POMFRET
EMERGENCY RESOURCE
CENTER

628 Mashamoquet Road

Pomfret, CT

POST FRAME BUILDING

CONTRACT DOCUMENTS
AND
SPECIFICATIONS

May 22, 2018

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Phased construction.
4. Work under separate contracts.
5. Access to site.
6. Coordination with occupants.
7. Work restrictions.
8. Specification and drawing conventions.
9. Miscellaneous provisions.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.2 PROJECT INFORMATION

A. Project Identification: POMFRET EMERGENCY RESOURCE CENTER.

1. Project Location: 628 MASHAMOQUET ROAD, POMFRET, CT.

B. Owner: TOWN OF POMFRET.

1. Owner's Representative: MAUREEN NICHOLSON, FIRST SELECTWOMAN.

C. Project Coordinator for Multiple Contracts: CHARLIE WEEDON has been appointed by Owner to serve as Project coordinator.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:

1. CONSTRUCTION OF AN APPROXIMATELY 7,000 SF. POST-FRAME BUILDING TO HOUSE GARAGE BAYS AND OFFICES IN SUPPORT OF EMERGENCY OPERATIONS IN THE TOWN OF POMFRET.

B. Type of Contract.
1. Project will be constructed under coordinated, concurrent multiple contracts.

1.4 WORK UNDER SEPARATE CONTRACTS

A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.

1.5 ACCESS TO SITE

A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.

B. Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Limits: Confine construction operations to area delineated by Project Coordinator.
2. Driveways, and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

1.6 COORDINATION WITH OCCUPANTS

A. Full Owner Occupancy: Owner will occupy adjacent site and building(s) during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
1. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations.

1.7 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 6 a.m. to 6 p.m., Monday through Friday, unless otherwise indicated.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:

1. Notify Owner not less than two days in advance of proposed utility interruptions.
2. Obtain Owner's written permission before proceeding with utility interruptions.

D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.

E. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet of entrances, operable windows, or outdoor-air intakes.

F. Controlled Substances: Use of controlled substances, other than tobacco, on Project site is not permitted.

1.8 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

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SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.2 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.3 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A schedule of alternates is included at the end of this Section.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. ONE - INTERIOR INSULATION AND FINISHES IN MODULES 1 AND 3.

B. Alternate No. TWO – CONSTRUCTION OF MODULE 4.

C. Alternate No. THREE – CONSTRUCTION OF ENTRANCE CANOPY

END OF SECTION 012300

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Project Coordinator’s responsive action.

B. Informational Submittals: Written and graphic information and physical samples that do not require Project Coordinator's responsive action.

1.3 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

B. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Project Coordinator's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Project Coordinator will advise Contractor when a submittal being processed must be delayed for coordination.
2. Resubmittal Review: Allow 15 days for review of each resubmittal.

C. Paper Submittals: Place a permanent label or title block on each submittal item for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space on label or beside title block to record Contractor's review and approval markings and action taken by Project Coordinator.
3. Include the following information for processing and recording action taken:

a. Project name.
b. Date.
c. Name of Project Coordinator.
d. Name of Contractor.

e. Name of subcontractor.
f. Name of supplier.
g. Name of manufacturer.
h. Submittal number or other unique identifier, including revision identifier.

1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).

i. Drawing number and detail references, as appropriate.
j. Location(s) where product is to be installed, as appropriate.
k. Other necessary identification.

D. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

1. Name file with submittal number or other unique identifier, including revision identifier.

a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).

2. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Project Coordinator.
3. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner**,** containing the following information:

a. Project name.
b. Date.
c. Name of Contractor.
d. Name of firm or entity that prepared submittal.
e. Names of subcontractor, manufacturer, and supplier.
f. Category and type of submittal.
g. Specification Section number and title.
h. Location(s) where product is to be installed, as appropriate.
i. Related physical samples submitted directly.
j. Other necessary identification.

E. Options: Identify options requiring selection by Project Coordinator.

F. Deviations: Identify deviations from the Contract Documents on submittals.

G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.

H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

I. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Project Coordinator's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements:

1. Submit electronic submittals via email as PDF electronic files.
2. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.

4. For equipment, include the following in addition to the above, as applicable:

    a. Wiring diagrams showing factory-installed wiring.
    b. Printed performance curves.
    c. Operational range diagrams.
    d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before or concurrent with Samples.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

    a. Identification of products.
    b. Schedules.
    c. Compliance with specified standards.
    d. Notation of coordination requirements.

e. Notation of dimensions established by field measurement.
f. Relationship and attachment to adjoining construction clearly indicated.
g. Seal and signature of professional engineer if specified.

2. Submit Shop Drawings in the following format:

a. PDF electronic file.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:
   a. Product name and name of manufacturer.

3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

E. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."

2.2 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file and three paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Project Coordinator.

B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."

C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 PROJECT COORDINATOR'S ACTION

A. General: Project Coordinator will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Project Coordinator will review each submittal, make marks to indicate corrections or revisions required, and return it. Project Coordinator will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.

C. Informational Submittals: Project Coordinator will review each submittal and will not return it or will return it if it does not comply with requirements. Project Coordinator will forward each submittal to appropriate party.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 013300

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SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.
5. Repair of the Work.

1.2 ACTION SUBMITTALS

A. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

B. Certified List of Incomplete Items: Final submittal at Final Completion.

1.3 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.5 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.

