



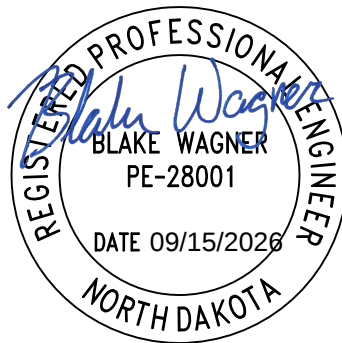
State of North Dakota

**ND State Library Renovation
Bismarck, North Dakota**

**Contract Documents
September 15, 2026**



SECTION 00 0107
SEALS PAGE



END OF SEALS PAGE

**SECTION 00 0110
TABLE OF CONTENTS**

PROCUREMENT AND CONTRACTING REQUIREMENTS

DIVISION 00 -- PROCUREMENT AND CONTRACTING REQUIREMENTS

- 00 0107 - Seals Page
- 00 0110 - Table of Contents
- 00 1113 - Advertisement for Bids
- 00 2113 - Instructions to Bidders
 - AIA Document A701-2018
- 00 4000 - Procurement Forms and Supplements
 - Substitution Request Form
- 00 4100 - Bid Form
- 00 4323 - Alternates Form
- 00 5000 - Contracting Forms and Supplements
- 00 5200 - Agreement Form
 - AIA Document A101-2017
- 00 7200 - General Conditions
 - AIA Document A201 - 2017
- 00 7300 - Supplementary Conditions
 - State's Addendum to A101-2017 and A201-2017

SPECIFICATIONS

DIVISION 01 -- GENERAL REQUIREMENTS

- 01 1000 - Summary
- 01 2000 - Price and Payment Procedures
- 01 2300 - Alternates
- 01 2500 - Substitution Procedures
- 01 3000 - Administrative Requirements
- 01 4000 - Quality Requirements
- 01 5000 - Temporary Facilities and Controls
- 01 5100 - Temporary Utilities
- 01 6000 - Product Requirements
- 01 7000 - Execution and Closeout Requirements
- 01 7800 - Closeout Submittals

DIVISION 02 -- EXISTING CONDITIONS

- 02 4100 - Demolition

DIVISION 03 -- CONCRETE (NOT USED)

DIVISION 04 -- MASONRY (NOT USED)

DIVISION 05 -- METALS (NOT USED)

DIVISION 06 -- WOOD, PLASTICS, AND COMPOSITES

- 06 1000 - Rough Carpentry
- 06 2000 - Finish Carpentry

State of North Dakota
ND State Library Renovation
Bismarck, North Dakota

J22525

06 4100 - Architectural Wood Casework

DIVISION 07 -- THERMAL AND MOISTURE PROTECTION

07 9200 - Joint Sealants

DIVISION 08 -- OPENINGS

08 1416 - Flush Wood Doors

08 7100 - Door Hardware

DIVISION 09 -- FINISHES

09 2116 - Gypsum Board Assemblies

09 5100 - Acoustical Ceilings

09 6500 - Resilient Flooring

09 6813 - Tile Carpeting

09 7200 - Wall Coverings

09 9123 - Interior Painting

DIVISION 10 -- SPECIALTIES (NOT USED)

DIVISION 11 -- EQUIPMENT (NOT USED)

DIVISION 12 -- FURNISHINGS (NOT USED)

12 3600 - Countertops

DIVISION 13 -- SPECIAL CONSTRUCTION (NOT USED)

DIVISION 14 -- CONVEYING EQUIPMENT (NOT USED)

END OF SECTION

STATE OF NORTH DAKOTA
ND STATE LIBRARY RENOVATION
BISMARCK, NORTH DAKOTA
COMMISSION NO. 26562

DIVISION 23 – HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)

SECTION 230500	HVAC GENERAL PROVISIONS
SECTION 230510	COMMON WORK RESULTS FOR HVAC
SECTION 230590	TESTING ADJUSTING AND BALANCING
SECTION 230700	HVAC INSULATION
SECTION 230900	HVAC DDC CONTROLS
SECTION 230990	HVAC SEQUENCE OF OPERATIONS
SECTION 233000	AIR DISTRIBUTION
SECTION 233700	AIR OUTLETS AND INLETS

TABLE OF CONTENTS

DIVISION 26 - ELECTRICAL

26 0500	Basic Electrical Requirements
26 0505	Electrical Demolition
26 0519	Conductors and Cables
26 0526	Grounding and Bonding
26 0529	Hangers and Supports
26 0534	Conduit
26 0537	Boxes
26 0553	Electrical Identification
26 2726	Wiring Devices
26 5100	Interior Lighting

DIVISION 27 - COMMUNICATIONS

27 1001	Communications Raceway System
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DIVISION 28 - ELECTRONIC SAFETY AND SECURITY

28 4600	Fire Detection and Alarm
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ADVERTISEMENT FOR BIDS

The State of North Dakota, Bismarck, North Dakota will receive sealed bids for the State of North Dakota ND State Library Renovation in Bismarck, ND.

All bids received will be publicly opened at 11:30 AM CST on Wednesday, October 7th in the OMB Conference Room JW-101 on the first floor of the J-Wing in the State Capitol, 600 East Boulevard Avenue, Bismarck, North Dakota. Bids received after the scheduled opening time will be returned to the Bidders unopened. Bids which do not comply with the Bond and Licensing provisions and any deficient bid submitted will be resealed and returned to the Bidder. Submit bids in duplicate on the forms provided by the Architect for the MULTIPLE PRIME BID for the:

STATE OF NORTH DAKOTA ND STATE LIBRARY RENOVATION

All bids shall be in accordance with the Contract Documents as prepared by J2 Studio Architecture + Design, PC, 919 South 7th Street, Suite 400, Bismarck, ND 58504. Bona fide Prime Contract Bidders may secure copies of the proposed Contract Documents by the following methods:

Printed Procurement and Contracting Documents: Obtain on September 15, 2026 by contacting Architect. Contractor shall be responsible for the cost of all reproduction for bid and construction documents.

Online Procurement and Contracting Documents: Obtain access on September 15, 2026 by contacting Architect. Online access will be provided to all registered bidders and suppliers.

