

Addendum

No. ONE Date: 2.27.19

Project:

A PE Facility for
Verbena High School for the
Chilton County Board of Education
Clanton, Alabama

McKee Project No. 19-120

A1.1 GENERAL MODIFICATIONS:

The following changes and/or substitutions to the plans and specifications are hereby made a part of same and are incorporated in full force as part of the contract.

Bidders shall acknowledge receipt of this Addendum in writing on his Proposal Form.

- A. Refer to the **Advertisement For Bids**, change as follows:

Separate sealed proposal as described above shall be received by Mr. Jason Griffin, Superintendent, at the Chilton County Board of Education, Clanton, Alabama, until **2:00 PM, Thursday, March 14, 2019**, then opened and read aloud.

A1.2 SPECIFICATION MODIFICATIONS;

- A. See the following responses to RFI questions received from Contractor's

Question:

Can we use 1 Superintendent for both sites.

Answer: Yes. If the Board of Education chooses to construct both PE Facilities (19-119 and 19-120), then One (1) superintendent for both projects is acceptable.

- B. Refer to **Section 02200, Earthwork (Revised 2.28.19)**, herein.
- C. Refer to **Section 13120, Pre-Engineered Buildings (Revised 2.28.19)**, herein.
- D. The following manufactures are hereby approved subject to the plans and specifications:
Section **08700, Finish Hardware**– Marshall Best

A1.3 DRAWING MODIFICATIONS: None

END OF ADDENDUM ONE

SECTION 02200 – EARTHWORK (Revised 2.28.19)

PART 1 – GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of the contract including General and Supplementary Conditions and Division 1 Specification Sections apply to work of this section.

DESCRIPTION OF WORK:

Extent of earthwork is indicated on drawings.

1. **Rough Grading.**
2. Preparation of subgrade for building slabs and walks is included as part of this work.
3. Drainage fill course for support of building slabs is included as part of this work.

Excavation for Mechanical/Electrical Work: Refer to Division 15 and 16 sections for excavation and backfill required in conjunction with underground mechanical and electrical utilities, and buried mechanical and electrical appurtenances; not work of this section.

Codes and Standards: Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.

Testing and Inspection Service:

The **Owner** will select a firm for soil testing and inspection service for quality control testing during earthwork, and Owner to pay costs.

Retesting of rejected materials and installed work shall be done at the Contractor's expense.

Referenced Standards: Where the term "Referenced Standard" is used in these Project Specifications, it shall be interpreted as **referring to the current edition of "Standard Specifications for Highway Construction, 2018 or latest edition" of Alabama Department of Transportation "**. Referenced Divisions of the "Standard" are hereby made a part of this Project Specification insofar as they may be termed applicable. In no case will requirements for "Method of Measurement" and "Basis of Payment" be considered as applicable to this Project Specification.

JOB CONDITIONS:

Existing Utilities: Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of support and protection during earthwork operations.

Should uncharted or incorrectly charted, piping or other utilities be encountered during excavation, consult utility Owner immediately for directions. Cooperate with Owner and

utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.

Use of Explosives: The use of explosives is not permitted.

Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

1. Perform excavation within drip-line of large trees to remain by hand, and protect the root system from damage or dryout to the greatest extent possible. Maintain moist condition for root system and cover exposed roots with burlap. Paint root cuts of 1" diameter and larger with emulsified asphalt tree paint.

PART 2 – PRODUCTS

PART 3 – EXECUTION

GENERAL:

Prior to the start of excavation and fill placement, the site should be cleared of existing improvements. Additionally, remnant elements associated with previously demolished structures, should be removed. Demolition should include removal of pavements, slabs, and all below grade structures including basement slabs, foundations, and walls. Utility lines will require grouting or removal, as appropriate.

Vegetation, topsoil, rootmat, and all organic materials should be completely removed from the site. Excavations resulting from demolition and vegetation removal should be backfilled in a controlled manner with engineered fill.

Fill Placement

All material used as structural fill should be relatively free of organics and other deleterious materials. Soil fill should exhibit a Liquid Limit less than 50, a Plasticity Index less than 30, and a maximum dry density of at least 100 pcf. Soil fill should contain no more than 30% rock, and individual rock fragments in the fill should be less than 4 inches in largest dimension. Soil fill must be placed in an environment free of excess water. Therefore, free-draining granular material (such as ALDOT # 57 crushed aggregate) should be used as the initial lift(s) of fill in areas containing water seepage.

Soil fill should be placed in lifts not exceeding eight inches in loose measure. Individual lifts of fill should be moisture conditioned to with $\pm 2\%$ of the optimum moisture content and compacted to a minimum of 98% of the Standard Proctor (ASTM D -698) maximum dry density. Soil may require wetting or drying to achieve proper compaction. Thinner lifts and manually operated equipment will be required to achieve proper compaction in limited access areas such as utility trenches and around manholes and inlets.

Soil compaction testing should be performed during fill placement. Testing will give an indication of the contractor's performance with regard to soil density and moisture content

requirements established in the project specifications. Compaction testing should be performed at random locations on each lift of fill placed to provide statistically relevant testing data. The frequency of density testing should be at least one test per lift for every 2,500 square feet of fill placed in building areas and 10,000 square feet in pavement and sidewalk areas (minimum of 3 tests per lift). Each lift of fill placed in utility trenches should be tested on 50-foot centers. A minimum of 3 tests should be performed on all fill lifts.

Following construction, the foundations and underlying soils should be isolated from sources of excess water. Grades adjacent to the structure should be adjusted so that surface water flows away from the foundations. In no case should water be allowed to pond over newly-constructed footings. Roof drains and downspouts from the new buildings should be directed away from the foundations. Additionally, soils adjacent to foundations should consist of properly compacted, engineered fill to minimize water infiltration. The on-site soils contained fine-grained particles and will be adversely affected by excess water.

To reduce the potential for water migration through the floor slab, ground-supported slabs should be underlain by a capillary break consisting of a minimum of 4 inches of compacted, free-draining, coarse, granular material (such as ALDOT #57 crushed stone). Depending on the type of floor coverings to be used, the owner may also elect to install a vapor barrier typically consisting of 10 mil polyethylene sheeting. The sheeting will reduce the infiltration of water vapor through the slab and the potential for damage to floor coverings. Note, that the use of a vapor barrier will increase the potential for plastic shrinkage cracking during curing of the concrete slab.

