SECTION 07200 - BUILDING INSULATION

PART ONE – GENERAL

1.1 SECTION INCLUDES

A. Provide all building insulation required for this Work including, but not necessarily limited to:

1. Exterior walls.
2. Interior walls.
3. Interior walls and floors (Sound attenuation batts between units and at framed walls around elevator shaft as well as in elevator equipment room and mechanical room ceilings).
4. Ceilings at roof areas.
5. Elevator Machine Rooms.
6. Interior slab perimeter insulation.
7. Sill Seal.
8. Insulation baffle.
10. Adhesives.
11. Exterior Door & window openings.
12. Caulking.
13. Work to ensure testing in 07220 is passed, including a complete “super-seal” insulation package.

1.2 RELATED SECTIONS

A. This project is subject to an Energy Verification Program. Refer to Section 07220 – Thermal Bypass Inspection and Testing. All work is subject to inspection by the Contractor performing the blower door tests prior to completion in order to verify that
the unit can pass the blower door test. Failure to pass the blower door test will result in uncovering work and resealing the areas of air infiltration.

B. Section 07841 - Firestop Systems

C. Section 07900 - Caulking and Sealants

1.3 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per ASTM E 84 for surface-burning characteristics, by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

1.4 PRODUCT HANDLING

A. Use all means necessary to protect the materials of this Section before, during, and after installation and to protect the work and materials of all other trades.

B. Deliver materials to the job site, and store in a safe dry place with all labels intact and legible at time of installation.

1.5 REPLACEMENTS

A. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

1.6 CODES AND REGULATIONS

A. All sealants, caulking and adhesives must meet GS36 for low VOC content.

PART TWO – PRODUCTS

2.1 GENERAL

A. All insulation material shall be the product of D.O.W., W.R. Grace, Manville Co., Owens/Corning Fiberglas, Nu-Wool Company or an equal approved in advance by the Architect.

2.2 EXTERIOR WALL INSULATION
A. All exterior stud walls shall be insulated with 5-1/2", R-19, unfaced friction-fit fiberglass insulation.

**2.3 INTERIOR WALL INSULATION**

A. Insulate all interior walls where indicated on the Drawings, with 3 1/2", R-11, friction-fit fiberglass insulation.

**2.4 INTERIOR WALL & FLOOR INSULATION- SOUND ATTENUATION BATTs**

A. Fiberglass batts, specifically called out for sound attenuation with an STC of 50.

**2.5 CEILINGS AT ROOF AREAS**

A. Ceilings not capable of supporting or providing containment for blown-in insulation (such as above elevator shafts) shall be insulated with R-60 fiberglass batt insulation, unfaced friction fit. Sufficient insulation shall be placed in attic areas so that the R-value is maintained after initial settlement and throughout the one-year warranty period.

**2.6 CELLULOSE BLOWN-IN INSULATION**

A. Attics throughout shall be insulated with R-60 blown cellulose insulation. Sufficient insulation shall be placed in attic areas so that the R-value is maintained after initial settlement and throughout the one-year warranty period.

**2.7 CLOSED CELL FOAM INSULATION**

A. High Density Closed Cell 2.0 lb. polyurethane foam insulation, Class 1 Rating, and the following ASTM E84 Surface Burning Properties which permit it be remain exposed in attics and crawl spaces:
   1. Flame Spread @5” <= 25
   2. Smoke Developed @ 5” <= 450
   3. Fuel Contribution: none
   4. Other Properties:
      a. R-Value= 6.9 per inch
      b. Containing no CFC’s HCFC’s, formaldehyde, or volatile organic compounds.
      c. Water Vapor Transmission Properties, ASTM E96 data:
         1. .8 @ 1”
         2. .23 @3.5”
      d. ASTM E283 Air Leakage:  Zero (0) ft3/s.ft2 @ 75Pa (25mph wind) Sustained Wind Load.
      e. Fungi Resistance:  ASTM G –21 ZERO RATING
B. Product shall be ThermoSeal 2000 As manufactured by SprayFoamPolymers.com or equal.

2.8 MINERAL WOOL BLANKETS

A. **Blankets:** Non-combustible mineral wool insulation, thickness as required to fill wall openings and penetrations, Also to cover piping, laying on attic side of upper floor ceiling, to protect and separate from spray foam insulation application. Pyro-Fiber blankets as manufactured by Manville, Thermafiber Safing Insulation as manufactured by United Gypsum Company, or approved equal.

