Addendum #1

Directorate of Facilities Engineering 18 August 2020

This Addendum modifies, amends, and supplements designated parts of the Contract Documents, Specifications and Drawings for:

Repair Hangar Doors, Building #254, B.I.A., Bangor, Maine, BGS Project Number 3229, DFE Project Number 23SR13-414-D, Bid Number 21-002.

It shall be the responsibility of the Contractor to notify all Subcontractors and Suppliers for various portions of the work of any changes or modifications contained in this Addendum.

Specification Items:

1. Replace Section 00 01 0 Table Of Contents, page 1 of 2 with enclosed revised Section 00 01 0 Table Of Contents with page 1 of 2. Note, Section 01 11 00 Summary Of Work has been removed.

2. Remove Section 01 11 00 Summary Of Work from the contract.

3. Replace Section 00 11 13 Notice To Contractors, page 1 of 3 with enclosed revised Section 00 11 13 Notice To Contractors, page 1 of 3. Technical Submission requirement with Bid Proposal has been removed.

4. Replace Section 00 41 13 Contractor Bid Form, page 2 of 3 with enclosed revised Section 00 41 13 Contractor Bid Form, page 2 of 3. Addendum #1 is noted on page 2 of 3.

5. Replace Section 00 52 13 Construction Contract, page 4 of 5 with enclosed revised Section 00 52 13 Construction Contract page 4 of 5. Addendum #1 is noted on page 4 of 5.

6. Replace Section 01 00 00 Administrative Provisions pages 1 of 26 with enclosed revised Section 01 00 00 Administrative Provisions pages 1 of 26. Definition of Construction Drawings and Shop Drawings have been updated. Submission of Construction Drawings and Shop Drawings have been updated.

7. Replace Section 08 34 16.10 Steel Sliding Hangar Doors pages 1 of 19 with enclosed revised Section 08 34 16.10 Steel Sliding Hangar Doors pages 1 of 16.

Clarification Items:

1. Question: No questions at this time

Drawing Items:

1. Remove Drawings Sheet A-102 Plan and Elevation, replace with revised Drawings Sheet A-102 Plan and Elevation.

2. Remove Drawings Sheet C-101 Site Plan and Civil Notes, replace with revised Drawings Sheet C-101 Site Plan and Civil Notes.

00 01 10
Table Of Contents

DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMETNS

00 11 13
Notice to Contractors

Repair Hangar Doors, Building #254, B.I.A., Bangor, Maine, BGS Project Number 3229, DFE Project Number 23SR13-414-D, Bid Number 21-002

This is a performance based contract. The Contractor shall install all new Hangar Door components in accordance with the Unified Facilities Guide Specification (UFGS) 08 34 16.10. The Hangar Doors must be replaced. The Base Bid shall be based on providing New Hangar Doors, wall partitions, structural upgrades, Hangar Door Electrical Systems, Rail System, Drainage System, Electric Snow Melt System, and Building Automation Control Systems. Compliance with the Unified Facilities Guide Specification (UFGS) 08 34 16.10 may cause required structural building upgrades such as building soffit expansions and expansion of two Hangar Door storage rail curb areas.

Alternates may be applied against the Base Bid in the form of Alternate Deductions. The Contractor may use the existing Hangar Door Systems, such as existing Rail System, existing Drainage System, existing Electric Snow Melt System and existing Building Automation Control Systems connected to the existing Electric Snow Melt System as long as these systems comply with specification UFGS 08 34 16.10. The Hangar Door Systems that do not comply with specification UFGS 08 34 16.10 shall not be accepted. Alternates #1, #2, #3 and #4 provide a $0.00 dollar amount at each Alternates Item where the existing systems do not comply with specification UFGS 08 34 16.10.

Alternate #1 – Deduction – The Hangar Door existing Rail System will not be replaced and will comply with specification UFGS 08 34 16.10.

Alternate #2 – Deduction – The Hangar Door Electric Snow Melt System will not be replaced and will comply with specification UFGS 08 34 16.10.

Alternate #3 – Deduction – The Hangar Door existing Drainage System will not be replaced and will comply with specification UFGS 08 34 16.10.

Alternate #4 – Deduction – The Hangar Door existing Building Automation Control Systems connected to the existing Electric Snow Melt System will not be replaced and will comply with specification UFGS 08 34 16.10.

The Contractor shall furnish and install all items in accordance with Plans and Specifications prepared by: SRL Architects.

The cost of the work is approximately $ 1,200,000. The work to be performed under this contract shall be completed on or before the Final Completion date of *30 June 2021*.

1. Bids shall be submitted in sealed envelopes plainly marked "**Bid for *Repair Hangar Doors, Building #254, B.I.A., Bangor, Maine, BGS Project Number 3229, DFE Project Number 23SC19-305-D, Bid Number 20-028***" and addressed to the Bid Administrator:
   Directorate of Facilities Engineering
   194 Winthrop Street, Building #7, Camp Keyes
   Augusta, Maine 04330
   Attn: Mrs. Sherrill Hallett

3. The Bidder acknowledges receipt of the following addenda to the specifications and drawings:

   Addendum No. 1 Dated: 18 Aug. 2020

   Addendum No. _____ Dated: _____

   Addendum No. _____ Dated: _____

   Addendum No. _____ Dated: _____

   Addendum No. _____ Dated: _____

4. Bid security *is required* on this project.
   If noted above as required, the Bidder shall include a satisfactory Bid Bond (section 00 43 13) or a certified or cashier's check for 5% of the bid amount with this completed bid form submitted to the Owner.

5. Filed Sub-bids *are not required* on this project.

8.2 Specifications: ***28 July 2020***

8.3 Drawings: ***28 July 2020***

8.4 Addenda: ***Addendum #1 - 18 Aug. 2020***

SECTION 01 00 00

ADMINISTRATIVE PROVISIONS

PART 1 GENERAL

1.01 CONTRACT REQUIREMENTS

A. Scope of Work

1. This is a performance based contract. The Contractor shall install all new Hangar Door components in accordance with the Unified Facilities Guide Specification (UFGS) 08 34 16.10. The Hangar Doors must be replaced. The Base Bid shall be based on providing New Hangar Doors, wall partitions, structural upgrades, Hangar Door Electrical Systems, Rail System, Drainage System, Electric Snow Melt System, and Building Automation Control Systems. Compliance with the Unified Facilities Guide Specification (UFGS) 08 34 16.10 may cause required structural building upgrades such as building soffit expansions and expansion of two Hangar Door storage rail curb areas.

2. Alternates may be applied against the Base Bid in the form of Alternate Deductions. The Contractor may use the existing Hangar Door Systems, such as existing Rail System, existing Drainage System, existing Electric Snow Melt System and existing Building Automation Control Systems connected to the existing Electric Snow Melt System as long as these systems comply with specification UFGS 08 34 16.10. The Hangar Door Systems that do not comply with specification UFGS 08 34 16.10 shall not be accepted.

3. The Contractor shall furnish and install all items in accordance with Plans and Specifications prepared by: SRL Architects.

B. Contract Method

1. Basis of award of this Contract will be in accordance with Section 1 Instructions to Bidder, Paragraph 2.

2. Contract type: State of Maine – Bureau of General Services, Construction Contract, Section 00 52 13.

3. The project will be constructed under a single lump sum contract.

C. Work Sequence

1. Work of the Contract and related provisions are as described in the Contract Documents.

D. Contractor Use of Premises

1. The Contractor shall only have use of one half of the Building #245 at any given time. The MEARNG shall store Helicopters in the unused section of the Hangar. During the Construction Phase if inclement weather is predicted the Owner reserves the right to request that the Contractor halts their construction activates, clean and empty the building. The MEARNG will need to store their Helicopter inside the building until the inclement weather has pasted and the Helicopter are safe to be store outside of the building.

2. The Owner shall work with the Contractor to try and keep building disruptions to a minimum.

3. Work of this Contract includes coordinating the work with the daily operations of the Owner.

4. Limit use of premises for Work and construction operations only, allow for Owner occupancy, work by other Contractors, and public access.

5. Federal and State Holiday Schedule. The Contractor may not work on Federal or State Holidays; non-working days of this Contract for FY 2020 are 12 October, 11, 26, 27 November, 24, 25 December, for FY 2021 are 18 January, 15 February, 19 April, 31 May.

6. Limit access to Owner's site, hours of operations are 7:00 A.M. - 4:00 P.M. If Contractor would like to work on a federal or state holiday he/she must request permission from Owner three working days in advance. The Owner reserves the right to accept or reject Contractor's request.

7. The Contractor must work with each organization to gain access to certain area through-out the building. When the Contractor needs to gain access to certain areas, he must notify each organization seven working days in advance.

8. Coordinate use of premises under direction of Owner.

9. The Contractor shall be responsible for his/her security in Construction Area until substantial completion. The Contractor shall coordinate security of Building with Owner.

E. Owner Occupancy

1. Owner will occupy surrounding areas during entire period of construction, to conduct Owner's normal operations. The Contractor shall cooperate with Owner to minimize conflict to the Owner's operations.

F. Owner-furnished Products: Not Used

G. Schedule of Allowances: Not Used

H. Deductive Alternate:

All Hangar Door Systems shall comply with UFGS 08 34 16.10. The Contractor shall furnish and install all items in accordance with Plans and Specifications prepared by: SRL Architects.

1. Alternate #1 – Deduction – The Hangar Door existing Rail System will not be replaced and will comply with specification UFGS 08 34 16.10.

2. Alternate #2 – Deduction – The Hangar Door Electric Snow Melt System will not be replaced and will comply with specification UFGS 08 34 16.10.

3. Alternate #3 – Deduction – The Hangar Door existing Drainage System will not be replaced and will comply with specification UFGS 08 34 16.10.

4. Alternate #4 – Deduction – The Hangar Door existing Building Automation Control Systems connected to the existing Electric Snow Melt System will not be replaced and will comply with specification UFGS 08 34 16.10.

I. Unit Prices: Not Used

J. Applications for Payment:

1. Submit Six (6) copies of each application under procedures of 00 72 13 Section 31, on B.G.S. Form "Requisition for Payment", revised 1 May 2020.

K. Coordination:

1. After the Contract is awarded. The Contractor shall provide Stamp Construction Drawings and Stamp Shop Drawings to demonstrate the construction method and components to be used on this project. The Hangar Doors shall comply with the Hangar Door Design Criteria specified in Unified Facilities Guide Specification (UFGS) 08 34 16.10. See other specifications for requirements of submission of Construction Drawings and Shop Drawings.

2. Work of this Contract includes coordination of the entire Work of the Project.

3. The Contractor shall obtain and pay for all necessary construction/building permits. The Contractor shall send **(two) copies** of all permits to the Owner.

4. Coordinate work with all utilities. Interruption of services shall be coordinated with an appropriate official at the facility to minimize the disruption of operations within the facility.

5. Notify an appropriate official at the facility at least three days in advance of the need to move furnishings, equipment, materials, etc. from areas to be affected by the construction.

6. Control on-site activities to minimize the disruption of the occupants.

7. Coordinate the work of equipment and material suppliers and subcontractors.

8. Make arrangements for the timely delivery of materials and supplies to the job site and for their temporary storage on site.

9. Maintain the project site in a neat condition.

10. Assist the Owner during periodic site visits and in the review of construction.

11. Maintain up to date progress records and as-built drawings.

L. CONFLICTS

1. Contractor shall notify Owner in writing of any real or apparent conflicts in the Contract Documents and, except in cases of emergency, await Owner's determination before proceeding.

2. The **Owner's Project Manager - Robert W. Palmer III** shall resolve conflicts that arise during construction.

3. If two or more solutions are indicated in the Contract Documents, the Contractor shall assume the cost of the more expensive solution unless otherwise directed by the Owner.

M. Field Engineering

1. The Contractor shall be responsible for all field engineering as required.

2. The Contractor shall be responsible to verify all field measurements.

2. The Contractor shall be responsible for all special inspections required to obtain a Building Permit from the **City of Bangor**.

3. Provide a written description of the Contractor's experience in manufacturing steel Sliding Hangar Doors. See Section 08 34 16.10 Steel Sliding Hangar Doors, Part 1 General- 1.4 A for additional requirements.

4. Provide a written description of the Contractor's experience in erecting steel sliding Hangar Doors. See Section 08 34 16.10 Steel Sliding Hangar Doors, Part 1 General- 1.4 B for additional requirements.

5. Provide resumes of the Contractor's Consultants of Record (DOR) that will be assigned to this project.

5. The Contractor shall also hire a Maine Licensed P.E. to review and stamp the Construction Drawings and Shop Drawings Submissions.

6. The Contractor shall provide Stamp Construction Drawings and Stamp Shop Drawings to demonstrate the construction method and components to be used on this project. The Hangar Doors shall comply with the Hangar Door Design Criteria specified in Unified Facilities Guide Specification (UFGS) 08 34 16.10. See other specifications for requirements of submission of Construction Drawings and Shop Drawings.