3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
6. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
7. Complete final cleaning requirements, including touchup painting.
8. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

C. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Project Coordinator will either proceed with inspection or notify Contractor of unfulfilled requirements. Project Coordinator will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Project Coordinator, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.6 FINAL COMPLETION PROCEDURES

A. Inspection: Submit a written request for final inspection to determine acceptance. On receipt of request, Project Coordinator will either proceed with inspection or notify Contractor of unfulfilled requirements. Project Coordinator will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.7 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Project Coordinator for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.
1. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

    a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    e. Remove snow and ice to provide safe access to building.
    f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    h. Sweep concrete floors broom clean in unoccupied spaces.
    i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
    j. Remove labels that are not permanent.
    k. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and other foreign substances.

l. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
m. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
n. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
o. Leave Project clean and ready for occupancy.

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.

    a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 017700

SECTION 072100 - THERMAL INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Foam-plastic board insulation.
2. Glass-fiber blanket insulation.
3. Loose-fill insulation.
4. Spray-applied cellulosic insulation.
5. Vapor retarders.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 FOAM-PLASTIC BOARD INSULATION

A. Extruded-Polystyrene Board Insulation: ASTM C 578, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E 84.

1. 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:

a. DiversiFoam Products.
b. Owens Corning.
c. Pactiv Building Products.

2. Type X, 15 psi.

2.2 GLASS-FIBER BLANKET INSULATION

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. CertainTeed Corporation.
2. Guardian Building Products, Inc.
3. Johns Manville.
4. Owens Corning.

B. Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.

2.3 LOOSE-FILL INSULATION

A. Cellulosic-Fiber Loose-Fill Insulation: ASTM C 739, chemically treated for flame-resistance, processing, and handling characteristics.

1. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 100 percent.

2.4 VAPOR RETARDERS

A. Polyethylene Vapor Retarders: ASTM D 4397, 8 mils thick, with maximum permeance rating of 0.13 perms, similar to Tenoarm with gaskets and tape.

B. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications indicated.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Extend insulation to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.2 INSTALLATION OF BELOW-GRADE INSULATION

A. On vertical surfaces, set insulation units using manufacturer's recommended adhesive or loosely laid according to manufacturer's written instructions.

1. If not otherwise indicated, extend insulation a minimum of 36 inches below exterior grade line.

B. On horizontal surfaces, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.

3.3 INSTALLATION OF INSULATION FOR FRAMED CONSTRUCTION

A. Installation to meet Grade 1 standards.

B. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

C. Glass-Fiber or Mineral-Wool Blanket Insulation: Install in cavities formed by framing members according to the following requirements:

1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.

D. Spray-Applied Insulation: Apply spray-applied insulation according to manufacturer's written instructions. Do not apply insulation until installation of pipes, ducts, conduits, wiring, and electrical outlets in walls is completed and windows, electrical boxes, and other items not indicated to receive insulation are masked. After insulation is applied, make flush with face of studs by using method recommended by insulation manufacturer.

E. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:

1. Loose-Fill Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft.

3.4 INSTALLATION OF VAPOR RETARDERS

A. Place vapor retarders on side of construction indicated on Drawings. Extend vapor retarders to extremities of areas to protect from vapor transmission. Secure vapor retarders in place with adhesives or other anchorage system as indicated. Extend vapor retarders to cover miscellaneous voids in insulated substrates, including those filled with loose-fiber insulation.

B. Seal vertical joints in vapor retarders over framing by lapping no fewer than two studs.

1. Fasten vapor retarders to wood framing at top, end, and bottom edges; at perimeter of wall openings; and at lap joints. Space fasteners 16 inches o.c.

C. Seal joints caused by pipes, conduits, electrical boxes, and similar items penetrating vapor retarders with vapor-retarder tape to create an airtight seal between penetrating objects and vapor retarders.

D. Repair tears or punctures in vapor retarders immediately before concealment by other work. Cover with vapor-retarder tape or another layer of vapor retarders.

END OF SECTION 072100

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SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes hollow-metal work.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Include elevations, door edge details, frame profiles, metal thicknesses, preparations for hardware, and other details.

C. Schedule: Prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings.

PART 2 - PRODUCTS

2.1 INTERIOR DOORS AND FRAMES

A. Heavy-Duty Doors and Frames: SDI A250.8, Level 2. At locations indicated in the Door Schedule.

1. Physical Performance: Level B according to SDI A250.4.
2. Doors:

    a. Type: As indicated in the Door and Frame Schedule.
    b. Thickness: 1-3/4 inches.
    c. Face: Uncoated cold-rolled steel sheet, minimum thickness of 0.042 inch.
    d. Edge Construction: Model 2, Seamless.
    e. Core: Polyurethane

3. Frames:

    a. Materials: Uncoated, steel sheet, minimum thickness of 0.053 inch.
    b. Construction: Face welded.

4. Exposed Finish: Prime.

2.2 EXTERIOR HOLLOW-METAL DOORS AND FRAMES

A. Specified in Section 133400 Pre-Engineered Building Systems.

2.3 FRAME ANCHORS

A. Jamb Anchors:
   1. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.

2.4 MATERIALS

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.

   1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.

D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.

E. Power-Actuated Fasteners in Concrete: From corrosion-resistant materials.

F. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing).

G. Glazing: Section 088000 "Glazing."

2.5 FABRICATION

A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

B. Hollow-Metal Doors:

   1. Exterior Doors: Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.

C. Hollow-Metal Frames:
   1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
   2. Jamb Anchors: Provide number and spacing of anchors as follows:

      a. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
         1) Four anchors per jamb from 60 to 90 inches high.

3. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers.

    a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.

D. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.

1. Reinforce doors and frames to receive non-templated, mortised, and surface-mounted door hardware.
2. Comply with applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.

E. Stops and Moldings: Provide stops and moldings around glazed lites and louvers where indicated. Form corners of stops and moldings with mitered hairline joints.
1. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
2. Provide loose stops and moldings on inside of hollow-metal work.
3. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.