2.9 RIGID BOARD FOAM INSULATION

A. Styrofoam rigid board insulation, R-5.4 per inch, as manufactured by D.O.W. Chemical Corp. or approved equal. To be used to construct boxes over bathroom fan housings, fixture electrical boxes and over exposed water pipes in the attic (in lieu of mineral wool blanket) to protect from spray coat of closed cell foam insulation.

B. Thermax Sheathing Board, 1-1/2” thick, fire rated, shall be installed on the attic stairway walls as called for on the Drawings.

2.10 ELEVATOR MACHINE ROOM INSULATION

A. Insulate wall between elevator machine room and adjacent apartment where indicated on the Drawings, with two layers of 3 1/2" sound attenuation batt insulation, minimum STC 55.

2.11 ELEVATOR SHAFT WALLS

A. All exterior stud walls shall be insulated with 5-1/2", R-19, unfaced friction-fit fiberglass insulation.

2.12 ELEVATOR SHAFT WALLS

A. All elevator shaft walls in the attic shall be insulated with mechanically attached R-15 rigid board insulation, R-5. per inch.

2.13 INTERIOR SLAB PERIMETER INSULATION

A. The perimeter of all interior slabs shall be insulated with styrofoam rigid board insulation, R-5.4 per inch, as manufactured by D.O.W. Chemical Corp. or approved equal. Thicknesses vary as per Drawing details.
2.14 SILL SEAL
A. Polyethylene foam sill seal, width to match sill plate, as manufactured by DOW or approved equal.

2.15 INSULATION BAFFLE
A. Polystyrene foam type, width to match spacing of roof framing members, corrugated to provide a minimum of 1" airspace between roof deck and baffle.

2.16 FIRE-RATED SEALANT
A. Blankets: Non-combustible mineral wool insulation, thickness as required to fill wall opening, Pyro-Fiber blankets as manufactured by Manville, Thermafiber Safing Insulation as manufactured by United Gypsum Company, or approved equal.
B. Firestop: One part intumescent firestop putty which expands when exposed to heat.

2.17 ADHESIVES
A. Shall be B.F. Goodrich, PL 200 or a compatible adhesive recommended by the insulation manufacturer.

2.18 EXTERIOR DOOR & WINDOW OPENINGS
A. Non expanding spray type foam urethane insulation for installation in shim space around exterior doors and windows.

2.19 SPRAY TYPE INSULATION – Not used in DOOR & WINDOW OPENINGS
A. Use where required to seal around outlet and lighting boxes, where required for building seal and blower door testing.
B. Where required by code, some areas may require fire-rate foam to be used.

2.20 CAULKING
A. One part, gun-grade, silicon type. Must comply with GS36 for VOC content.

PART THREE – EXECUTION

3.1 GENERAL
A. Examine the areas and conditions under which work of this Section will be installed. Correct conditions detrimental to proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF FIBERGLASS INSULATION

A. Except otherwise specifically directed by the Architect, install all fiberglass building insulation in accordance with the current edition of "Fiberglass Building Insulation Application Instructions", publication 3-BL-4992 of the Owens/Corning Fiberglas Corporation.

B. Insulation must be installed at all band boards both parallel and perpendicular to joists. Insulate all cavities of perimeter walls. Stuff glass-fiber, loose-fill insulation into miscellaneous voids and cavity spaces. Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5-lb/cu. ft. (40 kg/cu. m).

C. Wire spring hangars shall be used to hold floor insulation in place and tight to underside of floor sheathing above.

D. **Wall Installation:**

1. Must be contiguous and continuous across the building envelope with all holes and cracks fully sealed
2. No gaps
3. No Compression
4. Insulation cut around obstructions
5. Carefully fit between piping and electrical wiring and boxes
6. Stapled to face of studs
7. External Channels, corners and areas around tub and showers insulated
8. Small spaces filled including behind intersecting stud walls
9. Fully aligned with both sides of the studs
10. Framed walls around elevator shaft to have sound attenuation batts filling wall cavities.