N. Field Testing and Inspections:

1. The Contractor shall carry all costs for testing and inspections required by the Contract Documents. The Contractor shall hire only Consultant approved and Owner approved independent testing agencies to perform all testing and inspections.

O. Reference Standards

1. For products specified by association or trade standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

2. The date of the standard is that in effect as of the Bid date, or date of Owner-Contractor Agreement when there are no bids, except when a specific date is given.

3. Obtain copies of standards when required by Contract Documents. Maintain copy at job site during progress of the specific work.

1.02 SCHEDULING AND PHASING OF WORK

A. Substantial Completion: Work of the Contract must be Substantially Completed by **1 June 2021** so that the Owner can have full use of interior space.

1. Except as otherwise specified, Substantial Completion is hereby defined to mean a stage of completion sufficient for the Owner to have full beneficial use and occupancy of the structure involved, less only minor corrections and repairs that can be performed without undue annoyance to building occupants which shall be documented on the "punch list" as specified hereinafter. Beneficial use and occupancy means removal of all debris, interior and exterior scaffolding, surplus equipment and material and cleaning as required under the Contract completed.

B. Final Completion of all Work of this Contract shall be by **15 June 2021**.

1. Except as otherwise specified, Final Completion is when the Work of the Contract has been completed in accordance with the terms and conditions of the contract documents with no “punch list” items open, and is ready for final payment.

C. The expiration date of this Contract is **30 June 2021.**

1. Except as otherwise specified, Expiration Date is hereby defined to mean the date when all engagements of the parties has ended, except to those which arise from the non-fulfillment of obligations created during its existence, such as warranties.

D. Normal building operations will continue throughout the length of the Project. The successful Contractor shall develop a schedule of work that is respectful of the Owner's needs but with a mutual understanding that temporary relocation of personnel within the building will be required.

E. Within ten (10) working days following receipt of the fully executed formal Contract Agreement by the Contractor, the Contractor shall prepare a proposed Phasing and Progress Schedule. The final Schedule shall be as mutually agreed to by the Owner and Contractor, and within the following guidelines:

1. The Owner's business operations must continue throughout the entire construction period.

2. Work within the building interior must comply with the Owner's requirements for continued use and occupancy.

3. Applicable egress codes must be complied with during the construction period. In particular, building entrances and exit ways must be kept open at all times.

1.03 REGULATORY REQUIREMENTS

A. Conform to Local, State and Federal codes.

1.04 PROJECT MEETINGS

A. Requirements:

1. Contractor shall, upon acceptance of a Contract and before commencing Work, contact the Owner and request a pre-construction conference as required in 00 72 13 Section 1.

B. Pre-construction Conference

1. The OWNER will administer pre-construction conference for execution of Owner-Contractor Agreement and exchange of preliminary submittals.

C. Progress Meetings

1. The Contractor shall schedule and administer Project meetings throughout progress of the Work, called meetings, and pre-installation conferences.

2. The Contractor shall make physical arrangements for meetings, prepare agenda with copies for participants, preside at meetings, record minutes, and distribute copies within two days to Owner, participants, and those affected by decisions made at meetings.

3. Attendance: Job superintendent, major Subcontractors and suppliers, Owner and those appropriate to agenda topics for each meeting.

4. Suggested Agenda: Review of Work progress, status of progress schedule and adjustments thereto, delivery schedules, submittals, maintenance of quality standards, pending changes and substitutions, and other items affecting progress of Work.

1.05 SUBMITTALS

A. Procedures

1. In all submittals always refer to project number **SR13-414-D.**

2. Refer to schedule of Contractor Deliverables provided by Owner/Consultant.

3. Submit the number of copies which Contractor requires, plus two copies, which will be retained by OWNER.

4. Submittals can be delivered electronically to both the Owner's Consultant and the Owner. If submitting by e-mail, submit to the Owner's Consultant for review, and the Owner for review, at the e-mail address below:

   Consultant: James Reuter jim@smithreuter.com

   Owner: Robert W. Palmer III - robert.w.palmer.nfg@mail.mil

5. Submittals can be delivered in paper form. Deliver copies of submittals to Consultant for approval at the address below:

   SRL Architects, 822 Grover Hill Road, Bethel, Maine 04217

   And one (1) copy to the Owner for review:

   Directorate of Facilities Engineering
   194 Winthrop Street
   BLDG 8, Camp Keyes – ATTN: **Robert W. Palmer III**
   Augusta, ME 04330

6. Submittal Sheets:

   a. Transmit each item under "Transmittal of Shop Drawings, Equipment Data, Material Samples, or Manufacturer's Certificates of Compliance" located at the end of this Section;

   b. During the Bidding Phase the Contractor shall send with their Bid Proposal all the Hangar Doors Technical Data Sheets and all the Components System Technical Data Sheets to describe how the Contractor shall Design the Hangar Door Ssytems to meeet the Design Criteria specified in Unified Facilities Guide Specification (UFGS) 08 34 16.10.

   c. After award of the Contract the Contractor shall design the Hangar Door Systems. The Contractor shall provide Stamp Construction Drawings and

Stamp Shop Drawings to demonstrate the construction method and components to be used on this project. The Hangar Doors shall comply with the Hangar Door Design Criteria specified in Unified Facilities Guide Specification (UFGS) 08 34 16.10. See other specifications for requirements of submission of Construction Drawings and Shop Drawings.

d. Identify Project, Contractor, Subcontractor, major supplier.

e. Identify drawing sheet and detail number, and Specification Section number, as appropriate.

f. Identify deviations from Contract Documents.

7. Comply with progress schedule for submittals related to Work progress. Coordinate submittal of related items.

8. CONSULTANT shall have 14 calendar days for review of submittals.

9. After **CONSULTANT** review of submittal, revise and resubmit as required identifying changes made since previous submittal.

10. Distribute copies of reviewed submittals to concerned persons. Instruct recipients to promptly report any inability to comply with provisions.

B. Quality Assurance; Substitutions, in accordance with Section 01 00 00, para. 1.08 (E).

C. Construction Progress Schedule

1. Submit an Initial Progress Schedule in duplicate. See 1.05.A.3 this section for submission information. After review by OWNER revise and resubmit as required.

2. The Contractor shall submit **two (2)** copies of the Final Construction Progress Schedule within 4 calendar days of OWNER review.

3. Submit revised schedules with each Application for Payment, reflecting changes since previous submittal.

D. Submittal Schedule

1. Submit a Submittal Schedule in duplicate within twenty (20) working days following receipt of the fully executed formal Contract Agreement by the Contractor. After review by **OWNER** and the **CONSULTANT** revise and resubmit as required.

2. Prepare the schedule in chronological order. Provide the following information:

a. Schedule date for the initial submittal.

b. Related section number.

c. Submittal category (Construction Drawings, Shop Drawings, Product Data, or Samples).

d. Name of Subcontractor.

e. Description of the part of Work covered.

f. Scheduled date for resubmittal.

g. Scheduled date for the Architect's final release of approval.

3. Show submittal dates required for Shop Drawings, Product Data, and Samples, and product delivery dates, including those furnished by Owner and those under Allowances as applicable.

E. Schedule Of Values

1. Submit Contract Schedule Of Values in duplicate within 10 days after date of Owner - Contractor Agreement. The Contractor shall include in their Contract Schedule of Values a Closeout Documentation Line Item. The Closeout Documentation Line Item shall consist of 5% of the total contract amount. This Closeout Documentation Line Item is to ensure that all Closeout Documentation are provided to the Owner and Consultant in a timely manner as stated in these Contract Documents.

2. Submit typed schedule on "Requisition for Payment", Form Section 00 62 76, BREM revised 24 May 2019.

3 Format: Table of Contents of this Project Manual.

4. Include in each line item a directly proportional amount of Contractor's overhead and profit.

5. Revise schedule to list change orders, for each application for payment.

F. Construction/Shop Drawings

1. Construction/Shop drawings will be submitted to the Owner, in accordance with para. 1.05 of this Section and accordance with the Unified Facilities Guide Specification (UFGS) 08 34 16.10. Construction/Shop drawings shall demonstrate to the Owner how all the new Hangar Door Systems shall be integrated into one complete and useable Hangar Door System. Construction/Shop Drawings at a minimum shall consist of:

a. Construction of new Hangar Doors.
b. Construction of new wall partitions and new building structural upgrades to accommodate the Hangar Doors.
c. Construction of new Hangar Door Electrical Systems.
d. Construction of new Rail System.
e. Construction of new Hangar Door Drainage System.
f. Construction of new Electric Snow Melt System.
g. Construction of new Building Automation Control Systems to control the Electric Snow Melt System.

2. See other specifications for requirements of submission of Stamp Construction Drawings and Stamp Shop Drawings.

G. Product Data

1. Mark each copy to identify applicable products, models, options, and other data; supplement manufacturers' standard data to provide information unique to the Work.

2. Submit the number of copies required in 1.05.A.3, this Section.

H. Manufacturer's Instructions

1. Submit the number of copies required in 1.05.A.3, this Section, of Manufacturer's Instructions.

I. Samples - Provide samples as described in other specifications.

J. Field Samples Not Used

K. Background Check Requirements:

1. Anyone allowed into the facility by the contracted vendor's personnel is considered to be a representative of the contractor and is required to have a prior approved background check before gaining access into the facility.

2. All Contractors/vendors must be in possession of a valid (not suspended, revoked, or expired) official government issued photo credential (i.e. driver's license, state issued identification card, etc.) and be screened through National Crime Information Center prior to being issued a Contractor Badge.

3. The Contractor shall supply a list of personnel who may be either involved in the work effort or be present at the facility to the Owner. The list shall be supplied to Owner within two weeks after the award of the contract or two weeks prior to the beginning of the contract work, whichever comes first. Owner will provide Contractor with an excel spreadsheet to fill in with required employee information.

4. The required employee information shall include: Company name, first name, middle initial, last name, suffix, maiden name(s), date of birth, gender, Driver License Number and State, Social Security Number, and Address with street, city and state for each person.

5. Results from the NCIC background check are controlled under the Privacy Act of 1974 and not permitted to be given to anyone not acting in a Security Force capacity. No details of the background check will be revealed other than a pass/fail or suspended/revoked.

6. The Department retains the right to screen and restrict from the facility, personnel employed by or who represent the contractor, who do not receive a satisfactory/passing background check.

7. The Department will provide to the Contractor the names of those personnel that are acceptable for access to facilities and those who are not acceptable for unescorted access.

8. Contractors/vendors with acceptable background checks will be issued Contractor Badges for that individual's unescorted entry. The badges will be issued for the duration of the contract, or service agreement, not to exceed two years.

1.06 QUALITY CONTROL

A. Quality Control, General

1. Maintain quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

B. Workmanship

1. Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.

2. Perform work by persons qualified to produce workmanship of specified quality.

3. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.

C. Manufacturers' Instructions

1. Comply with instructions in full detail, including each step in sequence. Should instructions conflict with Contract Documents, request clarification from Owner before proceeding.

D. Manufacturers' Certificates

1. When required by individual Specifications Section, submit manufacturer's certificate, in duplicate, those products that meet or exceed specified requirements.

1.07 CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

A. Electricity

1. All temporary work shall be provided in conformity with the National Electric Code, State laws, and requirements of the power company
2. The Contractor shall be allowed to hook to existing electrical panel in building, for temporary power. The Contractor will not disrupt power at building. The Owner will only pay for cost of electricity.
3. The Contractor shall provide all temporary electrical panels.
4. The Contractor shall be responsible to fix any damages, caused by modifications for temporary services.

B. Lighting

1. The Contractor shall provide source of lighting.

C. If Required, Temporary Heat

1. The Contractor shall prove temporary heat and equipment in interior spaces:
    a. The Contractor shall not use electrical heating units if the Owner is supplying electrical power to the Contractor.
    b. The Contractor shall be completely responsible for providing all equipment and labor required to comply with this section.
    c. The Contractor shall utilize the services of a qualified Heating subcontractor for providing Temporary Heat. These services shall be paid for by the Contractor.
    d. At no time shall any part of the building served by the boiler be allowed to be without heat if called upon by the building control system.
2. Temporary heating system work shall be performed under the direct supervision of individuals properly licensed to perform the necessary work.
3. All temporary work shall be provided in conformity with all applicable codes, State laws, and requirements of the utility company.
4. The Contractor shall pay the costs of all fuel required for temporary heating until Substantial Completion, unless specified otherwise.
5. Utilizing the Permanent Heat Distribution System for Temporary Heat:
    a. The Contractor may, with the approval of the Owner, elect to utilize the permanent heat distribution system for temporary heat.
    b. If the permanent heat distribution system cannot be utilized or if work requires a shutdown of the existing system the Contractor shall make arrangements, acceptable to the Owner, to comply with this requirement at no additional cost to the Owner.
    c. The Contractor shall furnish and pay the costs of any materials and equipment which are not part of the permanent heating system and which may be required to operate the permanent heat distribution system on a temporary basis.
6. Unit heaters, if used, shall be of the smokeless type and be installed and operated in such a way that finished work will not be damaged. "Salamanders" shall not be used.
7. Providing temporary heating service and equipment for exterior work:
    a. Installation of weather protection and heating devices shall comply with all safety regulations including provisions for adequate ventilation and fire protection devices.
    b. Unit heaters, if used, shall be of the smokeless type and be installed and operated in such a way that finished work will not be damaged. "Salamanders" shall not be used.

