SECTION 133420 - PORTABLE AND MOBILE BUILDINGS

PART 1 GENERAL

1.01 SECTION INCLUDES:
A. All labor, materials, equipment, accessories and services necessary to furnish, install and make operational a complete Portable Building.

1.02 REFERENCES
A. Reference to standards and/or specifications herein shall be interpreted to mean the latest revision unless noted otherwise. The following abbreviations appear in the specification:

1. APA American Plywood Association
2. NFPA National Fire Protection Association/National Forest Products Association
3. OSHA Occupational Safety and Health Act
4. SMACNA Sheet Metal and Air Conditioning Contractors National Association
5. UBC Uniform Building Code

B. Permission for deviation from these standards and/or specifications must be approved in writing by the Engineer in advance.

1.03 QUALITY ASSURANCE
A. Manufacturer shall be a nationally recognized company within the portable building industry, and have been continuously active in the construction of portable buildings for a minimum of 15 years.
B. Contractor shall be the portable building manufacturer's approved installer.
C. Manufacturer shall provide the Engineer names and pertinent data of at least ten projects of same or similar installations of portable buildings as specified in these specifications. At least three projects shall be local and available for the Engineer's inspection.
D. The manufacturer of the portable building shall provide the following warranties, providing for the repair/replacement of defective materials and workmanship not attributable to the occupants' normal use of structure:
   a. Unlimited non-prorated one year warranty on all installed equipment, finishes and nonstructural items (nonbearing framing, acoustic system, HVAC system, light fixtures, etc.).
   b. Minimum, non-prorated, five year warranty on structural elements.
   c. 10 year unlimited non-prorated warranty on the roof system.
E. The completed portable building shall comply with UBC and applicable codes/ordinances of the municipality where the structure is located and with OSHA requirements.
F. The Contractor shall appoint a Project Manager who shall:
   1. Coordinate all work for this contract with Purchaser requirements and Purchaser-provided work (i.e., site preparation).
   2. Be responsible for coordination and scheduling of work by subcontractors.
   3. Advise the Engineer of scheduling requirements for work by Purchaser's forces.
   4. Process all shop drawings and be knowledgeable of products to be used in the portable building construction of this Project.
   5. Coordinate and maintain current schedules required.
   6. Be experienced in the portable building industry, with a minimum of five years experience in portable building installations.

1.04 DELIVERY, STORAGE AND HANDLING
A. Portable building unit(s) shall be delivered to jobsite in new condition. Materials which are accessory to the installation of the unit(s) shall be delivered to jobsite in the original packages, containers or bundles bearing the name of manufacturer and product. Accessory materials shall be stored on pallets or equivalent wood blocking and properly protected.
B. Deliver materials in a manner to allow continuous progress of work, in accordance with established schedules.
C. Delivery and on-site storage of unit(s) and accessory materials shall not hinder vehicular or pedestrian traffic except in areas approved by the Engineer or as shown on drawings. Move-on schedule shall be approved by the Engineer.
D. Material handling equipment used onsite shall conform to and be operated in conformance with the most recent OSHA and local building code requirements.

1.05 SITE CONDITIONS

A. Access to site and work shall be coordinated with the Engineer.
B. Installation of work performed during rainy or inclement weather shall be performed only with the Engineer's approval. Interiors of unit(s) shall be protected and maintained weathertight during inclement weather.
C. Contractor shall assume that existing buildings onsite, if any, will be occupied and utilized for ongoing operations. Contractor shall not interrupt Purchaser's operations unless written approval is received from the Engineer.
D. Site shall be prepared by others (unless noted otherwise on drawings) and shall be ready to accept portable building unit(s). At minimum: site utilities shall be in place in locations shown on drawings, and landscaping that the Purchaser has determined may interfere with the installation will have been removed and will be reinstalled by the Purchaser unless otherwise noted on the drawings.
E. Contractor shall examine site for locations of utilities to service the portable building and verify existing "as-built" conditions as accurate. Site preparation requirements of the Contractor which differ or contradict the referenced drawings shall be brought to the attention of the Engineer. Submittal of bid constitutes statement that site preparation as shown on drawings is acceptable for move-on and setup.
F. All equipment, devices and accessories incidental to transporting, move-on, and setup of the portable unit(s) shall be provided by Contractor.