2.6 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.

1. Shop Primer: SDI A250.10.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Hollow-Metal Frames: Install hollow-metal frames of size and profile indicated. Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.

    a. At fire-rated openings, install frames according to NFPA 80.
    b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
    c. Install frames with removable stops located on secure side of opening.
    d. Install door silencers in frames before grouting.
    e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
    f. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.

g. Field apply bituminous coating to backs of frames that will be filled with grout containing antifreezing agents.

2. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:

a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

B. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Steel Doors:

a. Between Door and Frame Jambs and Head: 1/8 inch plus or minus 1/32 inch.
b. At Bottom of Door: 3/4 inch plus or minus 1/32 inch.
c. Between Door Face and Stop: 1/16 inch to 1/8 inch plus or minus 1/32 inch.

C. Glazing: Comply with installation requirements in Section 088000 "Glazing" and with hollow-metal manufacturer's written instructions.

1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

3.2 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.

B. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

C. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION 081113

SECTION 083613 - SECTIONAL DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes manually and electrically operated sectional doors.

B. Related Requirements:

1.2 ACTION SUBMITTALS

A. Product Data: For each type and size of sectional door and accessory.

B. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data.

C. Samples: For each exposed product and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

A. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer for both installation and maintenance of units required for this Project.

1.6 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of sectional doors that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Ten years from date of Substantial Completion – delamination
    a. One year limited on door.
    b. 3 year/20.000 cycles on door and operator system.

B. Special Finish Warranty: Manufacturer agrees to repair or replace components that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Warranty Period: Twenty years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Sectional doors shall comply with performance requirements specified without failure due to defective manufacture, fabrication, installation, or other defects in construction and without requiring temporary installation of reinforcing components.

B. Structural Performance, Exterior Doors: Capable of withstanding the design wind loads.

1. Design Wind Load: As indicated on Drawings
2. Testing: According to ASTM E 330.

C. Seismic Performance: Sectional doors shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

2.2 DOOR ASSEMBLY

A. Steel Sectional Door: Sectional door formed with hinged sections and fabricated according to DASMA 102 unless otherwise indicated.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Overhead Door Series 592 Doors or comparable product by one of the following:
   a. Clopay Building Products.
   b. Raynor.
   c. Wayne-Dalton Corp.

B. Operation Cycles: Door components and operators capable of operating for not less than 10,000 cycles.

C. Air Infiltration: Maximum rate of 0.08 cfm/sq. ft when tested according to ASTM E 283 or DASMA 105.

D. Installed R-Value: 17.5 deg F x h x sq. ft./Btu.

E. Steel Sections: Zinc-coated (galvanized) steel sheet with G90 zinc coating.

1. Section Thickness 2 inches.
2. Exterior-Face Surface: Ribbed.
3. Interior Facing Material manufacturer's standard material.

F. Track Configuration: Standard-lift track.

G. Weatherseals: Fitted to bottom and top and around entire perimeter of door.

H. Locking Devices: Equip door with locking device assembly.

1. Locking Device Assembly: Cremone type, both jamb sides, locking bars, operable from inside with thumbturn.

I. Manual Door Operator: Push-up operation. (Door number 5)

J. Electric Door Operator: Doors number 1,2,6 and doors 8 and 9 if Alternate accepted.

1. Usage Classification: Standard duty, up to 25 cycles per hour and up to 90 cycles per day.

2. Operator Type: Trolley.
3. Safety: Listed according to UL 325 by a qualified testing agency for commercial or industrial use; moving parts of operator enclosed or guarded if exposed and mounted at 8 feet or lower.
4. Motor Exposure: Interior, clean, and dry.
5. Emergency Manual Operation: Push-up type.
6. Obstruction-Detection Device: Automatic photoelectric sensor.
7. Control Station: Interior-side mounted.
8. Other Equipment: Portable, radio-control system.

K. Door Finish:
1. Baked-Enamel or Powder-Coat Finish: Gloss white.

2.3 STEEL DOOR SECTIONS

A. Exterior Section Faces and Frames: Zinc-coated (galvanized), cold-rolled, commercial steel (CS) sheet.

1. Roll horizontal meeting edges to a continuous, interlocking, keyed, rabbeted, shiplap, or tongue-in-groove weather-resistant seal, with a reinforcing flange return.
2. For insulated doors, provide sections with continuous thermal-break construction, separating the exterior and interior faces of door.

B. Section Ends and Intermediate Stiles: Enclose open ends of sections with channel end stiles formed from galvanized-steel sheet welded to door section. Provide intermediate stiles formed from galvanized-steel sheet, cut to door section profile, and welded in place. Space stiles not more than 48 inches apart.

C. Reinforce bottom section with a continuous channel or angle conforming to bottom-section profile and allowing installation of astragal.

D. Reinforce sections with continuous horizontal and diagonal reinforcement, as required to stiffen door and for wind loading. Provide galvanized-steel bars, struts, trusses, or strip steel, formed to depth and bolted or welded in place.

E. Provide reinforcement for hardware attachment.

F. Thermal Insulation: Insulate interior of steel sections with door manufacturer's standard CFC-free insulation, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, according to ASTM E 84. Enclose insulation completely within steel sections and the interior facing material, with no exposed insulation.

2.4 TRACKS, SUPPORTS, AND ACCESSORIES

A. Tracks: Manufacturer's standard, galvanized-steel track system of configuration indicated, sized for door size and weight, designed for lift type indicated and clearances indicated on Drawings, Provide complete system including brackets, bracing, and reinforcement to ensure rigid support of ball-bearing roller guides for required door type, size, weight, and loading.

