

# Ceco Building Systems Project Specifications

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## 1. GENERAL

### 1.1. Scope

- 1.1.1. These specifications delineate the design criteria, material quality, and fabrication processes used in metal building systems designed, manufactured and furnished by Ceco Building Systems, herein referred to as Ceco.
- 1.1.2. These specifications are intended for use as an outline of the performance requirements for the various materials used within Ceco metal building systems. They are further intended to insure that architects, engineers, builders, and owners understand the basis for design, manufacture, and application of these materials.
- 1.1.3. Engineering and mechanical properties of materials utilized by Ceco in its product line are provided or referenced within these specifications, as are industry specification standards, where applicable.
- 1.1.4. Ceco utilizes those standards, specifications and/or interpretations and recommendations of professionally recognized groups and agencies, such as MBMA, AISC, AISI, AWS, ASTM, IAS AC472 etc. as the basis in establishing its own design, standards, practices, methods, tolerances, fabrication and quality criteria. For convenience, certain provisions of a specification and/or recommendation of one of these groups or agencies (i.e. AISC, AISI, etc.) may be referenced, where appropriate, in Ceco documents. In all cases however, unless stipulated otherwise in the contract documents, Ceco's design, standards, practices, methods, tolerances, fabrication and quality criteria will govern the work.
- 1.1.5. Due to Ceco's policy of continuous product development and improvement, and also due to possible changes in material availability, these specifications are subject to change without notice.

### 1.2. Materials Included

- 1.2.1. Standard material furnished for Ceco metal building systems shall include primary and secondary structural framing members, bracing, metal panels for roofing and siding, flashings, fasteners, sealants, accessories, and all other miscellaneous component parts required for a complete building (with the exception of anchor rods and other embedded items, which are excluded). Insulation and other specific items beyond the scope of standard material shall also be furnished if shown or called for by contract documents.

### 1.3. Drawings and Calculations

- 1.3.1. Ceco shall provide erection information and drawings as required to assemble all parts, components, and accessories furnished by Ceco. Drawings shall include anchor rod setting plans, roof framing plan, wall framing elevations, cross-sections, etc., and shall also be furnished if shown or called for by contract documents.
- 1.3.2. Anchor rod setting plans shall include column reactions for use in designing foundations for the building. However, Ceco shall not be responsible for the design or the adequacy of the foundation.

#### 1.4. Building Nomenclature

- 1.4.1. The building width shall be measured from side wall "steel line" to the opposite side wall "steel line." The building length shall be measured from end wall "steel line" to the opposite end wall "steel line."
- 1.4.2. The building eave height shall be measured from finished floor to top of the eave strut. The top of the eave strut is the point of intersection between the side wall "steel line" and the roof "steel line."
- 1.4.3. The bay spacing shall be measured as follows:
  - a. Interior bays from center-line to center-line of interior frames.
  - b. End bays from "steel line" (inside of end wall sheets) to center-line of first interior frame.

#### 1.5. Building Description

- 1.5.1. Ceco buildings are designed to meet customers' exact requirements, therefore, the following information must be included in the contract documents in order to fully specify the building:
  - a. Size (width, length, eave height) specified to nearest 1/16"
  - b. Primary frame type (see section 1.5.2 below)
  - c. Expandable or non-expandable end walls. Also end frame type (see below) if non-expandable
  - d. Roof slope specified to nearest 1/16"
  - e. Side wall girt type (see Primary Frame types) and end wall girt type (see End Frame types)
  - f. Bay spacing for interior bay and end bays specified to nearest 1/16" (Bays may be equal or mixed)
  - g. Building location including state and county
  - h. Building code to be used
  - i. Design loads
    - Live
    - Collateral
    - Roof snow load as applicable
    - Ground snow load and exposure
    - Wind speed and exposure
    - Seismic
    - Occupancy category
    - Topography
  - j. Crane data, if applicable, including crane class
  - k. Information on attached and adjacent structures.
  - l. Serviceability requirements.
- 1.5.2. Primary Frame Types:
  - a. (RF) Rigid Frame Clear Span: Primary frames shall be welded rigid frame design, clear span type, with single gable roof and pinned base columns. Columns shall be either tapered or straight as specified. Girts shall be by-pass, inset or flush type. If required, column bases may be fixed in lieu of pinned.
  - b. (RF\_\_\*) Rigid Frame Multi-Span: Primary frames shall be welded rigid frame design, multi-span type (\*use numerical digit to denote number of spans to be furnished), with single gable roof, pinned base side wall columns, and rafter supported at intervals by interior pipe columns. Side wall columns shall be either tapered or straight as specified. Girts shall be by-pass, inset or flush type. If required, column bases may be fixed in lieu of pinned.

- c. (FW) Flush Wall Clear Span: Primary frames shall be welded rigid frame design, clear span type, with single gable roof and pinned base columns. Straight columns shall be used and depth shall be limited to contain the column entirely within the girt space. Girts shall be inset or flush type.
- d. (FW\_\_\*) Flush Wall Multi-Span: Primary frames shall be welded rigid frame design, multi-span type (\*use numerical digit to denote number of spans to be furnished), with single gable roof, pinned base side wall columns, and rafter supported at intervals by interior pipe columns. Side wall columns shall be straight, and depth shall be limited to contain the column entirely within the girt space. Girts shall be inset or flush type.
- e. (TB) Tapered Beam Straight Column: Primary frames shall be welded rigid frame design, clear span type, with single gable roof and pinned base columns. Columns shall be straight sections with no depth limitation. Rafter shall be a tapered beam with bottom flange horizontal and top flanges sloping with roof pitch. Girts shall be by-pass, inset or flush type.
- f. (SS) Single Slope Clear Span: Primary frames shall be a welded rigid frame design, clear span type, with single slope roof and pinned base columns. Columns shall be either tapered or straight as specified. Girts shall be by-pass, inset or flush type. If required, column bases may be fixed in lieu of pinned.
- g. (SS\_\_\*) Single Slope Multi-Span: Primary frames shall be a welded rigid frame design, multi-span type (\*use numerical digit to denote number of spans to be furnished), with single slope roof, pinned base side wall columns, and rafter supported at intervals by interior pipe columns. Side wall columns shall be either tapered or straight as specified. Girts shall be by-pass, inset or flush type. If required, column bases may be fixed in lieu of pinned.
- h. (LT) Lean-to: Primary frames shall be a post and beam design with high side of frame connected to and supported by the main building. Frame shall be a clear span type with single slope roof. When connected at eave line of main building, roof slope of lean-to shall match roof slope of main building. Columns and rafters are pinned at both ends. Columns shall be straight sections. Rafter shall be either a tapered beam or beam with parallel flanges as required by design. Girts shall be by-pass or inset type.

