

SECTION 02221  
BUILDING DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes demolition of lead based siding, windows, soffits, fascia boards, and trims; disconnecting utilities and exterior lighting; and removing designated building equipment and fixtures; and removing designated components.

1.2 SUBMITTALS

- A. Shop Drawings and Schedule: Describe demolition, removal procedures, sequence and schedule.

PART 2 EXECUTION

3.1 PREPARATION

- A. Provide, erect, and maintain temporary barriers and security devices.
- B. Notify adjacent owners of work which may affect their property, potential noise, utility outage, or disruption. Coordinate with owner.
- C. Prevent movement or settlement of adjacent structures. Provide bracing and shoring.
- D. Protect existing landscaping materials, and structures which are not to be demolished.
- E. Erect and maintain weatherproof airtight closures for exterior openings.
- F. Erect and maintain temporary partitions to prevent spread of dust, odors and noise to permit continued Owner occupancy.
- G. Protect existing items which are not indicated to be removed.

### 3.2 DEMOLITION REQUIREMENTS

- A. Conduct demolition to minimize interference with adjacent structures and existing tenants.
- B. Conduct operations with minimum interference to public or private accesses.
- C. Maintain egress and access at all times. Do not close or obstruct roadways, sidewalks without permits.
- D. Cease operations immediately if adjacent structures appear to be in danger. Notify authority having jurisdiction.
- E. Disconnect and cap and identify designated utilities.
- F. Every day after demolition make sure building is weather tight and all openings are secure.

### 3.3 SELECTIVE DEMOLITION

- A. Demolish and remove components in an orderly and careful manner, follow all local, state, and federal regulations for the removal and disposal of lead based siding, corner boards, soffits, fascia's, rake boards, trims, window & door surrounds, & windows. It is the intention to have a lead free exterior envelope and the contractor will be responsible to make sure this is achieved.

### 3.4 CLEAN UP

- A. Remove demolished materials from site as work progresses.
- B. Leave areas of work in clean condition.

### 3.5 SCHEDULE OF PRODUCTS TO BE REMOVED

- A. All interior furniture, fixtures, ornaments, etc. will be removed and replaced by the State of CT.
- B. Contractor to remove, store, and protect the following materials and equipment:

1. Benches and shutters remove, strip and refinish and reinstall.
2. Lighting remove and give back to the State of CT.

END OF SECTION

SECTION 06100  
ROUGH CARPENTRY

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes structural wall framing; wall sheathing; subfloor sheathing; flashings; and roof curbs and cants; blocking in wall openings; wood furring and grounds; electrical panel back boards, concealed wood blocking.

1.2 QUALITY ASSURANCE

- A. Perform Work in accordance with the following agencies:
  - 1. Lumber Grading Agency: Certified by ALSC.
  - 2. Plywood Grading Agency: Certified by APA/EWA - APA/The Engineered Wood Association.

PART 2 PRODUCTS

2.1 LUMBER MATERIALS

- A. Lumber Grading Rules: WWPA.
- B. Non-structural Light Framing: douglas fir species, common grade, 2" size classification, 19 percent maximum moisture content.
- C. Studding: douglas fir species, common grade, 2" size classification, 19 percent maximum moisture content.
- D. Sill Plate: Pressure treated.

2.2 SHEATHING MATERIALS

- A. Plywood Wall Sheathing: APA/EWA Rated Sheathing Structural I, Exposure Durability 1, unsanded.
- B. Exterior Telephone and Electrical Panel Boards: PVC.

2.3 SHEATHING AND UNDERLAYMENT LOCATIONS

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- A. Above Grade Wall Sheathing: match existing thickness, 48x96 sized sheets, square edges.

## 2.4 ACCESSORIES

- A. Sill Gasket on Top of Foundation Wall: Plate width, closed cell foam.
- B. Sill Flashing Under Sill Gasket: Polyethylene sheet.
- C. Building Paper: ASTM D4869 No. 30 asphalt felt.

## PART 3 EXECUTION

### 3.1 FRAMING

- A. Erect wood framing members in accordance with applicable code. Place members level and plumb. Place horizontal members crown side up. Provide new framed opening's as required for new windows.
- B. Place full width continuous termite shield and sill flashing on foundations where deteriorated sill is being replaced.
- C. Place sill gasket directly on sill flashing where deteriorated sill is being replaced.
- D. Provide new frame and curbs as required for new hatch doors and hatch roof area.

### 3.2 SHEATHING

- A. Install sheathing to simple span.
- B. Secure wall sheathing with ends staggered, over firm bearing.
- C. Place building paper over wall sheathing, weather lap joints and end laps, staple in place.
- D. Install exterior telephone and electrical panel back boards with pvc sheathing material. Size the back board by 12 inches beyond size of electrical panel.

END OF SECTION

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Rough Carpentry



## **SECTION 06 65 00 – Simulated Wood Trim**

### **Plastic Simulated Wood Trim**

#### **PART 1 GENERAL**

##### **1.1 SECTION INCLUDES**

- A. Cellular PVC trim boards for:
  - 1. Corner boards
  - 2. Soffits
  - 3. Fascia
  - 4. Battens
  - 5. Door pilasters
  - 6. Frieze boards
  - 7. Rake boards
  - 8. Architectural millwork
  - 9. Door trim
  - 10. Window trim
  - 11. Wainscoting
  - 12. Pergolas
  - 13. Cupolas
  - 14. Porch Ceilings
  - 15. Arbors
  - 16. Fencing
  - 17. Column Wraps
  - 18. Skirtboards
  - 19. Water tables
  - 20. Pilasters

##### **1.2 RELATED SECTIONS**

- A. Section 06 10 00 – Rough Carpentry
- B. Section 06 65 00 – Plastic Simulated Wood Trim
- C. Section 09 90 00 – Painting and Coating

### **1.3 REFERENCES**

- A. ASTM D792 - Density and Specific Gravity of Plastics by Displacement.
- B. ASTM D570 - Water Absorption of Plastics.
- C. ASTM D638 - Tensile Properties of Plastics.
- D. ASTM D790 - Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- E. ASTM D1761 - Mechanical Fasteners in Wood.
- F. ASTM D5420 - Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by means of a Striker Impacted by a Falling Weight.
- G. ASTM D256 - Determining the Pendulum Impact Resistance of Plastics.
- H. ASTM D696 - Coefficient of Linear Thermal Expansion of Plastics Between -30°C and 30°C with a Vitreous Silica Dilatometer.
- I. ASTM D635 - Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
- J. ASTM E84 - Surface Burning Characteristics of Building Materials.
- K. ASTM D648 - Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position.
- L. ASTM D3679 - Standard Specification for Rigid Poly Vinyl Chloride (PVC) Siding.

### **1.4 SUBMITTALS**

- A. General: Submit under provisions of Section 01 30 00 – Administrative Requirements.
- B. Product Data: Manufacture’s data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation instructions and methods.
  - 4. Code compliance reports.
- C. LEED Submittals: Provide documentation of how the requirements of Credit will be met:
  - 1. List of proposed materials demonstration that each material was extracted, harvested or recovered, as well as manufactured within 500 miles of the project site.
- D. Samples: For each product specified, two samples, minimum size 6 inches long, representing actual product, color, finish.