D. Water

1. The Contractor shall be allowed to hook to existing water in building, for temporary water supply. The Contractor will pay for cost of water usage for dust control and compaction [large amounts of water].

E. Sanitary Facilities

1. The Contractor shall provide their Sanitary Facilities.

F. Barriers

1. Provide as required to prevent public entry to construction areas, to provide for Owner's use of site, and to protect existing facilities and adjacent properties from damage from construction operations.

G. The Contractor will provide:

1. Office Trailer: Weather tight, with lighting, electrical receptacles, heating, cooling and drawing display table. The office trailer will have separate office space for the project manager to conduct his/her daily business.

2. Storage Sheds for Tools, Materials, and Equipment: Weather tight, with adequate space for organized storage and access, and lighting for inspection of stored materials.

3. His/her own on-site telephone, if so required for the conduct of his/her business.

4. Protected storage, if necessary.

5. Temporary barricades to separate the Contract Site areas from the Owner's area or public area.

H. Protection And Restoration

1. The Contractor shall be responsible for all damages to furnishings, equipment, supplies, existing construction, including finished surfaces, caused by Work of Contract.

2. The Contractor shall be fully responsible for maintaining weather-tight integrity of the roofing system and wall systems, including permanent and temporary flashings, during the entire construction period.

3. The Contractor's responsibilities shall include the cost to repair damage to the existing building's structure, finishes and contents associated with the Contractor's failure to maintain the watertight integrity of the roofing system and wall system, whether permanent or temporary, at no additional cost to the Owner.

4. The Contractor shall protect paved areas and lawns around the Building from damage associated with the construction. Costs to repair damage to paved areas and lawns

will be deducted from Contractor's final payment to cover Owner's expenses to repair damage. The Owner will determine if damages to lawns are minor or major.

I. Security

1. Provide security program and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, and theft. Coordinate with Owner's security program.

J. Water Control Not Used

K. Cleaning during Construction

1. Throughout the construction period the Contractor shall be responsible for maintaining building and site areas affected by the Work in a standard of cleanliness.

   a. Retain stored items in an orderly arrangement allowing maximum access, not impeding traffic or drainage, and providing protection of materials.

   b. Completely remove all scrap, debris, waste material and other items not required for construction from the site at least once a week.

   c. Provide adequate storage for all items awaiting removal from the job site, observing requirements for fire protection and protection of the ecology.

2. Conduct daily inspection, more often if necessary, to verify that requirements for cleanliness are being satisfied.

3. Provide required personnel, equipment and materials needed to maintain the specified standard of cleanliness.

4. Use only those cleaning materials and equipment that are compatible with the surface being cleaned, as recommended by the manufacturer of the material.

L. Removal

1. Unless otherwise specified, materials to be removed, including all components and accessories, become property of the Contractor and shall be promptly removed from the Contract Site and legally disposed of at Contractor's expense.

2. Remove temporary materials, equipment, services, and construction prior to Substantial Completion inspection.

3. Clean and repair damage caused by installation or use of temporary facilities. Restore existing facilities used during construction to specified, or to original, condition.

4. The Contractor shall be responsible for removing and disposing of solid wastes (including construction/demolition debris) per Section 01 35 43.

1.08 MATERIAL AND EQUIPMENT

A. Products
   1. Products include material, equipment, and systems.
   2. Comply with Specifications and referenced standards as minimum requirements.
   3. Components required to be supplied in quantity within a Specification section shall be the same, and shall be interchangeable.
   4. Do not use materials and equipment removed from existing structure, except as specifically required, or allowed, by Contract Documents.
   5. ACBM (ASBESTOS CONTAINING BUILDING MAT'LS) NOT ALLOWED, materials containing asbestos in any manner or quantity are not allowed on this Project. If such materials are installed they shall be removed and replaced at no additional cost to the Owner.

B. Transportation and Handling
   1. Transport products by methods to avoid product damage; deliver in undamaged condition in manufacturer's unopened containers or packaging, dry.
   2. Provide equipment and personnel to handle products by methods to prevent soiling or damage.
   3. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

C. Storage and Protection
   1. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.
   2. Arrange storage to provide access for inspection. Periodically inspect to assure products are undamaged, and are maintained under required conditions.
   3. Products Specified by Reference Standards or by Description Only: Any product meeting those standards.
   4. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not specifically named.

D. Products List
   1. Within 15 days after date of Owner-Contractor Agreement, submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

E. Substitutions

1. Substitutions shall be submitted to Consultant a minimum of 7 days prior to bid date for review. Any substitutions not submitted 7 days prior to bid date shall not be reviewed or considered.

2. Do not assume that "or Equal" or terms of similar meaning indicate automatic approval of substitute products.

3. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.

4. Request constitutes a representation that the Contractor:

   a. Has investigated proposed product and determined that it meets or exceeds, in all respects, specified product.

   b. Will provide the same warranty for substitution as for specified product.

   c. Waives claims for additional costs, which may subsequently become apparent.

5. The OWNER will determine acceptability of proposed substitution, and will notify the Contractor of acceptance or rejection in writing within a reasonable time.

1.09 CONTRACT CLOSEOUT

A. Closeout Procedures

1. Submit Closeout Documentation to the Architect/Engineer 10 days prior to the Substantial Completion Date. The Architect/Engineer shall confirm that the Contractor has fulfilled the Contract Closeout Documentation Requirements 10 days prior to the Substantial Completion Date. The Contractor shall not submit for Final Application for Payment until the Architect/Engineer has notified the Owner that Contractor has fulfilled the Contract Closeout Documentation Requirements.

2. When the Owner considers the Work of this contract has reached Substantial Completion, the Contractor and Owner shall sign a Certificate of Substantial Completion (Section 00 65 16). Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. This Certificate of Substantial Completion will be prepared by the Architect/Engineer as stated in Specification 00 72 13, Section 37.4. When the Certificate of Substantial Completion has been signed by the Owner and the Contractor, the completed Certificate of Substantial Completion shall set the date for Substantial Completion of the work or a designated portion of the work.

3. When the Contractor considers the Work of this contract has reached final completion, the Contractor shall submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for OWNER's inspection. This written notification shall be submitted to the Owner 7 calendar days prior to the proposed inspection date. Per Specification 00 72 13, Section 36.4, the Contractor shall not call for final inspection of any portion of the Work that is not complete and permanently installed. The Contractor may be found liable for the expenses of individuals called to final inspection meetings prematurely.

4. In addition to submittals required by the conditions of the Contract, provide release of all liens, claims (Section 00 65 19) and submit final requisition.

5. The Contractor's failures to comply with Closeout Procedures, if the Closeout Documentation Requirements are not completed by the Substantial Completion Date. The Owner reserves the right to recover the costs to complete the Closeout Documentation Requirements from the Schedule of Values item Closeout Documentation Line Item. The Owner reserves the right to hire an Architect/Engineer to complete the required Contract Closeout Documentation.

6. Liquidated Damages: The minimum liquidated damages for this project shall be applied as described under Section 00 72 13 General Conditions, paragraph 37.5 and based on the Substantial Completion Date. The work to be performed under this contract shall be Substantially Completed on or before **1 June 2021.**

7. **Under this contract $250.00 dollars per day shall be charged as liquidated damages for work required beyond the Substantial Completion date.**

B. Final Cleaning

1. Execute prior to final inspection.

2. Clean site; sweep hard surfaced areas, rake clean other surfaces.

3. Remove waste and surplus materials, rubbish, and construction facilities from the Project and from the site. Owner will be responsible for cleaning after acceptance.

C. Project Record Documents

1. Store documents separate from those used for construction.

2. Keep documents current; do not permanently conceal any work until Owner has inspected and required information has been recorded.

3. At Contract closeout, submit documents with transmittal letter containing date, Project title, Contractor's name and address, list of documents, and signature of Contractor.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION

3.01 FINAL CLEANING

A. Execute final cleaning before final project assessment.

B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

C. Clean equipment and fixtures to sanitary condition with cleaning materials appropriate to surface and material being cleaned.

D. Replace filters of operating equipment.

E. Clean debris from roofs, gutters, downspouts, and drainage systems.

F. Clean site; sweep paved areas, rake clean landscaped surfaces.

G. Remove waste and surplus materials, rubbish, and construction facilities from site.

3.02 STARTING OF SYSTEMS

A. Coordinate schedule for start-up of various equipment and systems.

B. Notify Architect/Engineer seven days before start-up of each item.

C. Verify each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.

D. Verify tests, meter readings, and specified electrical characteristics agree with those required by equipment or system manufacturer.

E. Verify wiring and support components for equipment are complete and tested.

F. Execute start-up under supervision of applicable manufacturer's representative in accordance with manufacturers' instructions.

G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation before start-up, and to supervise placing equipment or system in operation.

H. Submit a written report stating the equipment or system has been properly installed and is functioning correctly.

3.03 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of products to Owner's personnel two weeks before date of Substantial Completion.

B. Use operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.

C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at equipment location.

D. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

E. Required instruction time for each item of equipment and system is specified in individual sections.

3.04 TESTING, ADJUSTING AND BALANCING – NOT USED

3.05 PROTECTING INSTALLED CONSTRUCTION

A. Protect installed Work and provide special protection where specified in individual specification sections.

B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

E. Prohibit traffic or storage upon waterproofed or roofed surfaces. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

F. Prohibit traffic from landscaped areas.

3.06 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:

1. Drawings.

2. Specifications.

3. Addenda.

4. Change Orders and other modifications to the Contract.

5. Reviewed Shop Drawings, Product Data, and Samples.

6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress, not less than weekly.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:

1. Manufacturer's name and product model and number.

2. Product substitutions or alternates used.

3. Changes made by Addenda and modifications.

F. Red-Line Drawings: Legibly mark each item to record actual construction including:

1. Measured depths of foundations in relation to finish main floor datum.

2. Measured horizontal and vertical locations of underground utilities and an appurtenances, referenced to permanent surface improvements.

3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.

4. Field changes of dimension and detail.

5. Details not on original Contract drawings.

G. Submit Closeout Documentation to the Consultant 10 days prior to the Substantial Completion Date. The Consultant shall confirm that the Contractor has fulfilled the Contract Closeout Documentation Requirements 10 days prior to the Substantial Completion Date.

3.07 OPERATION AND MAINTENANCE DATA

A. Submittal Requirements:

1. Submit three (3) copies of data on 8-1/2 x 11-inch (A4) text pages, bound in three (3) separate D side ring binders with durable plastic covers.

2. **Contractor shall provide the O&M Manual in electronic form on CD/DVD**. All sections of the electronic form of the O&M Manual shall be **searchable**, excluding drawings and warranties. Every effort should be made to have the "Technical Data" section searchable as well, with the understanding this may not be possible in some instances.

3. Prepare binder cover with printed title "OPERATION AND MAINTENANCE", title of project, location, project number, and subject matter of binder when multiple binders are required. A spine label with same information should also be provided.

4. Subdivide each binder's contents with permanent page dividers, logically organized, with tab titles clearly printed. Tabs should be organized and titled based on the Table of Contents.

B. Manual Submission

1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect/Engineer will review draft and return one copy with comments.

2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.

3. Submit one copy of completed volumes 15 days before final inspection. Draft copy will be reviewed and returned after final inspection, with Architect/Engineer comments. Revise content of document sets as required before final submission.

4. Submit two sets of revised final volumes in final form within 10 days after Receipt from Owner.

C. Contents

1. Project Summary: The first page in binder should include a paragraph describing the Project followed by a Contact List. The Contact List is to include DFE Project Manager name along with company name, contact name, address, and telephone number for the Architect/Engineer, Contractor, Subcontractors, and major equipment suppliers.

2. Drawings: Provide reduced copies of each plan printed on 11 x 17 pages and insert them after the Project Summary page. Also provide a CD/DVD in the back of each binder containing Record Drawing files in both Adobe PDF and AutoCAD Release 2018 format. AutoCAD drawings shall be delivered as stand-alone without X-references. If Drawing originally had X-references, Bind them using the Insert option and do not explode inserted block. The Architect shall also provide the AutoCAD Plot Style (CTB file) used for the drawings along with any and all images used within the drawings.