### 1.5.3. End Frame Types

- a. Bearing End Frame - Hot Rolled (BF):  
This type end frame shall be a post and beam design with rafter pin connected at corner post but continuous over, and supported by, end posts spaced at intervals along the end wall. Corner posts and end posts shall be designed as pinned both ends. Rafter, corner posts, and end posts shall be either hot-rolled mill sections or welded-up "H" shaped, straight sections. Girts shall be by-pass or inset type.
- b. Bearing End Frame - Post and Beam (PB):  
This type end frame shall be a post and beam design with rafter pin connected at corner and end posts with end posts spaced at intervals along the end wall. Corner posts and end posts shall be designed as pinned both ends. Rafters shall be roll formed "C" sections (single or double) or H sections either mill shape or welded-up. Corner posts and end posts shall be roll formed "C" sections (single or double) or "H" shaped, straight sections either mill shape or welded-up depending on loading. Girts shall be Inset type

- c. Rigid End Frame (Full Load):  
End frames shall be welded rigid frame of same type and design as primary frames in building. End posts shall be furnished to provide support for girts if a sheeted end wall is specified. End posts shall be either hot-rolled mill sections or welded-up "H" shaped, straight sections. Girts shall be by-pass, inset or flush type.
- d. Rigid End Frame (Half Load):  
End Frames shall be a welded rigid frame design of same type as primary frames in building, but shall be designed for only half-bay loading. End posts shall be furnished to provide support for girts if portions of end wall are specified to be sheeted. End posts shall be either hot-rolled mill sections or welded-up "H" shaped straight sections. Girts shall be bypass, inset or flush type.

## **2. DESIGN**

### **2.1. General**

- 2.1.1. All structural steel mill sections and welded plate members shall be designed in accordance with the applicable sections, relating to design requirements and allowable stresses, of the American Institute of Steel Construction (AISC) "Specification for Structural Steel Buildings, Allowable Stress Design and Plastic Design."
- 2.1.2. All light-gauge, cold formed, structural members and covering shall be designed in accordance with the applicable sections, relating to design requirements and allowable stresses, of the American Iron and Steel Institute (AISI) "Specification for the Design of Cold Formed Steel Structural Members."

### **2.2. Design Loads**

- 2.2.1. Design load requirements shall be determined by local conditions, applicable codes, building end use, etc. Magnitude of design loads shall be specified by the contract documents. Application of design loads shall be in accordance with the Design Practices sections of the Metal Building Manufacturers Association (MBMA) 2006 "Low Rise Building Systems Manual" unless specified otherwise.
- 2.2.2. Loads to be considered are defined as follows:
  - a. Dead Load: The weight of the building system materials.
  - b. Collateral Loads: The weight of additional permanent materials, other than the building system, such as sprinklers, mechanical and/or electrical systems, partitions, and ceilings.
  - c. Roof Live Loads: Loads that are produced 1) during maintenance by workers, equipment and materials, and 2) during the life of the structure by moveable objects. Live loads do not include snow, wind, seismic, or collateral loads.
  - d. Roof Snow Loads: The vertical load induced by the weight of snow, assumed to act on the horizontal projection of the roof of the structure (assumed to be 0.7 of ground snow unless otherwise specified)
  - e. Wind Loads: The load caused by wind blowing from any horizontal direction.
  - f. Seismic Loads: The lateral load due to the movement of an earthquake acting on the structure in any horizontal direction.
  - g. Auxiliary loads: Dynamic live loads such as those induced by cranes and material handling systems.
  - h. Floor Live Loads: Those loads induced on a floor system by the use and occupancy of the building.
- 2.2.3. Unless otherwise specified, load combinations shall be those listed in the Design Practices section of the MBMA 2006 "Low Rise Building Systems Manual."

### 3. STRUCTURAL FRAMING

#### 3.1. General

- 3.1.1. All framing members shall be cleaned to remove loose rust and mill scale, and given one shop coat of primer. Primer shall be formulated to equal or exceed performance, under laboratory conditions, requirements of U.S. Federal Specification SSPC 15. The base metal shall be thoroughly cleaned then treated with iron phosphate solution to enhance paint adherence before coil is coated with a red oxide polyester paint. Paint dry film thickness shall be 1 mil on both sides.
- 3.1.2. Secondary structural framing shall be cold-formed using pre-painted coil stock which eliminates the need for a shop coat of primer.
- 3.1.3. In compliance with the 2001 ASTM Standards for Metal Building Systems all references in the Product Manual to ASTM A-570 and ASTM A-607 should be regarded as references to ASTM A-1011-SS and ASTM A-1011-HSLAS respectively.

#### 3.2. Primary Members

- 3.2.1. Primary structural framing shall refer to the Primary Frames (transverse rigid frames and lean-to rafters/columns), expandable and non-expandable End Frames (rafters/corner posts/end posts). Wind/Seismic Bracing, and Crane Systems.
  - a. Sheet, plate, strip mill plate, plate coils and flat bar stock used to fabricate welded-up, structural members shall conform to one of the following ASTM specifications as appropriate: ASTM A-572, Grade 50; ASTM A-529, Grade 50; ASTM A-1011-HSLAS, Grade 50 Class 1.
  - b. Members fabricated from W shapes (hot-rolled structural sections) will conform to one of the following ASTM specifications: ASTM A-529, Gr. 50; ASTM A-572, Grade 50 or ASTM A-992, Grade 50.
  - c. Members fabricated from other hot-rolled structural sections (S shapes, American Standard channels, angles, and all other miscellaneous structural shapes) shall conform to ASTM A-529, Grade 50 or ASTM A-572, Grade 50.
  - d. Interior columns of multi-span frames will be fabricated from round pipe or tube column sections which have minimum yield strength of 42,000 psi and conform to physical specifications of ASTM A-500, Grade B.
  - e. Rods used for bracing will conform to the physical specifications of ASTM A529, Gr. 50.
  - f. Cables used for bracing shall be zinc coated steel wire (7 strands), in conformance with ASTM A-475 EHS, Class A.
  - g. Members fabricated by cold forming process shall conform to ASTM specification ASTM A-1011, Grade 55 or ASTM A-1011-HSLAS, Grade 55, Class 1.

### 3.3. Secondary Members

- 3.3.1. Secondary structural framing shall refer to purlins, girts, eave struts, base members, flange bracing, gable angles, clips and other miscellaneous structural parts.
- a. Purlins, girts, eave struts, base members and gable angles shall be cold-formed from steel conforming to ASTM specification A-1011, SS, Grade 55 or ASTM A-1011-HSLAS, Grade 55, Class 1.
    - Purlins are roll formed "Z" sections, 8 1/2", 10", or 12" deep. Each "Z" section flange has a stiffening lip formed at 50° to the flange.
    - Girts are either roll formed "Z" sections, 8 1/2" or 10" deep, or roll formed "C" sections, 8 1/2" deep. Each flange of these members has a stiffening lip formed at 50° to the flange on "Z"s and at 90° on "C"s.
    - Eave struts are roll formed "C" sections, 8 1/2 " deep (roll formed) with 3 1/4" wide top and bottom flanges; or brake formed "C" sections 9 5/8" deep with 3 1/4 " wide top flange and 4 1/2 " wide bottom flange. Flanges are formed at angles other than 90 to the web to accommodate various roof slopes. Each flange has a stiffening lip formed at 90 degrees to the flange.
  - b. Galvanized cold-formed material shall conform to ASTM specification A653-06 SS grade 50, class 1 or 3 with minimum Fy = 55 ksi, Fu = 70 ksi, G90 coating.
  - c. All other miscellaneous secondary members shall have minimum yield strength of 36,000 psi.