E. **Floor Installation:**

1. Tight to the floor membrane above. Insulation shall be installed to maintain permanent contact with the underside of the floor slab or decking.
2. Batts snug but not compressed or buckled
3. All spaces insulated
4. Rim joists insulated
5. Split insulation when bridging or bracing is in place
6. No gaps
7. No Compression
8. Insulation cut around obstructions
9. Carefully fit between piping and electrical wiring and boxes
10. Rim Joists insulated

F. Ceiling Batt Installation:

1. Must be contiguous and continuous across the building envelope with all holes and cracks fully sealed.
2. No gaps
3. No Compression
4. Insulation cut around obstructions
5. Carefully fit between piping and electrical wiring and boxes
6. All draft stops in place
7. Batts cover trusses
8. All top plates covered
9. All venting clear - Maximum 1” clearance
10. IC rated fixtures covered
11. Attic access insulated
12. Split insulation when bridging or bracing is in place
13. Elevator equipment room and mechanical room ceilings to receive the sound attenuation batts.

G. Knee Walls:

1. Must be contiguous and continuous across the building envelope with all holes and cracks fully sealed.
2. No Gaps
3. No Compression
4. Insulation cut around obstructions
5. Carefully fit between piping and electrical wiring and boxes
6. Stapled to face of studs
7. Small spaces filled including behind intersecting stud walls

H. Rafter Space:

1. Must be contiguous and continuous across the building envelope with all holes and cracks fully sealed.
2. No Gaps
3. No Compression
4. Insulation cut around obstructions
5. Carefully fit between piping and electrical wiring and boxes
6. All venting clear – Maximum 1” clearance
7. All draft stops in place
8. Batts cover trusses
9. All top plates covered

3.3 INSTALLATION OF ATTIC INSULATION

A. Attic insulation shall be installed to provide full thickness and R-value specified. Install measuring tape strips in quantities of 1 for every 250 SF at locations throughout attic to verify thickness from access hatch. For blown in insulation in the ceiling, provide netting material as necessary to hold insulation in place and insure complete coverage of area.

B. Ceiling Blown in Installation:
   1. All draftstops in place
   2. All drops covered with hard covers
   3. Insulation covers entire surface
   4. Insulation uniform depth
   5. Insulation at proper depth
   6. Insulation covering cavities, drops, scuttles, bracing and IC rated fixtures
   7. Insulation covering top plates
   8. Baffles installed and eave vents or soffit vents clear: 1” minimum clearance
   9. Bag labels cut out and stapled to truss vertical near attic access
   10. Attic access insulated with rigid foam insulation
   11. Hand pack small inaccessible openings with batt insulation
   12. Do not place near chimneys or non IC rated fixtures

3.4 INSTALLATION OF INSULATION BAFFLE

A. Insulation baffles shall be installed at all roof eaves and dormers, to provide a minimum of 1” air space between roof deck and insulation system. Baffles shall be secured in place with staples or other fasteners and shall be installed to fill the entry width of cavity between roof framing members. Back baffles with blocking where needed to keep insulation from rolling into soffit.

3.5 INSTALLATION OF FIRE-RATED SEALANT

A. All penetrations through walls or floors between apartment units or apartments and corridor, in concealed spaces, or through any other fire-rated wall, floor, or ceiling system shall have the penetration sealed with fire-rated material. Material shall be installed in strict accordance with the manufacturer's installation instructions, to accordance with the manufacturer's installation instructions, to maintain the fire rating of the wall, floor, or ceiling assembly.

3.6 INSTALLATION OF SPRAY TYPE INSULATION
A. Completely fill shim space around all exterior doors and windows, and completely seal penetrations through wall plates, and floor joists at party walls, following manufacturer's installation recommendations. At windows and doors, trim any excess insulation flush with face of wall, after insulation has cured. Use fire-rated foam spray where required for code compliance and maintain the fire ratings.

3.7 INSTALLATION OF CAULKING

A. Caulking shall be installed on interior side of wall framing as part of a "Super Seal" insulation system, whereby all joints between and around top and bottom wall plates and all joints between double and triple studs shall be sealed. Wider gaps between framing members may be sealed using spray type foam insulation in lieu of caulking. All extra foam shall be cut off after foam has cured.

3.8 WORK RELATING TO SECTION 07220

A. Complete all work as required to ensure HERS testing listed in Section 07220 HERS Testing will pass.

3.9 SUPER-SEAL PACKAGE

A. The project insulation work shall include all aspects of the “super-seal” insulation package.

END OF SECTION