EXCAVATION:

Excavation is Unclassified, and includes excavation to subgrade elevations indicated, regardless of character of materials and obstructions encountered.

Earth Excavation includes excavation of pavements and other obstructions visible on ground surface; underground structures, utilities and other items indicated to be demolished and removed; together with earth and other materials encountered that are not classified as rock or unauthorized excavation.

Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Architect/Engineer. Unauthorized excavation, as well as remedial work directed by Architect/Engineer, shall be at Contractor's expense.

Under footings, foundation bases, or retaining walls, fill unauthorized excavation by extending indicated bottom elevation of footing or base to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position, when acceptable to Architect/Engineer.

Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by Architect/Engineer.

Additional Excavation: When excavation has reached required sub-grade elevations, notify Architect/Engineer who will make an inspection of conditions.

If unsuitable bearing materials are encountered at required subgrade elevations, carry

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excavations deeper and replace excavated material as directed by Architect/Engineer.

Removal of unsuitable material and its replacement as directed will be paid on basis of contract conditions relative to changes in work.

Stability of Excavations: Slope sides of excavations to comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.

Maintain sides and slopes of excavations in safe condition until completion of backfilling.

Dewatering: See civil drawings for drainage plan recommendation for controlling ground water during initial construction phase. Prevent surface water from flowing into excavations and from flooding project site and surrounding area.

Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.

Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey rainwater and water removed from excavations to collecting or run-off areas. Do not use trench excavations as temporary drainage ditches.

Material Storage: Stockpile satisfactory excavated materials where directed, until required for backfill or fill. Place, grade and shape stockpiles for proper drainage.

Locate and retain soil materials away from edge of excavations. Do not store within drip line of trees indicated to remain.

Dispose of excess soil material and waste materials as herein specified.

Excavation for Structures: Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10', and extending a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction, and for inspection.

In excavating for footings and foundations, take care not to disturb bottom of excavation. Excavate by hand to final grade just before concrete reinforcement is placed. Trim bottoms to required lines and grades to leave solid base to receive other work.

Excavation for Pavements: Cut surface under pavements to comply with cross-sections, elevations and grades as shown.

Excavation for Trenches: Dig trenches to the uniform width required for particular item to be installed, sufficiently wide to provide ample working room. Provide 6" to 9" clearance on both sides of pipe or conduit.

Excavate trenches to depth indicated or required. Carry depth of trenches for piping to establish indicated flow lines and invert elevations.

Where rock is encountered, carry excavation 6" below required elevation and backfill with a 6" layer of crushed stone or gravel prior to installation of pipe.

Except as otherwise indicated, excavate for exterior waterbearing piping (water, steam, condensate, drainage) so top of piping is not less than 2'-6" below finished grade.

Grade bottoms of trenches as indicated, notching under pipe bells to provide solid bearing for entire body of pipe.

Backfill trenches with concrete where trench excavations pass within 18" of column or wall footings and which are carried below bottom of such footings, or which pass under wall footings. Place concrete to level of bottom of adjacent footing.

1. Concrete is specified in Division 3.

Do not backfill trenches until tests and inspections have been made and backfilling authorized by Architect/Engineer. Use care in backfilling to avoid damage or displacement of pipe systems.

Excavation for utilities shall conform to manufacturer's recommendations for the type material used.

Cold Weather Protection: Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees F.

COMPACTION:

General: Control soil compaction during construction providing minimum percentage of density specified for each area classification indicated below.

Percentage of Maximum Density Requirements: Compact soil to not less than the following percentages of maximum density for soils which exhibit a well-defined moisture density relationship (cohesive soils) determined in accordance with ASTM D 698; and not less than the following percentages of relative density determined in accordance with ASTM D 2049, for soils which will not exhibit a well-defined moisture-density relationship (cohesionless soils).

1. Structures, Building Slabs and Steps and Pavements: Compact top 6" of subgrade and each layer of backfill (not exceeding 8" maximum) or fill material to not less than 98% of maximum density.
2. Lawn or Unpaved Areas: Compact top 6" of subgrade and each layer or backfill or fill material to not less than 90% of maximum density for cohesive soils and 90% of relative density for cohesionless soils.
3. Walkways: Compact top 6" of subgrade and each layer of backfill or fill material to not less than 95% of maximum density.

Moisture Control: Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer

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of soil material, to prevent free water appearing on surface during or subsequent to compaction operations.

Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

1. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing until moisture content is reduced to a satisfactory value.

BACKFILL AND FILL:

General: Place acceptable soil material in layers to required subgrade elevations, for each area classification listed below.

1. Utility Trenches backfill according to manufacturer's recommendation for the type material used.
2. In excavations, use satisfactory excavated or borrow material.
3. Under grassed areas, use satisfactory excavated or borrow material.
4. Under structures, building slabs, steps and pavements and after grading operations, thoroughly mix top 6" of subgrade and compact to a density not less than 98% of maximum density.
5. Under walks and pavements, use satisfactory excavated or borrow material, or combination of both.
6. Under building slabs, use drainage fill material.

Backfill excavations as promptly as work permits, but not until completion of the following:

1. Acceptance of construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.
2. Inspection, testing, approval, and recording locations of underground utilities.
3. Removal of concrete formwork.
4. Removal of trash and debris.

Ground Surface Preparation: Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow, strip, or break-up sloped surfaces steeper than 1 vertical to 4 horizontal so that fill material will bond with existing surface.

When existing ground surface has a density less than that specified under "Compaction" for particular area classification, break up ground surface, pulverize, moisture-condition to optimum moisture content, and compact to required depth and percentage of maximum density.

Placement and Compaction: Place backfill and fill materials in layers not more than 8" in loose depth for material compacted by heavy compaction equipment, and not more than 4" in loose depth for material compacted by hand-operated tampers.

Before compaction, moisten or aerate each layer as necessary to provide optimum
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moisture content. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

Place backfill and fill materials evenly adjacent to structures, piping or conduit to required elevations. Take care to prevent wedging action of backfill against structures or displacement of piping or conduit by carrying material uniformly around structure, piping or conduit to approximately same elevation in each lift.

GRADING:

General: Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated, or between such points and existing grades.

Grading Outside Building Lines: Grade areas adjacent to building lines to drain away from structures and to prevent ponding.

Finish surfaces free from irregular surface changes, and as follows:

1. Lawn or Unpaved Areas: Finish areas to receive topsoil to within not more than 0.2' above or below required subgrade elevations.
2. Walks: Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 0.10' above or below required subgrade elevation.
3. Pavements: Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than 0.10' above or below required subgrade elevation.

Grading Surface or Fill under Building Slabs: Grade smooth and even, free of voids, compacted as specified, and to required elevation. Provide final grades within a tolerance of 1/2" when tested with a 10' straightedge.

Compaction: After grading, compact subgrade surfaces to the depth and indicated percentage of maximum or relative density for each area classification.

BUILDING SLAB DRAINAGE COURSE:

General: Drainage course consists of placement of drainage fill material, in layers of indicated thickness, over subgrade surface to support concrete building slabs.

Placing: Place drainage fill material on prepared subgrade in layers of uniform thickness, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting material during placement operations.

When a compacted drainage course is shown to be 6" thick or less, place material in a single layer. When shown to be more than 6" thick, place material in equal layers, except no single layer more than 6" or less than 3" in thickness when compacted.

FIELD QUALITY CONTROL:

Quality Control Testing During Construction: Allow approved testing laboratory to inspect and approve subgrades and fill layers before further construction work is performed.

1. Perform field density tests in accordance with ASTM D 1556 (sand cone method) or ASTM D 2167 (rubber balloon method), or ASTM D 2922 (nuclear method) as applicable.
2. Footing Subgrade: For each strata of soil on which footings will be placed, conduct at least one test to verify required design bearing capacities. Subsequent verification and approval of each footing subgrade may be based on a visual comparison of each subgrade with related tested strata, when acceptable to Architect/Engineer.
3. Paved Areas and Building Slab Subgrade: Make at least one field density test of subgrade for every 3000 sq. ft. of paved area or building slab, but in no case less than 2 tests. In each compacted fill layer, make one field density test for every 3000 sq. ft. of overlaying building slab or paved area, but in no case less than 2 tests.
4. Foundation Wall Backfill: Take at least 2 field density tests, at locations and elevations as directed.

If in opinion of Architect/Engineer, based on testing service reports and inspection, subgrade or fills which have been placed are below specified density, provide additional compaction and testing at no additional expense.

MAINTENANCE:

Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.

Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction.

Settling: Where settling is measurable or observable at excavated areas during general project warranty period, remove surface (pavement, lawn or other finish), add backfill material, compact, and replace surface treatment. Restore appearance, quality, and condition of surface or finish to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

DISPOSAL OF EXCESS AND WASTE MATERIALS:

Removal from Owner's Property: Remove waste materials, including unacceptable excavated materials, trash and debris, and legally dispose of it off Owner's property site, in area approved by all local authorities and ADEM.

END OF SECTION

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SECTION 13120 - PRE-ENGINEERED BUILDINGS (Revised 2.28.19)

PART 1 – GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of the Contract including General and Supplementary Conditions and Division 1 Specifications sections apply to work specified in this Section.

SUMMARY:

Extent of pre-engineered buildings work is shown on drawings.

Building Type: The pre-engineered building system shown is a single story, rigid frame type metal building of the nominal length, width, eave height and roof pitch indicated.

1. Manufacturer's standard components may be used, providing components, accessories, and complete structure conform to architectural design appearance shown and to specified requirements.
2. Concrete floor and foundations and installation of anchor bolts are specified in a Division-3 section. Provide anchor bolts (including sizes and lengths) and anchor bolt plan to Contractor for work by others.
3. Sealants and caulking are specified in a Division-7 section.
4. Galvalume Finish Metal Loc Seam Roof Panel and Pre-finished Long Span Type III wall panels with a continuous vapor barrier inside of building purlins, girts, and insulation to provide complete isolation from inside conditioned air consisting of Batt Insulation, Roof Insulation, Wall Insulation, Vapor Barrier Liner Fabric, Thermal Breaks, Straps, and other devices and components as required.

DESCRIPTION

Provide all materials, labor, equipment and services, and perform all operations in connection with the furnishing and installing of roofing complete, in accordance with the drawings and specifications, and including, but not limited to, the following:

1. Metal Roof and Wall Panels
2. Insulation for Roof and Wall Panels
3. Interior Metal Wall Panels
4. Gutters and Downspouts
5. Roof Curbs
6. Roof Jacks
7. Workmanship
8. Inspection of Surfaces
9. Protection
10. Delivery, Samples and Shop Drawings
11. Guarantee and Warranty

SUBMITTALS:

Product Data: Submit manufacturer's product information, specifications and installation instructions for building components and accessories. Submit sample warranty.

Shop Drawings: Submit complete erection drawings showing anchor bolts settings, sidewall, endwall, and roof framing, transverse cross sections, covering and trim details, and accessory installation details to clearly indicate proper assembly of building components.

Samples: The contractor shall submit two (2) samples each of the following for Architects's review. Samples will be used to evaluate the quality of the finished roofing system.

1. 12-inch long by actual width of roofing with required finish.
2. Fasteners for application of roofing, deck, siding, and soffit panels.
3. Sealants, closures and clips.
4. 12-inch long minimum by 12-inch wide minimum of actual standing seam sidelap seams for both sides of a typical panel.
5. Length and width as required for actual standing seam roof panel and lap seam including stiffeners and fasteners and side lap seams for both sides of a typical panel.

Certification: Submit written Certification and all structural calculations prepared and signed by a Professional Engineer, registered to practice in the State where building is to be erected, verifying that building design meets indicated loading requirements and codes of authorities having jurisdiction. Calculations shall clearly show all loads used for the design of each member. All column reactions at the foundation shall be provided for verification of the foundation design.

QUALITY ASSURANCE:

Design Criteria:

1. Structural Framing: Design primary and secondary structural members and exterior covering materials for applicable loads and combinations of loads in accordance with the Metal Building Manufacturers Association's (MBMA) "Design Practices Manual".
2. Structural Steel: For design of structural steel members, comply with requirements of the American Institute of Steel Construction's (AISC) "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings" for design requirements and allowable stresses.
3. Light Gage Steel: For design of light gage steel members, comply with requirements of the American Iron and Steel Institute's (AISI) "Specification for the Design of Cold Formed Steel Structural Members" and "Design of Light Gage Steel Diaphragms" for design requirements and allowable stresses.
4. Welded Connections: Comply with requirements of the American Welding Society's (AWS) "Standard Code for Arc and Gas Welding in Building Construction" for welding procedures.