### 3.4. Connections

- 3.4.1. All field connections shall be bolted unless otherwise noted.
- a. All primary bolted connections, as shown on drawings, shall be furnished with high strength bolts conforming to ASTM specification ASTM A-325.
  - b. All secondary bolted connections, as shown on drawings, will be furnished with machine bolts conforming to ASTM specification ASTM A-307 unless ASTM A-325 bolts are required by design.
  - c. The standard A307 and A325 bolts shall be uncoated. Special coatings in conformance with ASTM specifications are available by special order.
  - d. All connections using machine bolts in conformance with ASTM A-307 shall use nuts in conformance with ASTM specification ASTM a-563 Grade A Hex. Connections using high strength bolts in conformance with ASTM A-325 shall use nuts in conformance with ASTM specification ASTM A-563 Grade C Heavy Hex.
  - e. All cast iron slope washers shall conform to ASTM specification A-48 Class 30 B.
  - f. Hardened Steel Washers in conformance with ASTM specification ASTM F-436, Type 1 carbon steel are available by special order.
- 3.4.2. All shop welding shall be by submerged arc, gas metal arc, or shielded arc process. Groove joint welds shall develop the full strength of the members connected. Welding shall conform to the applicable requirements of the American Welding Society "Structural Welding Code," AWS D1.1-98 with ultrasonic test acceptance criteria modified in accordance with AWS D1.1-98 Section 6.8 based on suitability for service criteria. The modified ultrasonic acceptance criteria are given in "Alternative Table 6.2 AWS D1.1-98" in the Ceco Building Systems Welding Standards. The documentation supporting the modified acceptance criteria is contained in the test report "Testing and

Inspection of Welding Procedures” by Goodrich Testing and Engineering, Inc. of Nashville, Tennessee. This documentation is available on request from Ceco Building Systems.

## **4. COVERING**

### **4.1. General**

- 4.1.1. Standard covering for roofs or walls shall be a ribbed-type panel having 36 inch net coverage. These panels shall be 26 gauge, Galvalume Plus steel, with or without a color coating. At Ceco's option, substrate for color coated panels may be galvanized steel in lieu of Galvalume Plus.
- 4.1.2. Premium covering for roofs shall be a standing seam panel having either 24" net coverage (DoubleLok), or 16" net coverage (BattenLok HS). These panels shall be 24 gauge, Galvalume Plus steel with or without a color coating.
- 4.1.3. Premium covering for walls shall be a concealed fastener panel having 16-inch net coverage (CWP16/ShadowRib™). These panels shall be 24 gauge Galvalume Plus with a color coating. At Ceco's option, substrate for these panels may be galvanized steel sheet in lieu of Galvalume Plus
- 4.1.4. All Panels, both standard and premium, shall be precision roll-formed to the required configuration specified under Section 4.3.
- 4.1.5. Roof and wall panels of other materials and thicknesses are available upon request.

### **4.2. Panel Materials**

- 4.2.1. Galvanize is a corrosion resistant zinc coating applied by a hot dip galvanization process. Galvanized panels shall conform to ASTM specification ASTM A-653, Grade 50 with coating weight G90. Grade 80 may be used as specified under item 4.3.3.
- 4.2.2. Galvalume is a specialty steel sheet product with a patented coating of corrosion-resistant, aluminum-zinc alloy applied by a continuous hot dipping process. Galvalume steel panels shall have minimum yield strength of 50,000 psi unless otherwise specified under Item 4.3.3. Galvalume steel will conform to ASTM specification A-792, Grade 50, SS, Class 2 with coating weight AZ55 for bare Galvalume and AZ50 for painted Galvalume. Grade 80 may be used as specified under item 4.3.3.
- 4.2.3. Acrylic coated Galvalume (Also referred to as Galvalume Plus) is a bare Galvalume sheet product with a thin, clear acrylic coating applied to both sides of the sheet. This panel conforms to ASTM specification A-792, grade 50. Galvalume Plus resists fingerprinting and smudging during handling and installation.
- 4.2.4. Standard paint, color coated panels shall have the exterior side finished with a silicone polyester coating system applied over Galvalume Plus or galvanized steel substrate. Surfaces shall be chemically cleaned, pretreated, primed, and coated, then oven-baked to cure. Top coating system shall have a dry film thickness of 0.70 to 0.80 mils. Specular Gloss at 60° viewing angle shall be 25% to 50%. The interior side of these panels shall be protected by a wash coat of primer. Panels shall be coated prior to roll forming.
- 4.2.5. Premium Paint, color coated panels shall have the exterior side finished with an extended life, fluoropolymer coating utilizing Kynar 500 Resin. This coating shall be

applied over a Galvalume Plus or galvanized steel substrate. Surfaces shall be properly prepared and primed, then coated and oven-baked to cure. Top coating system shall have a dry film thickness of 0.75 -0.90 mils on the exterior surface. Specular Gloss at 60° viewing angle shall be 8% to 15%. The interior side of these panels shall be protected by a back coat system of 0.60 ± 0.05 mils thickness. Panels shall be coated prior to roll forming.

#### 4.3. Panel Configurations and Finishes

4.3.1. Ribbed Wall Panels shall be as follows:

- a. PBR shall have 1 1/4" deep major ribs which are trapezoidal in shape, and are spaced 12" on center. Between each major rib are two minor stiffening ribs. The "leading edge" rib has a bearing leg. Each panel shall provide 3 feet of lateral coverage. Panel finish shall be either Galvalume Plus or painted. Refer to color charts for Standard and Premium paint colors available.

NOTE: PBR has achieved UL90 Listing.

- b. PBA shall have 1 1/8" deep ribs which reverse taper in width from 2 3/4" to 3/4", and are spaced 12" on center. Between each major rib, the panel is formed into a sculptured "valley" shape with six small "pencil" ribs in each "valley". Each panel shall provide 3 feet of lateral coverage. Panel finish shall be either Galvalume Plus or painted. Refer to color charts for Standard and Premium paint colors available.
- c. MAP (Architectural Panels) shall have 1 1/2" deep major ribs which taper in width from 2" to 3 13/16", and are spaced 12" on center. Between each major rib are two minor stiffening ribs, plus two small "pencil" ribs. The "leading edge" rib has a bearing leg. Each panel shall provide 3 feet of lateral coverage. Panel finish shall be either Galvalume Plus or painted. Refer to color charts for Standard and Premium paint colors available.
- d. PBU shall have 3/4" deep major ribs which are trapezoidal in shape and are spaced 6" on center. The "leading edge" rib has a bearing leg. Each panel shall provide 3 feet of lateral coverage. Panel finish shall be either Galvalume Plus or painted. Refer to color charts for Standard and Premium paint colors available.