Viewing Procurement and Contracting Documents: Copies of the plans and specifications are also on file and open for public inspection at:

Bismarck-Mandan Builders Exchange, Mandan, ND
Bismarck Builders Exchange, Bismarck, ND
Fargo-Moorhead Builders Exchange, Fargo, ND
Minnesota Builders Exchange, Minneapolis, MN
Builders Exchange of Billings, Billings, MT
Bozeman Plan Room, Bozeman, MT
Missoula Plans Exchange, Missoula, MT
Construction Industry Center, Rapid City, SD

In compliance with the laws of the state of North Dakota, each Contractor must be licensed for the highest amount of his bid as stated in Section 43-07-05 of the North Dakota Century Code.

All bids must be accompanied by a separate envelope containing the contractor's license and bid security complying with Section 48-01.2-05 of the North Dakota Century Code. This separate envelope shall be attached to the outside of the BID envelope. The bid security must be in a sum equal to five (5%) percent of the full amount of the bid; including all add Alternates, and must be in the form of a bidder's bond. The copy of the license or Certificate of Renewal thereof issued by the Secretary of State must be enclosed in the required bid bond envelope complying with Section 43-07-12 of the North Dakota Century Code.

No bid may be read or considered if the bid does not fully comply with the requirements of Section 48-01.2-05 and that any deficient bid submitted must be resealed and returned to the bidder immediately.

Bidders of this Work will be required to comply with the President's Executive Order #11246, EQUAL EMPLOYMENT OPPORTUNITY, AS AMENDED BY Executive Order #11375 and the provisions thereof, and as supplemented in applicable Department of Labor Regulations 41 CFR, Part 60.

The state of North Dakota does not discriminate on the basis of race, color, national origin, sex, religion, age, or disability in employment or the provision of services, and complies with the provisions of the North Dakota Human Rights Act.

The Owner reserves the right to reject any and all bids and rebid the project until a satisfactory bid is received in accordance with 48-01.2-07. The Owner further reserves the right to hold all bids for a period of SIXTY (60) DAYS AFTER THE DATE OF THE OPENING.

Dated this 15th day of September, 2026
STATE OF NORTH DAKOTA
Office of Management and Budget, Facilities Management Division

/s/ Ms. Mary Soucie; State Librarian

Published September 15, September 22, September 29, 2026

**SECTION 00 2113
INSTRUCTIONS TO BIDDERS**

SUMMARY

1.01 SEE AIA A701, INSTRUCTIONS TO BIDDERS FOLLOWING THIS DOCUMENT.

1.02 RELATED DOCUMENTS

- A. Document 00 4336 - Proposed Subcontractors Form.
- B. Document 00 4373 - Proposed Schedule of Values Form.

INVITATION

2.01 BID SUBMISSION

- A. Multiple Prime Bids signed and under seal, executed, and dated will be received at the office of the Owner at 600 East Boulevard Avenue, Bismarck, ND 58505 before 11:30 a.m. local standard time on the 7th day of October, 2026. Bids shall be delivered to the OMB Conference Room JW-101 on the first floor of the J-Wing in the Capitol at the time of bid, or the office of OMB Facility Management on the 4th Floor of the Capitol by 1:30pm.
- B. Offers submitted after the above time shall be returned to the bidder unopened.
- C. Offers will be opened publicly immediately after the time for receipt of bids.

2.02 INTENT

- A. The intent of this Bid request is to obtain an offer to perform work to complete a renovation of the existing ground floor of the State Library building, including new circulation desk, office and support space and new flooring; and an alternate bid for new flooring in other areas of the ground and first floors located at 604 East Boulevard Avenue, Bismarck, ND 58505 for a Stipulated Sum contract, in accordance with Contract Documents.

2.03 WORK IDENTIFIED IN THE CONTRACT DOCUMENTS

- A. Work of this proposed Contract comprises renovation, including general construction, mechanical, and electrical Work.

2.04 CONTRACT TIME

- A. Commencement date is anticipated to be October 21, 2026. Substantial Completion shall be April 7, 2027. Final Completion shall be April 21, 2027.
- B. Identify Contract Time in the Bid Form. The completion date in the Agreement shall be the Contract Time added to the commencement date.

BID DOCUMENTS AND CONTRACT DOCUMENTS

3.01 CONTRACT DOCUMENTS IDENTIFICATION

- A. Contract Documents are identified as Project Number J22525 State of North Dakota ND State Library Renovation, as prepared by Architect who is located at 919 South 7th Street, Suite 400, Bismarck, ND 58504, and with contents as identified in the Table of Contents.

3.02 AVAILABILITY

- A. Printed Procurement and Contracting Documents: Bid documents may be obtained at J2 Studio Architecture + Design, PC, 919 South 7th Street, Suite 400, Bismarck, ND 58504. Phone number is 701-255-1622. Cost for the drawings will be \$2.10 per sheet, and cost for the specifications will be \$.12 per page. **Cost of all documents is non-refundable. Contractor shall be responsible for cost of all reproduction of bid and construction documents.**
- B. Online Procurement and Contracting Documents: Obtain access on by contacting Architect. Online access will be provided to all registered bidders and suppliers.

- C. Bid Documents are made available only for the purpose of obtaining offers for this project. Their use does not grant a license for other purposes.

3.03 EXAMINATION

- A. Bid Documents are on display at the offices of the following construction plan rooms:
 - 1. Bismarck/Mandan Builders Exchange; Mandan, ND.
 - 2. Bismarck Builders Exchange; Bismarck, ND.
 - 3. Fargo-Moorhead Builders Exchange; Fargo, ND.
 - 4. Minnesota Builders Exchange; Minneapolis, MN.
 - 5. Builders Exchange of Billings; Billings, MT.
 - 6. Bozeman Plan Room; Bozeman, MT.
 - 7. Missoula Plans Exchange; Missoula, MT.
 - 8. Construction Industry Center; Rapid City, SD.
- B. Upon receipt of Bid Documents verify that documents are complete. Notify Architect should the documents be incomplete.
- C. Immediately notify Architect upon finding discrepancies or omissions in the Bid Documents.