### **1.5 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Manufacturer with a minimum of 15 years producing PVC trim products.
- B. Installer Qualifications: Installer with a minimum of 3 years experience with the installation of PVC trim products.
- C. Regulatory Requirements: Check with Local Building Code for installation requirements.
- D. Allowable Tolerances:
  - 1. Variation in component length: -0.00 / +1.00”
  - 2. Variation in component width: ± 1/16”



3. Variation in component thickness:  $\pm 1/16''$
4. Variation in component edge cut:  $\pm 2^\circ$
5. Variation in Density -0% + 10%

- E. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
1. Finish areas designed by Architect.
  2. Do not proceed with remaining work until workmanship, color, and sheen are approved by architect.
  3. Refinish mock-up area as required to produce acceptable work.
  4. Accepted mock-ups shall be comparison standard for remaining work.

## 1.6 DELIVERY, STORAGE AND HANDLING

- A. Trim materials should be stored on a flat and level surface on a full shipping pallet. Handle materials to prevent damage to product edges and corners.
- B. Store materials under a protective covering to prevent jobsite dirt and residue from collecting on the boards.

## 1.7 WARRANTY

- A. Provide manufacturer's Limited Lifetime warranty against defects in manufacturing that cause the products to rot, corrode, delaminate, or excessively swell from moisture.

## PART II PRODUCTS

### 2.1 MANUFACTURES

- A. Acceptable products: AZEK® Trimboards manufactured by The AZEK® Company, which is located at: 888 N Keyser Ave Scranton, PA 18508
- B. Substitutions: Not permitted
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 – Product Requirements

### 2.2 MATERIALS

- A. PVC: Free foam cellular PVC material with a small cell microstructure and density of .55 grams/cm<sup>3</sup>.
  - Material shall have a minimum physical and performance properties specified in the following Section C.
- C. Performance and physical characteristic requirements:

Property	Units	Value	ASTM Method
<b>PHYSICAL</b>			
Density	g/cm <sup>3</sup>	0.55	D 792
Water Absorption	%	0.15	D 570
<b>MECHANICAL</b>			
Tensile Strength	psi	2256	D 638
Tensile Modulus	psi	144,000	D 638
Flexural Strength	psi	3329	D 790
Flexural Modulus	psi	144,219	D 790
Nail Hold	Lbf/in of penetration	35	D 1761

Property	Units	Value	ASTM Method
Screw Hold	Lbf/in of penetration	680	D 1761
Staple Hold	Lbf/in of penetration	180	D 1761
Gardner Impact	in-lbs	103	D5420
Charpy Impact (@23°C)	ft-lbs	4.5	D256
THERMAL			
Coefficient of Linear Expansion	in/in/°F	3.2 x 10-5	D 696
Burning Rate	in/min	No burn when flame removed	D 635
Flame Spread Index	--	25	E 84
Heat Deflection Temp 264 psi	°F	150	D 648
Oil Canning (@140°F)	°F	Passed	D 648

## 2.3 SIMULATED WOOD TRIM

- A. PVC Trimboard: AZEK® Trimboard with Sealed Edge, designed with a natural appearance to compliment fiber cement and natural cedar.
1. Size:
    - a. Nominal Width:
      - 1) 2 inches
      - 2) 4 inches
      - 3) 5 inches
      - 4) 6 inches
      - 5) 8 inches
      - 6) 10 inches
      - 7) 12 inches
      - 8) 16 inches
    - b. Nominal Thickness:
      - 1) 5/8 inch (5/8 inch actual size)
      - 2) 1 inch (3/4 inch actual size)
      - 3) 5/4 inch (1 inch actual size)
      - 4) 6/4 inch (1-1/4 inch actual size)
      - 5) 8/4 inch (1-1/2 inch actual size)
    - c. Length:
      - 1) 12 feet
      - 2) 18 feet
  2. Finish:
    - a. Traditional/Smooth finish
    - b. Reversible with Traditional (Smooth)/Frontier (Woodgrain) finish
- B. Sheet Board: AZEK® Traditional (Smooth)/Frontier (Woodgrain) finish Sheet. For use as sheet materials or to create columns and gingerbread millwork.
1. Size:
    - a. Width/Length:
      - 1) 4 foot by 8 foot
      - 2) 4 foot by 10 foot
      - 3) 4 foot by 12 foot
      - 4) 4 foot by 18 foot
      - 5) 4 foot by 20 foot
    - b. Thickness:
      - 1) 3/8 inch
      - 2) 1/2 inch
      - 3) 5/8 inch

- 4) 3/4 inch
  - 5) 1 inch
  - 6) 1-1/4 inch
  - 7) 1-1/2 inch
2. Finish:
- a. Smooth/Traditional finish
  - b. Reversible with Traditional (Smooth)/Frontier (Woodgrain) finish
- C. PVC Cornerboard: AZEK® Corners: Folded, 90-degree, one-piece assembly produced with a Traditional or Frontier appearance to compliment fiber cement and natural cedar.
1. Size:
- a. Nominal Corner Size:
    - 1) 4 inches
    - 2) 6 inches
    - 3) 8 inches
  - b. Nominal Thickness:
    - 1) 5/4 inch (1 inch actual size)
  - c. Length:
    - 1) 10 feet
    - 2) 20 feet
2. Finish:
- a. Traditional (Smooth)
  - b. Frontier (Woodgrain)
- D. PVC Bead Board: AZEK® Beadboard: Tongue-and-Groove and Beaded Sheets.
1. Size:
- a. Thickness/Width/Length:
    - 1) Regular 5/8 inch by 4 Inches (Actual size 5/8 inch by 3-1/2 inches). Length 18 feet.
    - 2) Regular 1/2 inch by 6 inches (Actual size 1/2 inch by 5-1/2 inches). Length 18 feet.
    - 3) Regular 1 inch by 6 inches (Actual 3/4 inch by 5 1/2 inch). Length 18 feet.
    - 4) Sheet 1/2 inch by 4 feet (Actual size 1/2 inch by 48-1/8 inches) Length 8 feet.
    - 5) 1/2 inch by 4 Inches (Actual size 1/2 inch by 3-1/2 inches). Length 18 feet.
    - 6) 1/2 inch by 6 inches (Actual size 1/2 inch by 5-1/2 inches). Length 18 feet.
    - 7) 1 inch by 6 inch (Actual size 3/4 inch by 5 1/2 inches). Length 18 feet.
    - 8) WP4 T & G board 3/4 inch by 5-7/16 inch. Length 18 feet.
    - 9) Shiplap 1 inch by 6 inches (Actual size 3/4" by 5 1/2"). Length 18'
    - 10) Shiplap 1 inch by 8 inches (Actual size 3/4" by 7 1/4"). Length 18'
2. Finish:
- a. Traditional/Smooth finish.
- E. Mouldings: AZEK® Mouldings designed to complement exterior trim.
1. Crowns:
- a. 3 inches.
  - b. 4 Inches.
  - c. 5 inches.
  - d. 6 inches.
  - e. 8 inches.
  - f. Bed Mould.
  - g. Rams Crown.
  - h. Solid Crown.
  - i. Imperial Rake Crown.
  - j. Crosshead Pediment.
2. Casings:
- a. Base Cap.
  - b. Brick Mould.
  - c. Back Band.
  - d. Rake Moulding.