NOTE: PBU has achieved UL60 Listing.

4.3.2. Concealed Fastener Wall Panels shall be as follows:

- a. CWP16/ShadowRib™ (Concealed Fastener Wall Panel) shall be roll-formed with the face of the panel having an inset portion in the center third of the 16" width to provide a 6" wide, low face plane between two 5" wide, high face planes at edges, Panel is 3" deep at the high planes and 1 1/2" deep at the low plane. Side laps shall be of interlocking flange design to form a rigid, permanently tight joint that will not open up or pull apart. Panels shall be connected to supporting structural members with fasteners that are concealed from exterior view. Factory applied sealant shall be provided in the interlocking side joint to provide weathertightness. Each panel shall provide 16" coverage. Entire face of panel shall be embossed to add texture, and finish shall be an extended life color coating in one of Ceco's Premium Paint colors. Refer to color charts for Premium paint colors available
- b. ESP II shall be formed as an insulated panel system having embossed interior and exterior skin panels joined with non CFC polyurethane modified isocyanurate foam.

Minor striations in the exterior skin serve to hide the panel side joint resulting in an overall flat appearance. Each panel shall provide 42" coverage with a maximum panel length of 30'-0". Standard details are available for stack joint applications on walls over 30'-0" tall. Panels shall be connected to supporting structural members with clips and fasteners that are concealed from exterior view. Panels are available in thicknesses of 2", 2 1/2", 3", and 4". Exterior panel gauge is 24 standard with 22 gauge as an option. The interior panel is 26 gauge standard with 24 and 22 gauge as an option. Refer to insulated panel color charts for Standard or Premium paint colors available.

- c. EWP II shall be formed as an insulated panel system having embossed interior and exterior skin panels joined with non CFC polyurethane modified isocyanurate foam. The 5" wide major flutes are spaced 6" on center. Minor flutes in the exterior skin serve to aid in reducing waviness or oil canning. Each panel shall provide 42" coverage with a maximum panel length of 30'-0". Standard details are available for stack joint applications on walls over 30'-0" tall. Panels shall be connected to supporting structural members with clips and fasteners that are concealed from exterior view. Panels are available in thicknesses of 2", 2 1/2", 3", and 4". Exterior and interior panel gauge is 26 standard with 24 and 22 gauge as an option. Refer to insulated panel color charts for Standard or Premium paint colors available.
- d. FWP shall be formed as an insulated panel system having embossed interior and exterior skin panels joined with non CFC polyurethane modified isocyanurate foam. The exterior skin has no flutes or striations. Each panel shall provide 36" coverage with a maximum panel length of 30'-0". Panels shall be connected to supporting structural members with clips and fasteners that are concealed from exterior view. Panels are available in thicknesses of 2", and 3". Exterior panel gauge is 22 standard. The interior panel gauge is 26 standard with 24 and 22 gauge as an option. Refer to insulated panel color charts for Standard or Premium paint colors available.

4.3.3. Ribbed roof panels shall be as follows:

- a. MAP (Architectural Panel) shall have 1 1/2" deep major ribs which taper in width from 2" to 3 15/16", and are spaced 12" on center. Between each major rib are two minor stiffening ribs plus two small "pencil" ribs. The "leading edge" rib has a bearing leg. Each panel shall provide 36" of lateral coverage. Panel finish shall be either Galvalume Plus or painted. Refer to color charts for Standard or Premium paint colors available.

NOTE: MAP has achieved UL90 Listing.

- b. PBR shall have 1 1/4" deep major ribs which are trapezoidal in shape, and are spaced 12" on center. Between each major rib are two minor stiffening ribs. The "leading edge" rib has a bearing leg. Each panel shall provide 3 feet of lateral coverage. Panel finish shall be either Galvalume Plus or painted. Refer to color charts for Standard and Premium paint colors available.

NOTE: PBR has achieved UL90 Listing.

4.3.4. Standing Seam Roof Panels shall be as follows:

- a. DoubleLok (Standing Seam Roof Panel) shall be roll formed 24" wide. Each edge corrugation shall be one half of a major rib and shall have a standing leg on top of the half rib that interlocks with the adjacent panel. Edge corrugation shall be 2" high (3" including the standing leg). All major ribs shall taper in from 1 1/2" at top to 4 5/8" at base.

Interlocking standing legs at side laps shall be field seamed together into a Pittsburgh double fold, lock joint by use of an electric seaming machine obtained from Ceco. Factory applied sealant shall be provided in the overlapping standing seam leg to assure weather-tightness of the seamed joint. Concealed clips, which are seamed into the panel side lap, shall be furnished by Ceco to fasten panels to structural members.

Each panel shall provide 24" coverage. Panel finish shall be Galvalume Plus. 22 gauge is also available. Refer to color charts for Standard and Premium paint colors available.

NOTE Underwriters Laboratories Approval: DoubleLok panels carry a Class 4 UL-2218 rating under impact resistance, Class A UL-263 fire rating, and Class 90 UL-580 uplift resistance rating.

NOTE Factory Mutual Approval: DoubleLok panels carry a Class 1-SH hail damage rating, Class A ASTM E108 fire rating, and Class 1-60 FM windstorm rating.

- b. BattenLok HS (Straight Rib Architectural Roof Panel) shall be roll-formed 16 inches wide with a 2 inch deep straight rib at each edge. One edge rib shall have a "male" flange at its top and the other edge rib shall have a "female" flange. This design allows a friction interlock of "male/female" ribs on adjacent panels. At end laps the end of the overlapping panel shall be factory swaged to allow nesting with the bottom panel.

Interlocking straight ribs at side laps shall be field crimped together by the use of an electric seaming tool obtained from Ceco. Factory applied sealant shall be provided in the overlapping "female" flange to assure weathertightness of the continuously crimped joint. Concealed clips, which are crimped into the panel side laps, shall be furnished by Ceco to fasten panels to structural members.

Each panel shall provide 16 inches coverage. Surface texture of panel may be specified as smooth or embossed. Finish may be specified as either Galvalume Plus or painted. Refer to color charts for Standard and Premium paint colors available.

NOTE Underwriters Laboratories Approval: BattenLok HS panels carry a Class 4 UL-2218 rating under impact resistance, Class A UL-263 fire rating, and Class 90 UL-580 uplift resistance rating.