3.04 INQUIRIES/ADDENDA

- A. Direct questions to James Devine, email; james@j2studio.us and Carrie Meyer, email; carrie@j2studio.us.
- B. Addenda may be issued during the bidding period. All Addenda become part of Contract Documents. Include resultant costs in the Bid Amount.
- C. Verbal answers are not binding on any party.
- D. Clarifications requested by bidders must be in writing not less than 5 days before date set for receipt of bids. The reply will be in the form of an Addendum, a copy of which will be forwarded to known recipients.

3.05 PRODUCT/ASSEMBLY/SYSTEM SUBSTITUTIONS

- A. Where the Bid Documents stipulate a particular product, substitutions will be considered up to 5 days before receipt of bids. **No post bid substitutions will be accepted.**
- B. When a request to substitute a product is made, Architect may approve the substitution and will issue an Addendum to known bidders.
- C. The submission shall provide sufficient information to determine acceptability of such products.
- D. Provide complete information on required revisions to other work to accommodate each proposed substitution.
- E. Provide products as specified unless substitutions are submitted in this manner and accepted.
- F. See Section 01 6000 - Product Requirements for additional requirements.

SITE ASSESSMENT

4.01 PREBID CONFERENCE

- A. A prebid conference will be scheduled at a date and time to be determined.
- B. All Prime General, Mechanical and Electrical contract bidders and suppliers are invited.
 - 1. Contractors who do not attend may request access to the space from the Owner 48 hours prior to the requested visit date. Time and day will need to be coordinated with the Architect and Owner's representative.
- C. Representatives of Architect and design team will be in attendance.
- D. Information relevant to the Bid Documents will be recorded in an Addendum, issued to Bid Document recipients.

BID SUBMISSION

5.01 SUBMISSION PROCEDURE

- A. Bidders shall be solely responsible for the delivery of their bids in the manner and time prescribed.
- B. Submit two copies of the executed offer on the Bid Forms provided, signed and sealed with the required security in a closed opaque envelope, clearly identified with bidder's name, project name and Owner's name on the outside.
- C. Double Envelope: Submit one copy of all required documents listed in sealed in closed, opaque envelopes, clearly identified with bidder's name, project name, Owner's name, and acknowledged addenda on the outside of the large envelope.
 - 1. Small Envelope: Provide one copy of valid contractor's license and bid bond. Attach securely to large envelope.
 - 2. Large Envelope: Provide one copy of the executed offer on the Bid Forms provided, signed and sealed.

5.02 BID INELIGIBILITY

- A. Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind, may at the discretion of the Owner, be declared unacceptable.

BID ENCLOSURES/REQUIREMENTS

6.01 SECURITY DEPOSIT

- A. Bids shall be accompanied by a security deposit as follows:
 - 1. Bid Bond of a sum no less than 5 percent of the Bid Amount on AIA A310 Bid Bond Form.
- B. Endorse the Bid Bond in the name of the Owner as obligee, signed and sealed by the principal (Contractor) and surety.
- C. The security deposit will be returned after delivery to the Owner of the required Performance and Payment Bond(s) by the accepted bidder.
- D. Include the cost of bid security in the Bid Amount.
- E. If no contract is awarded, all security deposits will be returned.

6.02 BID FORM REQUIREMENTS

- A. Complete all requested information in the Bid Form and Appendices.

6.03 BID FORM SIGNATURE

- A. The Bid Form shall be signed by the bidder, as follows:
 - 1. Sole Proprietorship: Signature of sole proprietor in the presence of a witness who will also sign. Insert the words "Sole Proprietor" under the signature. Affix seal.
 - 2. Partnership: Signature of all partners in the presence of a witness who will also sign. Insert the word "Partner" under each signature. Affix seal to each signature.
 - 3. Corporation: Signature of a duly authorized signing officer(s) in their normal signatures. Insert the officer's capacity in which the signing officer acts, under each signature. Affix the corporate seal. If the bid is signed by officials other than the president and secretary of the company, or the president/secretary/treasurer of the company, a copy of the by-law resolution of their board of directors authorizing them to do so, must also be submitted with the Bid Form in the bid envelope.
 - 4. Joint Venture: Each party of the joint venture shall execute the Bid Form under their respective seals in a manner appropriate to such party as described above, similar to the requirements of a Partnership.

6.04 ADDITIONAL BID INFORMATION

- A. Submit the following Supplements 48 hours after Notice to Proceed:

1. Document 00 4336 - Proposed Subcontractors Form: Include the names of all Subcontractors and the portions of the Work they will perform.
2. Document 00 4373 - Proposed Schedule of Values Form identifies the Bid Amount segmented into portions as requested.

OFFER ACCEPTANCE/REJECTION

7.01 DURATION OF OFFER

- A. Bids shall remain open to acceptance and shall be irrevocable for a period of sixty (60) days after the bid closing date.

7.02 ACCEPTANCE OF OFFER

- A. Owner reserves the right to accept or reject any or all offers.
- B. After acceptance by Owner, Architect on behalf of Owner, will issue to the successful bidder, a written Notice of Award/Notice To Proceed.

END OF SECTION

ADVERTISEMENT FOR BIDS

The State of North Dakota, Bismarck, North Dakota will receive sealed bids for the State of North Dakota ND State Library Renovation in Bismarck, ND.

All bids received will be publicly opened at 11:30 AM CST on Wednesday, October 7th in the OMB Conference Room JW-101 on the first floor of the J-Wing in the State Capitol, 600 East Boulevard Avenue, Bismarck, North Dakota. Bids received after the scheduled opening time will be returned to the Bidders unopened. Bids which do not comply with the Bond and Licensing provisions and any deficient bid submitted will be resealed and returned to the Bidder. Submit bids in duplicate on the forms provided by the Architect for the MULTIPLE PRIME BID for the:

STATE OF NORTH DAKOTA ND STATE LIBRARY RENOVATION

All bids shall be in accordance with the Contract Documents as prepared by J2 Studio Architecture + Design, PC, 919 South 7th Street, Suite 400, Bismarck, ND 58504. Bona fide Prime Contract Bidders may secure copies of the proposed Contract Documents by the following methods:

Printed Procurement and Contracting Documents: Obtain on September 15, 2026 by contacting Architect. Contractor shall be responsible for the cost of all reproduction for bid and construction documents.

Online Procurement and Contracting Documents: Obtain access on September 15, 2026 by contacting Architect. Online access will be provided to all registered bidders and suppliers.

Viewing Procurement and Contracting Documents: Copies of the plans and specifications are also on file and open for public inspection at:

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Bismarck Builders Exchange, Bismarck, ND
Fargo-Moorhead Builders Exchange, Fargo, ND
Minnesota Builders Exchange, Minneapolis, MN
Builders Exchange of Billings, Billings, MT
Bozeman Plan Room, Bozeman, MT
Missoula Plans Exchange, Missoula, MT
Construction Industry Center, Rapid City, SD

In compliance with the laws of the state of North Dakota, each Contractor must be licensed for the highest amount of his bid as stated in Section 43-07-05 of the North Dakota Century Code.

All bids must be accompanied by a separate envelope containing the contractor's license and bid security complying with Section 48-01.2-05 of the North Dakota Century Code. This separate envelope shall be attached to the outside of the BID envelope. The bid security must be in a sum equal to five (5%) percent of the full amount of the bid; including all add Alternates, and must be in the form of a bidder's bond. The copy of the license or Certificate of Renewal thereof issued by the Secretary of State must be enclosed in the required bid bond envelope complying with Section 43-07-12 of the North Dakota Century Code.

No bid may be read or considered if the bid does not fully comply with the requirements of Section 48-01.2-05 and that any deficient bid submitted must be resealed and returned to the bidder immediately.

Bidders of this Work will be required to comply with the President's Executive Order #11246, EQUAL EMPLOYMENT OPPORTUNITY, AS AMENDED BY Executive Order #11375 and the provisions thereof, and as supplemented in applicable Department of Labor Regulations 41 CFR, Part 60.

The state of North Dakota does not discriminate on the basis of race, color, national origin, sex, religion, age, or disability in employment or the provision of services, and complies with the provisions of the North Dakota Human Rights Act.

The Owner reserves the right to reject any and all bids and rebid the project until a satisfactory bid is received in accordance with 48-01.2-07. The Owner further reserves the right to hold all bids for a period of SIXTY (60) DAYS AFTER THE DATE OF THE OPENING.

Dated this 15th day of September, 2026
STATE OF NORTH DAKOTA
Office of Management and Budget, Facilities Management Division

/s/ Ms. Mary Soucie; State Librarian

Published September 15, September 22, September 29, 2026

**SECTION 00 4000
PROCUREMENT FORMS AND SUPPLEMENTS**

PART 1 GENERAL

1.01 FORMS

- A. Use the following forms for the specified purposes unless otherwise indicated elsewhere in the procurement requirements.
- B. Instructions to Bidders: AIA A701.
- C. Substitution Request Form (During Procurement): Substitution Request Form on the following page.
- D. Bid Form: Section 00 4100 - Bid Form.
- E. Procurement Form Supplements:
 - 1. Bid Security Form: AIA A310.
 - 2. Proposed Schedule of Values Form: AIA G703.

1.02 REFERENCE STANDARDS

- A. AIA A310 - Bid Bond; 2010.
- B. AIA A701 - Instructions to Bidders; 2018.
- C. AIA G703 - Continuation Sheet; 1992.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 00 4100
BID FORM**

THE PROJECT AND THE PARTIES

1.01 TO:

- A. State of North Dakota (Owner)
604 East Boulevard Avenue
Bismarck, North Dakota 58505

1.02 FOR:

- A. Project: State of North Dakota ND State Library Renovation
B. Architect's Project Number: J22525
604 East Boulevard Avenue
Bismarck, North Dakota 58505

1.03 DATE: _____ (BIDDER TO ENTER DATE)

1.04 SUBMITTED BY: (BIDDER TO ENTER NAME AND ADDRESS)

- A. Bidder's Full Name _____
1. Address _____
2. City, State, Zip _____
B. Bid Type: (General, Mechanical, Electrical): _____

1.05 OFFER

- A. Having examined the Place of The Work and all matters referred to in the Instructions to Bidders and the Bid Documents prepared by J2 Studio Architecture + Design, PC for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sum of:
B. _____ dollars
(\$ _____), in lawful money of the United States of America.
C. We have included the required security deposit as required by the Instruction to Bidders.
D. All applicable federal taxes are included and State of North Dakota taxes are included in the Bid Sum.
E. We will comply and provide required insurance per State's Addendum to AIA Documents A101-2017 and A201-2017, Article 11.

1.06 ACCEPTANCE

- A. This offer shall be open to acceptance and is irrevocable for sixty days from the bid closing date.
B. If this bid is accepted by Owner within the time period stated above, we will:
1. Execute the Agreement within seven days of receipt of Notice of Award.
2. Commence work within seven days after written Notice to Proceed of this bid.
C. If this bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required Bond(s), the security deposit shall be forfeited as damages to Owner by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this bid and the bid upon which a Contract is signed.
D. In the event our bid is not accepted within the time stated above, the required security deposit shall be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

1.07 CONTRACT TIME

- A. If this Bid is accepted, we will:
- B. Complete the Work by the _____ day of _____, _____. (Bidder to enter day, month, and year.)

1.08 CHANGES TO THE WORK

- A. Refer to State's Addendum to AIA Documents A101-2017 and A201-2017 paragraph 7.2.3 for limits on percentages.

1.09 ADDENDA

- A. The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum.
 - 1. Addendum # _____ Dated _____.
 - 2. Addendum # _____ Dated _____.
 - 3. Addendum # _____ Dated _____.
 - 4. Addendum # _____ Dated _____.
 - 5. Addendum # _____ Dated _____.

1.10 BID FORM SUPPLEMENTS

- A. We agree to submit the following Supplements to Bid Forms within 48 hours after the Notice to Proceed:
 - 1. Document 00 4336: Proposed Subcontractors Form; Include the names of all Subcontractors and the portions of the Work they will perform.
 - 2. Document 00 4373 - Proposed Schedule of Values Form identifies the Bid Price/Sum segmented into portions as requested.

1.11 BID FORM SIGNATURE(S)

- A. The Corporate Seal of
- B. _____
- C. (Bidder - print the full name of your firm)
- D. was hereunto affixed in the presence of:
- E. _____
- F. (Authorized signing officer, Title)
- G. (Seal)
- H. _____
- I. (Authorized signing officer, Title)

1.12 IF THE BID IS A JOINT VENTURE OR PARTNERSHIP, ADD ADDITIONAL FORMS OF EXECUTION FOR EACH MEMBER OF THE JOINT VENTURE IN THE APPROPRIATE FORM OR FORMS AS ABOVE.

END OF SECTION

**SECTION 00 4323
ALTERNATES FORM**

PARTICULARS

1.01 THE FOLLOWING IS THE LIST OF ALTERNATES REFERENCED IN THE BID SUBMITTED BY:

1.02 (BIDDER) _____

1.03 TO (OWNER): STATE OF NORTH DAKOTA

1.04 DATED _____ AND WHICH IS AN INTEGRAL PART OF THE BID FORM.

ALTERNATES LIST

2.01 THE FOLLOWING AMOUNTS SHALL BE THE BID AMOUNT. REFER TO SECTION.

ALTERNATE BID # G1: CARPET REPLACEMENT ON GROUND AND FIRST FLOORS:

\$ _____

END OF SECTION

**SECTION 00 5000
CONTRACTING FORMS AND SUPPLEMENTS**

PART 1 GENERAL

**1.01 CONTRACTOR IS RESPONSIBLE FOR OBTAINING A VALID LICENSE TO USE ALL
COPYRIGHTED DOCUMENTS SPECIFIED BUT NOT INCLUDED IN THE PROJECT MANUAL.**

1.02 AGREEMENT AND CONDITIONS OF THE CONTRACT

- A. See Section 00 5200 - Agreement Form for the Agreement form to be executed.
- B. See Section 00 7200 - General Conditions for the General Conditions.
- C. The Agreement is based on AIA A101.
- D. The General Conditions are based on AIA A201.

1.03 FORMS

- A. Use the following forms for the specified purposes unless otherwise indicated elsewhere in Contract Documents.
- B. Bond Forms:
 - 1. Performance and Payment Bond Form: AIA A312.
- C. Post-Award Certificates and Other Forms:
 - 1. Submittal Transmittal Letter Form: AIA G810.
 - 2. Application for Payment Forms: AIA G702 with AIA G703 (for Contractors).
- D. Clarification and Modification Forms:
 - 1. Architect's Supplemental Instructions Form: AIA G710.
 - 2. Construction Change Directive Form: AIA G714.
 - 3. Proposal Request Form: AIA G709.
 - 4. Change Order Form: AIA G701.
- E. Closeout Forms:
 - 1. Certificate of Substantial Completion Form: AIA G704.

1.04 REFERENCE STANDARDS

- A. AIA A101 - Standard Form of Agreement Between Owner and Contractor where the basis of Payment is a Stipulated Sum; 2017.
- B. AIA A201 - General Conditions of the Contract for Construction; 2017.
- C. AIA A312 - Performance Bond and Payment Bond; 2010.
- D. AIA G701 - Change Order; 2017.
- E. AIA G702 - Application and Certificate for Payment; 1992.
- F. AIA G703 - Continuation Sheet; 1992.
- G. AIA G704 - Certificate of Substantial Completion; 2017.
- H. AIA G709 - Proposal Request; 2018.
- I. AIA G710 - Architect's Supplemental Instructions; 2017.
- J. AIA G714 - Construction Change Directive; 2017.
- K. AIA G810 - Transmittal Letter; 2001.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 00 5200
AGREEMENT FORM**

PART 1 GENERAL

1.01 FORM OF AGREEMENT

1.02 THE AGREEMENT TO BE EXECUTED IS ATTACHED FOLLOWING THIS PAGE.

1.03 RELATED REQUIREMENTS

- A. Section 00 7200 - General Conditions.
- B. Section 00 7300 - Supplementary Conditions.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

AIA® Document A101® – 2017

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the ____ day of ____ in the year Two Thousand Twenty-Six
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

Mary J. Soucie
604 E. Boulevard Avenue
Bismarck, ND 58505
(701) 328-4654

and the Contractor:
(Name, legal status, address and other information)



for the following Project:
(Name, location and detailed description)

J22525 ND State Library Renovation
601 E. Boulevard Avenue
Bismarck, ND 58505
Renovation of existing State Library to include new circulation desk, office and support space and new finishes throughout.

The Architect:
(Name, legal status, address and other information)

James Devine, AIA, NCARB, LEED-AP
919 S. 7th Street Suite #400
Bismarck, ND 58504
(701) 255-1622

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:

The author of this document may have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A101®–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201®–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS
- 2 THE WORK OF THIS CONTRACT
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
- 4 CONTRACT SUM
- 5 PAYMENTS
- 6 DISPUTE RESOLUTION
- 7 TERMINATION OR SUSPENSION
- 8 MISCELLANEOUS PROVISIONS
- 9 ENUMERATION OF CONTRACT DOCUMENTS

EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:

(Check one of the following boxes.)

☒ The date of this Agreement.

☐ A date set forth in a notice to proceed issued by the Owner.

☐ Established as follows:

(Insert a date or a means to determine the date of commencement of the Work.)

☐

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:

(Check one of the following boxes and complete the necessary information.)

[] Not later than () calendar days from the date of commencement of the Work.

[X] By the following date:

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date
-----------------	-----------------------------

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be (\$), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price
------	-------

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement. (Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance
------	-------	---------------------------

§ 4.3 Allowances, if any, included in the Contract Sum: (Identify each allowance.)

Item	Price
------	-------

§ 4.4 Unit prices, if any: (Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit (\$0.00)
------	-----------------------	-------------------------

§ 4.5 Liquidated damages, if any: (Insert terms and conditions for liquidated damages, if any.)

§ 4.6 Other: (Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment

issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

§ 5.1.3 Contractors shall submit all payments for application dated the last day of the month. Provided that an Application for Payment is received by the Architect not later than the fifth day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the first day of the following month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than **forty-five (45)** days after the Architect receives the Application for Payment. *(Federal, state or local laws may require payment within a certain period of time.)*

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

- .1 That portion of the Contract Sum properly allocable to completed Work;
- .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and
- .5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

10%

§ 5.1.7.1.1 The following items are not subject to retainage:

(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:

(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

Refer to Article 9.6.10 of the Supplementary General Conditions

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:

(Insert any other conditions for release of retainage upon Substantial Completion.)

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

§ 5.1.9 Except with the Owner’s prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor’s responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner’s final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect’s final Certificate for Payment, or as follows:

§ 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

0.00 % per annum

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.

(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

Mary Soucie

601 E. Boulevard Avenue, Bismarck, ND 58505

701-328-4564

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:

(Check the appropriate box.)

☒ Arbitration pursuant to Section 15.4 of AIA Document A201–2017

☐ Litigation in a court of competent jurisdiction

☐ Other (Specify)

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

§ 7.1.1 If the Contract is terminated for the Owner’s convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:

(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner’s convenience.)

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner’s representative:

(Name, address, email address, and other information)

Mary J. Soucie
604 E. Boulevard Avenue
Bismarck, ND 58505
(701) 328-4654

msoucie@nd.gov

§ 8.3 The Contractor’s representative:

(Name, address, email address, and other information)

§ 8.4 Neither the Owner’s nor the Contractor’s representative shall be changed without ten days’ prior notice to the other

party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101™–2017 Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with a building information modeling exhibit, if completed, or as otherwise set forth below:

(If other than in accordance with a building information modeling exhibit, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

§ 8.7 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor
- .2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction
- .4 Building information modeling exhibit, dated as indicated below:
(Insert the date of the building information modeling exhibit incorporated into this Agreement.)

- .5 Drawings

Number	Title	Date
--------	-------	------

- .6 Specifications

Section	Title	Date	Pages
---------	-------	------	-------

- .7 Addenda, if any:

Number	Date	Pages
--------	------	-------

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

- .8 Other Exhibits:
(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

☐ AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017 incorporated into this Agreement.)

☐ The Sustainability Plan:

Title	Date	Pages
-------	------	-------

☒ Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
Addendum	State's Addendum to AIA Documents A101-2017 and A201-2017		

.9 Other documents, if any, listed below:

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™-2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

This Agreement entered into as of the day and year first written above.

OWNER (Signature)

(Printed name and title)

CONTRACTOR (Signature)

(Printed name and title)

**SECTION 00 7200
GENERAL CONDITIONS**

FORM OF GENERAL CONDITIONS

1.01 THE GENERAL CONDITIONS APPLICABLE TO THIS CONTRACT IS ATTACHED FOLLOWING THIS PAGE.

RELATED REQUIREMENTS

2.01 SECTION 00 7300 - SUPPLEMENTARY CONDITIONS.

SUPPLEMENTARY CONDITIONS

3.01 REFER TO DOCUMENT 00 7300 - SUPPLEMENTARY CONDITIONS FOR AMENDMENTS TO THESE GENERAL CONDITIONS.

END OF SECTION

AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

J22525 ND State Library Renovation
601 E. Boulevard Avenue
Bismarck, ND 58505

THE OWNER:

(Name, legal status and address)

North Dakota State Library
604 E. Boulevard Avenue
Bismarck, ND 58505

THE ARCHITECT:

(Name, legal status and address)

J2 Studio Architecture + Design, PC
919 S. 7th Street Suite #400
Bismarck, ND 58504

TABLE OF ARTICLES

- 1 GENERAL PROVISIONS
- 2 OWNER
- 3 CONTRACTOR
- 4 ARCHITECT
- 5 SUBCONTRACTORS
- 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
- 7 CHANGES IN THE WORK
- 8 TIME
- 9 PAYMENTS AND COMPLETION
- 10 PROTECTION OF PERSONS AND PROPERTY

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For guidance in modifying this document to include supplementary conditions, see AIA Document A503™–2017, Guide for Supplementary Conditions.

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- 11 INSURANCE AND BONDS
- 12 UNCOVERING AND CORRECTION OF WORK
- 13 MISCELLANEOUS PROVISIONS
- 14 TERMINATION OR SUSPENSION OF THE CONTRACT
- 15 CLAIMS AND DISPUTES



INDEX

(Topics and numbers in bold are Section headings.)

Acceptance of Nonconforming Work

9.6.6, 9.9.3, **12.3**

Acceptance of Work

9.6.6, 9.8.2, 9.9.3, 9.10.1, 9.10.3, **12.3**

Access to Work

3.16, 6.2.1, **12.1**

Accident Prevention

10

Acts and Omissions

3.2, 3.3.2, 3.12.8, 3.18, 4.2.3, 8.3.1, 9.5.1, 10.2.5, 10.2.8, 13.3.2, 14.1, 15.1.2, 15.2

Addenda

1.1.1

Additional Costs, Claims for

3.7.4, 3.7.5, 10.3.2, 15.1.5

Additional Inspections and Testing

9.4.2, 9.8.3, 12.2.1, **13.4**

Additional Time, Claims for

3.2.4, 3.7.4, 3.7.5, 3.10.2, 8.3.2, **15.1.6**

Administration of the Contract

3.1.3, **4.2**, 9.4, 9.5

Advertisement or Invitation to Bid

1.1.1

Aesthetic Effect

4.2.13

Allowances

3.8

Applications for Payment

4.2.5, 7.3.9, 9.2, **9.3**, 9.4, 9.5.1, 9.5.4, 9.6.3, 9.7, 9.10

Approvals

2.1.1, 2.3.1, 2.5, 3.1.3, 3.10.2, 3.12.8, 3.12.9,

3.12.10.1, 4.2.7, 9.3.2, 13.4.1

Arbitration

8.3.1, 15.3.2, **15.4**

ARCHITECT

4

Architect, Definition of

4.1.1

Architect, Extent of Authority

2.5, 3.12.7, 4.1.2, 4.2, 5.2, 6.3, 7.1.2, 7.3.4, 7.4, 9.2, 9.3.1, 9.4, 9.5, 9.6.3, 9.8, 9.10.1, 9.10.3, 12.1, 12.2.1, 13.4.1, 13.4.2, 14.2.2, 14.2.4, 15.1.4, 15.2.1

Architect, Limitations of Authority and

Responsibility

2.1.1, 3.12.4, 3.12.8, 3.12.10, 4.1.2, 4.2.1, 4.2.2, 4.2.3, 4.2.6, 4.2.7, 4.2.10, 4.2.12, 4.2.13, 5.2.1, 7.4, 9.4.2, 9.5.4, 9.6.4, 15.1.4, 15.2

Architect's Additional Services and Expenses

2.5, 12.2.1, 13.4.2, 13.4.3, 14.2.4

Architect's Administration of the Contract

3.1.3, 3.7.4, 15.2, 9.4.1, 9.5

Architect's Approvals

2.5, 3.1.3, 3.5, 3.10.2, 4.2.7

Architect's Authority to Reject Work

3.5, 4.2.6, 12.1.2, 12.2.1

Architect's Copyright

1.1.7, 1.5

Architect's Decisions

3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 4.2.14, 6.3, 7.3.4, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4.1, 9.5, 9.8.4, 9.9.1, 13.4.2, 15.2

Architect's Inspections

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 13.4

Architect's Instructions

3.2.4, 3.3.1, 4.2.6, 4.2.7, 13.4.2

Architect's Interpretations

4.2.11, 4.2.12

Architect's Project Representative

4.2.10

Architect's Relationship with Contractor

1.1.2, 1.5, 2.3.3, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2, 3.5, 3.7.4, 3.7.5, 3.9.2, 3.9.3, 3.10, 3.11, 3.12, 3.16, 3.18, 4.1.2, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5, 9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3, 12, 13.3.2, 13.4, 15.2

Architect's Relationship with Subcontractors

1.1.2, 4.2.3, 4.2.4, 4.2.6, 9.6.3, 9.6.4, 11.3

Architect's Representations

9.4.2, 9.5.1, 9.10.1

Architect's Site Visits

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.4

Asbestos

10.3.1

Attorneys' Fees

3.18.1, 9.6.8, 9.10.2, 10.3.3

Award of Separate Contracts

6.1.1, 6.1.2

Award of Subcontracts and Other Contracts for Portions of the Work

5.2

Basic Definitions

1.1

Bidding Requirements

1.1.1

Binding Dispute Resolution

8.3.1, 9.7, 11.5, 13.1, 15.1.2, 15.1.3, 15.2.1, 15.2.5, 15.2.6.1, 15.3.1, 15.3.2, 15.3.3, 15.4.1

Bonds, Lien

7.3.4.4, 9.6.8, 9.10.2, 9.10.3

Bonds, Performance, and Payment

7.3.4.4, 9.6.7, 9.10.3, **11.1.2**, **11.1.3**, **11.5**

Building Information Models Use and Reliance

1.8

Building Permit

3.7.1

Capitalization

1.3

Certificate of Substantial Completion

9.8.3, 9.8.4, 9.8.5

Certificates for Payment

4.2.1, 4.2.5, 4.2.9, 9.3.3, **9.4**, 9.5, 9.6.1, 9.6.6, 9.7,

9.10.1, 9.10.3, 14.1.1.3, 14.2.4, 15.1.4
 Certificates of Inspection, Testing or Approval
 13.4.4
 Certificates of Insurance
 9.10.2
Change Orders
 1.1.1, 3.4.2, 3.7.4, 3.8.2.3, 3.11, 3.12.8, 4.2.8, 5.2.3,
 7.1.2, 7.1.3, **7.2**, 7.3.2, 7.3.7, 7.3.9, 7.3.10, 8.3.1,
 9.3.1.1, 9.10.3, 10.3.2, 11.2, 11.5, 12.1.2
Change Orders, Definition of
7.2.1
CHANGES IN THE WORK
 2.2.2, 3.11, 4.2.8, 7, 7.2.1, 7.3.1, 7.4, 8.3.1, 9.3.1.1,
 11.5
Claims, Definition of
15.1.1
 Claims, Notice of
 1.6.2, 15.1.3
CLAIMS AND DISPUTES
 3.2.4, 6.1.1, 6.3, 7.3.9, 9.3.3, 9.10.4, 10.3.3, **15**, 15.4
 Claims and Timely Assertion of Claims
 15.4.1
Claims for Additional Cost
 3.2.4, 3.3.1, 3.7.4, 7.3.9, 9.5.2, 10.2.5, 10.3.2, **15.1.5**
Claims for Additional Time
 3.2.4, 3.3.1, 3.7.4, 6.1.1, 8.3.2, 9.5.2, 10.3.2, **15.1.6**
Concealed or Unknown Conditions, Claims for
3.7.4
 Claims for Damages
 3.2.4, 3.18, 8.3.3, 9.5.1, 9.6.7, 10.2.5, 10.3.3, 11.3,
 11.3.2, 14.2.4, 15.1.7
 Claims Subject to Arbitration
 15.4.1
Cleaning Up
3.15, 6.3
 Commencement of the Work, Conditions Relating to
 2.2.1, 3.2.2, 3.4.1, 3.7.1, 3.10.1, 3.12.6, 5.2.1, 5.2.3,
 6.2.2, 8.1.2, 8.2.2, 8.3.1, 11.1, 11.2, **15.1.5**
Commencement of the Work, Definition of
8.1.2
Communications
 3.9.1, **4.2.4**
 Completion, Conditions Relating to
 3.4.1, 3.11, 3.15, 4.2.2, 4.2.9, 8.2, 9.4.2, 9.8, 9.9.1,
 9.10, 12.2, 14.1.2, 15.1.2
COMPLETION, PAYMENTS AND
9
 Completion, Substantial
 3.10.1, 4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, 9.8, 9.9.1,
 9.10.3, 12.2, 15.1.2
 Compliance with Laws
 2.3.2, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 9.6.4, 10.2.2,
 13.1, 13.3, 13.4.1, 13.4.2, 13.5, 14.1.1, 14.2.1.3,
 15.2.8, 15.4.2, 15.4.3
 Concealed or Unknown Conditions
 3.7.4, 4.2.8, 8.3.1, 10.3