1.06 SUBMITTALS

A. Manufacturer's literature indicating all materials to be provided as part of the portable building conforming to the requirement of this specification.
B. Complete Shop Drawings, supporting data and calculations of the portable building construction and systems indicating type of materials, gauge, dimension, fastening and anchoring methods and joints. Indicate by note any deviations from Construction Documents. Submit manufacturer's recommendations and requirements for items required by this work but provided by others as noted on drawings (e.g., site utilities).

1. Schedules for:
   a. Manufacture of portable building unit(s) with milestones stipulating Purchaser requirements and confirmation of information and Shop Drawings (e.g., completion deadline for site preparation work by others).
   b. Duration of move-on and setup.
   c. Installation and completion of work after move on and setup with milestones stipulating work timeframe for work by others, nature and timeframe of work by Contractor or his subcontractor and date for final inspection.
   d. Certifications required by codes, laws, ordinances, building officials and this specification.

PART 2 PRODUCT

2.01 MATERIALS

A. Portable building unit(s) in size and configuration and with materials as defined herein and on referenced drawings, conforming to Uniform Building Code (UBC) Classification Type V (N) construction with fire sprinkler (or other equivalent construction type defined by local building code) and UBC Chapter 50, Prefabricated Construction requirements.
B. Provide required fire rated assemblies and protected materials in accordance with other more stringent codes where selection of alternative materials (wood versus metal) or systems (ducted versus plenum return air) is allowed.
C. Structural Foundations

1. Unless otherwise noted, Contractor to provide all bearing blocks, stands, shims, anchors, hold down straps, etc., required by manufacturer and/or building code(s) to support and anchor the unit(s). Contractor may, with the Engineer's approval, determine that placement of the portable building unit(s) over existing paving or concrete is adequate for substitution of some structural foundation elements (i.e., bearing locks). Substitution in no way lessens the warranty against settlement.
D. Structural Frame

1. Provide welded steel frame with long span beams or joists to provide clear spans and open spaces. Secondary floor joists and roof purlins shall be of steel or wood as required. Jo support code minimum floor and roof loads but not less than the following:

   a. Floor - Use Uniform Load
      - Office space, Conference & Meeting Rooms 100 lbs/s.f.
      - Storage, Library stacking areas 125 lbs/s.f.
   b. Concentrated floor load .2,000 lbs.
   c. Roof - Minimum live load 20 lbs/s.f.
   d. Wind load - Design wind speed shall be 75 mph with exposure "C".

2. Provide for special loading criteria noted on drawings (i.e., equipment, access flooring, computers, antennae).

3. Structural sheathing shall be provided by the manufacturer where required by building code or for structural stability of the unit(s) in place and/or transit.

E. Floor and Roof Construction

1. Floor and roof substrate to be exterior grade plywood or particle board in accordance with American Plywood Association (APA) standards. Thickness as required by code and to support loading specified herein and on drawings; minimum 5/8 inch floor, 7/16 inch roof or as required by Roof Manufacturer. Other more stringent requirements of materials manufacturers may require increased substrate thickness.

F. Roof Membrane

1. Single ply Membrane - All systems shall be installed in accordance with Roofing Manufacturer's recommendations including attachment sheets, insulation, roof tapes, fasteners, adhesives, sealants, flashings, accessories, equipment and services. All systems shall be coated with a reflective coating material as recommended by the Roof System Manufacturer and minimum 50 percent reflectance. The following are pre-approved roof systems:

   a. Firestone Ultra Ply 78, mechanically anchored system.
   c. Owens-Corning Fiberglass, Derbigum HPS Single-Ply system, fully adhered.