- c. SuperLok (Straight Rib Architectural Roof Panel) shall be roll-formed 16 inches wide with a 2 inch deep straight rib at each edge. One edge rib shall have a "male" flange at its top and the other edge rib shall have a "female" flange. This design allows a friction interlock of "male/female" ribs on adjacent panels. At end laps the end of the overlapping panel shall be factory swaged to allow nesting with the bottom panel.

Interlocking straight ribs at side laps shall be field crimped together by the use of an electric seaming tool obtained from Ceco. Factory applied sealant shall be provided in the overlapping "female" flange to assure weathertightness of the continuously crimped joint. Concealed clips, which are crimped into the panel side laps, shall be furnished by Ceco to fasten panels to structural members.

Each panel shall provide 16 inches coverage. Panel gauge is 24 standard with 26 and 22 gauge as an option. Surface texture of panel may be specified as smooth or embossed. Finish may be specified as either Galvalume Plus or painted. Refer to color charts for Standard and Premium paint colors available.

NOTE Underwriters Laboratories Approval: SuperLok panels carry a Class 4 UL-2218 rating under impact resistance, Class A UL-263 fire rating, and Class 90 UL-580 uplift resistance rating.

NOTE Factory Mutual Approval: SuperLok panels carry a Class 1-SH hail damage rating, Class A ASTM E108 fire rating, and Class 1-90 FM windstorm rating.

- d. IBL (Straight Rib Architectural Roof Panel) shall be formed as an insulated panel system having interior and exterior skin panels joined with non CFC polyurethane modified isocyanurate foam. Panels shall have a 2" deep straight rib at each edge with 1/8" tall by 2" wide flutes evenly spaced across the exterior skin. Each panel shall provide 42" coverage with a panel length range from 8'-0 to 50'-0. Panels shall be connected to supporting structural members with clips and fasteners that are concealed from exterior view. Panels are available in thicknesses of 2 1/2", 3", and 4". Exterior panel gauge is 24 standard with 22 gauge as an option. The interior panel gauge is 26 standard with 24 and 22 gauge as an option. Refer to insulated panel color charts for Standard or Premium paint colors available.

NOTE: IBL panels carry a UL90 rating, Factory Mutual 4471, FM 1-90 windstorm, are Florida Building Code approved and are Dade County Florida approved.

- e. CCR (Ceco Composite Roof System) is a field assembled sandwich panel roof consisting of a metal liner panel, rigid board insulation, and a standing seam roof panel.

The interior liner shall be a rib type panel that is attached directly to structural members with screw fasteners. This panel is available in Galvalume Plus or painted finish. Rigid board insulation is next laid on top of the liner panel. Insulation material and thickness shall be as required to obtain specified "R" value.

The exterior roof panel shall be one of Ceco's standing seam panels (DoubleLok or BATTENLOK HS) as specified above. Standard concealed clips are used to attach the standing seam panels. A metal bearing plate is used under the base of each clip and clips are anchored by using long screw fasteners to penetrate through insulation and liner panel into the structural framing members.

#### **4.4. Flashing, Trim & Closures**

- 4.4.1. Flashing and/or trim shall be furnished at eaves, rake, corners, base, framed openings, and wherever necessary to seal against the weather and provide a finished appearance. Color shall be selected from Ceco's Standard paint colors except for trim.
- 4.4.2. Standard colors for this item are "Polar White" or "Burnished Slate" although other colors are available by special request. Profiles and dimensions of all flashing/trim will be Ceco's standards. Refer to color charts for Ceco's Premium paint colors available for trim.
- 4.4.3. Eave gutters and downspouts may be specified as optional. Gutters are box-shaped with face profile shaped to match rake trim. Downspouts are rectangular-shaped (2 7/8" x 4 1/4" min. size) and shall have a 45 degree elbow at the bottom. Standard colors for eave gutters are "Polar White" or "Burnished Slate" although other colors are available by special request. Color for downspouts shall be selected from Ceco's Regional Standard and Premium paint color charts.

- 4.4.4. Color coated, Galvalume Plus or galvanized steel for flashing, trim, metal closures, gutter, downspouts, and other miscellaneous uses shall be 26 gauge thickness of the same specification as the roof and wall covering material.
- 4.4.5. Material used for Base Angle/Trim members shall be color coated, 18 gauge, galvanized steel, 36,000 yield strength. Color shall be "Burnished Slate".
- 4.4.6. Preformed, closed cell, polyethylene closure strips matching the profile of the panel shall be installed along the eave and at other locations to provide weathertightness when shown on Ceco's erection drawings

#### **4.5. Fasteners**

- 4.5.1. Wall Fasteners shall be self-drilling carbon steel screws with an integral 5/16 inch hex. washer head. Screws for "panel to structural" application shall be #12 diameter with a minimum length of 1 1/4 inches. "Stitch" screws shall be 1/4 inch diameter and 7/8 inches long.
- 4.5.2. Panel to structural screws shall have a sealing washer (PVC or EPDM).
- 4.5.3. Both "standard" and "optional" Wall Fasteners shall have carbon steel heads. Entire fastener (body and head) shall have 0.0005 inches minimum thickness zinc plating plus a polymer coating for long term corrosion resistance. Fastener head shall also be painted to match wall panel and/or trim color.
- 4.5.4. Roof Fasteners shall be self-drilling carbon steel screws with an integral 5/16" hex. washer head (washer face undercut to encapsulate a sealing washer). Screws for "panel to structural" application shall be #12 diameter with a minimum length of 1 1/4 inches. "Stitch" screws shall be 1/4 inch diameter and 7/8 inches long. Standard Roof Fasteners shall be screws with carbon steel heads and shall have a sealing washer (PVC or EPDM). Entire fastener (body and head) shall have 0.0005 inches minimum thickness zinc plating plus a polymer coating or long term corrosion resistance. When used with color coated material, fastener head shall also be painted to match panel and/or trim color.
- 4.5.5. Optional Roof Fasteners shall be screws with an "Extended Life" head and shall have a sealing washer (EPDM). "Extended Life" heads shall be either a zinc/aluminum/manganese alloy casting or a 300 series stainless steel cap: (customer's option). Body (shank) of fastener shall have 0.0005 inches minimum thickness zinc plating. When used with color coated material, fastener head shall be painted to match panel and/or trim color.

#### **4.6. Sealants**

- 4.6.1. Sealants for side laps, end laps, accessories, etc. shall be a preformed, butyl rubber based compound. The material shall be non-hardening, non-shrinking and non-corrosive and shall have excellent adhesion to metals, painted surfaces and plastics at temperatures from -30°F to 160°F. These sealants shall be in tape mastic form, of shape and size recommended by Ceco for various applications, and shall have paper backing for easy handling.
- 4.6.2. Tube sealants shall be used to supplement tape mastic sealants and shall be applied in locations indicated by erection instructions. Tube sealant shall be a synthetic, elastomer based material which becomes tack-free in less than 2 hours at 75°F but retains flexibility.

