SECTION 07210 - BUILDING INSULATION

City of San Diego, CWP Guidelines

PART 1 -- GENERAL

1.1 WORK OF THIS SECTION

A. The WORK of this Section includes providing building insulation.

1.2 RELATED SECTIONS

A. The WORK of the following Sections applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.

1. Section 03520 Lightweight Insulating Concrete Deck
2. Section 06100 Rough Carpentry
3. Section 07510 Built-up Roofing System

1.3 CODES

A. The WORK of this Section shall comply with the current editions of the following codes as adopted by the City of San Diego Municipal Code:

1. Uniform Building Code

1.4 SPECIFICATIONS AND STANDARDS

A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section:

1. HH-I-524CInsulation Board, Thermal (Polystyrene)

2. HH-I-526CInsulation Board, Thermal (Mineral Fiber)

3. HH-I-585CInsulation, Thermal (Vermiculite)

4. HH-I-1972/1Insulation Board, Thermal, Polyurethane Or Polyisocyanurate, Faced With Aluminum Foil On Both Sides Of The Foam

5. LP-375C(3)Plastic Film, Flexible, Vinyl Chloride

6. TT-S-001657Sealing Compound, Single Component, Butyl Rubber Based, Solvent Release Type (For Buildings And Other Types Of Construction)

7. ASTM C 665Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing

8. ASTM D 312Specification for Asphalt Used in Roofing

9. ASTM D 2178Specification for Asphalt Glass (Felt) Used in Roofing and Waterproofing

10. ASTM D 2626Specification for Asphalt-Saturated and Coated Organic Felt Base Sheet Used in Roofing

11. ASTM E 84Test Method for Surface Burning Characteristics of Building Materials

12. ANSI/ASTM A 525Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process

13. ANSI/ASTM D 41Specification for Asphalt Primer Used in Roofing and Waterproofing

1.5 SHOP DRAWINGS AND SAMPLES

A. The following shall be submitted in compliance with Section 01300:

1. Manufacturer's product data.
2. Manufacturer's installation instructions.
3. Certification that products meet the specifications indicated.

1.3 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. **Delivery of Materials:** Manufactured materials shall be delivered in original unbroken packages, containers, or bundles bearing the name of the manufacturer.

B. **Storage:** Materials shall be carefully stored in an area which is protected from the elements in a manner recommended by the manufacturer to prevent damage to the material and marring of its finish.

PART 2 -- PRODUCTS

2.1 GENERAL

A. **General:** Only products certified as complying with the indicated requirements shall be provided.

B. **Products:** Products shall be new, of current manufacture, and shall be the products of reputable manufacturers specializing in the manufacture of such products.

C. **Manufacturer's Recommendations:** Products shall be recommended by the manufacturer for the application indicated.

2.2 GENERAL

A. **General:** Building insulation shall conform to the applicable requirement of the Underwriters Laboratories "Fire Resistance Index," Factory Mutual requirements, and specifications.

B. **Flame Spread Rating:** Insulation shall have a flame-spread rating of 25 or less and a smoke rating not exceeding 450 when tested in accordance with UBC Standard 42-1.

2.3 ROOF INSULATION

A. Roof insulation at wood framing shall be [6] [9] inches thick [membrane faced] [reflective membrane faced] fiber batts with an "R" value of [19] [30] (min) conforming to ASTM C-665, Type [II] [III] Class [A] [B] [C].

B. Roof insulation (board-type) shall be foil-faced with a glass fiber reinforced polyisocyanurate foam plastic core. The foam core shall have a uniform, closed cell structure. Roofing insulation shall be not less than [2-1/4][ ]-inch thick boards with "R" value of [18] [ ] (min), conforming to Federal Specification HH-I-1972/1, Class 2.

C. Roof insulation (board-type) shall be manufactured of inorganic fibers with asphalt and kraft paper mopping top surface. Roof insulation shall be [15/16] [1-5/8] [2-1/4]-inch thick boards with "R" value of [3.70] [6.67] [9.09] (min), conforming to Federal Specification HH-I-526C.

D. Roof insulation shall be a perlite, polyurethane, or isocyanurate foam and asphalt saturated felt chemically-bonded board. The minimum "R" values of the board shall be [ ] for [2-inch] [2-1/2-inch] [3-1/4-inch] thickness.

2.4 THERMAL WALL INSULATION

A. Thermal wall insulation at exterior wood or metal stud framed walls shall be [3-1/2] [6]-inch thick (min) with [no-faced] [membrane fused-face] [reflective membrane faced] fiber glass batts with a minimum "R" value of [ ], conforming to ASTM C-665 Type [I] [II] [III], Class [A] [B] [C].