2. Built-up Roofing Systems - All systems shall be installed in accordance with Roofing manufacturer's recommendations including attachment sheets, insulation, roof tapes, fasteners, adhesives, sealants, flashings, accessories, equipment and services. Following are pre-approved roof systems:

   a. Owens-Corning Fiberglass, #33TC
   b. GAF Building Materials Corp., #103 M-B
   c. Tremco, THURmastic THERM 100 system

3. Galvanized Metal - 24 gauge, painted. Install in accordance with applicable SMACNA details and standards.

4. Asphalt - Fiberglass Shingles Class A and wind-resistant label shingles, meeting ASTM D3018, Type 1 and D3161; "sentinel" grade as manufactured by GAF Building Materials Corp.; 20 year warranty; or equivalent. Color shall be selected by Engineer from Roofing Manufacturer's standard colors. Install in accordance with Roofing Manufacturer's recommendations including roofing felt, fasteners, adhesives, sealants, flashings, accessories, equipment and services.

G. Exterior Wall Construction

1. Nonbearing Framing Members - Nonbearing framing shall be made of metal or wood. Typical minimum size and spacing: two inch by four inch wood or 3 5/8 inch metal, at maximum spacing of 24 inches on center. Other widths and spacing as required by codes, other more stringent requirements of this specification, or required to enclose concealed or recessed work.

2. Exterior Skin - Exterior finish materials to be provided and installed in accordance with applicable industry standards and Material Manufacturer's recommendations and requirements. Exterior finish material may be used as structural sheathing if approved by the Engineer. Material and color shall be as noted on drawings and/or schedules. The following are pre-approved exterior skin materials unless noted otherwise on drawings:

   a. APA 303 siding, 6-S/W face grade, 24 inch on center span rating, 5/8 inch thick minimum, Group 1, exterior glue; T&G rough-sawn with grooves at 8 inches on center; stained or painted.
   b. 7/16 inch T&G primed hardboard exterior siding; rough sawn wood texture with grooves at 8 inches on center or sand finish stucco texture; painted.
c. .019 thick prefinished aluminum panels.

H. Vapor Barrier
1. Any of the following vapor material may be used:
   a. One half inch thick asphalt impregnated board.
   b. Asphalt saturated 15 pound rag felt.
   c. Four mil polyethylene sheet 1.
   d. Foil vapor barrier attached to batt insulation.

I. Interior Skin
1. All interior finish materials shall be provided and installed in accordance with respective Material Manufacturer's recommendations. Interior finish material of exterior wall may be used as structural sheathing if approved by the Engineer. Material and color shall be as noted on drawings and/or schedules.

J. Interior Nonbearing Partitions
1. Provide and install fixed interior nonbearing partitions in locations as shown on drawings including finish materials as noted and/or scheduled.
2. Stud Channel-stud system complete with head and floor tracks, bearings, accessories and anchorage; minimum 2 1/2 inches wide, 25 gauge electro-galvanized at maximum spacing of 24 inches on center. Other widths, gauges, and spacing as required by applicable building codes, other more stringent requirements of this specification or required to enclose concealed or recessed work.
3. Interior Finish - Material may not be used as structural sheathing without prior written approval of the Engineer. Material and color shall be as noted on drawings and/or schedules.

K. Doors, Door Frames and Hardware
1. Materials to be provided and installed as part of the Contractor's work.
2. Install doors, door frames and hardware in accordance with respective Material Manufacturers' specifications, codes, and other sections of this specification; free from bind or excess clearances; set to finish materials as detailed.

L. Windows, Glass and Glazing
1. General - Materials and installation to be in accordance with applicable building code provisions, industry standards, the Flat Glass Glazing Manual and other sections of this specification. Size, configuration an detail shall be as shown on drawings and/or schedules.
2. Exterior Windows, operable - Bronze anodized aluminum horizontal sliding with nail-on flanges, operable panel to glide on adjustable nylon glides; glass to be 3/16 inch thick minimum, solar bronze, factory glazed; provide solar mesh insect screen; Alenco Series 700 or equivalent by Reynolds Aluminum, International or Aluminaire.
3. Non-operable Exterior Windows - Bronze anodized aluminum picture/fixed window with nail-on flanges; glass to be 3/16 inch thick minimum, solar bronze, factory glazed; provide solar mesh screen; Alenco Series 700 or equivalent by Reynolds Aluminum, International or Aluminaire.
4. Glass and Glazing other than factory glazed.
   a. Provide minimum thickness specified in respective sections, required by portable building manufacturer, or as required for compliance with applicable codes, ordinances, laws, regulations and glass manufacturer's recommendations. Factory label all glass for type, quality and thickness; provide permanent labels as required by law.
   b. Glass Color - Typical exterior, solar bronze. Typical interior, clear, unless otherwise noted on the drawings.