#### **4.7. Installation of Wall and Roof Panels**

- 4.7.1. Wall panels shall be continuous from base to eave. If panel lengths exceed manufacturing and shipping limitations, splice shall occur over a wall girt.
- 4.7.2. Roof panels shall be continuous from eave to ridge. If panel lengths exceed manufacturing and shipping limitations, splice end laps shall be installed per Ceco's erection details. Sealant shall be used in all roof panel end laps.
- 4.7.3. When specified, all ribbed, roof panel side laps shall be sealed with a field applied continuous ribbon of tape mastic sealant. Eaves shall also be sealed when specified.
- 4.7.4. Fastener population and pattern for both wall and roof panels shall be as shown on erection details.

#### **4.8. Underwriters Laboratories Uplift Ratings**

- 4.8.1. For compliance with Underwriters Laboratories standard UL 580 class 90 (UL90) requirements, the following panels, installed in accordance with Ceco's standard erection instructions, shall be used.
  - a. MAP with up to 6" blanket type insulation
  - b. PBR with up to 2 1/4" rigid board insulation
  - c. PBU with up to 4" blanket type insulation
  - d. BATTENLOK HS with up to 6" blanket type insulation
  - e. BATTENLOK HS with up to 4" rigid board insulation
  - f. Composite with up to 4" rigid board insulation
  - g. DoubleLok with up to 6" blanket type insulation

### **5. Accessories**

#### **5.1. Personnel Doors**

- 5.1.1. Personnel (walk) door leaves shall be full flush hollow metal doors, 1 3/4" thick with 20 gauge, G-60 galvanized skins over a Kraft honey-comb core (typical) or a urethane foam core (optional). Leaf shall be reversible to work with non-handed door frames.
- 5.1.2. Personnel (walk) door frames shall be non-handed (reversible) frames, 8 5/8" deep with a 2-inch wide face, 16 gauge, G-60 galvanized steel with square cut, butted corners. Jambs and header are of knock-down type for field assembly through bolted connections. Door frame shall be an open "C" section to "wrap-around" end of 8 1/2" girts.
- 5.1.3. Personnel door sizes shall be either 3070 (single), 4070 (single) or 6070 (double). In addition to size, doors shall be designated as M (solid leaf), G (half glass; 23" x 29" nominal size), or LV (long vision glass; 6" x 54" nominal size). Doors shall be factory glazed with clear glass
- 5.1.4. Hardware furnished with all doors shall consist of three pair of butt hinges for each leaf (all hinges are plated and have a non-removable pin), a lockset in US26D or US32D finish, and an aluminum threshold (3 3/8 inches wide) with vinyl door sweep. An astragal will be furnished for active leaf of double doors as will head and foot bolts for inactive leaf.
  - a. Optional hardware that may be specified is:
    - Handicap (lever) handles, in lieu of knobs, on mortise locksets.
    - Panic exit/entrance hardware for single doors (3070 size only) or for active leaf only of double doors. Panic device will be touch bar type with cylindrical locks and push bar type with mortise locks.

- Surface mounted door closers
  - Vinyl weather-stripping kit
- b. Pre-assembled door and frame package optional.

5.1.5. Doors may be specified either as "Standard" or "Premium"-quality. Differences are as follows:

	Standard	Premium
Sizes	3070 & 4070 (single) 6070 (double)	3070 (single) 6070 (double)
Leaf styles	Solid, Half Glass, Long Vision	Solid, Half Glass, Long Vision
Core: Standard	Kraft honey-comb	Kraft honey-comb
Core: Optional	Urethane foam	Urethane foam
Glazing	Standard tempered or insulated	Standard tempered or insulated
Factory Paint (door & frame)	White primer coat	Burnished Slate primer coat
Surface texture (door/frame)	Smooth/smooth	Leather grain/smooth
Lockset: (typical)	Medium duty cylindrical*	Mortise**
Lockset: (optional)	Mortise**, panic	Panic
Weather-stripping kit:	Optional extra	Included

\* Medium duty cylindrical locksets are designed to conform to ANSI A156.2, Series 4000, Grade 2 and will meet Federal Specifications FF-H-00106B, Series 160. These locksets are UL listed.

\*\* Mortise locksets are designed to conform to ANSI A 156.2, Series 1000, Grade 1 and will meet Federal Specifications FF-H-00106B, Series 86 and 87. These locksets are UL listed.

5.1.6. Sheet metal trim shall be furnished with all doors to flash around door frame and provide a finished appearance

## 5.2. Horizontal Sliding Windows

- 5.2.1. Aluminum windows shall be single slide (horizontal) type, with pre-glazed clear glass, removable half screens, latching device, and weather-stripping. Window extrusions shall have mounting fins for connecting to structural sub-framing
- 5.2.2. Single windows shall be 3030, 4030, or 6030 nominal size where 3030 indicates 3'-0" wide by 3'-0" tall and 6030 indicates 6'-0 wide by 3'-0" tall.. Double or multiple windows can be formed by joining the window jamb fins together, and adding a reinforcing mullion.
- 5.2.3. Window shall be glazed with clear glass using vinyl glazing beads and shall be back-bedded. Screens for windows shall be fiberglass mesh (dark bronze color) in an aluminum frame (finish to match window finish).
- 5.2.4. All structural members shall be extruded aluminum, assembled with screws and sealed at junctions. Window construction shall conform to AAMA (American Architectural Manufacturers Association) Specification ANSI/AAMA 101-93.

- 5.2.5. Windows may be specified in either "Standard" or "Premium" quality. Differences are as follows:

	Standard	Premium
Finish on Aluminum	Mill	Burnished Slate
Glazing	1/4" single pane clear glass	5/8" double pane, clear insulated glass

- 5.2.6. Structural sub-framing, consisting of angle sections (hot-rolled or cold formed), shall be furnished with each window. Sub-framing, consisting of cold formed channel sections in lieu of angles, may be specified as optional.

- 5.2.7. Sheet metal trim shall be furnished with all windows to flash around opening and provide a finished appearance.

### 5.3. Fixed Glass Windows

- 5.3.1. Aluminum, strip windows shall be self-flashing type with mounting fins and snap-on trim. Frame members shall be extruded aluminum sections 2 1/2" deep with 0.062" wall thickness. Unit shall have a burnished slate finish and shall be pre-glazed.
- 5.3.2. Strip window unit shall be 2060, nominal size.
- 5.3.3. Glazing will be either single pane clear glass or insulated 5/8" double pane clear glass. Aluminum snap-in glazing beads will be used and glass will be back-bedded.
- 5.3.4. Window unit shall be assembled with screws and sealed at junctions. Construction shall conform to AAMA (American Architectural Manufacturers Association) Specification ANSI/AAMA 101-93.
- 5.3.5. Structural sub-framing, consisting of angle sections (hot-rolled or cold formed), shall be furnished with each window. Sub-framing, consisting of cold formed channel sections in lieu of angles, may be specified as optional. A thermal break is standard on windows for Midwestern Region.