2.5 WALL INSULATION

A. Thermal wall insulation at exterior masonry or concrete walls shall be [no-faced] [membrane faced] [reflective membrane faced] fiber glass batts [3-1/2] [2-1/2] [2]-inch thick with a minimum "R" value of [ ] and conforming to ASTM C-665.

B. Styrene foam board insulation shall be [ ]-inch thick, conforming to Federal Specification HH-I-524C, Type I, Class A with minimum "R" value of [ ] per inch of thickness. Furring channels for styrene foam board system shall be serrated furring channels, 1-5/8 inches wide with 5/8-inch serrated legs. Furring channels shall be not less than 25-gauge galvanized steel.

2.6 WALL INSULATION FILL

A. Masonry or block (cavity-cell) insulation shall be vermiculite loose fill insulation conforming to Federal Specification HH-I-585C Int. Amd. 1 and shall be treated for water repellency. Insulation shall have a coefficient of heat transfer ("U" value) no higher than [ ] for filled 8-inch lightweight block.

2.7 SOUND INSULATION

A. Sound insulation shall be not less than 3-1/2-inch thick kraft paper-faced mineral fiber batts conforming to ASTM C-665 Type [I] [II] [III], Class [A] [B] [C].

2.8 SPRAYED THERMAL INSULATION

A. Sprayed thermal insulation shall be incombustible material composed of mineral fibers and cementitious binders, having a minimum "R" value of [ ] for 2-inch thickness.

B. Adhesive shall comply with the recommendations of the insulation manufacturer.

C. Bonder shall comply with the recommendations of the insulation manufacturer.

D. Metal trim shall be fabricated of 26-gauge galvanized sheet steel conforming to ASTM A 525, Class G90.

2.9 BELOW-GRADE INSULATION

A. Below-grade insulation shall be [ ]-inch thick rigid expanded polystyrene "styrofoam" thermal insulation conforming to Federal Specification HH-I-524C, Type II, Class B. Insulation shall have a minimum compressive strength of 25 psi, maximum water vapor transmission rate of 1.5 perm-in, density of 1.5 lb/cu ft and an "R" value of [ ] per inch of thickness.

B. Insulation protection board shall be 1/2-inch thick bituminous-impregnated fiberboard or perlite protection board.

2.10 FASTENERS

A. Fasteners shall comply with the recommendations of the manufacturer of the insulating materials.

2.11 ALUMINUM FOIL TAPE

A. Aluminum foil tape shall be [2] [ ] inches wide.

2.12 CONCRETE PRIMER

A. Concrete primer shall conform to ANSI/ASTM D 41.

2.13 ASPHALT

A. Asphalt shall conform to ASTM D 312, Type IV.

2.14 BASE SHEET

A. Base sheet shall be asphaltic-saturated 43 lb (vapor-retarder) membrane conforming to ASTM D 2626 Type I, 25 lb/100 sq ft minimum weight.

2.15 ASPHALTIC-SATURATED FELT (ASF)

A. Asphaltic-saturated (vapor-retarder) felt shall be asphalt-impregnated inorganic glass felt conforming to ASTM D 2178, Type I, [15] [30] lb/100 sq ft minimum weight.

2.16 STEEL DECK FASTENERS

A. Steel deck fasteners shall have integral rust-resistant stress distribution caps, and shall comply with the recommendations of the insulation and roofing manufacturer.

2.17 VAPOR RETARDER MEMBRANE ROOF

A. [Vapor retarder membrane for roof insulations shall comply with Section 07510.] [Vapor retarder membrane for roof insulation shall be asphaltic-saturated felt.]

2.18 VAPOR RETARDER MEMBRANE SYSTEM FOR WALLS [AND CEILINGS]

A. Vapor retarder membrane shall be 6 mils sheeting vapor retarder conforming to Federal Specification L-P-375C(3) and shall have a vapor rating of not more than [0.06] [0.02] perms.]

B. Sealant for use with the vapor retarder shall be a single component butyl rubber base sealant conforming to Federal Specification TT-S-001657.

C. Joint cleaner shall be a non-corrosive and non-staining type cleaner recommended by sealant manufacturer and compatible with joint forming materials.

D. Tape shall be transparent polyethylene, self-adhering type of not less than 2-inch width and shall be as recommended by the insulation manufacturer.

2.19 MANUFACTURERS

A. Products shall be of the type and manufacture as indicated below (or equal):

1. Roof Insulation:

Johns-Manville co. "Fresco Foam"
Grefco, Inc. "Permalite PK"

2. Sprayed Thermal Insulation:

United States Mineral "Cafco Heat Shield"
American Energy Products "Spraydon Type II"

3. Aluminum Foil Tape:

"Aluma-Grip No. AF7-701" by Hardcast, Inc.