M. Insulation
1. Provide glass fibered batt insulation to meet applicable fire ratings and the following minimum R-values. Where framing space is restricted, use highest R-Factor space will allow. Provide accessories and attachment devices as required to attach and support insulation.
   a. Roof/Ceiling - R-30, foil faced.
   b. Exterior Walls - R-19.
   c. Interior Walls at Toilet Rooms - 3-1/2 inch sound attenuating batts.
   d. Floor - R-1 1 with protective board.

N. Fire Sprinkler System
1. Materials and installation are part of the contract work and shall be in accordance with latest standards of National Board of Fire Underwriters, NFPA #13.
2. Place all heads minimum one foot from edge of tile (centered in two foot by two foot area).
0. **Specialty Items, Miscellaneous Construction and Accessories.**

1. Provide and install all specialty items, miscellaneous construction, and accessories shown on drawings that are required to provide a completed facility installation. Install in accordance with manufacturers’ directions and recommendations, and by skilled mechanics of trades generally associated with individual items. Secure all items in place as shown on drawings or as directed. Protect against damage at all times.

2. Specialty items may include access panels, lead walls, sound booths, etc.

3. Miscellaneous construction may include skirting, fascia panels, canopies, porch structures, steps, etc.

4. Accessories may include restroom accessories, toilet partitions, etc. Provide accessories as shown on drawings. Provide the following for restroom facilities:
   a. All exposed metal on accessories shall be satin finish stainless steel.
   b. One granular soap dispenser shall be provided for each restroom (Bobrick B-132).
   c. Each sink shall be provided with a counter mount liquid soap dispenser (Bobrick B-822). Use wall mount where applicable (Bobrick B-1 12 or B-1 11).
   d. One combination paper towel dispenser/disposal shall be provided for up to three sinks. In the event more than three sinks are provided, one paper towel dispenser/disposal shall be provided for every two sinks (Bobrick B-3944). The location shall be as close to sink as possible.
   e. Small restrooms with one sink shall be provided with a paper towel dispenser only (Bobrick B-369).
   f. A toilet tissue dispenser with backer plate shall be provided for each toilet compartment (Bobrick B-6867).
   g. Grab bars with anchor plates shall be provided as required for handicapped (Bobrick B-6293).
   h. One feminine napkin/tampon vendor shall be provided for each women's restroom (Bobrick B-35024).
   i. One feminine napkin disposal shall be provided for each women's toilet compartment. A two-compartment disposal shall be provided wherever possible (Bobrick B-354), otherwise provide single compartment (Bobrick B-353).
   j. One stainless steel shelf shall be provided for each restroom (Bobrick B-298). Size - 8 inches by 24 inches long.
   k. One hook and bumper shall be provided on each toilet partition door (Bobrick B-212).
   l. A towel hook shall be provided for each shower head (Bobrick B-677).
   m. All shower stall soap dispensers shall be recessed and of a material that is noncorrosive.
   n. One toilet seat cover dispenser shall be provided for each toilet compartment (Bobrick B-3013).
   o. Toilet partitions shall be baked enamel and mounted from ceiling and wall. Vertical stiles at handicapped toilet compartments, however, shall extend to floor (stainless steel screws shall be typically utilized in all mounting).
   p. Latches on toilet compartment doors shall be surface mounted.
   q. One free-standing waste receptacle shall be provided at each restroom (Bobrick B-2260).
   r. Each restroom shall receive a mirror (Bobrick B-290 or 7224).
   s. Mirror shall be provided at each sink (Bobrick B-290, 1830).

**PART 3 EXECUTION**

**3.01 FIELD QUALITY CONTROL**

A. **Inspection**

   1. Contractor shall inspect project site and report any unacceptable conditions. Commencement of work constitutes statement that conditions are suitable for installation of work of this section.