1. Track Reinforcement and Supports: Galvanized-steel members to support track without sag, sway, and vibration during opening and closing of doors. Slot vertical sections of track spaced 2 inches apart for door-drop safety device.

B. Weatherseals: Replaceable, adjustable, continuous, compressible weather-stripping gaskets of flexible vinyl, rubber, or neoprene fitted to bottom and top of sectional door unless otherwise indicated.

2.5 HARDWARE

A. General: Heavy-duty, corrosion-resistant hardware, with hot-dip galvanized, stainless-steel, or other corrosion-resistant fasteners, to suit door type.

B. Hinges: Heavy-duty, galvanized-steel hinges at each end stile and at each intermediate stile, according to manufacturer's written recommendations for door size. Attach hinges to door sections through stiles and rails.

C. Rollers: Heavy-duty rollers with steel ball-bearings in case-hardened steel races, mounted with varying projections to suit slope of track. Provide 2-inch- diameter roller tires for 2-inch- wide track.

D. Push/Pull Handles: Equip each push-up operated or emergency-operated door with galvanized-steel lifting handles on each side of door, finished to match door.

2.6 LOCKING DEVICES

A. Locking Device Assembly: Fabricate with cylinder lock, spring-loaded deadbolt, operating handle, cam plate, and adjustable locking bars to engage through slots in tracks.

1. Lock Cylinders: Cylinders standard with manufacturer and keyed to building keying system.
2. Keys: Three for each cylinder.

B. Safety Interlock Switch: Equip power-operated doors with safety interlock switch to disengage power supply when door is locked.

2.7 COUNTERBALANCE MECHANISM

A. Cable Drums and Shaft for Doors: Cast-aluminum or gray-iron casting cable drums mounted on torsion shaft and grooved to receive door-lifting cables as door is raised. Mount counterbalance mechanism with manufacturer's standard ball-bearing brackets at each end of torsion shaft.

B. Cable Safety Device: Include a spring-loaded steel or spring-loaded bronze cam mounted to bottom door roller assembly on each side and designed to automatically stop door if either lifting cable breaks.

C. Bumper: Provide spring bumper at each horizontal track to cushion door at end of opening operation.

2.8 MANUAL DOOR OPERATORS (Door 5)

A. General: Equip door with manual door operator by door manufacturer.

B. Chain-Hoist Operator: Consisting of endless steel hand chain, chain-pocket wheel and guard, and gear-reduction unit with a maximum **25-lbf** force for door operation. Provide alloy-steel hand chain with chain holder secured to operator guide.

2.9 ELECTRIC DOOR OPERATORS (Doors 1, 2, 6 and doors 8 and 9 if Alternate accepted)

A. General: Electric door operator assembly of size and capacity recommended and provided by door manufacturer for door and "operation cycles" requirement specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, solenoid-operated brake, clutch, control stations, control devices, integral gearing for locking door, and accessories required for proper operation.

1. Comply with NFPA 70.
2. Control equipment complying with NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6; with NFPA 70, Class 2 control circuit, maximum 24-V ac or dc.

B. Usage Classification: Electric operator and components capable of operating for not less than number of cycles per hour indicated for each door.

C. Door-Operator Type: Unit consisting of electric motor, gears, pulleys, belts, sprockets, chains, and controls needed to operate door and meet required usage classification.

D. Motors: Reversible-type motor with controller (disconnect switch) for motor exposure indicated.

1. Electrical Characteristics:

a. Phase: Coordinate with building power.
b. Volts: Coordinate with building power.
c. Hertz: 60.

2. Motor Size: Minimum size as indicated. If not indicated, large enough to start, accelerate, and operate door in either direction from any position, at a speed not less than 8 in./sec. and not more than 12 in./sec., without exceeding nameplate ratings or service factor.

E. Obstruction Detection Device: External entrapment protection consisting of indicated automatic safety sensor capable of protecting full width of door opening. Activation of device immediately stops and reverses downward door travel.

1. Photoelectric Sensor: Manufacturer's standard system designed to detect an obstruction in door opening without contact between door and obstruction.

2. Electric Sensor Edge: Automatic safety sensor edge, located within astragal or weather stripping mounted to bottom section. Contact with sensor activates device. Connect to control circuit using manufacturer's standard take-up reel or self-coiling cable.

F. Control Station: Three-button control station in fixed location with momentary-contact push-button controls labeled "Open" and "Stop" and sustained- or constant-pressure, push-button control labeled "Close."

1. Interior-Mounted Units: Full-guarded, surface-mounted, heavy-duty type, with general-purpose NEMA ICS 6, Type 1 enclosure.

G. Emergency Manual Operation: Equip electrically powered door with capability for emergency manual operation. Design manual mechanism so required force for door operation does not exceed 25 lbf.

H. Emergency Operation Disconnect Device: Equip operator with hand-operated disconnect mechanism for automatically engaging manual operator and releasing brake for emergency manual operation while disconnecting motor without affecting timing of limit switch. Mount mechanism so it is accessible from floor level. Include interlock device to automatically prevent motor from operating when emergency operator is engaged.

I. Motor Removal: Design operator so motor may be removed without disturbing limit-switch adjustment and without affecting emergency manual operation.

J. Audible and Visual Signals: Audible alarm and visual indicator lights in compliance with regulatory requirements for accessibility.

K. Portable, Radio-Control System: Consisting of two of the following:

1. Three-channel universal coaxial receiver to open, close, and stop door.
2. Portable control device to open and stop door may be momentary-contact type; control to close door shall be sustained- or constant-pressure type.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install sectional doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.