3. Table of Contents: Provide a Table of Contents(TOC) for the binder and place behind the reduced plans. If multiple binders are necessary, include a TOC for the entire submission, then a TOC for the individual binder. TOC should be a listing of all products or systems and the 6 required components below each.

4. Product/System Components: Provide the following information for each product and/or system. Provide additional requirements as specified in individual product specification sections.

    a. OVERVIEW and INFORMATION:
        i. Equipment Register: equipment description, model number(s), date of installation, installer w/contact info, supplier w/contact info, manufacturer w/contact info, warranty date, warranty details, estimated life / useful life.
        ii. Description of Complete Installation: A general description of the installation to provide a general understanding of the equipment and its operation.
        iii. Specific System Description: A technical description of each system of the installation, written to ensure it can be clearly understood by persons not familiar with the installation.
        iv. Performance Data: Technically description of the mode of operation of each system provided. This section provides functionality details.
        v. When applicable, include charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

    b. OPERATIONS:
        i. Manufacturers' technical literature as appropriate. For other than common accessories, where no manufacturer literature is available, provide a precise and concise description of the operation procedure in plain English.
        ii. Safe start-up, break-in, routine operation, shut-down, and emergency operations for the equipment installed including a logical step-by-step sequence of instructions for each procedure. Include summer, winter and special operating instructions.
        iii. List of all limiting conditions for equipment.
        iv. Control Sequence and flow diagrams for the system installed.
        v. A legend for color-coded services. A legend of the symbols used on the drawings, unless included on the drawings.
        vi. Schedules of the parameter settings of each protective device, including fixed and adjustable circuit breakers, protective relays, adjustable photoelectric switches, pressure switches, and any other control and monitoring device, as established during commissioning and maintenance.

    c. MAINTENANCE
        i. Emergency procedures, including telephone numbers for emergency services, and procedures for fault-finding.
        ii. Manufacturers' technical literature, as appropriate. Include original manufacturers' parts list, illustrations, assembly drawings, and diagrams required for maintenance.
        iii. Detailed recommendations for the frequency of performance of routine maintenance tasks

iv. List of procedures and tasks associated with preventative (routine) maintenance.
v. Procedures for safe trouble shooting, disassembly, repair and reassembly, cleaning, alignment, inspection and adjustment, including a logical step-by-step sequence of instructions for each procedure.
vi. Include summer, winter and special maintenance instructions.
vii. Maintenance Schedule: schedule of the frequency of the required or recommended maintenance, testing and inspection for each type of equipment. The schedule is to include weekly and monthly attendance times.
viii. Installation and dismantling instructions: Instructions for the proper installation and dismantling of the equipment.
ix. Spares and Consumables:
    1. Schedule of spares (including bearings) with an expected operating life less than 40,000 hours. Include expected replacement frequency, item label manufacturer name, address, and telephone number, catalogue number name and address of local distributor.
    2. Schedule of Consumable Items (oil, grease, belts, bearings) to be used during servicing.
    3. Furnish spare parts, consumable items, and extra products in quantities specified in individual specification sections and/or as recommended by manufacturer or requested by Owner. Deliver to project site and place in location as directed by Owner; *obtain receipt before final payment*.

d. TECHNICAL DATA
    i. Manufacturers' technical literature assembled specifically for the project and **excluding irrelevant matter.**
    ii. Each product data sheet marked to clearly identify the specific products and components used in the installation and the data applicable. Additional instructions and illustrations, as required, to identify and changes to the manufacturers' data or to illustrate the function of each component in the installation.
    iii. Provide performance curves and engineering data
    iv. Include control diagrams by controls manufacturer as installed.
    v. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
    vi. Shop drawings when provided

e. WARRANTIES
    i. Provide originals of Manufacturers' warranties and bonds executed in duplicate by responsible subcontractors, suppliers, and manufacturers, *within ten days after completion of applicable item of work*
    ii. All Guarantees
    iii. Certificates of compliance for all electrical and plumbing works, where applicable.
    iv. If installation is not by the manufacturer, and product warranty is conditional on the manufacturer's approval of the installer, submit the manufacturer's approval of the installing firm.
f. COMMISSIONING REPORTS

i. Air and water balance reports
ii. Include test and balancing reports as specified in Section 01 91 00.
iii. Records of test results
iv. Records of Commissioning Data

3.08 PRODUCT WARRANTIES AND PRODUCT BONDS

A. Execute and assemble transferable warranty documents and bonds from subcontractors, suppliers, and manufacturers.

B. Verify documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Submit before final Application for Payment.

E. Time of Submittals:

1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.

2. Make other submittals within ten days after Date of Substantial Completion, before final Application for Payment.

3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

END OF SECTION 01 00 00

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE (Read instructions on page two prior to initiating this form.)	DATE:	TRANSMITTAL NO

SECTION I – REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS (This section will be initiated by the contractor.)

TO:	**FROM:**	**DFE PROJECT NUMBER**	**CHECK ONE:** ☐ THIS IS A NEW SUBMITTAL ☐ THIS IS A RESUBMITTAL OF TRANSMITTAL NO. ____
SPECIFICATION SEC NO. (Cover only one section with each transmittal)	**PROJECT TITLE AND LOCATION:**		

ITEM NO. a.	DESCRIPTION OF ITEM SUBMITTED (Type size, model number/etc.) b.	MFG OR CONTR. CAT., CURVE DRAWING OR BROCURE NO. c.	NO. OF COPIES d.	CONTRACT REFERENCE DOCUMENT		FOR CONTR-ACTOR USE CODE g.	VARIATION (See instr. #6) h.	FOR DFE USE CODE i.
				SPEC PARA NO. e.	DRAWING SHEET NO. f.			
							☐	
							☐	
							☐	
							☐	
							☐	
							☐	
							☐	
							☐	

REMARKS	I certify that the above submitted items have been reviewed in detail and are correct and in strict compliance with the contract drawings and specifications except as otherwise stated. _____ SIGNATURE OF THE CONTRACTOR NAME:

SECTION II – APPROVAL ACTION

ENCLOSURES RETURNED (List by Item No.)	NAME, TITLE OF APPROVING AUTHORITY	DATE

DFE SUBMITTAL FORM, AUG 2010 SHEET 1 of 1

INSTRUCTIONS

1. Section I will be initiated by the Contractor in the required number of copies.

2. Each transmittal shall be numbered consecutively in the space provided for "Transmittal No.". This number, in addition to the DFE Project Number, will form a serial number for identifying each submittal. For example: 23SR10-470-D-T1

3. For new submittals or resubmittals mark the appropriate box; on resubmittals, insert transmittal number of last submission as well as the new submittal number.

4. Submittals requiring expeditious handling will be submitted on a separate form.

5. A separate transmittal form will be used for submittals under separate sections of the specifications.

6. A check shall be placed in the "Variation" column (Section I, Column h) when a submittal is not in accordance with the plans and specifications. Also, a written statement to that effect shall be included in the space provided for "Remarks".

7. The form is a self-transmittal, i.e. letter of transmittal is not required.

8. When a sample of material or Manufacturer's Certificate of Compliance is transmitted, indicate "Sample" or "Certificate" in Section I, Column c.

9. Directorate of Facilities Engineering approving authority will assign action codes as indicated below in space provided in Section I, Column i to each item submitted. In addition, they will ensure enclosures are indicated and attached to the form prior to return to the Contractor. The Contractor will assign action codes as indicated below in Section I, Column g to each item submitted.

THE FOLLOWING ACTION CODES ARE GIVEN TO ITEMS SUBMITTED

A – Approved as submitted
B – Approved, except as noted on drawings
C – Approved, except as noted on drawings. Refer to attached sheet resubmission required.
D – Will be returned by separate correspondence.
E – Disapproved (See Attached)
F – Receipt acknowledged.
FX – Receipt acknowledged, does not comply as noted with contract requirements.
G – Other (Specify)

10. Approval of items does not relieve the Contractor from complying with all the requirements of the contract plans and specifications

DIVISION 08 - OPENINGS

SECTION 08 34 16.10

STEEL SLIDING HANGAR DOORS

PART 1 GENERAL

1.1 REFERENCES

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

AISC 325	(2017) Steel Construction Manual
AISC 360	(2016) Specification for Structural Steel Buildings

AMERICAN IRON AND STEEL INSTITUTE (AISI)

AISI SG03-3 Cold-Formed Steel Design Manual Set	(2002; Suppl 2001-2004; R 2008)

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)

ASCE 7-16 Buildings and Other Structures	(2017; Errata 2018; Supp 1 2018) Minimum Design Loads and Associated Criteria for

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1/D1.1M	(2020) Structural Welding Code - Steel

ASTM INTERNATIONAL (ASTM)

ASTM A36/A36M	(2014) Standard Specification for Carbon Structural Steel
ASTM A123/A123M	(2017) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A653/A653M	(2019) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM A1008/A1008M	(2016) Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable
ASTM A1011/A1011M	(2018a) Standard Specification for Steel Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength
ASTM C920	(2018) Standard Specification for Elastomeric Joint Sealants

ASTM E84	(2018a) Standard Test Method for Surface Burning Characteristics of Building Materials

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA ICS 1	(2000; R 2015) Standard for Industrial Control and Systems: General Requirements
NEMA ICS 2	(2000; R 2005; Errata 2008) Industrial Control and Systems Controllers, Contactors, and Overload Relays Rated 600 V
NEMA ICS 6	(1993; R 2016) Industrial Control and Systems: Enclosures
NEMA MG 1	(2018) Motors and Generators

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2019; TIA 19-1; TIA 19-2; TIA 19-3; TIA 19-4; ERTA 1 2019) National Electrical Code
NFPA 220	(2018) Standard on Types of Building Construction
NFPA 409	(2016; ERTA 2016) Standard on Aircraft Hangars

U.S. DEPARTMENT OF DEFENSE (DOD)

UFC 1-200-01	(2019) DoD Building Code
UFC 3-301-01	(2019) Structural Engineering

UNDERWRITERS LABORATORIES (UL)

UL 506	(2017) UL Standard for Safety Specialty Transformers

1.2 SUBMITTALS

SD-01 Preconstruction Submittals

Manufacturer's Qualifications

Installer's Qualifications

SD-02 Shop Drawings sealed by the Door Manufacturer's Registered Professional Engineer

Hangar Doors

Submit the door manufacturer's complete schematic wiring diagram, field wiring diagram, and a complete physical location drawing showing the location of controls with the runs of conduit, size of conduit, number and size of wires in each conduit, location of junction boxes, and full details of control mountings.

Submit drawings showing details of construction, installation, and operation; size, shapes, and thickness of materials; joints and connections; reinforcing; hardware; mechanical devices;

electrical devices; insulation; cladding; and design and detail data for work of other trades affected by hangar doors.

Steel Stud Walls

Submit drawings showing details of construction, installation, size, shapes, and thickness of materials; spacing of studs, joints and connections; reinforcing; hardware; insulation; and design and detail data for work of other trades affected by the walls.

Steel Rails for Doors to Ride On

Submit drawings showing details of construction, installation; size, shapes; joints and connections; reinforcing; hardware; and design and detail data for work of other trades affected by hangar door rails.

Steel Guides for Top of Hangar Doors

Submit drawings showing details of construction, installation, and operation; size, shapes, and thickness of materials; joints and connections; reinforcing; hardware; and design and detail data for work of other trades affected by top guides. This also includes the bracing for the door guides beyond the building limits.

Roof Eave Extension

Submit drawings showing details of construction, installation, size, shapes, and weight of materials; joints and connections; reinforcing; hardware; and design and detail data for work of other trades affected by the eave extension.

Snow Melt Equipment

Submit drawings showing details of construction, installation, and operation; materials; joints and connections; hardware; mechanical devices; electrical devices; and design and detail data for work of other trades affected by the snow melt equipment.

SD-05 Design Data sealed by a Registered Professional Engineer, registered in the State of Maine

Hangar doors

Submit design calculations for structural steel, cladding, mechanical, and insulation.

Steel Stud Walls

Submit design calculations for steel studs, wall shoe, wall plate, connection to existing building, cladding, and insulation.

Steel Rails for Doors to Ride On

Submit design calculations for steel rail, splicing, and supports.

Wheels for Doors to Ride On

Submit design calculations for the wheels the doors are riding on.

Steel Guides for Top of Hangar Doors

Submit design calculations for steel door guides, splicing, and connections to existing steel frame. This shall also include the rail guides and bracing of the guides that extend beyond the building at both ends of the building.

Roof Eave Extension

Submit design calculations for structural steel and eave, soffit, and roof closure.

Snow Melt Equipment

Submit design calculations for cable size and spacing.

SD-10 Operation and Maintenance Data

Submit operations and maintenance data for the following items: Door Guides, Door Wheels, Door Operators, Electrical Equipment, Snow Melt Equipment, Door Rails, and weather stripping.