5. Impact Resistance: Roof coverings installed on low-slope roofs (roof slope <2:12) shall resist impact damage based on the results of tests conducted in accordance with ASTM D 3746, ASTM D 4272, CGSB 37-GP-52M or the "Resistance to Foot Traffic Test " FM 4470.

Design Loads: Building shall meet all applicable Codes.

1. Basic design loads include live load, wind load and up-lift, in addition to the dead load. Minimum acceptable design loads and deflection criteria are shown on the drawings.
2. Design each member to withstand stresses resulting from combinations of loads that produce the maximum allowable stresses in that member as prescribed in MBMA's "Design Practices Manual".

Manufacturer's Qualifications: Provide pre-engineered metal buildings as produced by a manufacturer with not less than 5 years successful experience in the fabrication of pre-engineered metal buildings of the type and quality required. Manufacturer will be a member of the MBMA.

Erector's Qualifications: Pre-engineered building shall be erected by a firm that has not less than 5 years successful experience in the erection of pre-engineered buildings similar to those required for this project, and that has been licensed by the manufacturer of the building system.

PRE-ROOFING CONFERENCE:

A pre-roofing conference is required before any roofing materials are installed. This conference shall be conducted by a representative of the Architect and attended by representatives of the Owner, Building Commission Inspector, General Contractor, Roofing Contractor, Sheet Metal Contractor, Roof Deck Manufacturer (if applicable), and the Roofing Materials Manufacturer (if warranty is required of this manufacturer).

If equipment of substantial size is to be placed on the roof, the Mechanical Contractor must also attend this meeting. Provide at least 72 hours advance notice to participants prior to convening pre-roofing conference.

The pre-roofing conference is intended to clarify demolition and application requirements for work to be completed before roofing operations can begin. This would include a detailed review of the specifications, roof plans, roof deck information, flashing details, and approved shop drawings, submittal data, and samples. If conflict exists between the specifications and the Manufacturer's requirements, this shall be resolved. If this pre-roofing conference cannot be satisfactorily concluded without further inspection and investigation by any of the parties present, it shall be reconvened at the earliest possible time to avoid delay of the work. In no case should the work proceed without inspection of all roof deck areas and substantial agreement on all points.

The following are to be accomplished during the conference:

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1. To review all Factory Mutual and Underwriters Laboratories requirements listed in the specifications and resolve any questions or conflicts that may arise.
2. To establish trade-related job schedules, including the installation of roof-mounted mechanical equipment.
3. To establish roofing schedule and work methods that will prevent roof damage.
4. Require that all roof penetrations and walls be in place prior to installing the roof.
5. To establish those areas on the job site that will be designated as work and storage areas for roofing operations.
6. To establish weather and working temperature conditions to which all parties must agree.
7. To establish acceptable methods of protecting the finished roof if any trades must travel across or work on or above any areas of the finished roof.

The Architect shall prepare a written report indicating actions taken and decisions made at this pre-roofing conference. This report shall be made a part of the project record and copies furnished the General Contractor, the Owner, the Building Commission, and the Building Commission Inspector."

DELIVERY, STORAGE AND HANDLING:

Deliver and store prefabricated components, sheets, panels and other manufactured items so they will not be damaged or deformed.

Stack materials on platforms or pallets, covered with tarpaulins or other suitable weathertight ventilated covering. Store metal sheets or panels so that water accumulations will drain freely. Do not store sheets or panels in contact with other materials which might cause staining.

PROJECT WARRANTY:

Contractor shall also furnish standard Building Commission 5 year Guarantee.

All roof warranty's shall be provided to the Owner, by the Contractor at the Final Inspection to obtain the Substantial Completion.

Standard manufacturer's roofing guarantees which contain language regarding the governing of the guarantee by any state other than the State of Alabama, must be amended to exclude such language, and substituting the requirement that the Laws of the State of Alabama shall govern all such guarantees.

The roofing manufacture shall be required to provide documentation certifying that the roof design provided complies with the performance requirements as set forth in IBC Chapter 15, Section 1504. The documentation shall be attached to the roof warranty at the close out of the project.

Roof Panels

Durability of the metallic coated and unpainted roof panels due to rupture, structural failure or perforation shall be warranted for a period of twenty-five (25) years by the manufacturer.

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The exterior color finish for painted wall panels shall be warranted by the Manufacturer for twenty-five (25) years against blistering, peeling, cracking, flaking, chalking and shipping. Excessive color change and chalking shall be warranted for twenty-five (25) years. Color change shall not exceed 5 NBS units per ASTM D2244.68T, chalking shall not be less than a rating of 6 (white) or 8 (other colors) per ASTM D-659.

Compatibility: Provide products which are recommended by manufacturers to be fully compatible with indicated substrates, or provide separation materials as required to eliminate contact between incompatible materials.

WEATHER TIGHTNESS: The entire installation (penetrations, sub-framing, clips, panels, fasteners, rakes, eave, ridge, valley flashing conditions, roof to wall conditions as well as all materials specified as supplied by the manufacture) shall be guaranteed weather tight for a minimum of twenty (20) years. Provide written warranty, signed by metal roofing manufacturer and his authorized installer, agreeing to replace/repair defective materials and workmanship during the warranty period, certified by the third party inspection firm as stated under QUALITY ASSURANCE. This warranty shall be identified as neither Non-Depreciating, Non-Pro-Rated, nor have exclusions that identify, valleys, curbs, and flashings. The warranty shall be limited to the value of the installed roof assembly, including all materials and labor. The warranty shall be signed by the Manufacture of the roofing materials and the authorized installer.

PART 2 – PRODUCTS

Manufacturer: The following manufacturers' products have been used to establish minimum standards for materials, workmanship and function:

American Buildings Company
Bigbee Steel Buildings, Inc.
Butler Buildings Company
Ceco Building Systems
Gulf States Manufacturing
Inland Buildings
Morin Metal Buildings
Mesco Buildings
NCI Building Systems
Nucor Building Systems
Star Building Systems
Varco-Pruden Building System
Vulcan Steel Structures

MATERIALS:

Metals:

1. Hot-Rolled Structural Shapes: Comply with requirements of ASTM A36 or A529.
2. Tubing or Pipe: Comply with requirements of ASTM A500, Grade B, ASTM A501, or A53.
3. Members Fabricated from Plate or Bar Stock: Provide 42,000 psi minimum yield strength. Comply with requirements of ASTM A529, A570 or A572.

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4. Members Fabricated by Cold Forming: Comply with requirements of ASTM A607, Grade 50.
5. Bolts for Structural Framing: Comply with requirements of ASTM A307 or A325 as necessary for design loads and connection details.

STRUCTURAL FRAMING:

Rigid Frames shall be fabricated from hot-rolled structural steel. Provide built-up "I-beam" shape rigid frames consisting of either tapered or parallel flange beams and tapered columns. Provide frames factory welded and shop painted. Furnish frames complete with attachment plates, bearing plates and splice members. Factory drill frames for bolted field assembly.

1. Provide length of span and spacing of frames indicated. Slight variations in length of span and frame spacing may be acceptable if necessary to meet manufacturer's standard, and if approved by the Architect.
2. Provide rigid frames at endwalls where indicated.

End Wall Columns: Provide factory welded, shop painted endwall columns built-up "I" shape welded plate.

Wind Bracing: Provide horizontal and adjustable wind bracing at roof only using diagonal cables or threaded steel rods; comply with requirements of ASTM A36 or A572, Grade D.

SECONDARY FRAMING:

The spacing of all purlins as shown on the drawings is diagrammatic, the Registered Professional Engineer for the Pre-Engineered Building shall be responsible for the design of the roof structure to support the framing to meet all state, federal and local code restrictions and structural requirements set forth by the structural engineer. It shall be the responsibility of the Pre-Engineered Building manufacture to coordinate with the Bidding Contractor the amount of erection required for the roof framing before bidding.

Provide not less than 16-ga. shop painted rolled formed sections for the following secondary framing members unless shown otherwise on structural contract drawings.

1. Purlins.
2. Eave struts.
3. Endwall rafters.
4. Flange bracing.
5. Sag bracing.

Provide not less than 14-ga. cold-formed galvanized steel sections for the following secondary framing members:

1. Base channels.
2. Sill angles.
3. Endwall structural members (except columns and beams).

4. Purlin spacers.

Bolts: Provide ASTM A307 bolts, at secondary structural connections. Provide zinc-plated or cadmium-plated bolts when structural framing components are in direct contact with roofing and siding panels. Primary structural connections to be made with ASTM A325 bolts.

Shop Painting: Clean surfaces to be primed of loose mill scale, rust, dirt, oil, grease, and other matter precluding paint bond. Follow procedures of SSPC-SP3 for power tool cleaning, SSPC-SP7 for brush-off blast cleaning, and SSPC-SPI for solvent cleaning.

1. Prime structural steel primary and secondary framing members. See Structural Steel 05500 page 3 - Structural Steel Prime Paint and page 5 - Shop Painting.
2. Prime galvanized members, after phosphoric acid pretreatment with manufacturer's standard zinc dust-zinc oxide primer.

ROOF AND WALL PANELS WITH APPLIED INSULATION

Galvalume Finish Metal Loc Seam Roof Panel and Pre-finished Long Span Type III wall panels with a continuous vapor barrier inside of building purlins, girts, and insulation to provide complete isolation from inside conditioned air consisting of Batt Insulation, Roof Insulation, Wall Insulation, Vapor Barrier Liner Fabric, Thermal Breaks, Straps, and other devices and components as required.

Metal Roof Panel - Products shall be equal to or exceed the quality level of American Buildings Company's **360 Loc-Seam Roof System** with Kynar 500 finish. Equal products of other manufacturers may be used in the work, provided such products have been approved by the Architect, not less than five (5) days prior to scheduled bid opening.

Deviations in appearance from the quality standard manufacturer's panel must be approved by the owner before acceptance.

Changes in framing or variations in loading to the existing structure caused by alternate roof systems shall be subject to review and all costs for any modifications shall be the responsibility of the general contractor.

System Description

1. The roof system is a concealed fastener interlocking standing seam system with insulation between support and panel. **Panel must not be roll formed on site, nor use a portable roll former whereby the contractor manufactures the panel versus a single sourced manufacture providing the finished materials with a single sourced warranty.**
2. Roof panels shall be standing seam interlocking design and secured to the supports with a concealed structural fastening system.
3. The concealed attachment system shall eliminate all through penetration of the exposed roofing surface into structural supports and allow the roof covering to move independently of any differential thermal movement by the framing system.

4. The panel to structural clip shall be designed to provide \pm one inch of thermal movement. It shall incorporate a self centered feature to assure one inch of movement in both directions.
5. The standing seam shall have integral male and female interlocking ribs with a factory applied, non-hardening sealant, and the seams shall be continuously locked or crimped together by mechanical means during installation.
6. Roof panels shall be fastened to the support framing members with a concealed clip or backing device of steel having a protective metallic coating. Through penetration of the roofing surface by exposed fasteners shall occur only for non-structural connection at panel termination and roof perimeter flashing location.
7. Panel termination and perimeter flashing (attached to roof panels) shall be sealed with sealants recommended by the manufacturer.
8. Required closures shall be metal. Non-metal closures shall not be acceptable.
9. Provide thermal blocks/thermal spacers at all deck supports.

Materials:

Roof Panels: Equal to American Buildings Company's Loc-Seam 360 Panel – Standing seam roof panel.

1. Roof Panel shall have a configuration consisting of 2 inch high vertical rib spaced on 16 inch centers for roofing. The panel shall have flush horizontal and vertical surfaces to facilitate sealing at terminations. Panel configurations which create voids requiring supple metal closure devices shall not be considered acceptable. Panels shall be joined at the sidelap with an interlocking seam mechanically locked by a seaming machine after installation. The female panel seam shall have a factory applied sealant, in compliance with UL90.
2. The panel shall be 24 gauge (minimum) commercially pure aluminum coated steel meeting military specification MIL-C-4174A Type II, Galvalume or G90 galvanized. Minimum yield stress shall be 50,000 PSI.

Exterior Wall Panel: Equal to American Buildings Company's Long Span III Panel (L3P)

1. Exterior Wall Panel shall have major ribs 1 1/4" high, spaced 12" on center for an even shadowed appearance. The panels are reinforced between the ribs for added strength. Each panel shall provide 36" net coverage in width. A minimum 1/2:12 roof slope is required. All roof panel side laps shall be at least one major rib and shall have a purlin bearing leg on the bottom section of the lap. Gauge: 24.

Panel Finishes:

1. Color Finish on All Trim, Fascia, Gutters, Downspouts, Interior and Exterior Wall Panels, Roof Panels:
 - a. Panels shall have a factory color finish on the exposed side. The exposed finish shall consist of a 70% KYNAR 500 resin base coating applied to a cleaned, pretreated and primed surface. **Color of the exterior roof panels, wall panels, gutters and downspouts, shall be selected from manufactures standard color pallet.** The dry film

thickness of the exterior coating shall not be less than 0.8 mil. exclusive of the primer. The interior color finish shall consist of a backer coat with a dry film thickness of 0.5 mil. The exterior color finish shall meet or exceed the performance requirements specified below. **Roof panels shall have “Galvalume” finish.**

b. Paint Color Test:

- | | | |
|-----|-------------|--|
| 1. | Test: | Film Thickness |
| | Test Method | ASTM D-1005 |
| | Performance | 0.2 mil primer
0.8-0.9 mil topcoat. |
| 2. | Test | 60° @ under 10 low gloss |
| | Test Method | ASTM D-523 |
| | Performance | 25-35 |
| 3. | Test | IR Reflectivity |
| | Test Method | ASTM D-4803-97 |
| | Performance | Must meet 25% Minimum (exceeds) |
| 4. | Test | Pencil Hardness |
| | Test Method | ASTM D-3363 |
| | Performance | HB-H |
| 5. | Test | Flexibility, T-Bend |
| | Test Method | ASTM D-4145 |
| | Performance | 2-T Galvalume Steel |
| 6. | Test | Adhesion |
| | Test Method | ASTM D-3359 |
| | Performance | No adhesion Loss |
| 7. | Test | Reverse Impact |
| | Test Method | ASTM D-2794 |
| | Performance | No cracking or loss of adhesion |
| 8. | Test | Abrasion, Falling Sand |
| | Test Method | ASTM D-968 |
| | Performance | 65-85 1/mil |
| 9. | Test | Mortar Resistance |
| | Test Method | ASTM C-267 |
| | Performance | No effect |
| 10. | Test | Detergent Resistance |
| | Test Method | ASTM D-2248 3% 72 hrs. @ 100°F |
| | Performance | No effect |
| 11. | Test | Acid Pollutants |
| | Test Method | ASTM D-1308 |
| | | 10% Muriatic Acid (15 min) |
| | | 20% Muriatic Acid (15 min) |
| | Performance | No effect, AAMA 605.2 <5units color change |
| 12. | Test | Acid Rain Test |
| | Test Method | Kesternich |
| | Performance | 15 cycles minimum, no objectionable color change |
| 13. | Test | Alkali Resistance |

	Test Method	20% Sodium Hydroxide (1hr)
	Performance	No effect
14.	Test	Salt Spray Resistance 5% @ 95° F
	Test Method	ASTM B-117
	Performance	1000 hrs Galvalume steel
15.	Test	Humidity Resistance 100% @ 100° F
	Test Method	ASTM D-2247
	Performance	Passes 1000 hrs Galvalume Steel
16.	Test	South Florida exposure
	Test Method	ASTM D-2244
	Performance	<5 units color change
17.	Test	UVB (313 bulbs)
	Test Method	ASTM G-53
	Performance	Passes 3000 hrs
18.	Test	Chalk Resistance
	Test Method	ASTM D-4214
	Performance	Rating of 8 min

- c. Colors must meet the following: The solar reflectance for a steep-sloped roof must be a minimum of 25%, dropping no less than to 15% after three years. Low sloped roofs (below 2:12) must be a minimum of 65% dropping to no less than 50% after three years.

Metal Building Roof and Wall Insulation: - The following manufacturers' products have been used to establish minimum standards for materials, workmanship and function:

Thermal Design, Inc., Simple Saver System, Madison, NE

Equal products of other manufacturers may be used in the work, provided such products have been approved by the Architect, not less than five (5) days prior to scheduled bid opening.

1. References:
 - a. A. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - b. ASTM E 96 - Standard Test Method for Water Vapor Transmission of Materials in Sheet Form (Procedure B).
 - c. ASTM C 665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
 - d. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials.
 - e. UL 723 - Tests for Surface Burning Characteristics of Building Materials.
 - f. ASTM C 1136 - Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation.
2. Design Requirements:
 - a. Insulating system shall have a continuous vapor barrier inside of building purlins, girts, and insulation to provide complete isolation from inside conditioned air.
3. Materials:

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PRE-ENGINEERED BUILDINGS
 013120-10

- a. Simple Saver System consists of Batt Insulation, Roof Insulation, Wall Insulation, Vapor Barrier Liner Fabric, Thermal Breaks, Straps, and other devices and components in a insulation system as follows:
 - 1) Batt Insulation: ASTM C 991 Type 1; preformed formaldehyde-free glass fiber batt conforming to the following:
 - a) Batt Size: Equal to purlin/girt spacing by manufacturer's standard lengths.
 - b) Unfaced.
- 4. Roof Insulation:
 - a. Formaldehyde-free fiberglass batt or fiberglass blanket complying with ASTM C 991 Type 1 and ASTM E 84 with a thermal resistance and thickness as follows:
 - 1) Upper Layer: **R-11**; 3-1/2 inches (89 mm) and Bottom Layer: **R-19**; 6 inches (152 mm). U Factor 0.040 (R25) installed.
- 5. Wall Insulation:
 - a. Formaldehyde-free fiberglass blanket or batt complying with ASTM C 991 Type 1, ASTM E 136 and ASTM E 84 with a thermal resistance and thickness as follows:
 - 1) **R-25**, U Factor U-0.060 (R16.6) installed.
- 6. Vapor Barrier Liner Fabric:
 - a. Syseal® type woven, reinforced, high-density polyethylene yarns coated on both sides with a continuous white or colored polyethylene coatings, as follows:
 - 1) Product complies with ASTM C 1136, Types I through Type VI.
 - 2) Perm rating: 0.02 for fabric and for seams in accordance with ASTM E 96.
 - 3) Flame/Smoke Properties: 1) 25/50 in accordance with ASTM E 84. 2) Self-extinguishes with field test using matches or butane lighter.
 - 4) Ultra violet radiation inhibitor to minimum UVMAX® rating of 8.
 - 5) Size and seaming: Manufactured in large custom pieces by extrusion welding from roll goods, and fabricated to substantially fit defined building area with minimum practicable job site sealing.
 - 6) Provide with factory double, extrusion welded seams. Stapled seams or heat-melted seams are not acceptable due to degradation of fabric.
 - 7) Factory-folded to allow for rapid installation.
 - 8) Color: As selected from manufactures standards
- 7. Vapor Barrier Lap Sealant:
 - a. Solvent-based, Simple Saver polyethylene fabric adhesive.
- 8. Vapor Barrier Tape:
 - a. Double-sided sealant tape 3/4 inch (19 mm) wide by 1/32 inch (.79 mm) thick.
- 9. Vapor Barrier Patch Tape:

- a. Single-sided, adhesive backed sealant tape 3 inches (76 mm) wide made from same material as Syseal® type liner fabric.
10. Thermal Breaks:
- a. 1/8 inch (3 mm) thick by 3 inch (76 mm) wide white, closed-cell polyethylene foam with pre-applied adhesive film and peel-off backing.
 - b. Polystyrene Snap-R snap-on thermal blocks.
11. Straps:
- a. 100 KSI minimum yield tempered, high-tensile-strength steel.
 - b. Size: Not less than 0.020 inch (0.50 mm) thick by 1 inch (25 mm) by continuous length.
 - c. Galvanized, primed, and painted to match specified finish color on the exposed side.
 - d. Color: As selected from manufactures standards
11. Primed and painted to match specified finish color on the exposed side.
12. High-tensile-strength stainless steel.
13. Woven polyester plastic. As selected from manufactures standards
14. Fasteners:
- a. For light gage steel: #12 by 3/4 (19 mm) inch plated Tek 2 type screws with sealing washer, painted to match specified color.
 - b. For heavy gage steel: #12 by 1-1/2 inch (38 mm) plated Tek 4 type screws with sealing washer, painted to match specified color.
 - c. For wood, concrete, other materials: As recommended by manufacturer.
15. Wall Insulation Hangers:
- a. Fast-R preformed rigid hangers, 32 inch (813 mm) long galvanized steel strips with barbed arrows every 8 inches (203 mm) along its length.
16. Installation:
- a. Install pre-engineered building insulation system in accordance with manufacturer's installation instructions and the approved shop drawings.
 - b. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
 - c. Install in exterior spaces without gaps or voids. Do not compress insulation.
 - d. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
 - e. Fit insulation tight in spaces and tight to exterior side of the sealed liner fabric and around mechanical and electrical services within plane of insulation.
17. Roof Insulation Installation:
- a. Straps:
 - 1) Cut straps to length and install in the pattern and spacings indicated on shop drawings.
 - 2) Tension straps to required value.
 - b. Vapor Barrier Fabric:
 - 1) Install vapor barrier fabric in large one-piece custom fabricated pieces to substantially fit defined building areas with minimum practicable job site sealing.
 - 2) Position pre-folded fabric on the strap platform along one eave purlin.

- 3) Clamp the two bottom corners at the eave and also centered on the bay.
 - 4) Pull the other end of the pleat-folded fabric across the building width on the strap platform, pausing only at the ridge to fasten the straps and fabric in position where plane of roof changes and to release temporary fasteners on the opposite ridge purlins.
 - 5) Once positioned, install fasteners from the bottom side at each strap/purlins intersection.
 - 6) Trim edges and seal along the rafters.
 - 7) All seams must be completely sealed and stapled seams not acceptable.
- c. Insulation:
- 1) Unpack, and shake to a thickness exceeding the specified thickness.
 - 2) Ensure that cavities are filled completely with insulation.
 - 3) Place on the vapor barrier liner fabric without voids or gaps.
 - 4) Place top layer of insulation over and perpendicular to the purlins without voids or gaps, as roof sheathing is applied.
 - 5) Place thermal block on top of purlins or bottom of purlins for retrofit work, if no other thermal break exists.
 - 6) Place new insulation between purlins at the required thickness for the R-value specified.
- d. Seal vapor barrier fabric to the wall fabric and elsewhere as required to provide a continuous vapor barrier.
18. Wall Insulation Installation:
- a. Insulation:
- 1) Install thermal break to exterior surface of girts as wall sheathing is applied.
 - 2) Install self-sticking foam thermal break to interior surface of girts prior to installation of insulation.
 - 3) Position and secure Fast-R hangers to girts on the inside face of the wall sheathing.
 - 4) Cut insulation to required lengths to fit vertically between girts.
 - 5) Fluff the insulation to the full-specified thickness.
 - 6) Neatly position in place and secure to Fast-R hangers.
 - 7) Ensure that cavities are filled completely with insulation.

Panel Fasteners:

1. For Galvalume® and Painted finished roof panels: Premium Cast Zinc head.
2. For wall panels: Coated carbon steel.
3. Color of exposed fastener heads to match the wall and roof panel finish.
4. Concealed Fasteners: Self-drilling type, of size required.

Gutter, Flashing and Downspout:

1. Gutters and Flashings: All standard exterior gutters are 26 gage G90 zinc-coated (Galvanized) or AZ50 aluminum-zinc alloy-coated steel with a pre-painted finish. Standard rake flashing is 26 gage G90 zinc-coated (galvanized) or AZ50 aluminum-zinc alloy-coated steel with a pre-painted finish. All other gutter and flashings shall be a minimum 26 gage steel.

2. Downspouts: All downspouts shall be 29 gage zinc-coated (galvanized) or aluminum-zinc alloy-coated steel with color coordinated, pre-painted finish, rectangular in shape.

Panel Clips:

1. All clips must have factory-applied mastic and designed so that movement between the panel and the clip does not occur.
2. Short or Tall Sliding clips: shall be either 3 ¼" or 4 ½" inches in height and provide 1 ¼" or 2 ½" inches of travel for panel thermal expansion and contraction, depending on clip choice.

Sealant And Closures:

1. Sidelaps: Factory applied non-skinning Butyl mastic.
2. Endlaps, Eave, Ridge Assembly, and Gable Flashings: Field applied 100% solids butyl-based elastomeric tape sealant, furnished in pre-cut lengths.
3. Outside Closures: Closed-cell, plastic or metal
4. Inside Closures: Closed-cell, plastic or metal

ACCESSORIES

Interior Wall Liner Panels: Equal to Architectural Building Systems, Long Span III Panel. The panel shall provide not less than 36" of coverage with overall depth of 1 ¼" nominal rib height, 12" on center, 22 gauge. Painted Kynar 500® Premium 70 Plus. Provide all trims, fasteners, sealants to match selected colors.

Roof Line Trim:

1. Trim Type: Simple Eave/Rake Trim.

Framed Openings: Used to frame out doors, windows, louvers, and any other openings. Refers to the framing members and flashing which surround an opening and includes jambs, header and or sill, trim, and fasteners.