4. Vapor Retarder Membrane System for Walls:

"Zendel Polyethylene Film" by Union Carbide

PART 3 -- EXECUTION

3.1 GENERAL

A. **General:** Products shall be installed in accordance with the manufacturer's written installation instructions.

3.2 APPLICATION

A. Sound insulation shall be installed in walls and ceilings of [toilets], [locker] rooms, [showers], [halls], [corridors], where indicated.

B. Roof structures shall be provided with the roof insulation system indicated.

C. Below-grade walls and roofs of buildings shall be insulated with below-grade insulation.

D. Exterior building walls that are stud-framed or furred on the interior shall be provided with thermal insulation. Exterior walls shall be provided with a vapor retarder system between the interior finish surface material and inside the face of the wall insulation.

E. Exterior walls shall be provided with an approved vapor retarder system between the interior finish material and inside face of the wall insulation.

F. Roof insulation shall be installed over a roof vapor retarder membrane system.

G. Non-grouted cells of building [masonry or] [concrete block] [brick block] shall be filled with block insulation.

3.3 INSTALLATION OF INSULATION

A. Blocking for wall-mounted items and items installed within furring and walls shall be securely installed prior to installation of insulation.

B. Expanded polystyrene foam board insulation shall be secured by furring channels, at 24 inches o.c. (max). Channels shall be secured to wall by concrete nails or pneumatically-driven fasteners.

C. Below-grade insulation shall have insulation protective board installed between below-grade insulation and backfill.

D. Insulation shall be installed to provide maximum sound and thermal benefits for material indicated. Insulation shall be installed to completely fill or cover voids between furring studs, providing a continuous blanket of insulation. Insulation shall be cut neatly to fit angles, corners and irregular areas and carefully wrapped around pipes, conduits, outlets, switches and beams to maintain continuity of insulation. Gaps or bridges shall be avoided. Insulation shall be tight fitting batts and shall be secured as recommended by the material manufacturers for job conditions.

E. Vapor retarder shall be installed continuously between the exterior and interior surfaces at exterior concrete or masonry walls that are furred.

F. Roof insulation shall be installed over a vapor retarder membrane. Concrete shall be primed. Vapor retarder felt shall be set in steep asphalt (23 lb/100 sq ft). First layer of insulation shall be set in steep asphalt (30 lb/100 sq ft) and shall be mechanically fastened throughout entire area. Subsequent layers of insulation shall be set in asphalt (30 lb/100 sq ft).

G. Sprayed thermal insulation shall be applied over adhesive coat where recommended by the manufacturer.

3.4 INSTALLATION OF VAPOR RETARDER MEMBRANE SYSTEM

A. **General:** The installation of the vapor retarder system shall not proceed until substrate construction and penetration WORK has been completed.

B. The CONTRACTOR and vapor retarder system Installer shall examine the substrate and the conditions under which the vapor retarder WORK is to be performed. The Installer shall notify the CONTRACTOR and CONSTRUCTION MANAGER in writing of unsatisfactory conditions.

Work on the vapor retarder shall not proceed until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

C. The CONTRACTOR shall notify the CONSTRUCTION MANAGER at least 7 days prior to completion of the vapor retarder system installation for inspection of the completed WORK.

D. The vapor retarder system shall be installed by experienced tradesmen specializing in installation of vapor retarders.

E. Vapor retarder membrane shall be overlapped at framing members including studs, joists, furring, columns, and girts, wherever possible.

F. Vapor retarder membrane shall be attached to wood framing members by staples. Staples shall be covered with not less than 2-inch square tape strip to provide an unbroken membrane.

G. With metal framing members including ceiling girts, membrane shall be secured to framing with adhesives and double-back tape.

H. Membrane seams shall be lapped at least 4 inches, sealed and taped.

I. The vapor retarder membrane shall be lapped, attached, and taped to other surfaces at extremities, windows, door frames, penetrations, floors and ceilings.

J. Special care shall be taken at penetrations including, but not limited to the following: electrical boxes, phone boxes, pipe penetrations and wire penetrations, to ensure that a continuous unbroken membrane is maintained. The membrane shall be cut with care without overcutting and shall be taped whenever possible. The membrane shall be sealed and taped to the penetrator.

K. Splits, tears, cuts, punctures, and damaged areas of the vapor retarder membrane shall be patched and repaired to insure vapor tightness.

L. A 1/8-inch bead of sealing compound shall be applied to the vapor retarder at framing members, blocking, and supports, including, but not limited to, the following: gypsum board, plywood, wainscots, insulation, support framing, and paneling will be anchored through it.

** END OF SECTION **