1.3 DESIGN REQUIREMENTS

1.3.1 Door Design and Components

The Steel sliding hangar doors and components dictated in the construction documents are representative of a commercially-available door. Design and fabricate the door to fit within the space allocated and in accordance with the criteria specified herein. Design doors to operate properly without binding, interference, or damage to weather stripping or the adjacent structure. Door must be of limited combustible construction in accordance with NFPA 220 and NFPA 409.

Submit Calculations sealed by the door manufacturer's registered professional engineer (DOR) for review.

1.3.1.1 Steel Door Components

Design all supporting, steel bracing and framing steel members in accordance with the specified loads and the requirements of AISC 325 and AISC 360. Design all cold formed steel in accordance with AISI SG03-3. Weld steel in accordance with the AWS D1.1/D1.1M Standards.

1.3.1.2 Loads

Design the door for the loads in accordance with UFC 1-200-01, UFC 3-301-01 and all other applicable criteria.

1.3.1.3 Wind Loads

In the closed position, design doors and all components to withstand the wind pressures produced by a 120 mile per hour wind force. Design all door components to withstand both the highest positive and negative pressures based on actual tributary area from the wind load indicated. In addition, design doors and all components to be operational during wind events which cause a positive or negative service load pressure of 15 psf on the surface of the door.

The DOR must show the appropriate design wind pressure for the design of the doors on the shop drawings.

Components and Cladding elements with Effective Areas greater than 700 square feet shall be permitted to designed using the provisions for MWFRSs.

The following loads and conditions are considered minimum and shall be increased as determined necessary by the DOR: Risk Category- II, Wind Speed- 120 mph, Exposure Category- D.

1.3.1.4 Seismic Loads

Design for an inward and outward seismic force according to the requirements for exterior nonstructural wall elements and connections in ASCE 7-16. The governing force (wind or seismic) must be concurrent with the door self-weight and must be factored according to ASCE 7-16 load combinations.

The following seismic parameters are considered minimal and may be increased as deemed necessary by the DOR: Risk Category- II, Site Class- E, S1- 7, Ss- 20.

1.3.1.5 Dimensions

Door leaves shall have a clearance of 4 ½" from the face of one leaf to the face of the adjacent leaf. There shall be a minimum of 14" from centerline of one leaf to the centerline of an adjacent leaf.

1.3.3.6 Deflections

For any door member, the deflection due to design wind load shall not exceed the member's length divided by 120.

Design Doors as a system to withstand the upward and downward deflections of the door header structure.

1.3.3.7 Connections

Design connections at top and bottom guide rails to withstand both the positive and negative design wind pressures. Design for an inward and outward seismic force according to the requirements for exterior nonstructural wall elements and connections in ASCE 7-16. The governing force (wind or seismic) must be concurrent with the door self-weight and must be factored according to ASCE 7-16 load combinations.

All connections in the structural steel frame of each leaf shall be welded.

1.3.3.8 Cold-Formed Steel Member

Cold-formed steel main members and girts shall be not less than 6 mm 1/4 inch thick.

1.3.3.9 Insulation

The building is unheated. Provide insulation in each leaf to prevent condensation inside the door.

1.3.3.10 Location of personnel doors.

Do not locate personnel doors between wheels and edge of hangar door leaf. Exact location to be determined by structural design of door leaf. See project drawings for approximate door locations.

1.3.3.11 Wheels

Type, size, and number of wheels to be determined by DOR based on size and weight of doors.

1.3.3.12 Rail Drains

New rail drains will be required. Connection to existing drains shall be designed by the DOR to minimize possibility of clogging.

1.3.4 Steel Stud Walls and Components

The steel stud walls shall be comprised of steel studs, a bottom shoe, top plate, insulation, and cladding to match the steel sliding doors. The walls shall be attached to the existing building frame.

Submit Calculations sealed by a registered professional engineer (DOR) for review.

Design the stud walls using the same wind velocity as the doors. Use the same seismic parameters as the doors.

1.3.4.1 Connections

Connection of the studs to the shoe and plate may be welded or mechanically fastened.

Stud walls shall be connected to the existing building with consideration for deflection of the existing building framing.

Cladding shall be attached to the studs, shoe, and plate using self-tapping screws with rubber grommets under the heads. Screw size and spacing shall be determined by the DOR.

1.3.4.2 Cladding

Cladding shall match the cladding on the steel sliding doors on both the interior and exterior faces.

1.3.5 Steel Rails

Steel rails for the doors ride shall be designed by the DOR including size of rail, joints in rail, expansion, and support prior to placing concrete. Minimum rail size shall be 30# rail or heavier as determined by the DOR.

1.3.6 Top of Door Guides and Bracing of Guide Extensions Beyond Building

Door guides, connection to existing framing, guide extension beyond building, and extension bracing shall be designed by the DOR and calculations submitted for review.

1.3.7 Snow Melt Equipment

The system must provide 50 watts per square foot minimum or greater as determined by the DOR.

The extent of the snow melt system must be from 1 foot beyond end of rail to 1 foot beyond end of rail and 3’-8” wide, the distance between joints in the existing slab.

1.3.8 Building Eave Extension

Should the existing building soffit need to be extended to make room for new door guides this contractor shall be responsible for the design of the extension. This includes confirming that the existing framing can support the additional dead and live loads. The analysis of the existing framing shall be based on the drawings of the existing building, a 40 psf roof snow load, and a 20 psf wind load.

1.4 QUALITY ASSURANCE

1.4.1 Manufacturer's Qualifications

Use a steel sliding hangar door product from a manufacturer who is regularly engaged in the design, fabrication, erection, and service of steel sliding hangar doors of type and size required for this project. The manufacturer shall have at least 5 years of similar steel sliding hangar door design experience. Similar doors must have comparable function and design including size, configuration, type of use, retractable or moving elements, safety features, controls, and other key engineering elements as the door being specified. It is acceptable to show that a series of similar doors collectively meet all comparable elements to the door being specified, although not necessarily individually. Manufacturer must submit written evidence on similar past door designs and installations listing the name, location, contact information of owners, installation dates, overall sizes, features, and other relevant information for experience and qualifications evaluation. Only manufacturers who can submit this evidence of actual installations where the products have proven practical, durable, and require a minimum of maintenance, will be qualified under this specification.

1.4.2 Installer's Qualifications

Installation of the door(s) shall be supervised by a manufacturer's representative and shall be in accordance with approved shop drawings. Installers shall be skilled and experienced in the erection of steel sliding hangar doors of the type specified herein. Installers must submit written evidence of similar past door installations listing the name, locations, contact information of owners, installation dates, overall sizes, features, and other relevant information for experience and qualifications evaluation.

1.4.3 Warranty

The door manufacturer shall provide a three-year warranty for all mechanical and electrical components against defects in material and workmanship beginning on the date of Project Acceptance.

1.5 DELIVERY, STORAGE, AND HANDLING

Deliver materials which are not shop installed on the doors in original rolls, packages, containers, boxes, or crates bearing the manufacturer's name, brand, and model number. Store materials and equipment in dry locations with adequate ventilation, free from dust and water, and permit access for inspection and handling. Handle doors carefully to prevent damage. Remove damaged items that cannot be restored to like-new condition and provide new items.

PART 2 PRODUCTS

2.1 HANGAR DOORS

2.1.1 Structural Steel

See Section 05 12 00 Structural Steel for additional information.

2.1.1.1 Top Guides and Bottom Rails for Hangar Doors

Top Guides: Maintain nominal elevation within plus or minus 1/4 inch and nominal center-to-center dimension within plus or minus 1/8 inch, with variation from nominal no greater than 1/8 inch in 20 feet. Joints of head guides are not required to be welded, but shim and grind so adjoining guide surfaces are not out of line more than1/16 inch. Top guide tolerances shall be met after dead load is imposed on building frame.

2.1.1.2 Hanging Head Flashing

Hanging Head Flashing shall be galvanized steel, not thinner than 1.2 mm thick 18 gage, reinforced as required. Coordinate with hangar door manufacturer. Show exact location and configuration on top guide shop drawings. Top guide and head flashing system shall be shop assembled to verify accuracy of fit and fastener location, and disassembled for shipping. Install head flashing after doors are in place.

2.1.1.3 Bottom Rails

Standard A.S.C.E. or A.R.E.A. section to be determined by the DOR. Do not install rails until top guide system has been installed. Continuously support rails and anchor. Set rails to elevation within plus or 1/4 inch, with variations from elevation no greater rate than 1/8 inch in 20 feet. Nominal design relationship between top guides and bottom rails to be maintained without exception. Center-to-center dimensions of bottom rails to be maintained within plus or minus 1/8 inch with variation from nominal no greater than 1/8 inch in 20 feet. Weld rail joints and grind smooth or provide with splice plate in accordance with ASCE standards.

2.1.2 Formed Steel

AISI SG03-3.

2.1.3 Galvanized Steel

Hot dipped galvanized frames in accordance with ASTM A123/A123M.

2.1.4 Sheet Steel

ASTM A1011/A1011M hot-rolled steel sheet, commercial quality, ASTM A1008/A1008M cold-rolled steel sheet, commercial quality.

2.1.5 Galvanized Sheet Steel

ASTM A653/A653M, coating designation G 90 galvanized steel sheet, commercial quality.

2.1.6 Exterior Cladding

Exterior cladding shall match existing cladding in configuration, thickness, and color including the metal and translucent fiberglass panels.

DOR shall not use cladding as a structural element to prevent sag or racking of the doors.

All panels shall be attached to the steel door frames using self-tapping screws with rubber grommets, size and spacing per DOR. Provide horizontal framing to support cladding as required.

Cladding on the exterior face of the new walls shall match the exterior face of the sliding door cladding. Provide horizontal framing as required to support cladding.

2.1.7 Interior Cladding

Interior cladding shall be a flat metal panel attached to structural steel using self-tapping screws, size and spacing by DOR. Maximum spacing shall be 12” o.c.

DOR shall not use cladding for preventing sag or racking of the doors.

Cladding on the interior face of the new walls shall match the interior face of the sliding door cladding. Provide horizontal framing as required to support cladding.

2.1.8 Insulation

Doors shall be insulated to prevent condensation within the door structure itself in this unheated building. Insulation shall have a flame spread rating of 75 or less, a smoked developed rating of 100 or less when tested in accordance with ASTM E84, contain asbestos, be water resistant, and glued in place.

2.1.9 Hardware

Provide hangar door hardware to accommodate actual dead loads plus wind and seismic loads as determined by the DOR. Provide top guide rollers, bottom wheels, interleaf bumpers, tractor pulls, track cleaners, and top bumpers as required for a complete and operational installation.

2.1.9.1 Wheel Assemblies

Bottom wheels shall be of steel plate or cast steel, having a minimum tread diameter as required for the actual wheel loading. If the height-to-width ratio of the door leaf exceeds three, wheel assemblies shall be vertically adjustable. Construct wheel assemblies to permit removal of the wheel without removing the door leaf from its position on the rail.

a. Treads: Machine wheel treads concentric with bearing seats. The clear distance between flanges shall not exceed the width of the rail by more than 1/8 inch at the tread nor more than 1/4 inch at the edge of the

flange. Machine internal bearing seats accurately for a press fit. Heat treat wheels 18 inches or greater in diameter to obtain a rim hardness of 320 Brinnel.

b. Wheel bearings: Provide tapered roller or spherical bearings, either internal or cartridge type, arranged so that both horizontal and vertical loads shall be transferred to the rail only through the bearing. Bearings shall be tightly sealed and equipped with high-pressure grease fittings.

2.1.9.2 Fixed Pancake Top Guide Rollers

Horizontal type; each with single or double steel rollers of a suitable diameter and thickness for satisfactory performance under the designated load conditions and top guide system used. Provide permanently lubricated bearings.

2.1.9.3 Personnel Doors

Provide each personnel door with an electrical interlock switch to prevent motor operation of the leaves when the personnel door is open an identified indicator light at each door leaf control station indicating when a personnel door is in the open position.

Door frames shall be formed from 16 gauge steel and have a 2" face and shall be fully welded at joints.

Strike jambs shall have 3 rubber silencers.

Stop height shall be 5/8".

Frames shall have 3/16" hinge reinforcing at the 3 hinges.

Provide 1/8" strike reinforcing.

Hollow metal doors shall be 1 ¾" doors.

Door material shall be 18 gauge.

Edges of doors shall be continuously seam welded.

Doors shall reinforced, stiffened, and insulated with 1.5 pound density polyurethane core and laminated to both inside faces of door.

Provide 3/16" hinge reinforcing in door.

Provide 3 brass hinges for each door.

Top and bottom reinforcing channels shall be 14 gage steel and shall be inverted and spot welded within the door.

Door strikes to be 40 5/16" above hangar deck.

Doors shall have self closing hardware that will not interfere with adjacent leaves during door operations.

Provide interior and exterior door pulls that do not interfere with adjacent leaves. Doors are not to be lockable.

2.1.10 Weather Stripping

Provide adjustable and readily replaceable material. Provide on vertical edges, sills, and heads to afford a weathertight installation.