- e. Adams Casing.
- f. Crosshead Pediment.
- g. Fluted/Reeded Casing.
- 3. Cove:
  - a. Quarter Round.
  - b. Bed Moulding.
  - c. Baluster Moulding.
  - d. Scotia Cove.
  - e. Cove Moulding
- 4. Sill:
  - a. Sill.
  - b. Sill Nose.
  - c. Heavy Sill.
  - d. Sub Sill Nose.
  - e. Historic Sill.
  - f. Large Historic Sill.
  - g. Window Sill Nose
- 5. Specialty:
  - a. Drip Cap.
  - b. Shingle Mould.
  - c. Garage Door Thermostop.
  - d. Water Table.
  - e. Beaded Cap.
  - f. Panel Mould.
  - g. Wainscot Cap.
- 6. J-Channel Series.
  - 1) J-Brick
  - 2) 4" J-Casing
  - 3) 6" J-Casing
  - 4) 4" QuickCorner
  - 5) 6" QuickCorner
- 7. Length:
  - a. 12 feet.
  - b. 16 feet.
  - c. 18 feet.
- 8. Finish:
  - a. Smooth finish.

## 2.4 SIMULATED WOOD TRIM

- A. PVC Trimboard: AZEK® Rabbeted Trimboard, designed with 3/4 inch pocket to accommodate any siding product including fiber cement, cedar, hardboard and vinyl.

- 1. Size:
  - a. Nominal Width:
    - 1) 4 inches
    - 2) 6 inches
    - 3) 8 inches
  - b. Nominal Thickness:
    - 1) 5/4 inch (1 inch actual size)
  - c. Length:
    - 1) 18 feet
- 2. Finish:
  - a. Traditional/Smooth finish
  - b. Frontier (Woodgrain) finish

B.

- C. PVC Cornerboard: AZEK® Rabbeted Corners. Folded 90 degree one piece corner assembly designed with 3/4 inch pocket to accommodate any siding product including fiber cement, cedar, hardboard and vinyl.

- 1. Size:
  - a. Nominal Corner Width:

- 1) 4 Inches
    - 2) 6 inches
  - b. Nominal Thickness:
    - 1) 5/4 inch (1 inch actual size).
  - c. Length:
    - 1) 10 feet.
    - 2) 20 feet.
  
- D. PVC Skirtboard: AZEK® 1-Piece Skirtboard. Precut trim providing grade clearance and starter strip for fiber cement sidings as well as composite sidings.
  - 1. Size:
    - a. Nominal Width:
      - 1) 5/4 inch x 4 inches
      - 2) 5/4 inch by 6 inches
      - 3) 5/4 inch by 8 inches
      - 4) 1 inch by 4 inches
      - 5) 1 inch by 6 inches
      - 6) 1 inch by 8 inches
      - 7) 1 inch by 10 inches
    - b. Length:
      - 1) 18 feet.
  - 2. Finish:
    - a. Traditional/Smooth finish.
    - b. Frontier/Woodgrain finish.
  
- E. PVC Skirtboard: AZEK® Universal Skirt Board, A two-piece reversible trimboard with integrated z-flashing and starter.
  - 1. Size:
    - a. Nominal Width:
      - 1) 5/4 inch by 6 inches
      - 2) 5/4 inch by 8 inches
      - 3) 5/4 inch by 10 inches
    - b. Length:
      - 1) 18 feet.
  - 2. Finish:
    - a. Traditional/Smooth finish.
    - b. Frontier/Woodgrain finish.
  
- F. PVC Bandboard/Skirtboard: AZEK® Integrated Drip Edge, A two-piece reversible trimboard with integrated z-flashing.
  - 1. Size:
    - a. Nominal Width:
      - 1) 5/4 inch by 6 inches
      - 2) 5/4 inch by 8 inches
      - 3) 5/4 inch by 10 inches
    - b. Length:
      - 1) 18 feet.
  - 2. Finish:
    - a. Traditional/Smooth finish.
    - b. Frontier/Woodgrain finish.
  
- G.
  
- H. PVC Columnwrap: AZEK® one-piece column wraps.
  - 1. Size:
    - a. Nominal Width:
      - 1) 4 inches by 4 inches (inside dimensions 3-3/4 inches)
      - 2) 6 inches by 6 inches (inside dimensions 5-3/4 inches)
      - 3) 8 inches by 8 inches (inside dimensions 7-1/2 inches)
    - b. Length:

- 1) 8 feet 6 inches
    - 2) 10 feet
  - c. Thickness:
    - 1) 1/2 inch
- 2. Finish:
  - a. Traditional/Smooth finish.

## 2.5 SIMULATED WOOD TRIM

- A. Paintable PVC Trimboard: AZEK® PaintPro® Trimboard, designed with a natural appearance to compliment fiber cement, engineered wood, natural cedar and is engineered to be painted.
  - 9. Size:
    - a. Nominal Width:
      - 1) 4 inches
      - 2) 6 inches
      - 3) 8 inches
      - 4) 10 inches
      - 5) 12 inches
    - b. Nominal Thickness:
      - 1) 1 inch (3/4 inch actual size)
      - 2) 5/4 inch (1 inch actual size)
    - c. Length:
      - 1) 16 feet
  - 10. Finish:
    - a. Reversible with Traditional (Smooth)/Frontier (Woodgrain) finish
    - b. Painting
      - 1) Must be painted within 180 days of UV exposure
      - 2) For lighter colors with a Light Reflective Value (LRV) 55 or greater: paint must be 100% acrylic latex.
      - 3) For darker colors with an LRV less than 55: Paint must be vinyl-safe from a vinyl-safe color palette.
      - 4) For custom color, use a coating with solar reflective pigments

## 2.6 ACCESSORY PRODUCTS

### A. Fasteners:

1. AZEK® Cortex for Trim
2. Use fasteners design for wood trim and wood siding (thinner shank, blunt point, full round head) with AZEK®.
3. Use a highly durable fastener such as stainless steel or hot-dipped galvanized.
4. Staples, small brads and wire nails must not be used as fastening members.
5. The fasteners should be long enough to penetrate the solid wood substrate a minimum of 1 1/2".
6. Standard nail guns work well with AZEK® trim products.
7. Use 2 fasteners per every framing member for trimboard applications. Trimboards 12" or wider, as well as sheets, will require additional fasteners.
8. Fasteners must be installed no more than 2" from the end of each board.
9. AZEK® should be fastened into a flat, solid substrate. Fastening AZEK® into hollow or uneven areas must be avoided.
10. Pre-drilling is typically not required unless a large fastener is used or product is installed in low temperatures.
11. 3/8" and 1/2" sheet product is not intended to be ripped into trim pieces. These profiles must be glued to a substrate and mechanically fastened.

### B. Adhesives:

1. Glue all AZEK® to AZEK® joints such as window surrounds, long fascia runs, etc. with AZEK® Adhesive, a cellular pvc cement, to prevent joint separation.
2. The glue joint should be secured with a fastener and/or fastened on each side of the joint to allow adequate bonding time.
3. AZEK® Adhesive has a working time of 10 minutes and will be fully cured in 24 hours.
4. If standard pvc cements are used, keep in mind these products typically cure quickly which will result in limited working time and may reduce adhesive strength.
5. Surfaces to be glued should be smooth, clean and in complete contact with each other.
6. To bond AZEK® to other substrates, various adhesives may be used. Consult adhesive manufacturer to determine suitability.

C. Sealants:

1. Use urethane, polyurethane or acrylic based sealants without silicone.

## 2.7 FINISHES

A. AZEK products do not require paint for protection but may be painted to achieve a custom color.

B. Preparation:

1. No special surface preparations are required prior to painting - sanding is not necessary for paint adhesion.
2. Surface must be clean and dry.
3. Use a 100% acrylic latex paint with a Light Reflective Value (LRV) of 55 or higher.
4. Follow the paint manufacturer's recommendations to apply.

