bond as manufactured by Dynamic Bonding Systems and supplied by American Fiber Cement Corporation.
 - a. Material: Structural adhesive and sealant based on MS-hybrid-polymer.
 - b. Physical Characteristics:
 - 1) Density: 1.54 g/cm³.
 - 2) Tensile strength: 2.3 N/mm².
 - 3) Shear strength: 2.1 N/mm².
 - 4) Fire reaction (EN 13501-1): B-s1-d0.

**** NOTE TO SPECIFIER ** Delete accessories not required.**

2. Accessories:
 - a. Dynamic Clean: For use in conjunction with Dynamic Bond.
 - b. Dynamic Tape: For use in conjunction with Dynamic Bond.
 - c. Dynamic Protect: For impregnation of wood surfaces.
 - d. Dynamic SI Epoxy: For impregnation of porous (fiber) cement panels.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions and approved submittals.

**** NOTE TO SPECIFIER ** Delete if exterior board application not required.**

- B. For exterior applications, comply with local codes and structural engineer's fastening calculations along with manufacturer's recommendations for fastener spacing.

**** NOTE TO SPECIFIER ** Patina, Patina Rough, Patina Inline, Solid, Transparent, Cover, Deco and Minerit HD architectural panels in a ventilated rain screen application. Special Requirements are necessary for buildings over 150 ft (45 m) high, or for buildings in high wind areas. Delete if not required.**

3.4 EXTERIOR CLADDING FOR RAINSCREEN APPLICATIONS

A. Detailing Requirements:

1. Air space at top and bottom of building or wall termination shall be 3/4 inch (20 mm) to facilitate airflow from behind the panels. Do not block vertical airflow at windows, doors, eaves, or at the base of the building. Airflow shall be continuous from bottom to top so there is air movement behind each panel. For walls over 60 feet high (18 m), the ventilated cavity between rear of panels and exterior wall shall be increased to 1-5/8 inches (40 mm). Air flow behind the cement fiber panels is critical to the performance of the rain screen constructions.
2. Fasteners in profile shall accommodate thermal expansion/contraction of metal and not interfere with panel application.
3. Install panels from top of building to bottom.
4. For straight walls, start panel installation in center and work outward.
5. For walls with inside corners, start installation at corner and work across wall.

**** NOTE TO SPECIFIER ** Delete patterns not required.**

6. Pattern: Straight pattern with vertical panels. Panel size as indicated.
7. Pattern: Straight pattern with horizontal panels. Panel size as indicated.
8. Pattern: Semi pattern with horizontal panels. Panel size as indicated.

B. Rain Screen Installation: Comply with manufacturer's installation requirements.

**** NOTE TO SPECIFIER ** Delete if not required.**

1. Attachment System: Comply with manufacturer's engineered design for cladding support framing.

3.5 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION