ADDENDUM NO. 1

Date: May 1, 2020

Project Name: AVIAN HOLDING BUILDING

Project No.: 101

SCO ID: 19-20103-01A

The following clarifications, amendments, additions, deletions, revisions, and modifications are hereby made a part of the Contract Documents and change the original documents only in the manner and to the extent stated below.

BIDDING QUESTIONS AND ANSWERS

1. Detail 3 on S2-01 shows a 2'-0" x 2'-0" pier at the columns and a 2'-0" x 3'-0" pier at the column lines with portal frames. It appears that these piers will be outside of the frame lines and the wall panels will need to be cut around them. There is nowhere to attach the angle if they are to be flush with the building line. They are located 6-inches above finished floor.

Response: The base of all columns as well as the bottom of wall angle are located on top of piers or curbs that are 6” above the nominal floor elevation. Doors, however, will drop down to have their sill at the nominal floor elevation. See 3D sketch on S0-00.

2. Therefore are all of the columns 6-inches above finished floor?

Response: The base of all columns are 6” above the nominal floor elevation.

3. The wall panels are not a standard wall panel. I have not heard of a wall panel that allows the attachment of interior finishes to the 1-inch lip. Therefore the PEMB manufacturers will not quote this panel and we have a NO BID situation. Please clarify.

Response: Interior finishes are attached to non-structural metal framing (1 5/8” metal studs) that are attached to the girts. The specification has been updated.

4. Liner panels are not standard liner panels either and are not considered concealed fastener panels. Are the standard 26ga silicone polyester paint PBR panels acceptable. If not, this is a NO BID situation.

Response: The intent is to have flush profile, concealed fastener exterior panels, insulation in the wall cavity, and metal stud framing for attachment of gypsum and cementitious products and finishes. The specifications have been updated.

5. Can a Prismatic skylight be substituted for a manufacturer. Our PEMB manufacturer stocks these and will give warranty with them?
6. The specs call for “Three coat fluoropolymer” paint for roof and wall panels. This will be considered a buyout of special material by the panel manufacturers and will have to purchase 10,000 pound coils and cause the building to be overbudget due to the cost. Please advise if 2-coat fluoropolymer “Kynar” is acceptable.

Response: Two-coat fluoropolymer is acceptable. The specifications have been updated.

7. In the specs for metal laboratory casework it says cold rolled painted for material. In one of the elevations it has a note referring to stainless steel cabinets. Which materials should be used?

Response: Cabinets shall be stainless steel. The specification has been updated.

8. On P001 in the Plumbing Fixture Schedule there is a reference to “Heatproof”. The standard HDPE trench will handle fluids up to 140 degrees maximum. The Vinyl Ester trench will handle fluids up to 210 degrees maximum. The epoxy coated grates that are specified will handle temperatures in excess of 210 degrees. With the amount of trench drain on this job the cost differences will be substantial. Please clarify.

Response: Provide the specified heatproof grates.

9. The COMcheck on G002 calls for R25 in roof and R11 in the walls. Detail I/A401 shows R25 in the walls. What R-value should we use?

Response: R-11 is called for in the walls of the holding area, but R-25 in the office areas. Refer to wall sections on Sheet A401.

10. How is the area identified on the attached photo and shown on the Construction Drawings (sheet C2.0) to be constructed? Is this Asphalt Paving or Concrete Paving, or existing?
Response: Existing asphalt pavement shall be striped for accessible parking as shown on C2.0.

11. On the plumbing fixture schedule P-3 - The model number listed is Bradley LVQD1 with is a single bowl sink. The notes call for it to a 2 compartment. Please verify which is correct.

Response: The plumbing fixture schedule has been updated.

12. There is appr. 280’ of silt fence already installed, do we remove it or can we use it as is?

Response: Existing sediment fence on-site may be incorporated to contractor’s site plan; however, contractor is ultimately responsible for the maintenance of the fencing and any repair/replacement required during the project and removal at the end of the project, once the site is stabilized.

13. There are 2 Popular trees at the pipe going under the road on the North side. Do we remove the trees or not? Doesn’t show them on drawings.

Response: The trees may remain.

14. For perforated pipe, what do we use? Specs has two types. Is it PVC or CP. On the plans it says triple wall, what is that? This needs an overall clarification.

Response: French drain perforated pipe must be solid wall pipe, either PVC or HDPE. HDPE can be double- or triple-walled.

15. The drawings clearly indicate “All SS cabinets to have SS worktops…” leading me to believe that these are stainless steel casework as well as countertops. But spec Section 123553.13 Item 2.4.A indicates cold-rolled steel ASTM A with is typically used for painted steel casework. Can you confirm which type material is required for the cabinets (painted or stainless)?

Response: Cabinets shall be stainless steel. The specification has been updated.

16. If stainless steel cabinets are required, can you confirm that they are to be a #4 satin/brushed finish the same as the countertops?

Response: All countertops and cabinets to be #4 satin finish.

17. The plumbing schedule calls for an Elkay sink (presumably a drop-in sink by the plumber) in the Avian Food Prep room but the casework spec 2.8.B.9 indicates that sinks at stainless steel countertops are to be “factory welded” and “integral”. Can you confirm that the SS countertop only requires a sink cutout to accommodate a drop-in sink (by others)?

Response: The sink shall be drop-in as indicated in the plumbing fixture schedule. The cabinet specification has been updated.

18. The trench drains are specified to be Zurn Model Z886. What is the finish of the Grates for the floor drain? Cast Iron, etc.?

Response: The finish is to be black epoxy coated grate per the plumbing fixture schedule.
19. I would like to get Inland Building Systems approved as an acceptable Metal Building Manufacturer. Inland is IAS certified and one of the oldest metal building companies. Inland meets the minimum requirements of the specifications with the exception of the metal roof and wall panel finishes. Inland uses a two coat fluoropolymer paint finish which is standard in the metal building industry. Your specifications 13 3419-2.5 and 1.6 calls for a three coat.

Response: The specifications are not closed. Manufacturers that meet the specifications may be acceptable. The specifications have been updated for a two-coat fluoropolymer finish.

20. Do you have an estimated value/budget for this project?

Response: We do not publish budgets or cost estimates for publicly bid projects.

21. The FRP panel color (Sage - 405) that is called out on the finish plan is not available in a smooth finish from Mason Company. Do we quote a "pebbled" texture?

Response: The basis-of-design product has been modified to be Kal-Lite which will provide custom colors in a smooth finish. Other manufacturers that can meet the specification may be acceptable.

22. Is there somewhere on site to get suitable soil to replace the soil that is unsuitable or will we need to bring it in from off-site?

Response: Suitable soil shall be imported from off-site.

23. Are we responsible for any soil testing?

Response: Soil testing is the responsibility of the Owner.

REVISED SPECIFICATIONS (attached)

Bid Proposal Form
12 3553.13 – Metal Laboratory Casework
13 3419 – Metal Building Systems

REVISED DRAWINGS (attached)

A221 – Finish Plan
P001 – Plumbing Notes, Symbols, and Schedules
E100 – Lighting and Power Plans

-- END OF ADDENDUM NO. 1 --
FORM OF PROPOSAL

New Avian Holding Building                         Contract:                   
NC Zoological Park                                  Bidder:                   
SCO-ID # 19-20103-01A                               Date:                   

The undersigned, as bidder, hereby declares that the only person or persons interested in this proposal as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this proposal or in the contract to be entered into; that this proposal is made without connection with any other person, company or parties making a bid or proposal; and that it is in all respects fair and in good faith without collusion or fraud. The bidder further declares that he has examined the site of the work and the contract documents relative thereto, and has read all special provisions furnished prior to the opening of bids; that he has satisfied himself relative to the work to be performed. The bidder further declares that he and his subcontractors have fully complied with NCGS 64, Article 2 in regards to E-Verification as required by Section 2.(c) of Session Law 2013-418, codified as N.C. Gen. Stat. § 143-129(j).

The Bidder proposes and agrees if this proposal is accepted to contract with the
State of North Carolina through the North Carolina Department of Natural and Cultural Resources
in the form of contract specified below, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary to complete the construction of
New Avian Holding Building
in full in complete accordance with the plans, specifications and contract documents, to the full and entire satisfaction of the State of North Carolina, and
the NC Zoological Park
with a definite understanding that no money will be allowed for extra work except as set forth in the General Conditions and the contract documents, for the sum of:

SINGLE PRIME CONTRACT:

Confirm receipt of Addendum No. 1. 

Base Bid: $_________________________ Dollars($)_________________________

Alternate No. 1 (Add/Subtract) $_____________ Alternate No. 2 (Add/Subtract) $_____________
Alternate No. 3 (Add/Subtract) $_____________  
Unit Price No. 1 $_____________ Unit Price No. 2 $_____________
Unit Price No. 3 $_____________ Unit Price No. 4 $_____________

General Subcontractor:       Plumbing Subcontractor: 
_________________________ Lic:__________________________________________________ Lic:_________________________

Mechanical Subcontractor:       Electrical Subcontractor: 
_________________________ Lic:__________________________________________________ Lic:_________________________

GS143-128(d) requires all single prime bidders to identify their subcontractors for the above subdivisions of work. A contractor whose bid is accepted shall not substitute any person as subcontractor in the place of the subcontractor listed in the original bid, except (i) if the listed subcontractor’s bid is later determined by the contractor to be non-responsible or non-responsive or the listed subcontractor refuses to enter into a contract for the complete performance of the bid work, or (ii) with the approval of the awarding authority for good cause shown by the contractor.
The bidder further proposes and agrees hereby to commence work under this contract on a date to be specified in a written order of the designer and shall fully complete all work thereunder within the time specified in the Supplementary General Conditions Article 23. Applicable liquidated damages amount is also stated in the Supplementary General Conditions Article 23.

MINORITY BUSINESS PARTICIPATION REQUIREMENTS

Provide with the bid - Under GS 143-128.2(c) the undersigned bidder shall identify on its bid (Identification of Minority Business Participation Form) the minority businesses that it will use on the project with the total dollar value of the bids that will be performed by the minority businesses. Also list the good faith efforts (Affidavit A) made to solicit minority participation in the bid effort.

NOTE: A contractor that performs all of the work with its own workforce may submit an Affidavit (B) to that effect in lieu of Affidavit (A) required above. The MB Participation Form must still be submitted even if there is zero participation.

After the bid opening - The Owner will consider all bids and alternates and determine the lowest responsible, responsive bidder. Upon notification of being the apparent low bidder, the bidder shall then file within 72 hours of the notification of being the apparent lowest bidder, the following:

An Affidavit (C) that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the 10% goal established. This affidavit shall give rise to the presumption that the bidder has made the required good faith effort and Affidavit D is not necessary;

* OR *

If less than the 10% goal, Affidavit (D) of its good faith effort to meet the goal shall be provided. The document must include evidence of all good faith efforts that were implemented, including any advertisements, solicitations and other specific actions demonstrating recruitment and selection of minority businesses for participation in the contract.

Note: Bidders must always submit with their bid the Identification of Minority Business Participation Form listing all MB contractors, vendors and suppliers that will be used. If there is no MB participation, then enter none or zero on the form. Affidavit A or Affidavit B, as applicable, also must be submitted with the bid. Failure to file a required affidavit or documentation with the bid or after being notified apparent low bidder is grounds for rejection of the bid.
The undersigned further agrees that in the case of failure on his part to execute the said contract and the bonds within ten (10) consecutive calendar days after being given written notice of the award of contract, the certified check, cash or bid bond accompanying this bid shall be paid into the funds of the owner's account set aside for the project, as liquidated damages for such failure; otherwise the certified check, cash or bid bond accompanying this proposal shall be returned to the undersigned.

Respectfully submitted this day of ____________________________

________________________________________
(Name of firm or corporation making bid)

WITNESS:

By: ____________________________  
Signature

______________________________  
(Name of firm or corporation making bid)

______________________________  
Proprietorship or Partnership

By: ____________________________  
Signature

Name: ____________________________  
Print or type

Title ____________________________  
(Owner/Partner/Pres./V.Pres.)

Address ____________________________

ATTEST:

By: ____________________________  
License No. ____________________________

Title: ____________________________  
Federal I.D. No. ____________________________

(Corp. Sec. or Asst. Sec. only)

Email Address: ____________________________

(CORPORATE SEAL)
NEW AVIAN HOLDING BUILDING

SECTION 12 3553.13 - METAL LABORATORY CASEWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Metal laboratory casework.
2. Laboratory countertops.

B. Related Requirements:

1. Section 06 1053 "Miscellaneous Rough Carpentry" for wood blocking for anchoring laboratory casework.
2. Section 09 2216 "Non-Structural Metal Framing" for reinforcements in metal-framed partitions for anchoring laboratory casework.

1.3 COORDINATION

A. Coordinate layout and installation of framing and reinforcements for support of laboratory casework.

B. Coordinate installation of laboratory casework with installation of laboratory equipment.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For laboratory casework.

1. Include plans, elevations, sections, and attachments to other work including blocking and reinforcements required for installation.
2. Indicate types and sizes of casework.
3. Indicate manufacturer's catalog numbers for casework.
4. Show fabrication details, including types and locations of hardware.
5. Indicate locations and types of service fittings.
6. Include details of utility spaces showing supports for conduits and piping.
7. Include details of support framing system.
8. Include details of exposed conduits, if required, for service fittings.
9. Indicate locations of and clearances from adjacent walls, doors, windows, other building components, and laboratory equipment.
10. Include coordinated dimensions for laboratory equipment specified in other Sections.
1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect finished surfaces during handling and installation with protective covering of polyethylene film or other suitable material.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install laboratory casework until building is enclosed, utility roughing-in and wet-work are complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.

B. Established Dimensions: Where laboratory casework is indicated to fit to other construction, establish dimensions for areas where casework is to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

C. Field Measurements: Where laboratory casework is indicated to fit to existing construction, verify dimensions of existing construction by field measurements before fabrication and indicate measurements on Shop Drawings. Provide fillers and scribes to allow for trimming and fitting.

D. Locate concealed framing, blocking, and reinforcements that support casework by field measurements before enclosing them, and indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Bedcolab Ltd.
2. BMC Manufacturing.
3. CIF Laboratory Solutions.
4. Hamilton Laboratory Solutions, LLC.
5. Hanson Lab Furniture, Inc.
6. ICI Scientific.
8. Lab Crafters, Inc.
9. Lab Fabricators.
10. Mott Manufacturing Ltd.
11. Multi-Lab, Inc.

B. Source Limitations: Obtain laboratory casework from single source from single manufacturer unless otherwise indicated.

C. Product Designations: Drawings indicate sizes and configurations of laboratory casework by referencing designated manufacturer’s catalog numbers. Other manufacturers’ laboratory casework of similar sizes and similar door and drawer configurations and complying with Specifications may be considered. See Section 01 6000 "Product Requirements."
2.2 PERFORMANCE REQUIREMENTS

A. System Structural Performance: Laboratory casework and support framing system shall withstand the effects of the following gravity loads and stresses without permanent deformation, excessive deflection, or binding of drawers and doors:

5. Shelves: 40 lb/sq. ft.

2.3 CASEWORK, GENERAL

A. Casework Product Standard: Comply with SEFA 8 M, "Laboratory Grade Metal Casework."

2.4 CABINET HARDWARE

A. General: Provide laboratory casework manufacturer's standard, commercial-quality, heavy-duty hardware complying with requirements indicated for each type.

B. Hinges: Stainless-steel, five-knuckle hinges complying with BHMA A156.9, Grade 1, with antifriction bearings and rounded tips. Provide two for doors 48 inches high or less and three for doors more than 48 inches high.

C. Hinged-Door and Drawer Pulls: Solid-aluminum, stainless-steel, or chrome-plated-brass, back-mounted pulls. Provide two pulls for drawers more than 24 inches wide.

1. Design: Wire pulls.
2. Overall Size: 1 by 4-1/2 inches.

D. Door Catches: Dual, self-aligning, permanent magnet catches. Provide two catches on doors more than 48 inches high.

E. Drawer Slides: Side mounted, epoxy-coated steel, self-closing; designed to prevent rebound when drawers are closed; complying with BHMA A156.9, Type B05091.

1. Provide Grade 1; for drawers not more than 6 inches high and 24 inches wide.
2. Provide Grade 1HD-100; for drawers more than 6 inches high or 24 inches wide.
3. Heavy Duty (Grade 1HD-100 and Grade 1HD-200): Full-overtravel-extension, ball-bearing type.

F. Label Holders: Stainless steel, aluminum, or chrome plated; sized to receive standard label cards approximately 1 by 2 inches, attached with screws or rivets. Provide on drawers.

2.5 COUNTERTOP AND CABINET MATERIALS

A. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304.
2.6 METAL CABINETS
A. Fabrication: Assemble and finish units at point of manufacture. Use precision dies for interchangeability of like-size drawers, doors, and similar parts. Perform assembly on precision jigs to provide units that are square. Reinforce units with angles, gussets, and channels. Except where otherwise specified, integrally frame and weld cabinet bodies to form dirt- and vermin-resistant enclosures. Where applicable, reinforce base cabinets for sink support. Maintain uniform clearance around door and drawer fronts of 1/16 to 3/32 inch.

2.7 COUNTERTOPS, SHELVES
A. Countertops, General: Provide units with smooth surfaces in uniform plane, free of defects. Make exposed edges and corners straight and uniformly beveled. Provide front and end overhang of 1 inch.
B. Stainless-Steel Countertops: Made from stainless-steel sheet, not less than 0.062-inch nominal thickness, with No. 4 satin finish.
   1. Extend top down 1 inch at edges with a 1/2-inch return flange under frame. Apply heavy coating of heat-resistant, sound-deadening mastic to undersurface.
   2. Form backsplash coved to and integral with top surface.
   3. Provide raised (marine) edge around perimeter of countertops containing sinks.
   4. Pitch countertops that contain sinks two ways to sink without channeling or grooving.
   5. Factory punch holes for service fittings.
   6. Reinforce underside of countertop with channels, or use thicker metal sheet where necessary to ensure rigidity without deflection.
   7. Weld shop-made joints.
   8. Where field-made joints are required, provide hairline butt joints mechanically bolted through continuous channels welded to underside at edges of joined ends. Keep field jointing to a minimum.
   9. After fabricating and welding, grind surfaces smooth and polish to produce uniform, directionally textured finish with no cross scratches or evidence of welds. Passivate and rinse surfaces; remove embedded foreign matter and leave surfaces clean.
C. Stainless-Steel Shelves: Made from stainless-steel sheet, not less than 0.050-inch nominal thickness, with No. 4 satin finish. Weld shop-made joints. Fold down up front edge 3/4 inch; fold up back edge 3 inches.
   1. Provide integral stiffening brackets, formed by folding up ends 3/4 inch and welding to upturned back edge.
   2. After fabricating, grind welds smooth and polish to produce uniform, directionally textured finish with no cross scratches or evidence of welds. Passivate and rinse surfaces; remove embedded foreign matter and leave surfaces clean.

PART 3 - EXECUTION

3.1 EXAMINATION
A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of reinforcements, and other conditions affecting performance of the Work.
B. Proceed with installation only after unsatisfactory conditions have been corrected.
3.2 INSTALLATION OF CABINETS

A. Comply with installation requirements in SEFA 2. Install level, plumb, and true in line; shim as required using concealed shims. Where laboratory casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical. Do not exceed the following tolerances:

1. Variation of Tops of Base Cabinets from Level: 1/16 inch in 10 feet.
2. Variation of Bottoms of Upper Cabinets from Level: 1/8 inch in 10 feet.
3. Variation of Faces of Casework from a True Plane: 1/8 inch in 10 feet.
5. Variation in Alignment of Adjacent Door and Drawer Edges: 1/16 inch.

B. Base Cabinets: Fasten cabinets to utility-space framing, partition framing, wood blocking, or reinforcements in partitions, with fasteners spaced not more than 16 inches o.c. Bolt adjacent cabinets together with joints flush, tight, and uniform.

1. Where base cabinets are installed away from walls, fasten to floor at toe space at not more than 24 inches o.c. and at sides of cabinets with not less than two fasteners per side.

C. Wall Cabinets: Fasten to hanging strips, masonry, partition framing, blocking, or reinforcements in partitions. Fasten each cabinet through back, near top, at not less than 16 inches o.c.

D. Install hardware uniformly and precisely.

E. Adjust operating hardware so doors and drawers align and operate smoothly without warp or bind and contact points meet accurately. Lubricate operating hardware as recommended by manufacturer.

3.3 CLEANING AND PROTECTING

A. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.

B. Protect countertop surfaces during construction with 6-mil plastic or other suitable water-resistant covering. Tape to underside of countertop at a minimum of 48 inches o.c.

END OF SECTION 12 3553.13
SECTION 13 3419 - METAL BUILDING SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes:
   1. Structural-steel framing.
   2. Metal roof panels.
   3. Metal wall panels.
   4. Metal soffit panels.
   5. Thermal insulation.
   6. Accessories.

B. Related Requirements:
   1. Section 01 2300 "Alternates" for metal building canopies provided as an alternate.
   2. Section 07 7253 "Snow Guards" for prefabricated devices designed to hold snow on the roof surface.
   3. Section 08 1113 "Hollow Metal Doors and Frames" for doors and frames to be installed in metal building systems.
   4. Section 08 5113 "Aluminum Windows" for windows to be installed in metal building systems.
   5. Section 08 6200 "Unit Skylights" for prefabricated skylights to be installed in metal building systems.

1.3 DEFINITIONS

A. Terminology Standard: See MBMA's "Metal Building Systems Manual" for definitions of terms for metal building system construction not otherwise defined in this Section or in standards referenced by this Section.

1.4 COORDINATION

A. Coordinate sizes and locations of concrete foundations and casting of anchor-rod inserts into foundation walls and footings. Anchor rod installation, concrete, reinforcement, and formwork requirements are specified in Section 03 3000 "Cast-in-Place Concrete."

B. Coordinate metal panel assemblies with rain drainage work, flashing, trim, and construction of supports and other adjoining work to provide a leakproof, secure, and noncorrosive installation.
1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to metal building systems including, but not limited to, the following:
   a. Condition of foundations and other preparatory work performed by other trades.
   b. Structural load limitations.
   c. Construction schedule. Verify availability of materials and erector's personnel, equipment, and facilities needed to make progress and avoid delays.
   d. Required tests, inspections, and certifications.
   e. Unfavorable weather and forecasted weather conditions and impact on construction schedule.

2. Review methods and procedures related to metal roof panel assemblies including, but not limited to, the following:
   a. Compliance with requirements for purlin and rafter conditions, including flatness and attachment to structural members.
   b. Structural limitations of purlins and rafters during and after roofing.
   c. Flashings, special roof details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect metal roof panels.
   d. Temporary protection requirements for metal roof panel assembly during and after installation.
   e. Roof observation and repair after metal roof panel installation.

3. Review methods and procedures related to metal wall panel assemblies including, but not limited to, the following:
   a. Compliance with requirements for support conditions, including alignment between and attachment to structural members.
   b. Structural limitations of girts and columns during and after wall panel installation.
   c. Flashings, special siding details, wall penetrations, openings, and condition of other construction that will affect metal wall panels.
   d. Temporary protection requirements for metal wall panel assembly during and after installation.
   e. Wall observation and repair after metal wall panel installation.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of metal building system component.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:
   a. Metal roof panels.
   b. Metal wall panels.
   c. Metal soffit panels.
   d. Thermal insulation and vapor-retarder facings.
   e. Louvers.

B. Shop Drawings: Indicate components by others. Include full building plan, elevations, sections, details and the following:
1. Anchor-Rod Plans: Submit anchor-rod plans and templates before foundation work begins. Include location, diameter, and minimum required projection of anchor rods required to attach metal building to foundation. Indicate column reactions at each location.

2. Structural-Framing Drawings: Show complete fabrication of primary and secondary framing; include provisions for openings. Indicate welds and bolted connections, distinguishing between shop and field applications. Include transverse cross-sections.
   a. Show provisions for attaching roof curbs.

3. Metal Roof and Wall Panel Layout Drawings: Show layouts of panels including methods of support. Include details of edge conditions, joints, panel profiles, corners, anchorages, clip spacing, trim, flashings, closures, and special details. Distinguish between factory- and field-assembled work; show locations of exposed fasteners.
   a. Show roof-mounted items including roof hatches, equipment supports, pipe supports and penetrations, lighting fixtures, and items mounted on roof curbs.
   b. Show wall-mounted items including personnel doors, vehicular doors, windows, louvers, and lighting fixtures.

4. Accessory Drawings: Include details of the following items, at a scale of not less than 1-1/2 inches per 12 inches:
   a. Flashing and trim.

C. Samples for Initial Selection: For units with factory-applied finishes.

D. Samples for Verification: For the following products:
   1. Panels: Nominal 12 inches long by actual panel width. Include fasteners, closures, and other exposed panel accessories.
   2. Flashing and Trim: Nominal 12 inches long. Include fasteners and other exposed accessories.
   3. Vapor-Retarder Facings: Nominal 6-inch-square Samples.
   4. Accessories: Nominal 12-inch-long Samples for each type of accessory.

E. Door Schedule: For doors and frames specified in other sections. Include details of reinforcement.

F. Delegated-Design Submittal: For metal building systems.
   1. Include analysis data indicating compliance with performance requirements and design data signed and sealed by the qualified professional engineer registered in the State of North Carolina responsible for their preparation.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For erector and manufacturer.

B. Welding certificates.

C. Letter of Design Certification: Signed and sealed by a qualified professional engineer. Include the following:
NEW AVIAN HOLDING BUILDING

1. Name and location of Project.
2. Order number.
3. Name of manufacturer.
4. Name of Contractor.
5. Building dimensions including width, length, height, and roof slope.
6. Indicate compliance with AISC standards for hot-rolled steel and AISI standards for cold-rolled steel, including edition dates of each standard.
8. Design Loads: Include dead load, roof live load, collateral loads, roof snow load, deflection, wind loads/speeds and exposure, seismic design category or effective peak velocity-related acceleration/peak acceleration, and auxiliary loads (cranes).
9. Load Combinations: Indicate that loads were applied acting simultaneously with concentrated loads, according to governing building code.

D. Erector Certificates: For qualified erector, from manufacturer.
E. Source quality-control reports.
F. Sample Warranties: For special warranties.

1.8 CLOSEOUT SUBMITTALS
A. Maintenance Data: For metal panel finishes and door hardware to include in maintenance manuals.

1.9 QUALITY ASSURANCE
A. Manufacturer Qualifications: A qualified manufacturer.

1. Accreditation: Manufacturer's facility accredited according to the International Accreditation Service's AC472, "Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems."
2. Engineering Responsibility: Preparation of comprehensive engineering analysis and Shop Drawings by a professional engineer who is legally qualified to practice in jurisdiction where Project is located.

B. Erector Qualifications: An experienced erector who specializes in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.

C. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3, "Structural Welding Code - Sheet Steel."

1.10 DELIVERY, STORAGE, AND HANDLING
A. Deliver components, sheets, panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Protect foam-plastic insulation as follows:
   1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
   2. Protect against ignition at all times. Do not deliver foam-plastic insulation materials to Project site before installation time.
   3. Complete installation and concealment of foam-plastic materials as rapidly as possible in each area of construction.

1.11 FIELD CONDITIONS

A. Weather Limitations: Proceed with panel installation only when weather conditions permit metal panels to be installed according to manufacturers’ written instructions and warranty requirements.

1.12 WARRANTY

A. Special Warranty on Metal Panel Finishes: Manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
   1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
      a. Color fading more than 5 Hunter units when tested according to ASTM D2244.
      b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
      c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
   2. Finish Warranty Period: 20 years from date of Substantial Completion.

B. Special Weathertightness Warranty for Standing-Seam Metal Roof Panels: Manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that leak or otherwise fail to remain weathertight within specified warranty period.
   1. Warranty Period: 20 years from date of Final Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   1. VP Buildings; a United Dominion company.
2. Star Building Systems; an NCI company.
3. Vulcan Steel Structures, Inc.

B. Source Limitations: Obtain metal building system components, including primary and secondary framing and metal panel assemblies, from single source from single manufacturer.

2.2 SYSTEM DESCRIPTION

A. Provide a complete, integrated set of mutually dependent components and assemblies that form a metal building system capable of withstanding structural and other loads, thermally induced movement, and exposure to weather without failure or infiltration of water into building interior.

B. Primary-Frame Type:

1. Rigid Clear Span: Solid-member, structural-framing system without interior columns.

C. End-Wall Framing: Manufacturer's standard, for buildings not required to be expandable, consisting of primary frame, capable of supporting tributary bay design load, and end-wall columns.

D. End-Wall Framing: Engineer end walls to be expandable. Provide primary frame, capable of supporting full-bay design loads, and end-wall columns.

E. Secondary-Frame Type: Manufacturer's standard purlins and joists and exterior-framed (bypass) girts.

F. Eave Height: As indicated on drawings.

G. Bay Spacing: As indicated on Drawings.

H. Roof Slope: 2 inches per 12 inches.

I. Roof System: Manufacturer's standard standing-seam, vertical-rib, metal roof panels with a vinyl liner insulation system.

J. Exterior Wall System: Manufacturer's standard concealed-fastener, flush-profile, metal wall panels.

1. Liner Panels: Flush profile.

2.3 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, licensed in the State of North Carolina, to design metal building system.

B. Structural Performance: Metal building systems shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to procedures in MBMA's "Metal Building Systems Manual."

1. Design Loads:

   a. Roof Live Load 20 psf
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b. Snow Load: Per NCSBC using the following Criteria:

1) Ground Snow Load = 15 psf
2) Snow Importance Factor IS= 1.0
3) Snow Exposure Factor Ce= 1.0
4) Thermal Factor Ct= 1.0
5) Flat Roof Snow Load Pf= 10.5 psf
6) Minimum Snow Load Pm= 15.0 psf
7) Snow Guards will be used at roof eave which WILL obstruct sliding snow.

c. Collateral Dead Load: 6.0 psf - DO NOT assume collateral dead load is in place for uplift load combinations
d. Rooftop and Suspended Equipment Loads: as indicated
e. Wind Load: Per NCSBC (ASCE 7-10) using the following Criteria:

1) Ultimate Wind Speed= 115 mph
2) Vasd= 89 mph
3) Wind Exposure= B

2. Deflection and Drift Limits: Design metal building system assemblies to withstand serviceability design loads without exceeding deflections and drift limits recommended in AISC Steel Design Guide No. 3 "Serviceability Design Considerations for Steel Buildings."

3. Deflection and Drift Limits: Total deflection under any service load combination shall be no greater than the following:

b. Girts: Horizontal deflection of 1/240 of the span.
c. Metal Roof Panels: Vertical deflection of 1/180 of the span.
d. Metal Wall Panels: Horizontal deflection of 1/180 of the span.
e. Design secondary-framing system to accommodate deflection of primary framing and construction tolerances, and to maintain clearances at openings.

C. Seismic Performance: Metal building system shall withstand the effects of earthquake motions determined according to the NCSBC 2018ed (2015 IBC, incorporating North Carolina amendments) and the following criteria:

1. Seismic Design Category B (based on short period exception)
2. Occupancy Category (T1604.5) II
3. Seismic Importance Factor (IE) 1.00
4. Seismic Site Classification D
5. Ss 19.0 %g
6. S 8.9 %g
7. SDS 20.3 %g
8. S0 14.3 %g
9. Seismic Force Resisting System Steel System Not Specifically Detailed for Seismic Resistance
10. Response Modification Factor (R) 3
11. System Overstrength Factor 3
12. Deflection Amplification Factor 3
13. Seismic Response Coefficient 0.068
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D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

E. Structural Performance for Metal Roof and Wall Panels: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E1592:

1. Wind Loads: Component and cladding pressures shall be calculated from design wind load information provided above.
2. Snow Load: Snow loads shall be calculated from design snow load information provided above.

F. Air Infiltration for Metal Roof Panels: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E1680 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft..

G. Air Infiltration for Metal Wall Panels: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E283 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft..

H. Water Penetration for Metal Roof Panels: No water penetration when tested according to ASTM E1646 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft..

I. Water Penetration for Metal Wall Panels: No water penetration when tested according to ASTM E331 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft..

J. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.

1. Uplift Rating: UL 90.

K. Thermal Performance for Opaque Elements: Provide the following maximum U-factors and minimum R-values when tested according to ASTM C1363 or ASTM C518:

1. Roof:
   a. U-Factor: .098.
   b. Cavity R-Value: 25.

2. Walls:
   b. Cavity R-Value: 11.
2.4  STRUCTURAL-STEEL FRAMING

A. Structural Steel: Comply with AISC 360, "Specification for Structural Steel Buildings."

B. Bolted Connections: Comply with RCSC's "Specification for Structural Joints Using High-Strength Bolts."

C. Cold-Formed Steel: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" for design requirements and allowable stresses.

D. Primary Framing: Manufacturer's standard primary-framing system, designed to withstand required loads and specified requirements. Primary framing includes transverse and lean-to frames; rafters, rake, and canopy beams; sidewall, intermediate, end-wall, and corner columns; and wind bracing.


   2. Rigid Clear-Span Frames: I-shaped frame sections fabricated from shop-welded, built-up steel plates or structural-steel shapes. Interior columns are not permitted.


   5. Rafter: Tapered.

E. Secondary Framing: Manufacturer's standard secondary framing, including purlins, girts, eave struts, flange bracing, base members, gable angles, clips, headers, jambs, and other miscellaneous structural members. Unless otherwise indicated, fabricate framing from either cold-formed, structural-steel sheet or roll-formed, metallic-coated steel sheet, prepainted with coil coating, to comply with the following:

   1. Purlins: C- or Z-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes; minimum 2-1/2-inch-wide flanges.

      a. Depth: As needed to comply with system performance requirements.

   2. Girts: C- or Z-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes. Form ends of Z-sections with stiffening lips angled 40 to 50 degrees from flange, with minimum 2-1/2-inch-wide flanges.

      a. Depth: As required to comply with system performance requirements.

   3. Eave Struts: Unequal-flange, C-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes; to provide adequate backup for metal panels.

   4. Flange Bracing: Minimum 2-by-2-by-1/8-inch structural-steel angles or 1-inch-diameter, cold-formed structural tubing to stiffen primary-frame flanges. No flange bracing shall be allowed for the interior flange of any column within 9'-0" of the finish floor level.


   7. Purlin and Girt Clips: Manufacturer's standard clips fabricated from steel sheet. Provide galvanized clips where clips are connected to galvanized framing members.

   8. Framing for Openings: Channel shapes; fabricated from cold-formed, structural-steel sheet or structural-steel shapes. Frame head and jamb of door openings and head, jamb, and sill of other openings.
9. Miscellaneous Structural Members: Manufacturer's standard sections fabricated from cold-formed, structural-steel sheet; built-up steel plates; or zinc-coated (galvanized) steel sheet; designed to withstand required loads.

F. Canopy Framing: Manufacturer's standard structural-framing system, designed to withstand required loads; fabricated from shop-welded, built-up steel plates or structural-steel shapes. Provide frames with attachment plates and splice members, factory drilled for field-bolted assembly.
   1. Type: Tapered-beam, below-eave type.

G. Bracing: Provide adjustable wind bracing as follows:
   1. Rigid Portal Frames: Fabricated from shop-welded, built-up steel plates or structural-steel shapes to match primary framing; of size required to withstand design loads.
   2. Diaphragm Action of Metal Panels: Metal building SHALL NOT resist wind forces through diaphragm action of metal panels.

H. Anchor Rods: Headed anchor rods as indicated in Anchor Rod Plan for attachment of metal building to foundation.

I. Materials:
   1. W-Shapes: ASTM A992/A992M.
   2. Channels, Angles, M-Shapes, and S-Shapes: ASTM A36/A36M.
   3. Plate and Bar: ASTM A36/A36M; ASTM A572/A572M, Grade 50 or 55; or ASTM A529/A529M, Grade 50 or 55.
   4. Metallic-Coated Steel: Steel sheet, metallic coated by the hot-dip process.
      a. Zinc-Coated (Galvanized) Steel Sheet: ASTM A653/A653M, SS, Grades 33 through 80, or HSLAS or HSLAS-F, Grades 50 through 80; with G90 coating designation.
      a. Finish: Hot-dip zinc coating, ASTM F2329, Class C.
   6. High-Strength Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A325, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers.
      a. Finish: Hot-dip zinc coating, ASTM F2329, Class C.
      e. Finish: Hot-dip zinc coating, ASTM F2329, Class C.
   8. Threaded Rods: ASTM A572/A572M, Grade 50 or ASTM A36/A36M, as required for structural performance.
c. Finish: Hot-dip zinc coating, ASTM F2329, Class C.

J. Finish: Factory primed. Apply specified primer immediately after cleaning and pretreating.
   1. Clean and prepare in accordance with SSPC-SP2.
   2. Coat with manufacturer's standard primer. Apply primer to primary and secondary framing to a minimum dry film thickness of 1 mil.
      a. Prime secondary framing formed from uncoated steel sheet to a minimum dry film thickness of 0.5 mil on each side.

2.5 METAL ROOF PANELS

A. Standing-Seam, Vertical-Rib, Metal Roof Panels: Formed with vertical ribs at panel edges and intermediate stiffening ribs symmetrically spaced between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels and engaging opposite edge of adjacent panels.

   1. Material: Aluminum-zinc alloy-coated steel sheet, 0.024-inch (24 gage) nominal uncoated steel thickness. Prepainted by the coil-coating process to comply with ASTM A755/A755M.
      b. Color: As indicated by manufacturer's designations.

   2. Clips: Two-piece, floating clip fabricated from aluminum-zinc alloy-coated steel, or stainless-steel sheet to accommodate thermal movement.
   3. Joint Type: Mechanically seamed.
   5. Panel Height: 2 inches.

B. Finishes:

   1. Exposed Coil-Coated Finish:
      a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers’ written instructions.

   2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

2.6 METAL WALL PANELS

A. Concealed-Fastener, Flush-Profile, Metal Wall Panels: Formed with vertical panel edges and flush surface; with flush joint between panels; designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners and factory-applied sealant in side laps.
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1. Material: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.024-inch nominal uncoated steel thickness. Prepainted by the coil-coating process to comply with ASTM A755/A755M.
   b. Color: As indicated by manufacturer's designations.

3. Panel Height: 3 inches.

B. Finishes:

1. Exposed Coil-Coated Finish:
   a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

2.7 METAL SOFFIT PANELS

A. General: Provide factory-formed metal soffit panels designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners and factory-applied sealant in side laps. Include accessories required for weathertight installation.

B. Metal Soffit Panels: Match profile and material of metal wall panels.

1. Finish: Match finish and color of metal roof panels.

2.8 THERMAL INSULATION

A. Mineral-Fiber-Blanket Insulation: ASTM C665, type indicated below; consisting of fibers manufactured from glass, slag wool, or rock wool.
   1. Unfaced: Type I (blankets without membrane covering), passing ASTM E136 for combustion characteristics.

2.9 ROOF AND WALL LINER SYSTEM

A. Interior liner system: ASTM E84, Class A material with a flame spread rating of 25 or less, high density polyethylene fabric designed to be continuous vapor retarder supported by manufacturer’s recommended steel strapping. System to provide continuous vapor retarder on the inside plane of purlins or girts.

1. Basis of Design: Simple Saver System
2. Color: White
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2.10 PERSONNEL DOORS AND FRAMES

A. Swinging and Sliding Personnel Doors and Frames: As specified in Section 08 1113 "Hollow Metal Doors and Frames."

B. Provide complete, boxed hoods for sliding personnel doors with finish to match metal wall panels.

2.11 WINDOWS

A. Aluminum Windows: As specified in Section 08 5113 "Aluminum Windows."

2.12 ACCESSORIES

A. General: Provide accessories as standard with metal building system manufacturer and as specified. Fabricate and finish accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes. Comply with indicated profiles and with dimensional and structural requirements.

1. Form exposed sheet metal accessories that are without excessive oil-canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.

B. Roof Panel Accessories: Provide components required for a complete metal roof panel assembly including copings, fasciae, corner units, ridge closures, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.

1. Closures: Provide closures at eaves and ridges, fabricated of same material as metal roof panels.
2. Clips: Manufacturer's standard, formed from stainless-steel sheet, designed to withstand negative-load requirements.
3. Cleats: Manufacturer's standard, mechanically seamed cleats formed from stainless-steel sheet or nylon-coated aluminum sheet.
4. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
5. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch-thick, flexible closure strips; cut or premolded to match metal roof panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
6. Thermal Spacer Blocks: Where metal panels attach directly to purlins, provide thermal spacer blocks of thickness required to provide 1-inch standoff; fabricated from extruded polystyrene.

C. Wall Panel Accessories: Provide components required for a complete metal wall panel assembly including copings, fasciae, mullions, sills, corner units, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal wall panels unless otherwise indicated.

1. Closures: Provide closures at eaves and rakes, fabricated of same material as metal wall panels.
2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch-thick, flexible closure strips; cut or premolded to match metal wall panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

D. Flashing and Trim: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch nominal uncoated steel thickness, prepainted with coil coating; finished to match adjacent metal panels.

1. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers.

2. Opening Trim: Aluminum-zinc alloy-coated steel sheet, 0.030-inch (22 gage) nominal uncoated steel thickness, prepainted with coil coating. Trim head and jamb of door openings, and head, jamb, and sill of other openings.

E. Louvers: Size and design indicated; self-framing and self-flashing. Fabricate welded frames from zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.048-inch nominal uncoated steel thickness; finished to match metal wall panels. Form blades from zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.036-inch nominal uncoated steel thickness; folded or beaded at edges, set at an angle that excludes driving rains, and secured to frames by riveting or welding. Fabricate louvers with equal blade spacing to produce uniform appearance.


2. Blades: Adjustable type, with weather-stripped edges, and manually operated by hand crank or pull chain.

3. Free Area: Not less than 7.0 sq. ft. for 48-inch-wide by 48-inch-high louver.

4. Bird Screening: Galvanized steel, 1/2-inch-square mesh, 0.041-inch wire; with rewirable frames, removable and secured with clips; fabricated of same kind and form of metal and with same finish as louvers.

   a. Mounting: Interior face of louvers.

5. Vertical Mullions: Provide mullions at spacings recommended by manufacturer, or 72 inches o.c., whichever is less.

F. Roof Curbs: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.048-inch nominal uncoated steel thickness prepainted with coil coating; finished to match metal roof panels; with welded top box and bottom skirt, and integral full-length cricket; capable of withstanding loads of size and height indicated.

1. Curb Subframing: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.060-inch nominal uncoated steel thickness, angle-, C-, or Z-shaped metallic-coated steel sheet.

2. Insulation: 1-inch-thick, rigid type.

G. Pipe Flashing: Premolded, EPDM pipe collar with flexible aluminum ring bonded to base.

H. Materials:

1. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide fasteners with heads matching color of materials being fastened by means of plastic caps or factory-applied coating.
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a. Fasteners for Metal Roof Panels: Self-drilling, Type 410 stainless steel or self-tapping, Type 304 stainless-steel or zinc-alloy-steel hex washer head, with EPDM washer under heads of fasteners bearing on weather side of metal panels.
b. Fasteners for Metal Wall Panels: Self-drilling, Type 410 stainless steel or self-tapping, Type 304 stainless-steel or zinc-alloy-steel hex washer head, with EPDM sealing washers bearing on weather side of metal panels.
c. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws with hex washer head.
d. Blind Fasteners: High-strength aluminum or stainless-steel rivets.

2. Corrosion-Resistant Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

3. Metal Panel Sealants:
   b. Joint Sealant: ASTM C920; one part elastomeric polyurethane or polysulfide; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended by metal building system manufacturer.

2.13 FABRICATION

A. General: Design components and field connections required for erection to permit easy assembly.

1. Mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams, and instruction manuals.

2. Fabricate structural framing to produce clean, smooth cuts and bends. Punch holes of proper size, shape, and location. Members shall be free of cracks, tears, and ruptures.