2.1.10.1 Neoprene

Use flap-type, two-ply, cloth-inserted neoprene or extruded, double flap, single or dual opposed solid neoprene material on vertical edges and sills. The two-ply material shall have a minimum thickness of 1/8 inch and shall be retained continuously for its full length and secured with rust-resistant fasteners 12 inches o.c. Extruded weather stripping with heavy center section shall be attached at 12 inches o.c., but continuous bar may be omitted. Clearance between metal parts on vertical edges of leaves and between leaves and jambs which are to be weather-stripped shall be as indicated.

2.1.10.2 Metallic

Form head weather stripping material between each leaf and the top guide system of not thinner than 1.2 mm thick 18 gage galvanized sheet steel or flap-type, cloth-inserted neoprene.

2.1.10.3 Hanging Head Flashing

Provide cloth-inserted neoprene weathering fastened to top of door leaves to engage the head flashing when doors are closed.

2.1.11 Fasteners

Hot dipped galvanized.

2.1.12 Sealant

Single-component or multicomponent elastomeric type conforming to ASTM C920, Type S or M, Grade NS, Class 12.5, Use NT. Provide a sealant that has been tested on the types of substrate to which it will be applied.

2.1.13 Primer

Zinc-Rich Epoxy Primer.

2.1.14 Starters

Provide magnetic reversing starters in NEMA ICS 6, Type 12 enclosures equipped with access door-controlled, fused safety disconnect switches. Starters shall be factory wired with overload and undervoltage protection, mechanical and electrical interlocks, auxiliary contacts, relays and timing devices as required, control circuit transformers, and a numbered terminal strip. The control circuit transformer shall reduce the voltage in the control circuits to 120 volts or less, and shall conform to UL 506.

2.1.15 Electrical

Provide conduit, wire, flexible cables, boxes, devices, accessories, and install trolley duct.

2.1.16 Snow Melt System

Provide electric premanufactured snow melt systems that extends from the centerline of the building to the end of the door storage area at each end of the building.

The snow shall be melted by using electric cables embedded in the concrete adjacent to each side of each door rail.

System provided shall be complete with all necessary operator devices and electrical controls.

Cable shall be affixed with UL or ETL marked sticker on power lead.

All materials shall be from a single manufacturer to insure system quality and compatibility.

Do not operate systems for a minimum of 25 days after the concrete is placed, the concrete reaches design strength, or the date set by the DOR. Wait shall be the maximum of the above.

Cables shall be constructed with dual heating elements, reinforcement, insulated ground system, and outer jacket.

Power leads shall be insulated current carrying conductors with ground system and outer jacket.

Power leads shall be maximum of 20 feet long.

Connect snow melt system to ARNG (Army National Guard) existing "TRIDIUM" building management system.

Connect to system using ethernet connection.

Information to be transferred to the TRIDIUM system shall be ON/OFF state, outdoor ambient temperature, slab temperature, and moisture sensor state.

Provide for remote override of ON/OFF state.

2.1.17 Eave Extension

See Section 05 12 00 Structural Steel for materials, fabrication, and erection. Existing fascia may be reused. Provide additional roof sheathing to match existing in color, thickness, and cross section.

2.2 FABRICATION

2.2.1 Doors

2.2.1.1 Frames and Framing

Door leaves shall be of welded construction. Joints shall develop 100 percent of the strength of the framing members. Vertical members shall be continuous throughout the height of the door. When required, prepare splices to facilitate field assembly in accordance with standard practice. Frames and framing members shall be true to dimensions and square in all directions; no leaf shall be bowed, warped, or out of line in the vertical or horizontal plane of the door opening by more than one mm in 2 meters 1/8 inch in 20 feet. Provide diagonal bracing so that the completed leaf assembly will be braced to withstand shipping, assembly, and operational loads. Exposed welds and welds which interfere with the installation of various parts such as cover sheets shall be ground smooth.

2.2.1.2 Exterior Covering and Interior Liner Sheets

Interior and exterior cladding shall be fastened to the frame by threaded fasteners. Where flat sheets are attached as interior liner sheets, the clear unsupported area shall not exceed 25 square feet. Make edges of exterior sheets weathertight with sealant.

2.2.2 Locking Devices

Do not provide locking devices on motor-operated hangar doors.

2.2.3 Tractor Pulls

Provide tractor pulls so that leaves can be towed by a tractor or similar equipment in the event of power failure. The tractor pull shall be designed for drive force to tow door of 5000 pounds. Minimum thickness steel plate shall be 3/8 inch.

2.2.4 Track Cleaners

Provide a device to clear debris from the rail head and wheel flange grooves as the leaf is moved.

2.2.5 Insulation

Secure insulation to doors with clips, studs, or adhesive.

2.2.6 Cable System for Group Doors

The minimum size for the cable which interconnects the leaves shall be 10 mm 3/8 inch; the cables shall be improved plow steel with lubricated hemp centers or wire rope cores. Sheaves over which the cables operate shall have a diameter of at least 18 cable diameters and either sealed ball-or roller-type bearings or graphite bronze bearings of a sufficient capacity for the operating loads. Grease fittings shall be provided for the sheave bearings unless permanently lubricated bearings are used.

2.3 OPERATION

2.3.1 Hangar Door

Hangar doors shall be biparting.

2.3.1.3 Anchored Group Doors

Each group of leaves shall have a traction-drive operating unit located in the lead leaf of the group and driving one or more wheels of the lead leaf. The leaves in each group shall start to move at the same time and arrive at their fully open or fully closed positions simultaneously. Provide necessary cables, fittings, sheaves, housings, guards, pickups, brackets, anchors, and miscellaneous hardware.

2.3.2 Operating Units

Each operating unit shall move its lead leaf at a speed of approximately 60 feet per minute at zero wind load conditions and to be operable up to and including a maximum wind load of 15 pounds per square foot. The operating units shall consist of either a separate motor and gear reducer or a gearhead motor, high-speed shaft brake, and necessary roller chains and sprockets. The systems shall be provided with overload protection for the drive units and a means for emergency tractor towing operation.

a. Motors shall be NEMA MG 1, high-starting torque, reversible type with sufficient horsepower and torque output to operate the leaves in either direction from any position under zero wind load conditions at not more than 75 percent of their rated capacity. Motors shall operate on current voltage of the characteristics indicated at not more that 3600 rpm. Motor enclosures shall be drip-proof type or NEMA totally-enclosed, fan-cooled (TEFC) type. Motors shall have a minimum service factor of 1.2.

b. Gear reduction units shall allow a reversal of effort through the gears without damage to the units.

c. Operating mechanisms shall be covered on the interior of the leaf by a hinged 16 gage flat steel cover.

2.3.3 Braking Systems

Braking systems shall be designed to ensure stoppage of the leaves under normal, dry rail conditions within the safety edge overtravel limit. The braking systems shall be either a magnetic, spring-set, solenoid-released brake or hydraulic type. Provide a hand release to release the brake when it becomes necessary to move the leaf with an outside force. The hand release shall be an automatic reset type so that the brake will be operable during subsequent electrical operation of the door.

2.3.4 Controls

Doors shall be controlled by constant pressure push buttons mounted on the lead leaf. Removing pressure from the button shall stop the movement of the leaves. The control equipment shall conform to NEMA ICS 1 and NEMA ICS 2. Interior push buttons shall be mushroom head type, mounted in heavy-duty, oil-tight enclosures conforming to NEMA ICS 6, Type 13, except that enclosure for reversing starter with disconnect switch shall be Type 12.

2.3.4.3 Push Buttons for Anchored Group Doors

Each group shall be controlled by a two-button push button station marked "OPEN" and "CLOSE" mounted near the inside leading edge of the lead leaf.

2.3.5 Limit Switches

Provide limit switches to prevent overtravel and bumping. Safety edges shall not be used as limit switches.

2.3.5.1 Plunger-Type Limit Switches

Limit switches shall be actuated by 3/4 inch diameter stainless steel rods of adjustable length, guided at both ends with nonmetallic bearings and with tape-type constant force springs to return the rods to their normal position after actuation. The actuating rods shall have sufficient overtravel so that the leaves cannot bump one another or any portion of the building or be damaged when being towed. Each rod shall be adjustable 6 inches plus or minus from its normal position.

2.3.5.2 Lever Arm Type Limit Switches

Provide for anchored group doors to stop the travel of each group in the fully open and fully closed positions. The limit switches shall be:

a. Positive acting, snap action, lever arm type with actuating cams designed with sufficient overtravel to permit the group to come to a complete stop without overtraveling the limit switches.

b. Mounted on the leaves, and the actuating cams mounted either on the top guides or on adjacent door leaves.

2.3.6 Safety Edges

Provide fail-safe safety edges on the leading edge of the drive leaf of anchored group doors from one inch above the floor to the top of the door leaf. For leaves 12 inches thick (including siding) or less, provide a single run of safety edge the full width of door. For leaves over 12 inches thick (including siding,) provide a double run of safety edge spaced to provide the maximum degree of safety in stopping the leaves. For leaves over 12 inches thick (including siding) provide a double run of safety edges on the outer edge of each side of door leaf covering no less than 80 percent of leaf.

a. Design: Provide safety edges to provide a minimum of 3-1/2 inches of overtravel after actuation until solid resistance is met and door motion comes to a complete stop. If door requires more than 3-1/2 inches to come to a complete stop, provide additional overtravel built into safety edge the distance required for door motion to come to a complete stop. Use electric safety edges.

b. Specs: Use sensing edges of reinforced polyvinyl chloride cover or other Government-approved material with chemical resistance to diesel and JP-4 fuel, hydraulic fluids, SAE-30 oil and salt water. Use cover that provides hermetic seal for weather and moisture resistant protection of internal foam and contact elements. Internal foam may be polyurethane and/or latex foam per military specification MIL-R-5001, medium density. Use two contact elements separated by perforated foam or other Government -approved materials and design to perform the switching function when the sensing edge encounters an obstruction along any portion of its active length.

c. Operation: Actuation of the safety edge on leading edge of a group of leaves shall stop movement of the group. Actuation of a safety edge shall lock out the motor control in the direction of travel until reset, but shall permit the door to be reversed away from the obstruction which tripped the safety edge. Safety edges shall be alive only when doors are moving. Safety edges shall be reset by moving doors away from the obstruction. The lower portion of the safety edges to a height of approximately 5 feet shall be independently removable for convenience in servicing or repair. The remainder of the edge may be in one piece up to a maximum of 20 feet.

d. Bumper(s): Each door leaf edge provided with a safety edge shall be protected by a spring type bumper(s). Bumper shall be designed to absorb 150 percent of the door drive force when door is pushed in an emergency. For continuous safety edges, bumpers shall extend to the sides. For sectional safety edges, the bumper can interrupt the safety edge for a distance not greater than 12 inches.

e. Keyed bypass: Provide a keyed bypass to the door controls to render the safety edges in a temporary "repair" mode, if necessary. The door drive shall be restored from its "fail safe" mode by activation of the keyed bypass.

2.3.6.1 Electrical Safety Edges

Connect the safety edge in series with the necessary relays and resistors to make the system complete. The service shall be not more than 24 volts and the circuit shall be normally energized so that the malfunction of any of the component parts will make the door inoperative. Wire sensing edges to provide for control reliable 4-wire operation of hangar door so that any power loss to the sensing edges is experienced, then the door becomes inoperable until power is restored and a reset operation is initiated. Install sensing edges to operate through a normally energized relay so that when the sensing edge is compressed the relay contacts open. Install relay contacts to also open if any component in the sensing edge control circuit is broken so as to break continuity. Use 24 volts electrical service to the control circuit. Ensure service to the sensing edge does not exceed a nominal 24 volts. Install a large red indicator light and/or a loud siren, to be simultaneously activated with the actuation of any sensing edge, to indicate the presence of an obstruction.

2.3.7 Warning Device

Provide a clearly audible signal on each group of leaves. The warning device shall:

a. Operate when the push button is actuated for movement of the door in either direction;

b. Sound 5 seconds before the door moves, and while the door is moving; and

c. Consist of not less than a 6 inch diameter bell or equivalent decibel-rated horn, loud enough to be heard in the hangar and on the apron.

d. Have a distinct warning sound that is different than all other warning system sounds in the hangar bay.

2.3.8 Emergency Operation

Hangar doors shall be constructed and equipped so that they can be operated-manually or by tractors from the hangar floor in case of power failure. Manual operation of hangar doors shall be designed to avoid damage to safety edges.

2.3.9 Electrical Work

The door manufacturer shall provide the proper electrical equipment and controls built in accordance with the latest NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6 standards. Equipment, control circuits, and safety edge circuits shall conform to NFPA 70. Where located 18 inches or less above the floor, they shall be explosion-proof as defined in NFPA 70, Article 513. Manual or automatic control devices necessary for motor operation

of the doors shall be provided, including push button stations, limit switches, combination fused disconnect switches and magnetic reversing starters, control circuit transformers, relays, timing devices, warning devices, and trolley ducts with collectors or trolleys.