B. **Protection**

   1. Contractor shall be responsible for protection of property during course of work.
   2. Areas of existing landscaping and construction shall be protected from damage. All damage caused by Contractor will be repaired, at his expense, to its original condition to the complete satisfaction of the Engineer.
3.02 PREPARATION

A. Construction Preparation
   1. Contractor's Project Manager shall be responsible for coordination and accuracy of placement of bearing blocks, stands, shims, anchors, hold-down straps and other structural items requiring placement in work provided as part of the project work (i.e., site concrete, asphaltic pavement).
   2. The Contractor's Project Manager shall review all Shop Drawings and referenced drawings relating to site utilities that detail the size and location of utility lines, meters, piping, conduit, trench depth/width(s), voltage, diameter, etc. The Contractor's Project Manager shall notify the Engineer of any code violations and stop work until Violations are resolved.

B. Manufacture of Portable Building Unit(s)
   1. General - All materials, installation, construction methods, and procedures used in the manufacture of the portable building unit(s) shall conform to the requirements of the UBC (specifically Chapter 50), OSHA, applicable industry standards, laws, ordinances and other regulations which govern the manufacture of portable and/or prefabricated assemblies.
   2. Approvals, inspections, and other requirements of the governing code and/or industry standards shall be made in accordance with their requirements and shall be performed during manufacture of the unit(s). Every material shall be graded, marked or labeled where required and shall be inspected for conformance. Where said markings are not readily accessible for inspection, at site or at manufacturing plant, portable building manufacturer shall provide certificates of approval certifying that the assembly in question has been inspected and meets the requirements of the code.

C. Move-On
   1. General - The move-on of the portable building unit(s) shall be supervised by the Contractor's Project Manager.
   2. The Contractor shall secure required permits for transport of unit(s) from manufacturing plant to project site.
   3. Place the portable building unit(s) on site, taking care not to damage adjacent buildings, landscaping and other site amenities.
      a. Secure unit(s) to bearing blocks, stands, shims, anchors, hold-down straps and other accessories required by code and as recommended by Portable Building Manufacturer.
      b. Remove wheels and hitch, if applicable, and store in place designated by Engineer.
   4. After placement of unit(s) and prior to attachment of closure strips or other finishes which might conceal joints, align all units to provide true and plumb conditions with not more than 1/8-inch difference in alignment at horizontal and vertical joints. Unit(s) shall be level with not more than 1/8-inch variation in floor elevation in 20 feet. The Contractor's Project Manager and Engineer shall inspect joints prior to concealment.
   5. Attach and finish all closure strips to ensure watertightness of completed unit. A water test may be required by the Engineer.
   6. Contractor shall make all final connections of site utilities to the completed unit (electrical, sanitary sewer, water, natural gas, etc.) Set all ground-mounted equipment and make final connections.
   7. Install skirting, canopies, fascias, stairs and other miscellaneous items noted on drawings or which are part of the work.
   8. Adjust all operable windows, doors and hardware and put in working order free from binding, and within acceptable and/or specified tolerances.

D. Final Cleaning and Adjustment
   1. Contractor's Project Manager shall provide a final inspection of the work. Any deficiencies found during final inspection will be corrected within ten (10) working days and will be reinspected by Project Manager and the Engineer.
   2. Remove all protective coverings from exposed finished surfaces, clean off soil and other discoloration, clean and polish glass, mirrors and other installed items. Do not remove cleaning and care instructions adhered to installed items without authorization from Engineer. Do not remove glass and door labels required by law to remain permanently affixed. Clean all exposed surfaces of unit (interior and exterior walls, floors, ceilings, roof), window and door tracks, cabinetry. Leave premises in clean condition to complete satisfaction of Engineer. Remove all debris from project site.
   3. Contractor to adjust for settlement 14 days after completion of his work or after completion of interior work by others, whichever is later. Inspect all joints and closure strips for alignment and
watertightness and do work required to insure watertightness of structure. Additional water tests may be required.

END SECTION