Roof Curbs: Roof curbs shall be manufactured from minimum 18 gage AZ55 aluminum-zinc alloy-coated steel. Curbs shall have an integral cricket type water diverter. The minimum curb height shall be 8".

1. Top of curb to be level, with 1 ½" top flange.
2. Curb walls insulated with 1 ½"-3lb.density fiberglass insulation.
3. Welded cricket on upslope side of curb to divert water.
4. Metal rib covers supplied loose for flexibility when installing curb.
5. Standard sub-frame shall be minimum 16 gauge steel.
6. All fasteners and sealants required for installation shall be furnished by metal building manufacturer.

Roof Vents: Accessories used on the roof to allow air to pass through.

1. Gravity ridge ventilators shall be manufactured from galvanized steel and painted white. The ventilator body shall be 24 gage and the skirt shall be adjustable to match the roof slope. Chain operated damper will be furnished. Ventilators shall be equipped with standard bird screens and riveted end caps. Ventilators shall be 10' long and have a 9" or 12" throat.
2. 20" round ventilators shall be 24 gage and shall have an adjustable base for ridge mounting or a pitched base for on-slope mounting.

Pipe Flashings: Pipe flashing shall be of a one piece construction and fabricated from an EPDM membrane and shall have an aluminum base that can be field conformed to any panel configuration. Pipe flashings shall be flexible for mounting on any roof slope. Service temperature ranges shall be from -30°F to +250°F. Three standard flashing sizes shall accommodate pipe sizes from 1/4" diameter up to 13" diameter.

1. Size: 1/4" to 4" Pipe
2. Size: 4" to 7" Pipe
3. Size: 7" to 13" Pipe

FABRICATION

General:

1. Framing members shall be shop fabricated for field bolted assembly. The surfaces of the bolted connections shall be smooth and free from burrs or distortions.
2. All shop connections shall be in accordance with the American Welding Society (AWS) Code for Building Construction as applicable.
3. Certification of welder qualification will be furnished when required and specified at order entry.
4. Visual inspection methods will be used for verification of weld quality as outlined by the AWS Structural Steel Welding Code, Visual Inspection Acceptance Criteria, Table 6.1.
5. All framing members where necessary shall carry an easily visible identifying mark.

Primary Framing:

1. Plates, Stiffeners and Related Members.: Factory weld base plates splice plates, cap plates, and stiffeners into place on the structural members.
2. Bolt Holes and Related Machining: Shop fabricate base plates, splices and flanges to include bolt connection holes. Shop fabricated webs to include bracing holes.
3. Secondary structural connections (purlins and girts) to be ordinary bolted connections, which may include welded clips.
4. Manufacturer is responsible for all welding inspection in accordance with the manufacturer's IAS Accreditation.
5. Non-Destructive Testing (NDT) - NDT shall be performed and documented as required by the governing building code for this project.

Open-Web Roof Joists:

1. Purlins for 'long-bay' building layouts shall consist of open-web bar joists designed under Steel Joist Institute (SJI) specifications by an SJI-Certified Joist Manufacturer for the prescribed loads.
2. Field welding of joist bridging and seats is an alternative method for connection of joists to supporting primary structural members.

Zee Purlins:

1. Fabricate purlins from cold-formed "Z" sections with stiffened flanges. Size flange stiffeners to comply with the requirements of the latest edition of AISI. Connection bolt will install through the webs, not the flanges.

Girts:

1. Girts must be simple or continuous span as required by design. Connection bolts will install through the webs, not the flanges.

Bracing:

1. Diagonal Bracing: Diagonal bracing in the roof and sidewall shall be used to remove longitudinal loads (wind, crane, etc.) from the structure. This bracing will be furnished to length and equipped with hillside washers, cut washers and nuts at each end. It may consist of rods threaded at each end or galvanized cable with suitable threaded end anchors.
2. Special Bracing: When diagonal bracing is not permitted in the sidewall, a rigid frame type portal, fixed base columns, or wall diaphragm must be used. Wind bracing in the roof and/or walls need not be furnished where it can be shown that the diaphragm strength of the roof and/or wall covering is adequate to resist the applied wind forces.
3. Flange Braces: The compression flange of all primary framing shall be braced laterally with angles connecting to the webs of purlins or girts so that the flange compressive stress is within allowable limits for any combination of loadings.
4. Bridging: Laterally bridge the top and bottom chords of the open-web bar joists as required by design thereof and specified on the building erection drawings.

Standing Seam Panels - General:

One side of the panel is configured as female, having factory applied butyl mastic inside the female seam. The female side will hook over the male side and when seamed creates a continuous lock, forming a weathertight seam.

Panels are factory notched at both ends so that field installation can commence or terminate from either end of the building. Panels cannot start at both ends of the building and work towards each other.

1. Maximum panel length is 50 feet unless otherwise noted in the Contract Documents.
2. Endlaps:

- a. Endlaps must have a 16 gauge backup plate and have the endlap joint fasteners installed in four factory applied dimples.'
- b. Apply mastic between the panels and secure with #14-14x1 inch self-drilling fasteners through the panels, and backup plate to form a compression joint.
- c. "Through-the-Roof" fasteners may only be used at endlaps and eaves.

PART 3 – EXECUTION

EXAMINATION

Examine substrates, areas, and conditions, with erector present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

Before erection proceeds, survey elevations and locations of concrete and masonry bearing surfaces and locations of anchor rods, bearing plates and other embedment's to receive structural framing, with Erector present, for compliance with requirements and metal building system manufacturer's tolerances.

Proceed with erection only after unsatisfactory conditions have been corrected.

PREPARATION

Clean surfaces thoroughly prior to installation.

Provide temporary shores, guys, braces, and other supports during erection to keep structural framing secure, plumb, and in alignment against temporary construction loads equal in intensity to design loads.

Remove temporary supports when permanent structural framing connections and bracing are in place, unless otherwise indicated.

INSTALLATION

The erection of the metal building and the installation of accessories shall be performed in accordance with the manufactures erection manuals and the building erection drawings. The erection shall be performed by a qualified erector using proper tools and equipment. In addition, erection practices shall conform to Section 4, Common Industry Practices found in the most current version of the Metal Building Systems Manual. There shall be no field modifications to primary structural members except as authorized and specified by the manufacture.

PROTECTION

Protect installed products until completion of project.

Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION