

NORTHWESTERN UNIVERSITY
PROJECT NAME _____
JOB # _____

FOR: _____
ISSUED: 03/29/2017

SECTION 072100 -

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1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Sustainable Design Submittals:

1. Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.
2. Product Data: For adhesives, indicating VOC content.
3. Laboratory Test RLab 5t Td ()Tj -0.002 Tc 0.0.

- B. Extruded Polystyrene Board, Type X: ASTM C 578, Type X, 15-psi (104-kPa) minimum compressive strength; unfaced; maximum flame-spread and smoke-developed indexes of 25 and 450, respectively, per ASTM E 84.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. DiversiFoam Products.
 - b. Dow Chemical Company (The).
 - c. Owens Corning.
 2. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
- C. Extruded Polystyrene Board, Type IV: ASTM C 578, Type IV, 25-psi (173-kPa) minimum compressive strength; unfaced; maximum flame-spread and smoke-developed indexes of 25 and 450, respectively, per ASTM E 84.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. DiversiFoam Products.
 - b. Dow Chemical Company (The).
 - c. Owens Corning.
 2. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
- D. Extruded Polystyrene Board, Type IV, Drainage Panels: ASTM C 578, Type IV, 25-psi (173-kPa) minimum compressive strength; unfaced; maximum flame-spread and smoke-developed indexes of 25 and 450, respectively, per ASTM E 84; fabricated with shiplap or channel edges and with one side having grooved drainage channels.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. DiversiFoam Products.
 - b. Dow Chemical Company (The).
 - c. Owens Corning.
- E. Extruded Polystyrene Board, Type VI: ASTM C 578, Type VI, 40-psi (276-kPa) minimum compressive strength; maximum flame-spread and smoke-developed indexes of 25 and 450, respectively, per ASTM E 84.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. DiversiFoam Products.
 - b. Dow Chemical Company (The).
 - c. Owens Corning.
- F. Extruded Polystyrene Board, Type VI, Drainage Panels: ASTM C 578, Type VI, 40-psi (276-kPa) minimum compressive strength; unfaced; maximum flame-spread and smoke-developed

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- b. DiversiFoam Products.
 - c. Insulfoam-a division of Carlisle Construction Materials Inc.

- B. Molded Polystyrene Board, Type VIII: ASTM C 578, Type VIII, 13-psi (90-kPa) minimum compressive strength.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. ACH Foam Technologies, Inc.
 - b. Atlas EPS; a Division of Atlas Roofing Corporation.
 - c. DiversiFoam Products.

- C. Molded Polystyrene Board, Type II: ASTM C 578, Type II, 15-psi (104-kPa) minimum compressive strength.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. ACH Foam Technologies, Inc.
 - b. Atlas EPS; a Division of Atlas Roofing Corporation.
 - c. DiversiFoam Products.
 - d. Insulfoam-a division of Carlisle Construction Materials Inc.

- D. Molded Polystyrene Board, Type IX: ASTM C 578, Type IX, 25-psi (173-kPa) minimum compressive strength.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. ACH Foam Technologies, Inc.
 - b. Atlas EPS; a Division of Atlas Roofing Corporation.
 - c. DiversiFoam Products.
 - d. Insulfoam-a division of Carlisle Construction Materials Inc.

- E. Molded Polystyrene Board, Type XIV: ASTM C 578, Type XIV, 40-psi (276-kPa) minimum compressive strength.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. ACH Foam Technologies, Inc.
 - b. Atlas EPS; a Division of Atlas Roofing Corporation.
 - c. Insulfoam-a division of Carlisle Construction Materials Inc.

- F. Molded Polystyrene Board, Type XV: ASTM C 578, Type XV, 60-psi (414-kPa) minimum compressive strength.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. ACH Foam Technologies, Inc.
 - b. Atlas EPS; a Division of Atlas Roofing Corporation.
 - c. Insulfoam-a division of Carlisle Construction Materials Inc.

2.3 POLYISOCYANURATE FOAM-PLASTIC BOARD

- A. Polyisocyanurate Board, Foil Faced: ASTM C 1289, foil faced, Type I, Class 1 or 2.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Atlas Roofing Corporation.
 - b. Carlisle Coatings & Waterproofing Inc.
 - c. Dow Chemical Company (The).
 - d. Firestone Building Products.
 - 2. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
- B. Polyisocyanurate Board, Glass-Fiber-Mat Faced: ASTM C 1289, glass-fiber-mat faced, Type II, Class 2.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Atlas Roofing Corporation.
 - b. Carlisle Coatings & Waterproofing Inc.
 - c. Firestone Building Products.
 - 2. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

2.4 GLASS-FIBER BLANKET

- A. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 37 percent.
- B. Glass-Fiber Blanket, Unfaced: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. Knauf Insulation.
- C. Glass-Fiber Blanket, Polypropylene-Scrim-Kraft Faced: ASTM C 665, Type II (nonreflective faced), Class A (faced surface with a flame-spread index of 25 or less); Category 1 (membrane is a vapor barrier).
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation.
 - b. Johns Manville; a Berkshire Hathaway company.