B. Tracks: Provide sway bracing, diagonal bracing, and reinforcement as required for rigid installation of track and door-operating equipment.

C. Accessibility: Install sectional doors, switches, and controls along accessible routes in compliance with regulatory requirements for accessibility.

D. Power-Operated Doors: Install automatic garage doors openers according to UL 325.

E. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion.

F. Touch-up Painting: Immediately after welding galvanized materials, clean welds and abraded galvanized surfaces and repair galvanizing to comply with ASTM A 780/A 780M.

3.2 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain sectional doors.

END OF SECTION 083613

SECTION 133400
POST FRAME WOOD STRUCTURES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Provide pre-engineered building systems, including but not limited to primary and secondary structural framing systems, sheathing, roofing, siding, personnel doors overhead doors, windows, louvers and accessories required for a weathertight building envelop. Building design to be based on the following system:
   1. Clear span wood trusses and above grade wood columns on concrete foundation.

B. Post Framed building standard sections and details to be provided with Bid Package.

1.2 REFERENCES

A. ASTM International (ASTM):
   1. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   2. ASTM C1036 - Standard Specification for Flat Glass.
   3. ASTM C1048 - Standard Specification for Heat-Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass.
   4. ASTM D3363 - Standard Test Method for Film Hardness by Pencil Test.
   5. ASTM D4145 - Standard Test Method for Coating Flexibility of Prepainted Sheet.
   6. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
   7. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.

1.3 SYSTEM DESCRIPTION

A. Structural Frame Design:
   1. Design shall be based on the following Post-frame building framing and enclosure.
      a. Type: Clear span roof truss.
      b. Maximum Width: 36 feet.
      c. Maximum Clear Height: 16 feet.
      d. Columns: bolted to foundation.
      e. Purlins: Recessed between trusses in galvanized steel joist hangers OR on-edge above truss, factory drilled and fastened with 3/16 inch x 6 inches screw.

B. Dimensions:
   1. Module One:
      a. Width: 36 feet 0 inches, outside to outside of primary or secondary wall framing.
      b. Length: 60 feet 0 inches, outside to outside of primary or secondary wall framing.
      c. Height: 16 feet 0 inches, clearance from top of foundation wall to underside of truss or rafter.
      d. Roof Slope: 4:12 (units of rise per 12 units of run).

e. Ceiling Slope: Flat.

2. Module Two:
   a. Width: 36 feet 0 inches, outside to outside of primary or secondary wall framing.
   b. Length: 40 feet 0 inches, outside to outside of primary or secondary wall framing.
   c. Height: 8 feet 0 inches, clearance from top of foundation wall to underside of truss or rafter.
   d. Roof Slope: 4:12 (units of rise per 12 units of run).
   e. Ceiling Slope: Flat.
3. Module Three:
   a. Width: 36 feet 0 inches, outside to outside of primary or secondary wall framing.
   b. Length: 32 feet 8 inches, outside to outside of primary or secondary wall framing.
   c. Height: 14 feet 0 inches, clearance from top of foundation wall to underside of truss or rafter.
   d. Roof Slope: 4:12 (units of rise per 12 units of run).
   e. Ceiling Slope: Flat.
4. Module Four:
   a. Width: 36 feet 0 inches, outside to outside of primary or secondary wall framing.
   b. Length: 60 feet 0 inches, outside to outside of primary or secondary wall framing.
   c. Height: 16 feet 0 inches, clearance from top of foundation wall to underside of truss or rafter.
   d. Roof Slope: 4:12 (units of rise per 12 units of run).
   e. Ceiling Slope: Flat.

C. Structural Requirements:
1. Building Code: International building Code (IBC 2012 with CT Amendments) and ASCE-7, current edition.
2. Design Loads:
   a. Ground Snow Load: 40 psf
   b. Exposure Category: B.
   c. Roof Load, Live load: 20 psf
   d. Wind Load: Wind speed (3 sec gust): 100 mph
   e. Wind Exposure: Maximum Considered Earthquake 0.2 Second Spectral Response Acceleration.
   f. Maximum Considered Earthquake 1.0 Second Spectral Response Acceleration.
   g. Collateral Loads: Additional loads imposed by contract documents other than weight of building systems specified in this section.
   h. Combination Loads: Comply with Building Code.
   i. Risk Category: IV, Emergency Communications Center, Ambulance, Emergency Vehicles Garages.
3. Structural Design:
   a. Perform calculations using diaphragm and/or frame analysis. Incorporate bracing as required.
   b. Comply with AF&PA "National Design Specification for Wood Construction (NDS)."
   c. Trusses:

1) Limit deflection for live or snow loads to L/240 for trusses supporting steel ceilings and to L/180 for overhangs and trusses not supporting ceilings. (Module 4)
2) Limit deflection for live or snow loads to L/360 for trusses supporting GWB or plaster ceilings and to L/180 for overhangs and trusses not supporting ceilings. (Modules 1, 2 and 3)

d. Metal Wall and Roof Panels:
1) Design in accordance with AISI "Specifications for the Design of Light-Gauge, Cold-Formed Steel Structural Members" and in accordance with sound engineering methods and practices.

e. Plywood or Oriented Strand Board Sheathing: Comply with APA "Plywood Design Specification."

f. Expansion/Contraction Provisions: Design roof attachment system to allow for expansion and contraction of metal roofing, due to seasonal temperature variations, without detrimental effect to the roof panels.

1.4 SUBMITTALS

A. Submit under provisions of Section 013300 – Submittal Procedures.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Manufacturer's specifications and installation instructions for building components and accessories.
2. Preparation instructions and recommendations.
3. Storage and handling requirements and recommendations.

