

SECTION 07324

CONCRETE TILE ROOFING

PART 1 GENERAL

1.01 SUMMARY

A. Related Sections:

- 1. 06100 - Carpentry.
- 2. 07600 - Flashing and Sheet Metal.

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM):

- 1. C91-95c Specification for Masonry Cement.
- 2. C144-93 Specification for Aggregate for Masonry Mortar.
- 3. C150-96 Specification for Portland Cement.
- 4. C270-96a Specification for Mortar for Unit Masonry.
- 5. D41-94 Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
- 6. D249-89(96) Specifications for Asphalt Roll Roofing (Organic Felt) Surfaced with Mineral Granules.
- 7. D312-95a Specification for Asphalt Used in Roofing.
- 8. D2626-95 Specification for Asphalt-saturated and Coated Organic Felt Base Sheet Used in Roofing.
- 9. D4586-93 Specification for Asphalt Roof Cement, Asbestos-Free.

1.03 SUBMITTALS

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*NOTE TO SPECIFIER: Concrete tile roofing required for existing projects shall match existing concrete tile roofing as to design, style, texture, color and manufacturer. Substitutions will not be accepted.*

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- A. Manufacturer's Literature: Submit copies of manufacturer's published material, handling, and application instructions for concrete tile roofing including mortar and subroofing data before starting work.

Project Name  
Project No.

**M-DCPS MASTER  
SPECIFICATION GUIDELINES**

March 03  
07324 - 1

B. Samples:

1. Concrete Tile Roofing: Submit samples of concrete tile roofing proposed to be used in the work to indicate accuracy of color match to the existing concrete tile roofing work.
2. Mortar: Submit one sample of thoroughly dry mortar proposed to be used in the work to indicated accuracy of color match to existing mortar work.

1.04 QUALITY ASSURANCE

A. Applicator Qualifications:

1. Certificate of Training: Submit certificate of training by concrete tile roofing manufacturer before starting the work.
2. Installation Experience: Submit a list of a minimum of 3 satisfactory roofing installations performed by applicator using materials and methods similar to those specified in this section before starting the work.

B. Reference Specifications and Codes:

1. Florida Building Code (FBC).
2. Underwriters Laboratories UL 790 and ASTM E108 requirements for Class "A" fire rating for roof coverings.
3. Uplift requirements based on the basic wind velocity pressures for the project according to American Society of Civil Engineers (ASCE) 7-98.
  - a. Comply with calculations, signed and sealed by a Florida registered professional engineer, establishing wind velocity pressure values for the specific project according to ASCE 7-98 using a wind speed of 146 mph, exposure category "C", and a wind load importance factor of 1.15.

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*NOTE TO SPECIFIER: Insert required FM wind uplift classification, in the following paragraph 5, as determined by ASCE 7-98 using a wind speed of 146 mph, exposure category "C", and with a wind importance factor for educational buildings of 1.15.*

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4. Factory Mutual requirements for Class I rated assembly

and FM 1-\_\_\_\_\_ uplift classifications as determined by ASCE 7-98.

5. Roofing manufacturer's specifications.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply roofing when precipitation is occurring or when frost, water, or dampness is visible on roof decks.
- B. Do not apply roofing when ambient temperature is less than 40 degrees F.
- C. Maintain rolls of felt at a temperature of at least 60 degrees F. for not less than 24 hours before laying.

1.06 WARRANTY

A. Contractor shall furnish the Board a 5 year written warranty, beginning at Substantial Completion, signed by Roofing applicator, covering materials and quality of work for entire "Roofing System", including repair and replacement of flashing and other roofing components deemed faulty or in disrepair by A/E during warranty period. This warranty shall include all other work performed by the contractor described in other sections, including but not limited to, caulking and sealants, sheet metal, insulation, and roofing accessories.

- 1. Such items deemed faulty or in disrepair shall be repaired at no cost to the Board.
- 2. No dollar limit on warranty.
- 3. Single source responsibility.
- 4. Definition of faulty components or roofing in disrepair includes but is not limited to:

- a. Defects in the quality of work or materials.
- b. Leaks of any kind.

B. Manufacturer shall furnish the Board a 20 year written warranty, beginning at Substantial Completion, signed by manufacturer's authorized representative for repair and replacement period and terms:

- 1. No dollar limit on warranty.
- 2. Single source responsibility.
- 3. Definition of faulty components or roofing in disrepair includes but is not limited to:

- a. Defects in the quality of work or materials.
- b. Leaks of any kind.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Concrete Tile:

- 1. Gory Associated Industries.
- 2. Accepted equivalent.