2.3.9.1 Trolley Ducts

Provide one or more runs of trolley duct as required for the door system provided. Ducts shall have solid copper conductors in a protective steel [or polyvinyl chloride] housing. Provide adequate clearances in the top guide system for the ducts.

a. Each run shall consist of the required number of sections of straight track, a section of dropout track, feed boxes, end caps, couplings, hangers, and other accessories to make the system complete and workable. Provide expansion tracks in each run where the system crosses a building expansion joint in the roof construction and in the top guides.

b. Furnish one track-supported tandem trolley or self-supporting collector for each group of doors, complete with spring-loaded brush contacts. Provide trolley pulling brackets and corrosion-protected chains attached from each side of the pulling bracket to each side of the tandem trolley or support bracket for self-supporting collectors.

2.4 FINISHES

2.4.1 Ferrous Metal

Clean, prepare, and coat all exposed and non-exposed ferrous metal surfaces as part of the Section 09 97 13 work, including all requirements, submittals, certifications, testing, and inspections required by Section 09 97 13. Do not coat finished bearing surfaces. Alternate coating systems or products will not be considered. Prepare surface and apply coatings in the shop, following all temperature, humidity, and testing requirements listed in the Section 09 97 13. After installation of the door, prep and touch up surfaces damaged during assembly and installation of the door. Prep and coat unfinished ferrous metal accessories such as bolts and brackets.

2.4.2 Factory-Finished Panels

All factory-finished ferrous metal panels to be exposed to the interior or exterior shall be galvanized G90 per ASTM A653/A653M and coated with a PVDF fluoropolymer equal to Kynar 500.

2.5 SIGNAGE

Provide a placard sign immediately adjacent to the controls explaining how to operate the door and indicating the following:

a. Notice:

(1) Doors must be closed and not operated when wind speeds above 60 mph are expected.

PART 3 EXECUTION

3.1 ERECTION

Assemble doors and accessories in accordance with approved shop drawings. Do not erect doors until the work of other trades in preparing the opening has been completed, the hangar roof is under full dead load, and the top guide and rail systems are within specified tolerances.

3.1.1 Touch-Up Coating

After installation of the door, the same installer that performed the initial coating prior to assembly and erection shall prep and touch up surfaces damaged during assembly and installation of the door as well as unfinished ferrous metal accessories per the requirements listed in Section 09 97 13 and per this Section.

3.2 Snow Melt Equipment

Install snow melt equipment per manufacturer's recommendations.

3.2 FIELD QUALITY CONTROL

3.2.1 Manufacturer's Field Services

Provide an authorized representative of the door manufacturer to supervise erection of doors.

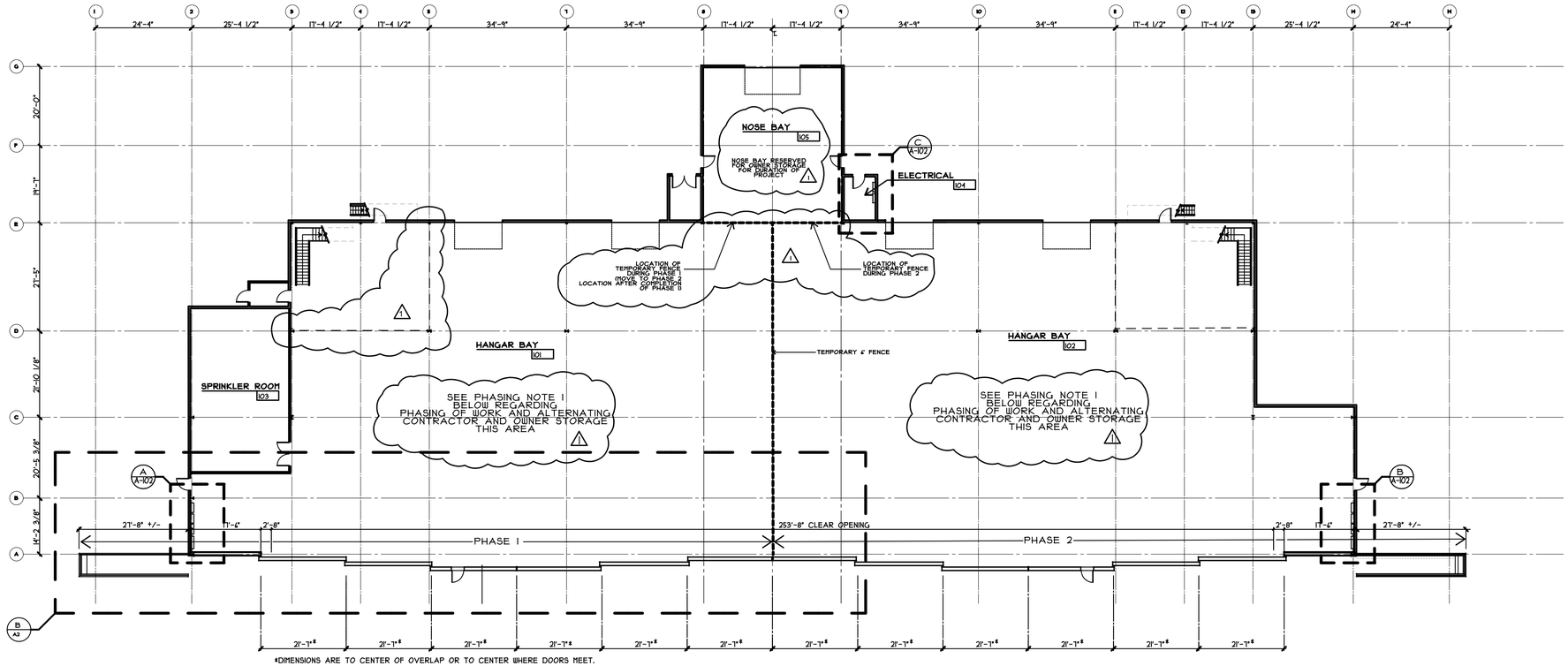
3.2.2 Tests

Immediately after the door installation is complete, the door manufacturer or his representative shall perform a complete operating test in the presence of the Contracting Officer. Correct defects disclosed by the test. Retest the doors and adjust them until the entire installation is fully operational and acceptable to the Contracting Officer.

3.3 ELECTRICAL WORK

NFPA 70. Provide all conduit, wiring, and mounting of controls in accordance with the latest electrical code.

End of Section



*DIMENSIONS ARE TO CENTER OF OVERLAP OR TO CENTER WHERE DOORS MEET.

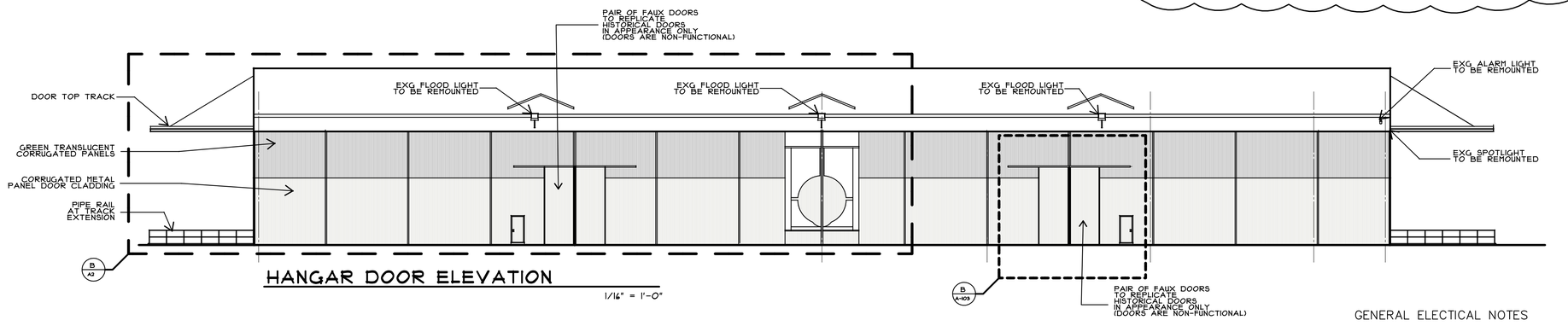
NORTH

FLOOR PLAN

1/16" = 1'-0"

PHASING NOTE:

1. THE CONTRACTOR MUST START ON THE LEFT (NORTH) HALF (CALLED PHASE 1) OF THE BUILDING. ONCE WORK IS COMPLETE IN THIS AREA THE OWNER SHALL MOVE ALL EQUIPMENT TO THE COMPLETED SIDE OF THE HANGAR. ⚠1 ONCE THE OWNER HAS MOVED ALL EQUIPMENT AND STORAGE ITEMS, THE CONTRACTOR SHALL BE GIVEN PERMISSION FROM THE OWNER TO START WORK ON THE RIGHT (SOUTH) SIDE OF THE BUILDING.

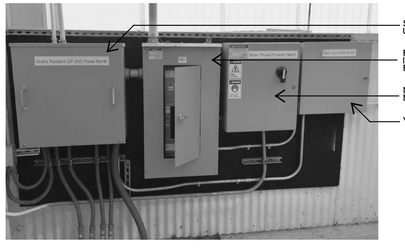


HANGAR DOOR ELEVATION

1/16" = 1'-0"

GENERAL ELECTICAL NOTES

1. ALL WORK MUST BE PERFORMED IN ACCORDANCE WITH NFPA-70, AND NATIONAL ELECTRICAL CODE (NEC) 2017.
2. ELECTRICAL WORK IS TO BE DESIGNED BY THE CONTRACTOR'S DOR (DESIGNER OF RECORD) PURPOSE OF THIS DRAWING IS TO GIVE INFORMATION OF EXISTING CONDITIONS RELEVANT TO THIS PROJECT. ELECTRICAL CONTRACTOR MUST VERIFY.
3. ALL CONDUTOR MATERIAL, INCLUDING WIRING, PANELBOARD BUSES, AND GROUNDING MUST BE COPPER. ' ALUMINUM CONDUCTORS ARE NOT ALLOWED.
4. FLEXIBLE CONNECTIONS TO MOTORS MUST BE LIQUID TIGHT FLEXIBLE METAL CONDUIT, UNLESS OTHERWISE NOTED.
5. ALL CONDUIT MUST BE RIGID CONDUIT WITH THE EXCEPTION OF FLEXIBLE MOTOR CONNECTIONS. INTERIOR CONDUIT MUST BE TYPE EMT AND ABOVE GROUND EXTERIOR CONDUIT MUST BE RIGIT GALVANIZED STEEL. BELOW GROUND CONDUIT MUST BE SCHEDULE 80 PVC WITH GALVANIZED STEEL. SWEEPS
6. ALL PANELBOARDS AND SWITCHBOARDS MUST HAVE APPROPRIATE ARC-FLASH LABELS INSTALLED IN ACCORDANCE WITH NFPA 70E REQUIREMENTS.
7. GROUND THE ELECTRICAL DISTRIBUTION SYSTEM IN ACCORDANCE WITH NEC ARTICLE 250 AND ELECTRICAL SPECIFICATIONS