C. Shop Drawings: Showing roof framing, cross sections, roof and wall covering and trim details and accessory and component details clearly indicating proper assembly.

D. Structural Engineer Certification of building and foundation design: Letter signed by a Professional/Structural Engineer, registered to practice in the jurisdiction of the project, verifying compliance with Snow Design Requirements. Letter shall reference specific dead loads, live loads, wind loads, tributary area load reductions (if applicable) collateral loads, seismic loads, end use categories, and governing building code including edition and load applications.

E. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

F. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum ten years experience in producing pre-engineered wood buildings of the type specified.

B. Installer Qualifications: Installer Qualifications: Minimum three years experience in erection of pre-engineered wood buildings of the type specified.

C. Structural Engineer's Qualifications: Minimum of three years designing post frame structures; registered in the jurisdiction of the project.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation. Follow manufacturer's recommended storage procedures. Do not allow steel siding and roofing to contact the ground.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of authorities having jurisdiction.

1.7 PROJECT CONDITIONS

A. Anticipate environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 WARRANTY

A. Structural Design - Lifetime: Manufacturer warrants that the building will not experience an occurrence of structural failure or an occurrence of structural damage due to improper structural design on account of weather conditions, such as wind, ice, and snow, The foregoing warranty is limited to 50 years with respect to any Owner which is not an individual.

B. Preservative Treated Materials: 50 years. Preservative treated lumber, including structural columns, are warranted by the original materials manufacturer against failures due to fungal decay and termite infestation.

C. Roofing and Siding Finish, steel panel: Warranted by the original materials manufacturer for 40 years from the date of shipment. Refer to Warranty document for complete details.

D. Individual Building Products: Manufacturer's standard warranty.

E. Installation Warranty: One year general installation warranty, five years against roof leaks.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
   1. Lester Building Systems, 1111 2nd Ave. S., Lester Prairie, MN 55354; Web:www.lesterbuildings.com
   2. Morton Buildings, Inc., 563 Southampton Road, Westfield, MA, 01085; Web: www.mortonbuildings.com
   3. Other manufacturers offering similar systems as approved by the Project Manager.

2.2 STRUCTURAL FRAMING

A. Footings and Foundation:
   1. Column Foundation, Above Grade:
      a. Cast in place frost wall and foundation. Sized and reinforced as specified in the shop drawings. Foundation Design by Prefabricated Building Contractor. Installation by Concrete Contractor.

B. Primary Framing:

1. Columns:
    a. Untreated Lumber Section:
        1) Lumber: Lumber: No. 1 or Better Southern Yellow Pine or Douglas Fir-Larch or other equivalent NDS approved species/grade kiln dried to 19 percent maximum moisture content.
        2) Fabrication: Laminate individual pieces using ring shank feed nails per manufacturer's engineered nailing pattern.
        3) Grade and size shall be selected to support imposed loads within deflection limits.
    b. End Joint Connection of Treated and Untreated Sections: Factory fabricated finger joint.
    c. Configuration:
        1) Sidewall and Endwall Columns: 3 ply or 4 ply combining 2x4, 2x6, 2x8, or 2x10 (50x150, 50x200, 50x250 mm) dimension lumber as required by "Structural Design" requirements specified herein.
        2) Corner Columns: 2 ply or 3 ply 2x4, 2x6 or 2x8 (50x150, 50x200 mm) dimension lumber as required by "Structural Design" requirements specified herein.
    d. Column on Concrete Foundation:
        1) Provide cast-in-place anchors per shop drawings.
2. Trusses: Comply with "Structural Design" and "Quality Assurance" requirements as specified herein.
    a. Comply with TPI "Design Specification for Metal Plate Connected Wood Trusses" and "Quality Standard for Metal Plate Connected Wood Trusses."
    b. Manufacturer shall have a third-party inspection program to verify compliance with requirements of TPI.
    c. Stamp trusses with inspection agency identification.

C. Secondary Framing:
1. Purlins and Girts:
    a. Lumber: No. 2 or Better dimension lumber kiln dried to 19 percent maximum moisture content.
    b. Configuration: 2x4 or 2x6 or 2x8 (50x100, 50x150, 50x200 mm) as required by "Structural Design" requirements specified herein.
        1) Girts: Size, grade and spacing to meet wind and deflection criterion.
            a) Face mounted to exterior side of column OR
            b) Precision cut to fit between columns. Flush to exterior and interior faces.
        2) Purlins: Precision cut to fit between trusses flush with top of top chord. Provide 20 gauge galvanized purlin saddle hangers OR
        3) Purlins: Factory drilled and dadoed to accept 3/16 inch diameter x 6 inch screw fastener and ensure building modularity.
    c. Spacing: As required by "Structural Design" requirements specified herein.
2. Splashplank:
    a. Lumber: No. 2 or Better Southern Yellow Pine, preservative treated, to a retention of 14 pcf (2.2 kg/m3) of micronized copper azole.
    b. Configuration: 2x6 or 2x8 (50x 150 or 50x200 mm) dimension lumber. Milled S4S for single row and milled T&G for multiple rows.
3. Sill Plate:
    a. Lumber: No. 2 or Better Southern Yellow Pine, preservative treated, to a retention of 0.17 pcf (B2O3) borate (0.25 pcf disodium octaborate tetrahydrate

DOT) and kiln dried after treating to 19 percent maximum moisture content.
b. Configuration: 2x4 or 2x6 or 2x8 or 2x10 (50x100 or 50x150 or 50x200 or 50x250 mm) dimension lumber as required by "Structural Design" requirements specified herein.

4. Bracing, Wall and Lateral Truss Type (where required by "Structural Design"):
a. Lumber: No. 2 or Better dimension lumber.
b. Configuration:
1) 2x4 or 2x6 (50x100, 50x150 mm) as required by "Structural Design" requirements specified herein.