C. Primary Framing: Shop fabricate framing components to indicated size and section, with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.

1. Make shop connections by welding or by using high-strength bolts.
2. Join flanges to webs of built-up members by a continuous, submerged arc-welding process.
3. Brace compression flange of primary framing with steel angles or cold-formed structural tubing between frame web and purlin web or girt web, so flange compressive strength is within allowable limits for any combination of loadings.
4. Weld clips to frames for attaching secondary framing if applicable, or punch for bolts.
5. Shop Priming: Prepare surfaces for shop priming according to SSPC-SP 2. Shop prime primary framing with specified primer after fabrication.
D. Secondary Framing: Shop fabricate framing components to indicated size and section by roll forming or break forming, with baseplates, bearing plates, stiffeners, and other plates required for erection welded into place. Cut, form, punch, drill, and weld secondary framing for bolted field connections to primary framing.

1. Make shop connections by welding or by using non-high-strength bolts.
2. Shop Priming: Prepare uncoated surfaces for shop priming according to SSPC-SP 2. Shop prime uncoated secondary framing with specified primer after fabrication.

E. Metal Panels: Fabricate and finish metal panels at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.

1. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of metal panel.

2.14 SOURCE QUALITY CONTROL

A. Special Inspection: IAS AC472-accredited manufacturer is required.

1. Accredited Manufacturers: Special inspections will not be required if fabrication is performed by an IAS AC472-accredited manufacturer approved by authorities having jurisdiction to perform such Work without special inspection.

a. After fabrication, submit copy of certificate of compliance to authorities having jurisdiction, certifying that Work was performed according to Contract requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

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

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

1. Engage land surveyor to perform surveying.

C. Proceed with erection only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition.
B. Provide temporary shores, guys, braces, and other supports during erection to keep structural framing secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural framing, connections, and bracing are in place unless otherwise indicated.

3.3 ERECTION OF STRUCTURAL FRAMING

A. Erect metal building system according to manufacturer’s written instructions and drawings.

B. Do not field cut, drill, or alter structural members without written approval from metal building system manufacturer’s professional engineer.

C. Set structural framing accurately in locations and to elevations indicated, according to AISC specifications referenced in this Section. Maintain structural stability of frame during erection.

   1. Set plates for structural members on wedges, shims, or setting nuts as required.
   2. Tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
   3. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer’s written installation instructions for shrinkage-resistant grouts.

E. Align and adjust structural framing before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with framing. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
   1. Level and plumb individual members of structure.

F. Primary Framing and End Walls: Erect framing level, plumb, rigid, secure, and true to line. Level baseplates to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Use grout to obtain uniform bearing and to maintain a level base-line elevation. Moist-cure grout for not less than seven days after placement.
   1. Make field connections using high-strength bolts installed according to RCSC’s "Specification for Structural Joints Using High-Strength Bolts" for bolt type and joint type specified.
      a. Joint Type: Snug tightened or pretensioned as required by manufacturer.

G. Secondary Framing: Erect framing level, plumb, rigid, secure, and true to line. Field bolt secondary framing to clips attached to primary framing.
   1. Provide rake or gable purlins with tight-fitting closure channels and fasciae.
   2. Locate and space wall girts to suit openings such as doors and windows.
   3. Provide supplemental framing at entire perimeter of openings, including doors, windows, louvers, ventilators, and other penetrations of roof and walls.

H. Bracing: Install bracing in roof and sidewalls where indicated on approved erection drawings.
   1. Tighten rod and cable bracing to avoid sag.
2. Locate interior end-bay bracing only where indicated.

I. Framing for Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to structural framing.

J. Erection Tolerances: Maintain erection tolerances of structural framing within AISC 303.

3.4 METAL PANEL INSTALLATION, GENERAL

A. Fabricate and finish metal panels and accessories at the factory, by manufacturer’s standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer’s written instructions and to comply with details shown.

C. Examination: Examine primary and secondary framing to verify that structural-panel support members and anchorages have been installed within alignment tolerances required by manufacturer.

1. Examine roughing-in for components and systems penetrating metal panels, to verify actual locations of penetrations relative to seams before metal panel installation.

D. General: Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Field cut metal panels as required for doors, windows, and other openings. Cut openings as small as possible, neatly to size required, and without damage to adjacent metal panel finishes.

a. Field cutting of metal panels by torch is not permitted unless approved in writing by manufacturer.

2. Install metal panels perpendicular to structural supports unless otherwise indicated.

3. Flash and seal metal panels with weather closures at perimeter of openings and similar elements. Fasten with self-tapping screws.

4. Locate and space fastenings in uniform vertical and horizontal alignment.

5. Locate metal panel splices over structural supports with end laps in alignment.

6. Lap metal flashing over metal panels to allow moisture to run over and off the material.

E. Lap-Seam Metal Panels: Install screw fasteners using power tools with controlled torque adjusted to compress EPDM washers tightly without damage to washers, screw threads, or metal panels. Install screws in predrilled holes.

1. Arrange and nest side-lap joints so prevailing winds blow over, not into, lapped joints. Lap ribbed or fluted sheets one full rib corrugation. Apply metal panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or application not true to line.
F. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.

G. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal panel assemblies. Provide types of gaskets, fillers, and sealants indicated; or, if not indicated, provide types recommended by metal panel manufacturer.

1. Seal metal panel end laps with double beads of tape or sealant the full width of panel. Seal side joints where recommended by metal panel manufacturer.
2. Prepare joints and apply sealants to comply with requirements in Section 07 9200 "Joint Sealants."

3.5 METAL ROOF PANEL INSTALLATION

A. General: Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.

1. Install ridge caps as metal roof panel work proceeds.
2. Flash and seal metal roof panels with weather closures at eaves and rakes. Fasten with self-tapping screws.

B. Standing-Seam Metal Roof Panels: Fasten metal roof panels to supports with concealed clips at each standing-seam joint, at location and spacing and with fasteners recommended by manufacturer.

1. Install clips to supports with self-drilling or self-tapping fasteners.
2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
3. Seamed Joint: Crimp standing seams with manufacturer-approved motorized seamer tool so that clip, metal roof panel, and factory-applied sealant are completely engaged.
4. Rigidly fasten eave end of metal roof panels and allow ridge end free movement for thermal expansion and contraction. Predrill panels for fasteners.
5. Provide metal closures at peaks rake edges rake walls and each side of ridge caps.

C. Metal Fascia Panels: Align bottom of metal panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws. Flash and seal metal panels with weather closures where fasciae meet soffits, along lower panel edges, and at perimeter of all openings.

D. Metal Roof Panel Installation Tolerances: Shim and align metal roof panels within installed tolerance of 1/4 inch in 20 feet on slope and location lines and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.6 METAL WALL PANEL INSTALLATION

A. General: Install metal wall panels in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to girts, extending full height of building, unless otherwise indicated. Anchor metal wall panels and other components of the Work securely in place, with provisions for thermal and structural movement.
1. Unless otherwise indicated, begin metal panel installation at corners with center of rib lined up with line of framing.
2. Shim or otherwise plumb substrates receiving metal wall panels.
3. When two rows of metal panels are required, lap panels 4 inches minimum.
4. When building height requires two rows of metal panels at gable ends, align lap of gable panels over metal wall panels at eave height.
5. Rigidly fasten base end of metal wall panels and allow eave end free movement for thermal expansion and contraction. Predrill panels.
6. Flash and seal metal wall panels with weather closures at eaves and rakes, and at perimeter of all openings. Fasten with self-tapping screws.
8. Install flashing and trim as metal wall panel work proceeds.
9. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as indicated on Drawings; if not indicated, as necessary for waterproofing.
10. Align bottom of metal wall panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws.
11. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.

B. Metal Wall Panels: Install metal wall panels on exterior side of girts. Attach metal wall panels to supports with fasteners as recommended by manufacturer.

C. Installation Tolerances: Shim and align metal wall panels within installed tolerance of 1/4 inch in 20 feet, noncumulative; level, plumb, and on location lines; and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.7 METAL SOFFIT PANEL INSTALLATION

A. Provide metal soffit panels the full width of soffits. Install panels perpendicular to support framing.

B. Flash and seal metal soffit panels with weather closures where panels meet walls and at perimeter of all openings.

3.8 LINER SYSTEM AND THERMAL INSULATION INSTALLATION

A. General: Install insulation concurrently with metal panel installation, in thickness indicated to cover entire surface, according to manufacturer's written instructions.

1. Purlins, girts, and insulation to be isolated from the inside conditioned air.
2. Tape joints and ruptures in vapor retarder and seal each continuous area of insulation to the surrounding construction to ensure airtight installation.
3. Install blankets straight and true in one-piece lengths. Install vapor retarder over insulation, with both sets of facing tabs sealed, to provide a complete vapor retarder.

B. Blanket Roof Insulation: Comply with the following installation method:

1. Two-Layers-between-Purlin-with-Spacer-Block Installation: Install painted steel straps and vapor retarder liner system per manufacturer's recommendations. Install insulation on the vapor retarder liner system to fill entire insulation cavity. Upper most layer of insulation is placed over and perpendicular to the purlins.
2. Thermal Spacer Blocks: Where metal roof panels attach directly to purlins, install thermal spacer blocks.
NEW AVIAN HOLDING BUILDING

C. Blanket Wall Insulation: Install insulation to backside of metal panel with insulation hanger. Insulation to fill entire insulation cavity. Install vapor retarder liner system and steel straps per manufacturer's recommendations.

3.9 DOOR AND FRAME INSTALLATION

A. General: Install doors and frames plumb, rigid, properly aligned, and securely fastened in place according to manufacturers' written instructions. Coordinate installation with wall flashings and other components. Seal perimeter of each door frame with elastomeric sealant used for metal wall panels.

B. Personnel Doors and Frames: Install doors and frames according to NAAMM-HMMA 840. Fit non-fire-rated doors accurately in their respective frames, with the following clearances:

1. Between Doors and Frames at Jambs and Head: 1/8 inch.
3. At Door Sills with Threshold: 3/8 inch.
4. At Door Sills without Threshold: 3/4 inch.

C. Sliding Service Doors: Bolt support angles to opening head members through factory-punched holes. Bolt door tracks to support angles at maximum 24 inches o.c. Set doors and operating equipment with necessary hardware, jamb and head mold stops, continuous hood flashing, anchors, inserts, hangers, and equipment supports.

D. Door Hardware:

1. Install surface-mounted items after finishes have been completed at heights indicated in DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
3. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
4. Set thresholds for exterior doors in full bed of sealant complying with requirements for concealed mastic specified in Section 07 9200 "Joint Sealants."

3.10 WINDOW INSTALLATION

A. General: Install windows plumb, rigid, properly aligned, without warp or rack of frames or sash, and securely fasten in place according to manufacturer's written instructions. Coordinate installation with wall flashings and other components. Seal perimeter of each window frame with elastomeric sealant used for metal wall panels.

1. Separate dissimilar materials from sources of corrosion or electrolytic action at points of contact with other materials by complying with requirements specified in AAMA/WDMA/CSA 101/I.S.2/A440.

B. Set sill members in bed of sealant or with gaskets, for weathertight construction.

C. Install windows and components to drain condensation, water penetrating joints, and moisture migrating within windows to the exterior.
3.11 ACCESSORY INSTALLATION

A. General: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal roof panel assembly, including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
2. Install components for a complete metal wall panel assembly, including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
3. Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by manufacturer.

B. Flashing and Trim: Comply with performance requirements, manufacturer’s written installation instructions, and SMACNA’s "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without excessive oil-canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

C. Louvers: Locate and place louver units level, plumb, and at indicated alignment with adjacent work.

1. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.
2. Provide perimeter reveals and openings of uniform width for sealants and joint fillers.
3. Protect galvanized- and nonferrous-metal surfaces from corrosion or galvanic action by applying a heavy coating of corrosion-resistant paint on surfaces that will be in contact with concrete, masonry, or dissimilar metals.
4. Install concealed gaskets, flashings, joint fillers, and insulation as louver installation progresses, where weathertight louver joints are required. Comply with Section 07 9200 "Joint Sealants" for sealants applied during louver installation.

D. Roof Curbs: Install curbs at locations indicated on Drawings. Install flashing around bases where they meet metal roof panels.

E. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to panel as recommended by manufacturer.

3.12 FIELD QUALITY CONTROL

A. Product will be considered defective if it does not pass tests and inspections.
B. Prepare test and inspection reports.

3.13 CLEANING AND PROTECTION

A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A780/A780M and manufacturer's written instructions.

B. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

C. Touchup Painting: After erection, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted structural framing, bearing plates, and accessories.
   1. Clean and prepare surfaces by SSPC-SP 2, "Hand Tool Cleaning," or by SSPC-SP 3, "Power Tool Cleaning."
   2. Apply a compatible primer of same type as shop primer used on adjacent surfaces.

D. Metal Panels: Remove temporary protective coverings and strippable films, if any, as metal panels are installed. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
   1. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

E. Louvers: Clean exposed surfaces that are not protected by temporary covering, to remove fingerprints and soil during construction period. Do not let soil accumulate until final cleaning.
   1. Restore louvers damaged during installation and construction period so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units.
      a. Touch up minor abrasions in finishes with air-dried coating that matches color and gloss of, and is compatible with, factory-applied finish coating.

END OF SECTION 13 3419
1. All finishes must comply with NC State Building Code Chapter 8.

5. Exterior roof, wall, soffit, and fascia metal panels to match conc. curb; see struct.

6. Provide 6 type A signs color: snow blind, size: 2x4 mosaics, manufacturer: johnsonite, product no: calla 2820, color: white, size: 6".

3. Room identification signage color: urbane bronze, size: 2x4 mosaics, manufacturer: johnsonite, product no: calla 2820, color: snow blind, size: 2".

4. Toilet room signage color: extra white, size: 2".
### General Notes:

- **PLUMBING FIXTURE SCHEDULE**: List of plumbing fixtures and their specifications.
- **INTERCEPTOR SCHEDULE**: Specifications for interceptors and their components.
- **ELECTRIC WATER HEATER SCHEDULE**: List of electric water heaters and their specifications.
- **THERMOSTATIC MIXING VALVE SCHEDULE**: Specifications for thermostatic mixing valves.
- **PLUMBING LEGEND**: Legend for plumbing symbols and designations.

### Electric Water Heater Schedule

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Brand</th>
<th>Piping Type</th>
<th>Pressure</th>
<th>Temperature</th>
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<tbody>
<tr>
<td>EWH-1</td>
<td>Domestic Water Heater</td>
<td>A.O. Smith</td>
<td>Copper</td>
<td>10 psi</td>
<td>115°</td>
</tr>
</tbody>
</table>