## PART III EXECUTION

### 3.01 INSTALLATION

A. Manufacturer instructions:

1. Comply with manufacturer's product catalog installation instructions and product technical bulletin instructions.

B. Cutting:

1. AZEK® products can be cut using the same tools used to cut lumber.
2. Carbide tipped blades designed to cut wood work well. Avoid fine tooth metal cutting blades.
3. Rough edges from cutting may be caused by excessive friction, poor board support, or worn or improper tooling.

C. Cutting:

1. AZEK® products can be drilled using the same tools used to drill lumber.
2. Drilling AZEK® products is similar to drilling a hardwood. Care should be taken to avoid frictional heat build-up.
3. Use standard woodworking drills. Do not use drills made for normal rigid pvc.
4. Periodic removal of AZEK® shavings from the drill hole may be necessary.

D. Milling:

1. AZEK® products can be milled using standard milling machines used to mill lumber.
2. Relief Angle 20° to 30°
3. Cutting speed to be optimized with the number of knives and feed rate.

E. Routing:

1. AZEK® products can be routed using standard router bits and the same tools used to rout lumber.
2. Carbide tipped router bits are recommended.

F. Edge Finishing:

1. Edges can be finished by sanding, grinding or filing with traditional woodworking tools.

G. Nail Location:

1. Use 2 fasteners per every framing member for trimboard applications.
2. Trimboards over 12" or wider, as well as sheets, will require additional fasteners.
3. Fasteners must be installed no more than 2" from the end of each board.

H. Thermal Expansion and Contraction:

1. AZEK® products expand and contract with changes in temperature.
2. Properly fastening AZEK® material along its entire length will minimize expansion and contraction.
3. When properly fastened, allow 1/8" per 18 foot of AZEK® product for expansion and contraction.
4. Joints between pieces of AZEK® should be glued to eliminate joint separation. When gaps are glued on a long run of AZEK®, allow expansion and contraction at ends of the run.

END OF SECTION



# GreenFiber™ Cellulose Insulation C.S.I. 3-Part Specification



- 07 20 00 Thermal Protection
  - Section 07 21 00 Thermal Insulation
    - Sub-Section 07 21 23 Loose-Fill Insulation
    - Sub-Section 07 21 26 Blown Insulation
    - Sub-Section 07 21 29 Sprayed Insulation

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## Part 1 – General

### 1.01 Summary:

- A. GreenFiber Stabilized Insulation, GreenFiber Loose-Fill Insulation, and GreenFiber Loose-Fill Pest Control Insulation are used as nonstructural thermal insulating materials in buildings of all types of construction. The insulation is for use on or within floors, floor-ceiling or roof-ceiling assemblies, attics, crawl space, ceilings, walls, and partitions, although not all products can be used in all applications. The insulation is recognized for use in sound transmission reduction, fireblocking and in both non-fire-resistance rated and fire-resistance rated construction applications in accordance with IBC Section 703. GreenFiber Fire Rated Material (FRM) is for use in specific fire-resistance rated construction in accordance with IBC Section 703 and applicable Underwriters Laboratories and/or other fire rating testing organizations' assembly listings.

### 1.02 Reference:

- A. American Society for Testing and Materials (ASTM).
  - 1. E 84-10 Standard Test Method for Surface Burning Characteristics of Building Materials.
  - 2. C 518-10 Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
  - 3. C 739-08 Standard Specification for Cellulosic Fiber Loose-Fill Thermal Insulation.
  - 4. E 970-10 Standard Test Method for Critical Radiant Flux of Exposed Attic Floor Insulation Using a Radiant Heat Energy Source.
  - 5. C 1149-08 Standard Specification for Self-Supported Spray Applied Cellulosic Thermal Insulation.
  - 6. E 136-09b Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C.
  - 7. C 1015-06 Standard Practice for Installation of Cellulosic and Mineral Fiber Loose-Fill Thermal Insulation.
  - 8. E 119-10a Standard Test Methods for Fire Tests of Building Construction and Materials.
- B. Consumer Products Safety Commission (CPSC) 16 CFR Part 1209, Interim Safety Standard for Cellulose Insulation, and 16 CFR Parts 500 and 1404 where applicable.
- C. Federal Trade Commission (FTC) 16 CFR Part 460, Labeling and Advertising of Home Insulation.
- D. Environmental Protection Agency (EPA) 40 CFR Part 247.12 Comprehensive Procurement Guideline For Products Containing Recovered Materials.
- E. CAN / ULC S-703-09 Standard for Cellulose Fiber Insulation for Buildings.
- F. CAN / ULC S-102.2-10 Standard Method Test for Surface Burning Characteristics of Flooring, Floor Covering, and Miscellaneous materials and assemblies.
- G. Underwriters Laboratories (UL) Product Classification Marks are found on all bags.

H. State of California Section 1350 California Department of Public Health Standard Practice for VOC Testing

**1.03 Work Included:** The work performed under this section shall include all materials, equipment, labor and services required to install GreenFiber Insulation in accordance with these specifications and the manufacturer's installation instructions, and as indicated on the drawings if applicable.

**1.04 Related Work:** All electrical, plumbing, and mechanical penetrations must be completed prior to application. Air sealing, either fire-resistance rated or non-fire-resistance rated, must be completed where required as well. Certain exceptions may apply, for example, when using GreenFiber Insulation as a fireblock in interstitial spaces between floors. Follow all Code and local jurisdiction requirements in the application of these products.

**1.05 Submittals:** Submit GreenFiber Insulation product literature, current Evaluation Report, and installation instructions for specified products and their application. GreenFiber has a universal Submittal Form that may be applicable in many applications and may be found at [www.greenfiber.com](http://www.greenfiber.com).

**1.06 Delivery:**

- A. Protect insulation from physical damage to the bag or the product itself, and from becoming wet, soiled, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation.
- B. Insulation package labels include a production code that indicates date and place of manufacture, and all required current statutory and classification marks.

**1.07 Limitations:**

- A. Avoid heating the work area with propane or kerosene space heaters. Use electric heaters and ventilation to avoid adding excessive moisture vapor to the building envelope.
- B. Do not install GreenFiber Insulation where it may be exposed to rain or ground water. Do not install GreenFiber in contact with masonry walls below grade. In any application where GreenFiber's products may be exposed to high humidity, a detailed moisture control design must be used.
- C. Do not allow GreenFiber Insulation to contact any surface above 194°F (90°C).
- D. Keep insulation away from exhaust flues of furnaces, water heaters, space heaters, chimney flues or other heat or combustion producing devices. ASTM C 1015-06 recommends that a minimum of three inches of air space should be maintained between the insulation and heat source. Do not install GreenFiber's products around heat or ignition sources or operations such as welding, metal cutting, grinding or other potentially flammable situations.
- E. GreenFiber Insulation is not classified as noncombustible according to ASTM E 136-09b.
- F. GreenFiber's insulation products may not be used in thermal insulation applications where there is not an approved coverage chart on the bag. Some applications do not require the use of a thermal insulation coverage chart. GreenFiber's insulation products can be used in these applications provided manufacturer's installation instructions and all other applicable Code, fire safety and other requirements are met.

**Part 2 – Products**

**2.01 Manufacturer:** US GreenFiber, LLC

**2.02 Materials:** GreenFiber Cellulose Insulation

- A. Complies with 16 CFR Parts 460, 500, 1209 and 1404, ASTM C 1149-08, ASTM C 739-08, ASTM C 518-10, ASTM E 970-10, ASTM E 84-10, CAN / ULC S-102.2-10, CAN / ULC S-703-09 Type 1 and Type 2.
- B. Surface Burning Characteristics:
  - 1. ASTM E 84-10: Flame spread <25, Smoke Developed Index <50
  - 2. CAN / ULC S 102.2: Maximum Flame Spread 90.
- C. GreenFiber's insulation products, when used in fire-resistance rated wall assemblies, are allowed to increase the fire-resistance rating by fifteen (15) minutes per IBC 2012 Table 722.6.2(5) provided the cavity is completely filled with a minimum density of 2.6 pounds per cubic foot.
- D. Complies with all building code requirements for cellulose fiber thermal insulation. Provide ICC ESR1996 or CCMC Listings 12911-L and 13162-L as required.
- E. Complies with EPA 40 CFR Part 247.12.
- F. Complies with Scientific Certification Services (SCS) certification report SCS-MC-02055 for minimum 85% recycled content, with minimum 55% post-consumer and 30% pre-consumer. The remaining 15% is fire retardant chemical and stabilizing additives.
- G. No asbestos, mineral fibers, or formaldehyde are used in the manufacturing process.
- H. Thermal Performance:
  - 1. ASTM C 518-10, thermal performance varies with density and thickness. See the appropriate product coverage chart to calculate the R-value per inch if needed. All C 518-10 testing is done at a representative thickness of 4".
  - 2. CAN / ULC S-703-09, varies depending on whether the product is Type 1 open or closed, or Type 2 open or closed.

### **Part 3 – Execution**

#### **3.01 Inspection:**

- A. Examine the areas and conditions under which work will be installed.
- B. Verify adjacent materials are dry and ready to receive insulation.
- C. Verify mechanical, plumbing and electrical services within walls have been inspected.
- D. Provide a written report to the architect, builder or general contractor listing conditions that require correction prior to installation.
- E. Do not proceed with installation until conditions as identified in 3.01-D have been corrected.

#### **3.02 Preparation:**

- A. Remove any loose dust, dirt, foreign material or films that may impair adhesion to application surfaces.
- B. Verify adhesion requirements and compatibility of all surfaces to receive thermal insulation materials.
- C. Protect all nearby surfaces that are not intended to receive thermal insulation, e.g. outlets, windows and doors.
- D. Make sure there are no assembly details that appear to be preventing the application of the product per the manufacturer's instructions.

#### **3.03 Installation:**

- A. Read, understand and comply with manufacturer's instructions for particular conditions of installation.
- B. Wear proper clothing and eye protection.
- C. For breathing protection, use a NIOSH approved N95 or higher disposable or reusable particulate respirator per 29 CFR 1910.134.
- D. The work shall be coordinated with other trades whose work may be affected by, or have an effect on, the installation.
- E. Spray-applied and Stabilized GreenFiber Insulation shall be installed with equipment specifically designed for its application.

- F. Drying time varies due to local climate conditions including temperature, humidity and the installed moisture. Do not cover the insulation until the insulation moisture levels, measured and documented after a minimum period of 24 hours from the time of installation, reach a moisture reading of 25% or less in accordance with GreenFiber's Wall Spray Manual.

### **3.04 Clean-up:**

- A. Remove sprayed material from surfaces not specifically required to be insulated.
- B. Broom-clean work areas affected by the work of this section.

### **3.05 Documentation:**

- A. The installer must provide a completed GreenFiber Attic Card with the installed thickness and R-value claims or other documentation of the installation quality and performance, per 16 CFR Part 460. The installer must also apply attic rulers where appropriate per Code and FTC requirements.
- B. When installing Spray-applied GreenFiber Insulation, record the data on a quality control moisture measurement control log, as included in the GreenFiber Wall Spray Manual. One suggested form is the GreenFiber Stabilized All Borate Insulation Installation Control Log.
- C. When installing GreenFiber Stabilized Insulation for attics, record the data on a quality control moisture measurement control log. One suggested form is the GreenFiber Stabilized Insulation Installation Control Log.

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## SECTION 07461

### SIDING (HZ5) PANELS (James Hardie HZ5 Engineered for Climate Siding)

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Factory-finished fiber cement lap siding, panels, shingle, trim, fascia, moulding and accessories; James Hardie HZ5 Engineered for Climate Siding.

##### 1.2 RELATED SECTIONS

- A. Section 06100 - Rough Carpentry: Wood framing and bracing.
- B. Section 06100 - Rough Carpentry: Sheathing.
- C. Section 07200 - Thermal Protection: Exterior wall insulation.

##### 1.3 REFERENCES

- A. ASTM C1186 - Standard Specification for Flat Fiber-Cement Sheets
- B. ASTM D3359 - Standard Test Method for Measuring Adhesion by Tape Test, Tool and Tape.
- C. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.

##### 1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- 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 atypical non-standard applications of cementitious siding materials which are outside the scope of the standard details and specifications provided by the manufacturer.
- D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, two samples, minimum size 4 by 6 inches (100 by 150 mm), representing actual product, color, and patterns.

##### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum of 2 years experience with installation of similar products.
- B. 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. Refinish mock-up area as required to produce acceptable work.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store siding on edge or lay flat on a smooth level surface. Protect edges and corners from chipping. Store sheets under cover and keep dry prior to installing.
- C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

## 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 absolute limits.

## 1.8 WARRANTY

- A. Product Warranty: Limited, non-pro-rated product warranty.
  - 1. HardiePlank HZ5 lap siding for 30 years.
  - 2. HardiPanel HZ5 vertical siding for 30 years.
  - 3. HardieSoffit HZ5 panels for 30 years.
  - 4. HardieShingle HZ5 siding for 30 years.
  - 5. Artisan HZ5 lap siding for 30 years.
- B. Product Warranty: Limited, product warranty.
  - 1. HardieTrim HZ and HZ5 boards for 15 years.
- C. Finish Warranty: Limited product warranty against manufacturing finish defects.
  - 1. When used for its intended purpose, properly installed and maintained according to James Hardie's published installation instructions, James Hardie's ColorPlus finish with ColorPlus Technology, for a period of 15 years from the date of purchase: will not peel; will not crack; and will not chip. Finish warranty includes the coverage for labor and material.
- D. Workmanship Warranty: Application limited warranty for 2 years.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: James Hardie Building Products, Inc., which is located at: 26300 La Alameda Suite 400 ; Mission Viejo, CA 92691; Toll Free Tel: 866-274-3464; Tel: 949-367-4980; Fax: 949-367-4981; Email: [request info \(info@jameshardie.com\)](mailto:request_info@jameshardie.com); Web: [www.jameshardiepros.com](http://www.jameshardiepros.com).
- B. Substitutions: Not permitted.
- C. Requests for approval of equal substitutions will be considered in accordance with provisions of Section 01600.

### 2.2 SIDING

- A. HardiePlank HZ5 lap siding, HardiPanel HZ5 vertical siding, HardieSoffit HZ5 panels and HardieShingle HZ5 siding requirement for Materials:
  - 1. Fiber-cement Siding - complies with ASTM C 1186 Type A Grade II.
  - 2. Fiber-cement Siding - complies with ASTM E 136 as a noncombustible material.
  - 3. Fiber-cement Siding - complies with ASTM E 84 Flame Spread Index = 0, Smoke Developed Index = 5.
  - 4. CAL-FIRE, Fire Engineering Division Building Materials Listing - Wildland

- Urban Interface (WUI) Listed Product.
- 5. National Evaluation Report No. NER 405 (BOCA, ICBO, SBCCI, IBC, IRC).
- 6. City of Los Angeles, Research Report No. 24862.
- 7. Miami Dade County, Florida Notice of Acceptance 07-0418.04.
- 8. US Department of Housing and Urban Development Materials Release 1263d.
- 9. California DSA PA-019.
- 10. City of New York M EA 223-93-M.
- 11. Florida State Product Approval FL889.
- 12. Texas Department of Insurance Product Evaluation EC-23.

B. Shingle Siding: HardieShingle HZ5 siding as manufactured by James Hardie Building Products, Inc.

- 1. Type: HardiShingle Individual Shingles 6 inches (152 mm) wide by 18 inches (457 mm) high with 8 inches (203 mm) exposure.
- 2. Type: HardiShingle Individual Shingles 8 inches (203 mm) wide by 18 inches (457 mm) high with 8 inches (203 mm) exposure.
- 3. Type: HardiShingle Individual Shingles 12 inches (305 mm) wide by 18 inches (457 mm) high with 8 inches (203 mm) exposure.
- 4. Type: HardieShingle Straight-Edge Notched Panel 48 inches (1219 mm) wide by 16 inches (406mm) high with 7 inches (178 mm) exposure.
- 5. Type: HardieShingle Staggered-Edge Notched Panel 48 inches (1219 mm) wide by 16 inches (406mm) high with 7 inches (178 mm) exposure.

## 2.3 FASTENERS

A. Wood Framing Fasteners:

- 1. Wood Framing: 4d common corrosion resistant nails.
- 2. Wood Framing: 6d common corrosion resistant nails.
- 3. Wood Framing: 8d box ring common corrosion resistant nails.
- 4. Wood Framing: 0.089 inch (2.2 mm) shank by 0.221 inch (5.6 mm) head by 2 inches (51 mm) corrosion resistant siding nails.
- 5. Wood Framing: 0.093 inch (2.4 mm) shank by 0.222 inch (5.6 mm) head by 2 inches (51 mm) corrosion resistant siding nails.
- 6. Wood Framing: 0.093 inch (2.4 mm) shank by 0.222 inch (5.6 mm) head by 2-1/2 inches (64 mm) corrosion resistant siding nails.
- 7. Wood Framing: 0.091 inch (2.3 mm) shank by 0.221 inch (5.6 mm) head by 1-1/2 inches (38 mm) corrosion resistant siding nails.
- 8. Wood Framing: 0.091 inch (2.3 mm) shank by 0.225 inch (5.7 mm) head by 1-1/2 inches (38 mm) corrosion resistant siding nails.
- 9. Wood Framing: 0.121 inch (3 mm) shank by 0.371 inch (9.4 mm) head by 1-1/4 inches (32 mm) corrosion resistant roofing nails.
- 10. Wood Framing: No. 11 gauge 1-1/4 inches (32 mm) corrosion resistant roofing nails.
- 11. Wood Framing: No. 11 gauge 1-1/2 inches (38 mm) corrosion resistant roofing nails.
- 12. Wood Framing: No. 11 gauge 1-3/4 inches (44 mm) corrosion resistant roofing nails.

## 2.4 FINISHES

A. Factory Finish: Refer to Exterior Finish Schedule.

- 1. Product: ColorPlus Technology by James Hardie.
- 2. Definition: Factory applied finish; defined as a finish applied in the same facility and company that manufactures the siding substrate.
- 3. Process:
  - a. Factory applied finish by fiber cement manufacturer in a controlled environment within the fiber cement manufacturer's own facility utilizing a multi-coat, heat cured finish within one manufacturing process.
  - b. Each finish color must have documented color match to delta E of 0.5

or better between product lines, manufacturing lots or production runs as measured by photospectrometer and verified by third party.

4. Protection: Factory applied finish protection such as plastic laminate that is removed once siding is installed
5. Accessories: Complete finishing system includes pre-packaged touch-up kit provided by fiber cement manufacturer. Provide quantities as recommended by manufacturer.

B. Factory Finish Color for Trim, Soffit and Siding Colors:

1. Arctic White JH10-20.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If framing preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Nominal 2 inch by 4 inch (51 mm by 102 mm) wood framing selected for minimal shrinkage and complying with local building codes, including the use of water-resistive barriers or vapor barriers where required. Minimum 1-1/2 inches (38 mm) face and straight, true, of uniform dimensions and properly aligned.
  1. Install water-resistive barriers and claddings to dry surfaces.
  2. Repair any punctures or tears in the water-resistive barrier prior to the installation of the siding.
  3. Protect siding from other trades.

### 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.
- C. Install a water-resistive barrier is required in accordance with local building code requirements.
- D. The water-resistive barrier must be appropriately installed with penetration and junction flashing in accordance with local building code requirements.
- E. Install Engineered for Climate HardieWrap weather barrier in accordance with local building code requirements.
- F. Use HardieWrap Seam Tape and joint and laps.
- G. Install HardieWrap flashing, and HardieWrap Flex Flashing
- H. Locate splices at least 12 inches (305 mm) away from window and door openings.

### 3.3 INSTALLATION - HARDIE HZ5 SHINGLESIDE CLADDING

- A. Install materials in strict accordance with manufacturer's installation instructions.
- B. Substrate: Install a minimum 7/16 inch (11 mm) thick OSB wall sheathing or equivalent braced walls complying with applicable building codes.
- C. Starting: Install a minimum 1/4 inch (6 mm) thick lath starter strip at the bottom course of the wall.
- D. Maintain clearance between siding and adjacent finished grade.



- E. Apply starter course of 10 inches (254 mm) shingles or 9-1/2 inches (241 mm) lap siding overlapping the starter strip.
- F. Apply subsequent courses horizontally with a minimum 10 inch overlap at the top and a minimum 2 inch (51 mm) side lap. The bottom edge of the first two courses overlaps the starter strip.
- G. Fasten between 1/2 inch (13 mm) and 1 inch (25 mm) in from the side edge and between 8-1/2 inches (216 mm) and 9 inches (229 mm) up from the shingle bottom edge.
- H. Allow minimum vertical clearance between the edge of siding and any other material in strict accordance with the manufacturer's installation instructions.
- I. Ensure vertical joints of overlapping shingle course do not align.
- J. Wind Resistance: Where a specified level of wind resistance is required, Hardie Shingle siding is installed to substrate and secured with a minimum two fasteners described in Table No. 6, 7 and 8 in National Evaluation Service Report No. NER-405.

#### 3.4 FINISHING

- A. Finish unprimed siding with a minimum one coat high quality, alkali resistant primer and one coat of either, 100 percent acrylic or latex or oil based, exterior grade topcoats or two coats high quality alkali resistant 100 percent acrylic or latex, exterior grade topcoat within 90 days of installation. Follow paint manufacturer's written product recommendation and written application instructions.
- B. Finish factory primed siding with a minimum of one coat of high quality 100 percent acrylic or latex or oil based exterior grade paint within 180 days of installation. Follow paint manufacturer's written product recommendation and written application instructions.

#### 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

SECTION 09900  
PAINTS AND COATINGS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes surface preparation and field application of paints, stains and other coatings.

1.2 SUBMITTALS

Only request submittals needed to verify compliance with Project requirements.

- A. Product Data: Submit data on all finishing products.
- B. Samples: Submit two paper chip samples, 6"x 6" in size illustrating range of colors available for each surface finishing product scheduled.

1.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit maintenance and cleaning instructions.

1.4 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience ,and with service facilities within 100 miles of Project.
- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience approved by manufacturer.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Store and apply materials in environmental conditions required by manufacturer's instructions.

PART 2 PRODUCTS

2.1 PAINTS AND COATINGS

Goodwin State Forest  
Lead Abatement & Restoration

- A. Paint Manufacturers:
  - 1. Benjamin Moore & Co.
  - 2. PPG Architectural Finishes.
  - 3. Sherwin-Williams.
  
- B. Interior Stain Manufacturers:
  - 1. Cabot
  - 2. Minwax
  - 3. Olympic

## 2.2 COMPONENTS

- A. Coatings: Ready mixed coatings of good flow and brushing properties, capable of drying or curing free of streaks or sags.
  
- B. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials required to achieve the finishes specified.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that substrate conditions are ready to receive Work.
  
- B. Measure moisture content of porous surfaces using an electronic moisture meter. Do not apply finishes unless moisture content is less than 12 percent.

### 3.2 PREPARATION

- A. Correct minor defects and clean surfaces which affect work of this section.
  
- B. Remove electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or applying finishes.
  
- C. Exterior Trim Scheduled to Receive Paint Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior silicone caulking compound.

### 3.3 APPLICATION

- A. Sand wood surfaces lightly between coats to achieve required finish.
- B. Where clear finishes are required, tint fillers to match wood.
- C. Prime concealed surfaces of exterior trim and siding with primer paint per manufacturer's specification.
  - 1. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.
- D. Stain wood as specified in manufacturers specifications.
- E. Cleaning: As work proceeds, promptly remove finishes where spilled, splashed, or spattered.

### 3.4 SCHEDULE - EXTERIOR & INTERIOR SURFACES

- A. Exterior Trim - Painted (Opaque):
  - 1. One coat of alkyd oil stain blocker primer sealer.
  - 2. Two coats of latex enamel, semigloss.
- B. Interior window sashes and jambs, heads & sills - solid Staine:
  - 1. Two coats color white.

### 3.5 SCHEDULE - COLORS

All exterior siding and trim to be white (artic white).  
All exterior shutters to be green to match existing.  
All interior window sashes and jambs, heads, & sills solid stain white.

END OF SECTION

SECTION 16010

BASIC ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Basic Electrical Requirements specifically applicable to Division 16 Sections, in addition to Division 1 - General Requirements. Work includes the removal of existing exterior wall mounted lighting and the replacement with LED exterior lighting in the same location, the removal of exterior electric meters & boxes and the replacement after installation of New PVC back board.

1.02 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code.

1.03 SUBMITTALS

- A. Submit under provisions of general requirements.
- B. Submit shop drawings and product data grouped to include complete submittals of related systems, products, and accessories in a single submittals.
- C. Mark dimensions and values in units to match those specified.

1.04 REGULATORY REQUIREMENTS

- A. Conform to applicable Building Code for THE STATE OF CT.
- B. Electrical: Conform to NFPA 70.

1.05 PROJECT/SITE CONDITIONS

- A. Install Work in locations shown on PHOTO'S SCOPE OF WORK.

1.06 SEQUENCING AND SCHEDULING

- A. Construct Work in sequence under provisions of general conditions. Remove exterior wall mounted lighting, remove exterior cedar siding replace exterior cedar siding install new exterior LED lighting in same location.
- B. Remove exterior electric meter and service, remove exterior cedar siding, install new PVC back board, and reinstall exterior electric meter and service.

END OF SECTION

SECTION 16060

MINOR ELECTRICAL DEMOLITION FOR REMODELING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical demolition.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Materials and equipment for patching and extending work: As specified in individual Sections.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that abandoned wiring and equipment serve only abandoned facilities.
- B. Demolition scope of work photo's are based on casual field Observation. Report discrepancies to Owner & Architect/Engineer before disturbing existing installation.
- C. Beginning of demolition means installer accepts existing conditions.

3.02 PREPARATION

- A. Disconnect electrical systems in walls and exterior lighting, scheduled for removal.
- B. Coordinate utility service outages with Utility Company.
- C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.
- D. Existing Electrical Service: Maintain existing system in service until new PVC back board is complete and ready for installation. Disable system only to make switchovers and connections. Obtain permission from Owner at least 24 hours before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area.

3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Demolish and extend existing electrical work under As required for new LED lights and mew PVC back board.
- B. Remove exposed abandoned conduit. Cut conduit flush with walls, and patch surfaces.

- C. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets which are not removed.
- D. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
- E. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.
- F. Repair adjacent construction and finishes damaged during demolition and extension work.
- G. Extend existing installations using materials and methods compatible with existing electrical installations.

#### 3.04 INSTALLATION

- A. Install materials and equipment under the provisions of general conditions.

END OF SECTION

SECTION 16130

BOXES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wall outlet boxes.
- B. Pull and junction boxes.

1.03 REFERENCES

- A. ANSI/NEMA FB 1 - Fittings and Supports for Conduit and Cable Assemblies.
- B. ANSI/NEMA OS 1 - Sheet-steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
- C. ANSI/NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports.
- D. ANSI/NFPA 70 - National Electrical Code.
- E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

1.04 PROJECT RECORD DOCUMENTS

- A. Accurately record actual locations and mounting heights of outlet, pull, and junction boxes.

1.05 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc.

1.06 PROJECT CONDITIONS

- A. Verify location of all exterior boxes.

PART 2 PRODUCTS

2.01 OUTLET BOXES

- A. Sheet Metal Outlet Boxes: ANSI/NEMA OS 1, galvanized steel.
  - 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2 inch (13 mm) male fixture studs where required.
- B. Nonmetallic Outlet Boxes: ANSI/NEMA OS 2.
- C. Cast Boxes: NEMA FB 1, Type FD aluminum  
Provide gasketed cover by box manufacturer.  
Provide threaded hubs.



## 2.03 PULL AND JUNCTION BOXES

- A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.
- B. Surface-Mounted Cast Metal Box: NEMA 250, Type 4; flat-flanged, surface-mounted junction box.
  - 1. Material: Galvanized cast iron.
  - 2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.

## PART 3 EXECUTION

### 3.01 INSTALLATION

- A. Install electrical boxes as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.
- B. Use flush mounting outlet boxes.
- C. Secure flush mounting box to exterior wall and partition studs. Accurately position to allow for surface finish thickness.
- D. Use stamped steel bridges to fasten flush mounting outlet box between studs.
- E. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- F. Support boxes independently of conduit, except cast box that is connected to two rigid metal conduits both supported within 12 inches of box.
- G. Use gang box where more than one device is mounted together. Do not use sectional box.
- H. Use gang box with plaster ring for single device outlets.
- I. Use cast outlet box in exterior locations exposed to the weather and wet locations.

END OF SECTION

SECTION 16530

SITE LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Exterior luminaires and accessories.

1.02 REFERENCES

- A. ANSI C136.25-2009 - LED flood light
- B. ANSI/NFPA 70 - National Electrical Code.

1.03 SYSTEM DESCRIPTION

- A. Exterior wall mounted security and area lighting.

1.04 DESIGN REQUIREMENTS

- A. Design and layout lighting system in conformance with IES recommended procedures.

1.05 PERFORMANCE REQUIREMENTS

- A. Exterior wall mounted security and area lighting: Provide illumination levels and uniformity indicated on manufacturers specifications.

1.06 SUBMITTALS

- A. Submit under provisions of general conditions.
- B. Shop Drawings: Indicate dimensions and components for each luminaire which is not a standard product of the manufacturer.
- C. Product Data: Provide dimensions, ratings, and performance data.
- D. Design Data: Include lighting calculations.
- E. Test Reports: Indicate measured illumination levels.
- F. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under "Regulatory Requirements".
- G. Manufacturer's Instructions: Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.

1.07 OPERATION AND MAINTENANCE DATA

- A. Submit under provisions of general conditions.
- B. Maintenance Data: Include instructions for maintaining luminaires.

1.08 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years documented experience.

1.09 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect, and handle products to site under provisions of general conditions.
- B. Accept products on site. Inspect for damage.

PART 2 PRODUCTS

2.01 LUMINAIRES

- A. Manufacturers:
  - Flood lights
  - 1. RAB Lighting Model LED LFLOOD 78W.
  - 2. KIM Lighting Model CFL1 27L5KUV WH FH-CFL JW.
  - 3. ENVOY lighting Model FLLR Medium 34 W LED round back flood light.
  - 4. Substitutions: Under provisions of general conditions.

Wall lanterns at all doors on both sides.

  - 1. Progress lighting P5685STR Crawford single light wall lantern CFL.
  - 2. Forte lighting 17076-01 Traditional / Classic wall Sconce CFL.
  - 3. Maxim 85044 1 light outdoor wall lantern CFL.
  - 4. Substitutions: Under provisions of general conditions.
- B. Description: Area flood LED type luminaire.
- C. Material: Extruded aluminum housing with cast aluminum Bracket.
- D. Installation Conditions: Outdoor use only.
- E. Mounting: Wall mounting provide all accessories as required for complete installation with existing fixtures to be removed.
- F. Accessories:
  - 1. All lights are on time clocks.
- G. Provide light bar type specified for luminaire.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturers' instructions.

- B. Install light bars in each luminaire.

### 3.02 FIELD QUALITY CONTROL

- A. Operate each luminaire after installation and connection. Inspect for improper connections and operation.
- B. Measure illumination levels to verify conformance with performance requirements.
- C. Take measurements during night sky, without moon or with heavy overcast clouds effectively obscuring moon.

### 3.03 ADJUSTING

- A. Adjust work under provisions of General conditions.
- B. Aim and adjust luminaires to provide illumination levels and distribution as directed by owner.

### 3.04 CLEANING

- A. Clean work under provisions of General conditions.
- B. Clean electrical parts to remove conductive and deleterious materials.
- C. Remove dirt and debris from enclosure.
- D. Clean photometric control surfaces as recommended by manufacturer.
- E. Clean finishes and touch up damage.

END OF SECTION

**SECTION 16700  
FACILITY LIGHTNING PROTECTION**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. This section specifies the furnishing and installation of a complete UL master labeled lightning protection system.

**1.2 RELATED WORK**

- A. Section 07620 FLASHING AND SHEET METAL: Penetrations through the roof.
- B. Section 16000, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS: Requirements that apply to all sections of Division 26.
- C. Section 16000, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS: Requirements for personnel safety and to provide a low impedance path to ground for possible ground faults.
- D. Section 16000 CATHODIC PROTECTION: Requirements for protection of buried ferrous equipment from galvanic corrosion.
- E. Section 16000, SURGE PROTECTIVE DEVICES: Surge protective device installed at the electrical service entrance.

**1.3 QUALITY ASSURANCE**

- A. Refer to Paragraph, QUALIFICATIONS, (PRODUCTS AND SERVICES), REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.

**1.4 SUBMITTALS**

- A. Submit the following in accordance with Section 16000, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.
  - 1. Shop Drawings:
    - a. Submit sufficient information to demonstrate compliance with drawings and specifications.
    - b. Show locations of air terminals, connections to required metal surfaces, down conductors, and grounding means.
    - c. Show the mounting hardware and materials used to attach air terminals and conductors to the structure.
  - 2. Certifications: Two weeks prior to final inspection, submit the following.
    - a. Certification by the manufacturer that the lightning protection system conforms to the requirements of the drawings and specifications.

- b. Certification by the Contractor that the lightning protection system has been properly installed and inspected.
- c. Certification that the lightning protection system has been inspected by a UL representative and has been approved by UL without variation.

**1.5 APPLICABLE PUBLICATIONS**

- A. Publications listed below (including amendments, addenda, revisions, supplements, and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by designation only.
- B. National Fire Protection Association (NFPA):
  - 70-11.....National Electrical Code (NEC)
  - 780-11.....Standard for the Installation of Lightning Protection Systems
- C. Underwriters Laboratories, Inc. (UL):
  - 96-05.....Lightning Protection Components
  - 96A-07.....Installation Requirements for Lightning Protection Systems
  - 467-07.....Standard for Grounding and Bonding Equipment

**PART 2 - PRODUCTS**

**2.1 GENERAL REQUIREMENTS**

- A. Lightning protection components shall conform to NFPA 780 and UL 96, for use on Class I. Aluminum materials are not allowed.
  - 1. Class I: Copper.
  - 2. Class I air terminals: Solid copper, (18 inches) long, not less than (3/8 inch) diameter, with sharp bare copper points.
  - 3. Ground rods: Copper-clad steel, 0.75 in diameter by 10 feet long.
  - 4. Ground plates: Solid copper, not less than 20 gauge.
  - 5. Bonding plates: Bronze, (8 square inches).
  - 6. Through roof connectors: Solid copper riser bar, length and type as required to accommodate roof structure and flashing requirements.
  - 7. Down conductor guards: Stiff copper or brass.
  - 8. Anchors and fasteners: Bronze bolt and clamp type shall be used for all applications except for membrane roof. Adhesive type are allowed only for attachment to membrane roof materials, using adhesive that is compatible with the membrane material.

9. Connectors: Bronze clamp-type connectors shall be used for roof conductor splices, and the connection of the roof conductor to air terminals and bonding plates. Crimp-type connectors are not allowed.
10. Exothermic welds: Exothermic welds shall be used for splicing the roof conductor to the down conductors, splices of the down conductors, and for connection of the down conductors to ground rods, ground plates, and the ground ring.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION**

- A. Installation shall be coordinated with the siding manufacturer and installer.
- B. Install the conductors as inconspicuously as practical.
- C. Install the down conductors within the concealed cavity of exterior walls where practical. Run the down conductors to the exterior at elevations below the finished grade.
- D. Where down conductors are subject to damage or are accessible near grade, protect with down conductor guards to (8 feet) above grade. Bond down conductor guards to down conductor at both ends.
- E. Make connections of dissimilar metal with bimetallic type fittings to prevent electrolytic action.
- F. Install ground rods and ground plates not less than (2 feet) deep and a distance not less than (3 feet) nor more than (8 feet) from the nearest point of the structure. Exothermically weld the down conductors to ground rods and ground plates in the presence of the Resident Engineer, or COTR.
- G. Bond down conductors to metal main water piping where applicable.
- H. Bond down conductors to building structural steel.
- I. Connect exterior metal surfaces, located within (3 feet) of the conductors, to the conductors to prevent flashovers.
- J. Maintain horizontal or downward coursing of main conductor and insure that all bends have at least an(8 inches) radius and do not exceed 90 degrees.
- K. Conductors shall be rigidly fastened every(3 feet) along the roof and down to the building to ground.
- L. Air terminals shall be secured against overturning either by attachment to the object to be protected or by means of a substantial tripod or

other braces permanently and rigidly attached to the building or structure.

- M. Install air terminal bases, cable holders and other roof-system supporting means without piercing membrane or metal roofs.

### **3.2 ACCEPTANCE CHECKS AND TESTS**

- A. Test the ground resistance to earth by standard methods, and conform to the ground resistance requirements specified in Section 16000, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.
- B. A UL representative shall inspect the lightning protection system. Obtain and install a UL numbered master label for each of the lightning protection systems at the location directed by the UL representative and the Resident Engineer or COTR.

---END---