2.3 CONCEALED FASTENER, LAP-SEAM, METAL ROOF PANELS

A. Description: Metal roof panels with side edges lapping adjacent panels. Secured to supports using fasteners through the major ribs. Fasteners concealed with snap-on batten. Include accessories required for weathertight installation.
1. Configuration
a. Roll-formed; 36-inch coverage width. Provide panels covering up to 50-foot lengths in single pieces.
b. Rib profile, 1-inch high trapezoidal major ribs 18 inches on center. Reversed minor ribs 3-inch wide on centers spaced symmetrically.
c. One outboard corrugation as overlapping.
d. Opposite outboard corrugation as underneath corrugation with full return leg to support side lap.
e. Outboard side Lap Height with Batten (H by W): 1.5 by 1 inches.
f. Factory cut to required length.
g. Eave: Hemmed.
h. Eave: 24” overhang.
i. Rake: 12” overhang.
2. Material and Finish: 26-gauge steel, ASTM A 792 Class AZ50 Galvalume, coated both sides, 0.0187 inches (.474 mm) thick.
a. Exterior Surface Finish: Bonderize and provide baked-on primer and factory applied baked-on 70 percent Kynar 500 or Hylar 5000 PVDF fluoropolymer resin-based paint coating manufactured by Valspar, with a minimum dry film thickness of 0.7 - 0.8 mil.
b. Color to be as selected by Owner from Manufacturer’s full range.
1) Roof Color:

B. Fasteners: DS2000 coated No. 14 piercing screws with 3/8 inch hex head pre-assembled to 1/2 inch O.D. dome seal or bond seal galvanized steel ASTM A153, and EPDM washers.

2.4 ROOFING ACCESSORIES

A. Steel Ridge Cap:
1. The cap materials and construction shall match the roof steel materials and construction.

B. Vents: Ridge vent as shown on Drawings.

C. Eave Overhang Fascia Flashing:
1. Size: 24 inches nominal.
2. Fascia Flashing Color: TBD
3. Vented Soffit Color: TBD.

D. End Overhang Fascia Flashing:
   1. Size: 12 inches nominal.
   2. Fascia Flashing Color: TBD
   3. Vented Soffit Color: TBD.

E. Gutters and Downspouts: Provide manufacturer's standard gutters and downspouts as shown on Drawings.

F. Closure Strips: Closed cell, 2 pcf density polyethylene foam, premolded to match configuration of panels.

2.5 SIDING

A. Sheathing: 7/16” OSB with integrated water and air resistive barrier.
   1. Engineereed wood panel designed to meet Structural 1 rating requirements.
   2. Taped as per manufacturer’s written instructions. Tape to itself, windows and doors.
   3. Use Siga-Fentrim tape to seal sheathing to foundation.

B. Siding: Ribbed panel as described below.
   1. Material and Finish: 26 Gauge, ASTM A 653, Structural Quality, Grade 80 (550) (formerly Grade E), AZ50 (Z180) zinc coating both sides, Triple Spot Test.
      a. Exterior Surface Finish:
         1) Bonderize and provide baked on primer and factory applied, baked-on 70% Kynar 500 or Hylar 5000 PVDF fluoropolymer resin based Fluropon paint coating as manufactured by Valspar, 0.9 mil (0.023 mm) minimum dry film thickness.
         2) Gloss (60 Degrees): ASTM D523, 20 to 80.
         3) Pencil Hardness: ASTM D3363, F to 2H.
         4) T-Bend: ASTM D4145: 2T to 4T.
      b. Color to be as selected by Owner from Manufacturer’s full range.
         1) Base/Wainscot Color:
         2) Wall Color:
   2. Configuration:
      a. Roll-formed; 36 inch (915 mm) coverage width. Provide panels covering up to 35 foot (10.5 m) lengths in single pieces.
      b. Four major corrugations, 7/8 inch (22 mm) high, spaced 12 inches (305 mm) on center with 3 minor corrugations, 1/8 inch (3 mm) high, spaced 3 inches (76 mm) on center between each major corrugation.
      c. Form one outboard corrugation as overlapping corrugation.
      d. Form opposite outboard corrugation as underneath corrugation with full return leg to support side lap and a continuous anti-siphon drain channel.
      e. Factory cut to required length.
      f. Factory miter cut gable ends.
      g. Material and Finish: As shown on Erection Drawings, except as specified herein.
      h. Fasteners: Color coated No. 10 piercing screws with 1/4 inch (6 mm) hex head pre-assembled to 1/2 inch (13 mm) O.D. dome seal or bond seal galvanized steel and EPDM washers.

C. Siding Accessories:
   1. Wall Trim and Flashings: Manufacturer's standard wall trim and flashings.
   2. Louvers: Manufacturer's standard sheet metal unit with 1/2 inch (13 mm) hardware

cloth screen, pre-finished enamel selected from standard colors, 18 x 24 inch (457 x 610 mm) size.

3. Closure Strips: Closed cell, 2 pcf (32 kg/m^3) density polyethylene foam, premolded to match configuration of panels.
4. Material and Finish: As shown on Erection Drawings, except as specified herein.

2.6 INSULATION (ADD ALTERNATE ONE: MODULES ONE AND THREE)

A. Blanket Insulation: ASTM C 665, Type II, Class C, Fiberglass Blanket, located between framing and exterior sheathing:
   1. Thermal Resistance: R-19 (R-3.34).