2.02 MATERIALS

A. Portland cement concrete tile, style Spanish "S", to match existing as to both texture and color.

B. Mortar:

- 1. Portland Cement: ASTM C150, Type I, domestic.
- 2. Masonry Cement: ASTM C91, domestic.
- 3. Sand: ASTM C144.
- 4. Water: Potable.

C. Roofing Membrane:

- 1. Asphalt Primer: ASTM D41.
- 2. Asphalt ASTM D312, Type III or IV according to code.
- 3. Asphalt Roof Cement: ASTM D4586.
- 4. Asphalt #30 Coated Base Sheet Roofing Felt: ASTM D2626, Type I.
- 5. Asphalt #90 Mineral Surface Roll Roofing: ASTM D249.
- 6. Sheathing Paper: Rosin sized sheathing paper.
- 7. Fastening for Roofing Felt to Concrete and/or Masonry Surface: Galvanized concrete nails of length conforming to Fed. Spec. FF- N-105B, Type II, Style II.
- 8. Tin Caps: 1-5/8" diameter, 32 Gage.

D. Foam Attachment: According to FBC.

E. Mortar Mix:

- 1. ASTM C270, Type S (1,800 psi) or stronger, accurately mixed in the following proportions by volume:

TYPE S

1 part masonry cement  
1/2 part Portland cement  
4 parts sand maximum

F. Batten Boards:

1. One inch by two inch (nominal) Redwood or treated moisture resistant Douglas Fir.

G. Other materials, not specifically described but required for a complete and proper installation of concrete tile roofing shall be as selected by the Contractor subject to the acceptance of the A/E.

PART 3 EXECUTION

3.01 INSPECTION

- A. Do not proceed with the work of this section until conditions detrimental to the proper and timely completion of the work have been corrected in an acceptable manner.

3.02 APPLICATION

- A. Provide sufficient crew as required to weatherproof roof deck area worked on before end of each day's work or before rainfall, if rain is imminent.

1. Extend roofing plies up abutting vertical surfaces and seal with bituminous cement.

- B. Heat Type III or IV asphalt, as required by slope and code, to maximum 450 degrees F. and do not keep heated overnight.

- C. Apply asphalt at minimum 350 degrees F.

1. Use thermometers to check temperature of asphalt during heating and applications.
2. Assign personnel to oversee heating operation at all times to prevent exceeding of maximum specified temperature.

- D. Apply roofing felts without wrinkles or buckles.

1. 30 lb. Felt:
  - a. Apply tin-capped felt roofing across the slope of the roof in a progressive and continuous fashion. Type and number of plies shall be according to code application and uplift requirements.
  - b. Tin cap nail 12 inches on center both w
  - c. Provide starter sheets to maintain the specified number of felt plies throughout the roof.
  - d. Extend roofing plies up vertical surfaces as shown in the drawings.
  
2. 90 lb. Felt:
  - a. Apply 90 lb. felt roofing in a solid mopping of hot asphalt spread uniformly over the tin-capped sheet at a rate of not less than 25 pounds of asphalt per square.
  - b. Mop hot asphalt the full lap width of each ply so that felt does not touch felt.
  
- E. Follow manufacturer's published instructions relating to handling and use of materials except as otherwise specified in this section.
  
- F. Application of Sheet Metal Work:
  1. Provide new sheet metal drip strips to match shape of existing drip strips.
    - a. Secure in place over tin capped base sheet and cover by mineral surfaces felt ply.
  2. Provide new sheet metal flashing formed in shapes as shown on the drawings and as required to make a complete weatherproof installation.
  
- G. Application of Tile:
  1. Apply tiles according to manufacturer's latest published installation instructions to produce a job matching the existing concrete tile roofing installations as accepted by the A/E.
  2. Sample Panel:
    - a. Before proceeding with tile work, provide

approximately 4 foot by 3 foot sample panel of proposed work for A/E review.

- 1) Remainder of work shall have quality of construction matching accepted sample.

### 3.03 CLEANING UP

- A. Upon completion of this portion of the work, remove tools, equipment, and surplus materials of this section, including tile ends and other debris resulting from the concrete tile roofing installation.

END OF SECTION