A A-101 EXG ELCTRICAL AND CONTROL PANELS NORTH WALL

B A-101 EXG ELCTRICAL AND CONTROL PANELS SOUTH WALL

C A-101 EXG MAIN BUILDING BREAKER

REGISTERED ARCHITECT
JAMES R. REUTER
No. 1736
STATE OF MAINE

BUILDING 254 - REPAIR HANGAR DOORS

BIA

BANGOR, MAINE

⚠1 REVISED 19 AUG 2020

SRL ARCHITECTS
Commercial and Municipal Design

93 Pitt Street
Portland, ME 04105
207.747.5975

822 Grover Hill Rd.
Bethel, ME 04217
207.824.7237

info@smithreuter.com

PLAN AND ELEVATION

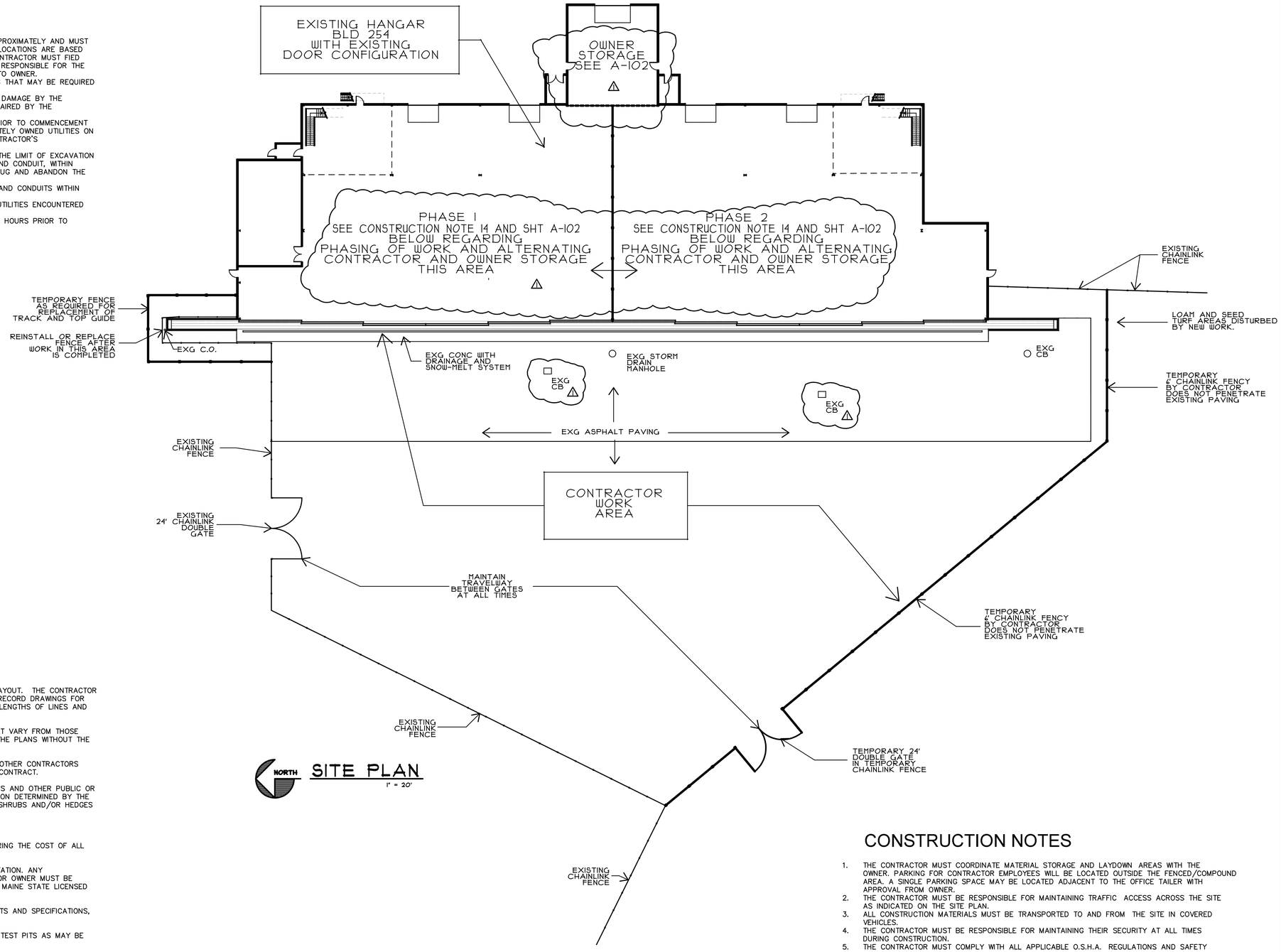
BREM #3229
DFE PROJ. NO.
23SR13-414-ABC

07/28/2020

A-102

UTILITY NOTES

1. EXISTING UTILITIES SHOWN ON THE PROJECT DRAWINGS ARE LOCATED APPROXIMATELY AND MUST BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. UTILITY LOCATIONS ARE BASED ON PHYSICAL LOCATIONS AND DRAWINGS PROVIDED BY THE OWNER. THE CONTRACTOR MUST FIED VERIFY ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR MUST BE RESPONSIBLE FOR THE REPAIRS OF ALL DISTURBED UTILITIES DURING CONSTRUCTION AT NO COST TO OWNER.
2. THE CONTRACTOR MUST ARRANGE FOR TEMPORARY UTILITY CONNECTIONS THAT MAY BE REQUIRED DURNG CONSTRUCTION.
3. EXISTING UTILITIES TO REMAIN IN OPERATION MUST BE PROTECTED FROM DAMAGE BY THE CONTRACTOR. ANY DAMAGE TO EXISTING UTILITIES TO REMAIN MUST BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE OWNER.
4. THE CONTRACTOR IS RESPONSIBLE FOR CALLING DIG-SAFE 72 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING PRIVATELY OWNED UTILITIES ON SITE. COST FOR LOCATING UTILITIES WITHIN THE PROJECT AREA IS THE CONTRACTOR'S RESPONSIBILITY.
5. WHERE CONTRACTOR ENCOUNTERS EXISTING PIPES AND CONDUIT WITHIN THE LIMIT OF EXCAVATION FOR THE WORK OF THE PROJECT, CONTRACTOR MUST REMOVE THE PIPES AND CONDUIT, WITHIN THOSE LIMITS OF EXCAVATION, AND PLUG THE ENDS. CONTRACTOR MUST PLUG AND ABANDON THE REMAINING PORTIONS IN PLACEAT NO COST TO THE OWNER.
6. CONTRACTOR MUST RE-ROUTE OR OTHERWISE MAINTAIN EXISTING PIPES AND CONDUITS WITHIN THE LIMITS OF EXCAVATION, REQUIRED TO REMAIN ACTIVE.
7. CONTRACTOR MUST PROVIDE HORIZONTAL AND VERTICAL LOCATIONS OF UTILITIES ENCOUNTERED OR AANDONED ON RECORD DRAWINGS AT THE COMPLETION OF WORK.
8. CONTRACTOR MUST NOTIFY AND OBTAIN APPROVAL FROM THE OWNER 72 HOURS PRIOR TO DISCONNECTING ANY UTILITY REQUIRED AS PART OF THIS PROJECT.



SITE PLAN
1" = 20'

GENERAL NOTES

1. THE CONTRACTOR MUST BE RESPONSIBLE FOR PROVIDING ALL FIELD LAYOUT. THE CONTRACTOR MUST TAKE TIES TO ALL UTILITY CONNECTIONS AND PROVIDE MARKED-UP RECORD DRAWNGS FOR ALL PROPOSED UTILITIES SHOWING TIES TO CONNECTIONS, BENDS, VALVES, LENGTHS OF LINES AND INVERTS.

2. THE ENGINEER MUST BE NOTIFIED IN WRITING OF ANY CONDITIONS THAT VARY FROM THOSE SHOWN ON THE PLANS. THE CONTRACTOR'S WORK MUST NOT VARY FROM THE PLANS WITHOUT THE EXPRESSED APPROVAL FROM THE ENGINEER AND OWNER.

3. THE CONTRACTOR IS INSTRUCTED TO COOPERATE WITH ANY AND ALL OTHER CONTRACTORS PERFORMING WORK ON THIS JOB SITE DURING THE PERFORMANCE OF THIS CONTRACT.

4. THE CONTRACTOR MUST RESTORE LAWNS, DRIVEWAYS, CULVERTS, SIGNS AND OTHER PUBLIC OR PRIVATE PROPERTY DAMAGED OR REMOVED TO PRE-CONSTRUCTION CONDITION DETERMINED BY THE ENGINEER/OWNER AT THE CONTRACTOR'S EXPENSE. ANY DAMAGED TREES, SHRUBS AND/OR HEDGES MUST BE REPLACED AT THE CONTRACTOR'S EXPENSE.

5. THE CONTRACTOR MUST COMPLY WITH ALL REQUIRED PERMITS.

6. THE CONTRACTOR MUST BE RESPONSIBLE FOR OBTAINING, AND INCURRING THE COST OF ALL REQUIRED PERMITS, INSPECTIONS, CERTIFICATES.

7. THE CONTRACTOR MUST PROTECT EXISTING PROPERTY LINE MONUMENTATION. ANY MONUMENTATION DISTURBED OR DESTROYED, AS JUDGED BY TH ENGINEER OR OWNER MUST BE REPLACED AT THE CONTRACTOR'S EXPENSE UNDER THE SUPERVISION OF A MAINE STATE LICENSED LAND SURVEYOR.

8. IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE ALL PLAN SHEETS AND SPECIFICATIONS, AND COORDINATE WORK WITH ALL CONTRACTS FOR THE SITE.

9. THE CONTRACTOR MUST BE RESPONSIBLE TO CONDUCT EXPLORATORY TEST PITS AS MAY BE REQUIRED TO DETERMINE UNDERGROUND CONDITIONS.

10. ALL TRENCH EXCAVATION AND ANY REQUIRED SHEETING AND SHORING MUST BE DONE IN ACCORDANCE WITH THELATEST O.S.H.A. REGULATIONS FOR CONSTRUCTION.

11. THE CONTRACTOR MUST BE RESPONSIBLE FOR THE MAINTENANCE OF SURFACE DRAINAGE DURING THE COURSE OF WORK.

12. MAINTAIN ACCES TO OTHER BUILDINGS ON SITE AS INDICATED ON THIS PLAN

13. THE CONTRACTOR MUST BE RESPONSIBLE FOR SNOW REMOVAL AND KEEPING ALL MEANS OF EGRESS CLEARED FOR THE DURATION OF THE PROJECT.

CONSTRUCTION NOTES

1. THE CONTRACTOR MUST COORDINATE MATERIAL STORAGE AND LAYDOWN AREAS WITH THE OWNER. PARKING FOR CONTRACTOR EMPLOYEES WILL BE LOCATED OUTSIDE THE FENCED/COMPOUND AREA. A SINGLE PARKING SPACE MAY BE LOCATED ADJACENT TO THE OFFICE TAILER WITH APPROVAL FROM OWNER.
2. THE CONTRACTOR MUST BE RESPONSIBLE FOR MAINTAINING TRAFFIC ACCESS ACROSS THE SITE AS INDICATED ON THE SITE PLAN.
3. ALL CONSTRUCTION MATERIALS MUST BE TRANSPORTED TO AND FROM THE SITE IN COVERED VEHICLES.
4. THE CONTRACTOR MUST BE RESPONSIBLE FOR MAINTAINING THEIR SECURITY AT ALL TIMES DURING CONSTRUCTION.
5. THE CONTRACTOR MUST COMPLY WITH ALL APPLICABLE O.S.H.A. REGULATIONS AND SAFETY REQUIREMENTS.
6. THE CONTRACTOR MUST PROVIDE QUALIFIED PERSONNEL ON SITE CAPABLE OF PROVIDING HORIZONTAL AND VERTICAL CONTROL.
7. ALL SURPLUS MATERIAL, AS DETERMINED BY THE OWNER, MUST BECOME THE PROPERTY OF THE CONTRACTOR AND MUST BE DISPOSED OF OFF OWNER'S PROPERTY.
8. ALL UTILITY PIPES AND STRUCTURES REMOVED AS PART OF THE CONSTRUCTION MUST BE DISPOSED OF OFF SITE IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL GOVERNMENT REGULATIONS AT THE CONTRACTOR'S EXPENSE. SEE ADMINISTRATIVE SECTION 010000 – WASTE SLIS.
9. ALL CONSTRUCTION SIGNS MUST BE DESIGNED TO WITHSTAND 50MPH VELOCITY WINDS AND BE PREPARED BY A PROFESSIONAL SIGN COMPANY.
10. THE EXPOSED SOIL SURFACE MUST BE MOISTENED PERIODICALLY WITH ADEQUATE WATER TO CONTROL DUST.
11. THE CONTRACTOR MUST BE RESPONSIBLE TO MAKE THE SITE SAFE FOR USERS DURING NON-WORKING HOURS. PARKING AREA MUST BE AVAILABLE FOR USERS.
12. LOAM AND SEED ANY TURF AREAS DISTURBED BY NEW WORK.
13. EXCAVATE AS REQUIRED, USING EXISTING MATERAIL FOR NEW BASE ~~PLACED IN 6" LIFTS AND COMPACTED TO 95%~~
14. THE CONTRACTOR MUST START ON THE LEFT (NORTH) HALF (CALLED PHASE 1) OF THE BUILDING. ONCE WORK IS COMPLETE IN THIS AREA THE OWNER SHALL MOVE ALL EQUIPMENT TO THE COMPLETED SIDE OF THE HANGAR. ⚠ ONCE THE OWNER HAS MOVED ALL EQUIPMENT AND STORAGE ITEMS, THE CONTRACTOR SHALL BE GIVEN PERMISSION FROM THE OWNER TO START WORK ON THE RIGHT (SOUTH) SIDE (PHASE 2) OF THE BUILDING.

REGISTERED ARCHITECT
JAMES R. REUTER
No. 1736
STATE OF MAINE

BUILDING 254 - REPAIR HANGAR DOORS
BIA
BANGOR, MAINE

⚠ REVISED 19 AUG 2020

SRL ARCHITECTS
Commercial and Municipal Design
93 Pitt Street
Portland, ME 04105
207.747.5975
822 Grover Hill Rd.
Bethel, ME 04217
207.824.7237
info@smithreuter.com

SITE PLAN AND CIVIL NOTES

BREM #3229
DFE PROJ. NO.
23SR13-414-ABC

07/28/2020

C-101