B. Vapor barrier: 8 mil poly to be installed on the warm side of walls and ceilings.

2.7 INTERIOR FINISH - WALLS AND CEILINGS (ADD ALTERNATE ONE: MODULES ONE AND THREE)

A. Steel Panel:
   1. Type: Ribbed panel - 30 Gauge, ASTM A 653, Structural Quality, Grade 80 (formerly Grade E), galvanized steel with G40 (Z120) zinc coating both sides, Triple Spot Test. Color: Liner White.

2.8 PERSONNEL DOORS

A. Steel Frame, Steel Clad, Hinged Doors: Commercial Quality.
   1. Thermally Broken Doors:
      a. Frame: 16 gauge, G60 galvanized, 50 ksi, thermally broken.
         1) Sill: Thermally-broken extruded aluminum, 0.062 inch minimum wall thickness, 1/2 inch low-profile, ADA compliant sill.
         2) Head: Thermally-broken extruded aluminum, 0.062 inch minimum wall thickness, field installed snap-in parting stop.
         3) Overall Frame Depth: 3-1/2 inches.
         4) Weatherstripping: Field-installed, frame-mounted, dual seal, bulb and leaf, extruded Santoprene sides and head; bulb and wand Alcryn sweep bottom rail.
      b. Door Panel: 1-3/4 inches thick, pressure injected, 2.2 pcf polyurethane foam insulation, R-12. 24 gauge, G60 galvanized steel skin, both sides, rolled edges wrap into the stiles and rails. No perimeter frame.
         1) Rails and Stiles: Pultruded figerglass rails and tiles, painted to match skins.
         2) Reinforcing: High density molded urethane reinforcing blocks at lock, deadbolt, panic hardware and closer locations.
         3) Hardware Preparation: 2-3/4 inch backset with 2-1/8 inch diameter lock bore hole.
         4) Finish: Factory-painted siliconized polyester.
   2. Glazing:
      a. Glass: Tempered glass, ASTM C1048.
      b. Door Lites: 22 by 36 inch lite, 3/4 inch double pane insulating glass with 1/2 inch air filled space.
         1) Grid: None.
   3. Grade 2 Commercial Hardware: Coordinate with Owner’s keyless entry security system.

a. Lever-Lever Lockset: Entry, privacy and passage models as applicable, satin chrome finish, 1/2 inch stainless steel latch bolt, anti-lockout feature.
b. Deadbolt: Satin chrome finish, 1 inch hardened throwbolt, free spinning cylinder collar, double ball-bearing anti-drill design.
c. Hinges: Three 4x4 stainless steel ball-bearing hinges with tamperproof pins.

4. Installation Accessories:
   a. Corrugated Steel Siding:
      1) Steel J flashing at head, standard color.
      2) Steel C flashing at jambs, standard color.
      3) Sealant, Manus 75-A caulk, color matched to siding.

2.9 WINDOWS

A. Vinyl Framed Windows: Basis of Design equal to Mathew Brothers, Clara Starrett model windows.

B. Tested according to AAMA and NRFC standards, and Energy Star rated.
   1. Fixed
      a. 3/4” insulated Low E, argon filled glazing
      b. Warm edge spacer
      c. U Value = 0.24 maximum
      d. Air infiltration less than 0.01 cfm/ft2
      e. Water resistance = 12.1 psf
      f. Design pressure = 60.19 psf
      g. Install drywall receiver if alternate to finish garage modules is accepted.

   2. Awning
      a. 3/4” insulated Low E, argon filled glazing
      b. Warm edge spacer
      c. U Value = 0.24 maximum
      d. Air infiltration less than 0.04 cfm/ft2
      e. Water resistance = 12.1 psf
      f. Design pressure = 60.19 psf
      g. Install drywall receiver if alternate to finish garage modules is accepted.

   3. Casement
      a. 1- 1/8” triple glazed, Low E, argon filled
      b. Warm edge spacer
      c. U Value = 0.19 maximum
      d. Air infiltration less than 0.01 cfm/ft2
      e. Water resistance = 9.20 psf
      f. Design pressure = 60.19 psf
      g. Multi-point locking system
      h. Provide egress hardware in Bunk Room.
      i. Install drywall receiver

C. Features
   a. 20-year manufacturer’s warranty on windows and sealed units
   b. White interior and exterior frame and sash.
   c. White hardware.
   d. Interior weep system.
   e. Sloped sill.

f. Insect screen on operable sash.

D. Installation
1. Use drywall receiver on all windows, three side to accept ½" gypsum wall board.

2.10 JOINT SEALANT MATERIAL

A. Sealant: 100% neutral curing silicone sealant or manufacturers standard. Color: Clear.

B. Tape Sealant: where required by manufacturers specifications for water tight seals.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that site conditions are acceptable for erection/installation of pre-engineered wood building system.

B. Coordinate with responsible entity to perform corrective work on unsatisfactory conditions.

C. Commencement of work by erector/installer is acceptance of site conditions.

3.2 ERECTION- STRUCTURAL FRAMING

A. Erect in accordance with manufacturer's instructions and approved shop drawings.

B. Provide temporary erection and wind load bracing to maintain structure plumb and in alignment until installation of permanent bracing and/or roofing and wall coverings are completed.

C. Do not field cut or alter structural members without approval of Architect and manufacturer.

3.3 INSTALLATION

A. Erect building per manufacturer's instructions and sequencing.

B. Metal Roofing:
1. General: Install in accordance with manufacturer's instructions. Secure to structural framing aligned, level and plumb. Space fasteners as shown on Erection Drawings.
2. Sidelap: Minimum one full corrugation.
3. Endlap: 8 inches for slopes 4 in 12 to 5 in 12. Secure together over and to structural members.
4. Accessories: Install as shown on Erection Drawings.

END OF SECTION

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