### 5.4. Wall Louvers

- 5.4.1. Wall louvers shall be operable type, with pull-chain operator, weather-stripped blades, and removable insect screens. Mounting fins for connecting to structural sub-framing shall be provided.
- 5.4.2. Single louver size shall be 4040. Double or multiple louver banks can be formed by joining side fins together, and adding a reinforcing mullion.
- 5.4.3. Louver shall be made of galvanized steel. Frame shall be 18 gauge (min.) and blades shall be 20 gauge (min.) material. Frame joints will be welded. Blades will be overlapping type, providing maximum weathertightness when closed and allowing free air flow when open.
- 5.4.4. Screens shall be 18/16 aluminum or fiber mesh in an extruded or formed aluminum frame. Screens will be exterior mounted. Louvers may be specified in either Standard or Premium quality.

	Standard	Premium
Finish on frame and blades	Galvanized	Burnished Slate*

\*Finish coating of polyester paint applied over galvanized steel.

- 5.4.5. Structural sub-framing, consisting of angle sections (hot-rolled or cold formed), shall be furnished with each louver. Sub-framing, consisting of cold formed channel sections in lieu of angles, may be specified as optional.
- 5.4.6. Sheet metal trim shall be furnished to flash around louver and provide a finished appearance.

### **5.5. Powered Wall Exhausters**

- 5.5.1. Powered wall exhausters shall consist of a belt-driven exhaust fan, a self-closing exterior louver, structural sub-framing to support the unit, and trim to flash around unit and provide a finished appearance.
- 5.5.2. Exhaust fan shall be 48 inches in diameter, four (or more) blades, belt-driven complete with frame and mounting cage. Fan will be powered with a 3/4 HP electric motor (110/220 volt, single phase, non-reversible, overload protection). Fan rating is 20,100 CFM at zero static pressure. No wiring or controls are included.
- 5.5.3. Louver shall be automatic type which opens by action of exhaust air when fan is turned on and self-closes, by gravity action, when fan is shut off. Louver will be 54" x 54". Frame and blades (interlocking type) will be fabricated from mill finished aluminum extrusions.
- 5.5.4. Structural sub-framing, consisting of cold-formed channel sections, shall be furnished with each exhaust fan. Trim shall be Ceco's standard to accommodate wall panel configuration.

### **5.6. Framed Openings**

- 5.6.1. Framed openings shall be furnished by Ceco to accommodate Overhead Doors or Roll-up Doors supplied by others. Framed openings shall consist of structural framing to provide a large opening in a wall, along with necessary trim to flash around this opening and provide a finished appearance
- 5.6.2. Size of opening shall be determined by size of door specified. Structural framing (jamb and header) shall consist of cold-formed, open "C" sections (8 3/4", or 10 1/4" deep) or hot-rolled channel sections, (primer painted – Standard/Galvanized – optional) depending on structural requirements. Necessary clips and fasteners, for making connections for all members, shall be provided. Trim around opening shall be Ceco's standard to accommodate wall panel configuration. (Door track supports are by door supplier).
- 5.6.3. Color-coated trim to entirely cover shop-primed structural jamb and header may be specified as optional.

### **5.7. Translucent Panels (Wall)**

- 5.7.1. Wall lights shall be General Purpose, type I, translucent panels manufactured from polyester resin reinforced with chopped glass fibers. These panels shall have the same configuration as the ribbed wall panels specified. Wall lights are not available for use with CWP16 (concealed fastener) wall panels.
- 5.7.2. Panels shall have a minimum weight of 6 ounces per square foot. Exterior face will have a pebble texture, and color will be white. Light transmittance is 60% ± 5%.
- 5.7.3. Each panel shall provide 3 feet of lateral coverage. Maximum length panel available is 6'-9". Installation of translucent wall panels is similar to that of steel panels.

5.7.4. Insulated translucent wall panels are not available.

## **5.8. Translucent Panels (Roof)**

- 5.8.1. Roof lights shall be General Purpose, type I, translucent panels manufactured from polyester resin reinforced with a mesh of woven fiberglass cloth in addition to chopped glass fibers. These panels shall have the same configuration as the roof panels specified.
- 5.8.2. Panels shall have a minimum weight of 8 ounces per square foot. Exterior face will be smooth or have a pebble texture, and color will be white or clear. Light transmittance is 48% ± 5%.
- 5.8.3. Ribbed translucent panels shall provide 3 feet coverage. Maximum length of panel available is 11'-0". Installation of translucent roof panels is similar to that of steel ribbed panels.
- 5.8.4. DoubleLok translucent panels are 24" wide and 10'-3" long. Typical opening in roof is 1'-4" wide by 9'-0" long. Installation of assembly is similar to that of steel DoubleLok panels.
- 5.8.5. Insulated roof translucent panels are also available in all roof panel configurations including DoubleLok, BATTENLOK HS, and SuperLok. Insulated roof lights consist of an exterior panel as specified above, plus a clear, lightweight, translucent interior panel. These two panels are separated by a thin layer of foam insulation. Insulated roof panel (lights) have a thermal resistance factor (R) of 1.89.

## **5.9. Roof Ventilators (Ridge)**

- 5.9.1. Ridge ventilators shall be gravity type with operable dampers, and shall be furnished with bird screens. Ventilator shall have skirts suitable for mounting directly on ribbed panels and end caps that are adaptable, with slight field modification, for use on buildings with roof slopes 1/4:12 minimum up to 6:12 maximum.
- 5.9.2. Single units shall be 10'-0" long and shall have a 9 inch throat opening. Each ventilator shall have end caps at both ends which allow the vent to be used, without modification, as a single unit or in continuous run.
- 5.9.3. Ventilator shall be made of 26 gauge lockforming quality, G-90 galvanized or Galvalume Plus steel substrate with color coated white finish. Bird screens shall be 1/2" mesh, 19 gauge galvanized hardware cloth. Ventilators shall be shop assembled, and all connections shall be riveted and sealed to prevent leaking.
- 5.9.4. Dampers shall be controlled from the floor by chains connected to the ventilator pull bar. Dampers are spring loaded to remain in the open position and are closed by pulling and locking the chain. Dampers have a positive wind-lok in any position to prevent damper flutter.
- 5.9.5. Operator kits are available to provide remote operation of dampers from almost any convenient location along the end wall or side wall. "Hook-up" kits are also available which allow dampers of up to 6 continuous vents to be tied together to operate by a single operator.
- 5.9.6. When used on buildings with an expansion ridge cap, the skirt of the ventilator shall be shop modified to mount on top of this ridge cap.