- c. Knauf Insulation.
- D. Glass-Fiber Blanket, Kraft Faced: ASTM C 665, Type II (nonreflective faced), Class C (faced surface not rated for flame propagation); Category 1 (membrane is a vapor barrier).
- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. Knauf Insulation.
- E. Glass-Fiber Blanket, Reinforced-Foil Faced: ASTM C 665, Type III (reflective faced), Class A (faced surface with a flame-spread index of 25 or less); Category 1 (membrane is a vapor barrier), faced with foil scrim, foil-scrim kraft, or foil-scrim polyethylene.
- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. Knauf Insulation.
- F. Glass-Fiber Blanket, Foil Faced: ASTM C 665, Type III (reflective faced), Class B (faced surface with a flame-propagation resistance of 0.12 W/sq. cm); Category 1 (membrane is a vapor barrier), faced with foil scrim, foil-scrim kraft, or foil-scrim polyethylene.
- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. Knauf Insulation.

2.5 GLASS-FIBER BOARD

- A. Insulation shall comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
- B. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 37 percent.
- C. Glass-Fiber Board, Unfaced: ASTM C 612, Type IA; unfaced, with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84, passing ASTM E 136 for combustion characteristics. Nominal density of 2.25 lb/cu. ft (36 kg/cu. m), thermal resistivity of

- c. Knauf Insulation.
- D. Glass-Fiber Board, Faced: ASTM C 612, Type IA; faced on one side with foil-scrim-kraft or foil-scrim-polyethylene vapor retarder, with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84. Nominal density of 2.25 lb/cu. ft. (36 kg/cu. m), thermal resistivity of 4.3 deg F x h x sq. ft./Btu x in. at 75 deg F (29.8 K x m/W at 24 deg C).
- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. Knauf Insulation.
- E. Glass-Fiber Board, Unfaced: ASTM C 612, Type IA; unfaced, with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84, passing ASTM E 136 for combustion characteristics. Nominal density of 3 lb/cu. ft. (48 kg/cu. m), thermal resistivity of 4.3 deg F x h x sq. ft./Btu x in. at 75 deg F (29.8 K x m/W at 24 deg C).
- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. Knauf Insulation.
- F. Glass-Fiber Board, Faced: ASTM C 612, Type IA; faced on one side with foil-scrim-kraft or foil-scrim-polyethylene vapor retarder, with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84. Nominal density of 3 lb/cu. ft. (48 kg/cu. m), thermal resistivity of 4.3 deg F x h x sq. ft./Btu x in. at 75 deg F (29.8 K x m/W at 24 deg C).
- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. Knauf Insulation.
- G. Glass-Fiber Board, Unfaced: ASTM C 612, Type IA; unfaced, with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84, passing ASTM E 136 for combustion characteristics. Nominal density of 4.25 lb/cu. ft. (68 kg/cu. m), thermal resistivity of 4.3 deg F x h x sq. ft./Btu x in. at 75 deg F (29.8 K x m/W at 24 deg C).
- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. Knauf Insulation.
- H. Glass-Fiber Board, Faced: ASTM C 612, Type IA; faced on one side with foil-scrim-kraft or foil-scrim-

indexes of 15 and zero, respectively, per ASTM E 84. Nominal density of 6 lb/cu. ft. (96 kg/cu. m).

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

- a. Industrial Insulation Group, LLC (IIG-LLC).
- b. Roxul Inc.

G. Mineral-Wool Board, Type III, Unfaced: ASTM C 612, Type III; with maximum flame-spread and smoke-developed indexes of 15 and zero, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics. Nominal density of 8 lb/cu. ft. (128 kg/cu. m).

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Industrial Insulation Group, LLC (IIG-LLC).
- b. Roxul Inc.

H. Mineral-Wool Board, Type III, Faced: ASTM C 612, Type III; faced on one side with foil-scrim or foil-scrim-polyethylene vapor retarder; with maximum flame-spread and smoke-developed indexes of 15 and zero, respectively, per ASTM E 84. Nominal density of 8 lb/cu. ft. (128 kg/cu. m).

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Industrial Insulation Group, LLC (IIG-LLC).
- b. Roxul Inc.

2.8 LOOSE-FILL INSULATION

A. Insulation shall comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

B. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than **37** percent.

C. Cellulosic-Fiber Loose-Fill Insulation: ASTM C 739, chemically treated for flame-resistance, processing, and handling characteristics.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Central Fiber LLC.
- b. GreenFiber.
- c. Hamilton Manufacturing Inc.

D. Glass-Fiber Loose-Fill Insulation: ASTM C 764, Type I for pneumatic application or Type II for II fn[0 Td1Link <</MCID 96s.

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1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Covertech Fabricating Inc.
 - b. Fi-Foil Company.
 - c. Insulation Solutions, Inc.
 - d. Reflectix Inc.

2. Construction: [**Surfaces separated with internal expanders**] [~~Surfaces separated by~~
ETC 07w 0.831 01.192

1. Supplement adhesive attachment of insulation by securing boards with two-piece wall ties designed for this purpose and specified in Section 042000 "Unit Masonry."

3.6 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

A. Blanket Insulation: Install in cavities formed by framing members according to the following requirements:

1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
3. Maintain 3-inch (76-mm) clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
4. Attics: Install eave ventilation troughs between roof framing members in insulated attic spaces at vented eaves.
5. For metal-framed wall cavities where cavity heights exceed 96 inches (2438 mm), support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.
6. For wood-framed construction, install blankets according to ASTM C 1320 and as follows:
 - a. With faced blankets having stapling flanges, lap blanket flange over flange of adjacent blanket to maintain continuity of vapor retarder once finish material is installed over it.
- 7. Vapor-Retarder-Faced Blankets 6 >>BDC vent:

NORTHWESTERN UNIVERSITY
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3.7 INSTALLATION OF CURTAIN-WALL INSULATION