## **5.10. Roof Ventilators (Round)**

- 5.10.1. Round roof ventilators shall be gravity type with operable dampers, and shall be furnished with bird screens. Ventilator shall have a built-in base with a skirt suitable for mounting directly on ribbed panels. Roof slope must be specified so that base may be fabricated to match.
- 5.10.2. Round ventilators shall have a 20-inch diameter throat opening.
- 5.10.3. Ventilator shall be made of 26 gauge lock forming quality, G-90 galvanized or Galvalume Plus substrate with color coated white finish. Bird screen shall be 1/2" mesh, and all connections shall be riveted and sealed to prevent leaking.
- 5.10.4. Dampers shall be controlled from the floor by chains connected to the ventilator pull bar. Dampers are spring loaded to remain in the open position and are closed by pulling and locking the chain.
- 5.10.5. When used on gabled buildings with ribbed roof panels, the vent will straddle the ridge, while on single slope buildings vents will be mounted slightly down slope from the high side wall.

## **5.11. Roof Curbs (For Equipment)**

### 5.11.1. GENERAL

- a. The general conditions and supplemental general conditions of the contract apply to this section as if completely written herein.
- b. The General Contractor shall provide all labor, material and equipment to completely install the prefabricated metal building Roof curbs.
- c. The prefabricated metal building roof curbs shall be used on all roof penetrations, including but not limited to HAVC units, exhaust fans, skylights and duct openings.

### 5.11.2. CONSTRUCTION

- a. The prefabricated metal building roof curbs shall be constructed using minimum 0.080 Aluminum or 18 gauge AZ 55 prime Galvalume Plus steel, or heavier gauge (as required). Fully mitered and welded corners. Integral base plates and water cricket or diverter. Factory insulated curbs to utilize 1 1/2" thick, 3# density fiberglass insulation. Roof curbs must be fabricated with integral panel ribs creating a rib to rib installation.
- b. Minimum height of roof curbs shall be 8" above finished roof or as specified.
- c. The prefabricated metal building roof curbs shall be sloped to match the roof pitch and provide a level top.

5.11.3. INSTALLATION–The prefabricated metal building roof curbs must be installed in accordance with instructions and as detailed on drawings.

5.11.4. COORDINATION–The prefabricated metal building roof curb sizes and options shall be coordinated by curb supplier and the general contractor prior to fabrication.

5.11.5. WARRANTY–The prefabricated metal building roof curb shall be guaranteed to be free from defects in materials or workmanship for a period of 20 years.

## 5.12. Pipe Flashing

- 5.12.1. Pipe flashing units shall be a one piece construction that accommodates pipes made of steel, cast iron, P.V.C. and sheet metal.
- 5.12.2. Unit may be specified in one of three sizes, as follows:
  - a. #3 size for 1/4" to 4" outside pipe diameter
  - b. #5 size for 4" to 7" outside pipe diameter
  - c. #8 size for 7" to 13" outside pipe diameter

## 5.13. Insulation

- 5.13.1. The insulation shall be a NAIMA 202-96 flexible fiberglass metal building insulation as manufactured to conform to NAIMA 202-96 Standard and ASTM C991 Type 1, having an R-value of \_\_\_\_ for the roof and \_\_\_\_ for the walls. (You may also specify the thickness).
- 5.13.2. The insulation shall be faced with a vapor retarder having a permanence rating of not greater than 1.0 as tested in accordance with ASTM E96 Desiccant Method. (Specify the type vapor retarder.)
- 5.13.3. The composite product shall have a fire hazard classification of 25 (maximum) flame spread index and 50 (maximum) smoke developed index (FHC 25/50) when used in accordance with ASTM E84 or UL 723.
- 5.13.4. When using high R-value systems, the cavity between the exterior metal sheet and the faced fiberglass insulation must be completely filled with insulation or properly ventilated. Use unfaced fiberglass blanket insulation in conformance with ASTM C553, Type 1, Class B-1, to fill the space.
- 5.13.5. The laminated insulation package shall be clearly labeled to indicate R-value and fire hazard classification 25/50. The blanket shall be marked on the un-faced side with the R-value and the NAIMA 202-96 identification.

**NOTE:** SPECIFICATIONS—As recommended by NAIMA (North American Insulation Manufacturers Association)

## 6. Building Foundation

### 6.11. Anchor Rods

- 6.11.1. Anchor rods shall be furnished by others (not Ceco) and shall be set in strict accordance with Ceco's anchor rod drawings. Anchor rods shall be of length and strength to properly resist the governing reactions induced by the design loads and shall be of the diameter shown on Ceco's anchor rod drawings. All anchor rods shall be unpainted so as to bond with the concrete in which they are set.

### 6.12. Foundations

- 6.12.1. The building foundation shall be designed by a qualified engineer to support the metal building and all other loads required by the occupant's usage. Ceco's anchor rod drawings shall show column reactions to be used for designing the building foundation provided.

## **7. BUILDING ERECTION**

- 7.11.1. The erection of Ceco buildings shall be in accordance with applicable erection drawings, and other erection information furnished by Ceco.
- 7.11.2. Erection shall be performed by a qualified erector using proper tools and equipment. It shall be the responsibility of the erector to comply with all applicable legal and safety requirements. It shall further be the responsibility of the erector to determine and provide any and all temporary bracing, bridging, blocking, shoring, and/or securing of components, etc. as required for stability during the entire erection process.
- 7.11.3. Erector shall not make any field modifications to any structural member except as authorized and specified by Ceco.

## **8. Material and Workmanship Warranties**

- 8.11.1. With every building designed and manufactured by Ceco shall be furnished, if so requested on the contract documents, a one (1) year limited warranty against failures caused by faulty or substandard material within limits set by the warranty. This "Ceco Building Limited Warranty" shall also certify the design criteria used for the structural design of the building.
- 8.11.2. The "Ceco Building Limited Warranty" shall also include a one (1) year workmanship guarantee against failures caused by faulty erection. This workmanship clause is only applicable if Ceco erects the building material and accessories.
- 8.11.3. The "Ceco Building Limited Warranty" also includes the standard roof and wall paint warranties. The type of panel and finish are to be written in on the warranty document and this establishes the applicable warranty period.

### **8.12. Wall Paint Warranties**

- 8.12.1. Twenty (20) Year Warranty – Ceco's standard paint:
- 8.12.2. All wall panels which are color coated with Ceco's standard paint may be warranted, within limits set by the warranty, for a period of 20 years against chalk, fade, crack, check, blister or peel. This 20-year wall paint warranty is offered only if so requested on the contract documents. This is so indicated in the "Ceco Building Limited Warranty."
- 8.12.3. Twenty-Five (25) Year Warranty – Ceco's premium paint:
- 8.12.4. All wall panels which are color coated with Ceco's premium paint (Kynar 500 Fluoropolymer Coating) may be warranted, within limits set by the warranty, for a period of 25 years against fade, chalk, peel, crack, check or chip. This 25-year wall paint warranty is offered only if so requested on the contract documents. This is so indicated in the "Ceco Building Limited Warranty."