Conditions of the Contract
 1.1.1, 6.1.1, 6.1.4
 Consent, Written
 3.4.2, 3.14.2, 4.1.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3, 13.2,
 15.4.4.2
Consolidation or Joinder
15.4.4
CONSTRUCTION BY OWNER OR BY
SEPARATE CONTRACTORS
 1.1.4, **6**
Construction Change Directive, Definition of
7.3.1
Construction Change Directives
 1.1.1, 3.4.2, 3.11, 3.12.8, 4.2.8, 7.1.1, 7.1.2, 7.1.3,
7.3, 9.3.1.1
 Construction Schedules, Contractor's
 3.10, 3.11, 3.12.1, 3.12.2, 6.1.3, 15.1.6.2
Contingent Assignment of Subcontracts
5.4, 14.2.2.2
Continuing Contract Performance
15.1.4
 Contract, Definition of
1.1.2
CONTRACT, TERMINATION OR
SUSPENSION OF THE
 5.4.1.1, 5.4.2, 11.5, **14**
 Contract Administration
 3.1.3, 4, 9.4, 9.5
 Contract Award and Execution, Conditions Relating
 to
 3.7.1, 3.10, 5.2, 6.1
 Contract Documents, Copies Furnished and Use of
 1.5.2, 2.3.6, 5.3
Contract Documents, Definition of
1.1.1
Contract Sum
 2.2.2, 2.2.4, 3.7.4, 3.7.5, 3.8, 3.10.2, 5.2.3, 7.3, 7.4,
9.1, 9.2, 9.4.2, 9.5.1.4, 9.6.7, 9.7, 10.3.2, 11.5, 12.1.2,
 12.3, 14.2.4, 14.3.2, 15.1.4.2, **15.1.5**, **15.2.5**
Contract Sum, Definition of
9.1
 Contract Time
 1.1.4, 2.2.1, 2.2.2, 3.7.4, 3.7.5, 3.10.2, 5.2.3, 6.1.5,
 7.2.1.3, 7.3.1, 7.3.5, 7.3.6, 7, 7, 7.3.10, 7.4, 8.1.1,
 8.2.1, 8.2.3, 8.3.1, 9.5.1, 9.7, 10.3.2, 12.1.1, 12.1.2,
 14.3.2, 15.1.4.2, 15.1.6.1, 15.2.5
Contract Time, Definition of
 8.1.1
CONTRACTOR
3
 Contractor, Definition of
3.1, **6.1.2**
Contractor's Construction and Submittal
Schedules
3.10, 3.12.1, 3.12.2, 4.2.3, 6.1.3, 15.1.6.2
 Contractor's Employees
 2.2.4, 3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6,

10.2, 10.3, 11.3, 14.1, 14.2.1.1

Contractor's Liability Insurance

11.1

Contractor's Relationship with Separate Contractors and Owner's Forces

3.12.5, 3.14.2, 4.2.4, 6, 11.3, 12.2.4

Contractor's Relationship with Subcontractors

1.2.2, 2.2.4, 3.3.2, 3.18.1, 3.18.2, 4.2.4, 5, 9.6.2, 9.6.7, 9.10.2, 11.2, 11.3, 11.4

Contractor's Relationship with the Architect

1.1.2, 1.5, 2.3.3, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2, 3.5.1, 3.7.4, 3.10, 3.11, 3.12, 3.16, 3.18, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5, 9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3, 12, 13.4, 15.1.3, 15.2.1

Contractor's Representations

3.2.1, 3.2.2, 3.5, 3.12.6, 6.2.2, 8.2.1, 9.3.3, 9.8.2

Contractor's Responsibility for Those Performing the Work

3.3.2, 3.18, 5.3, 6.1.3, 6.2, 9.5.1, 10.2.8

Contractor's Review of Contract Documents

3.2

Contractor's Right to Stop the Work

2.2.2, 9.7

Contractor's Right to Terminate the Contract

14.1

Contractor's Submittals

3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 9.2, 9.3, 9.8.2, 9.8.3, 9.9.1, 9.10.2, 9.10.3

Contractor's Superintendent

3.9, 10.2.6

Contractor's Supervision and Construction

Procedures

1.2.2, 3.3, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4, 7.1.3, 7.3.4, 7.3.6, 8.2, 10, 12, 14, 15.1.4

Coordination and Correlation

1.2, 3.2.1, 3.3.1, 3.10, 3.12.6, 6.1.3, 6.2.1

Copies Furnished of Drawings and Specifications

1.5, 2.3.6, 3.11

Copyrights

1.5, **3.17**

Correction of Work

2.5, 3.7.3, 9.4.2, 9.8.2, 9.8.3, 9.9.1, 12.1.2, **12.2**, 12.3, 15.1.3.1, 15.1.3.2, 15.2.1

Correlation and Intent of the Contract Documents

1.2

Cost, Definition of

7.3.4

Costs

2.5, 3.2.4, 3.7.3, 3.8.2, 3.15.2, 5.4.2, 6.1.1, 6.2.3, 7.3.3.3, 7.3.4, 7.3.8, 7.3.9, 9.10.2, 10.3.2, 10.3.6, 11.2, 12.1.2, 12.2.1, 12.2.4, 13.4, 14

Cutting and Patching

3.14, 6.2.5

Damage to Construction of Owner or Separate Contractors

3.14.2, 6.2.4, 10.2.1.2, 10.2.5, 10.4, 12.2.4

Damage to the Work

3.14.2, 9.9.1, 10.2.1.2, 10.2.5, 10.4, 12.2.4

Damages, Claims for

3.2.4, 3.18, 6.1.1, 8.3.3, 9.5.1, 9.6.7, 10.3.3, 11.3.2, 11.3, 14.2.4, 15.1.7

Damages for Delay

6.2.3, 8.3.3, 9.5.1.6, 9.7, 10.3.2, 14.3.2

Date of Commencement of the Work, Definition of **8.1.2**

Date of Substantial Completion, Definition of **8.1.3**

Day, Definition of

8.1.4

Decisions of the Architect

3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 6.3, 7.3.4, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4, 9.5.1, 9.8.4, 9.9.1, 13.4.2, 14.2.2, 14.2.4, 15.1, 15.2

Decisions to Withhold Certification

9.4.1, **9.5**, 9.7, 14.1.1.3

Defective or Nonconforming Work, Acceptance, Rejection and Correction of

2.5, 3.5, 4.2.6, 6.2.3, 9.5.1, 9.5.3, 9.6.6, 9.8.2, 9.9.3, 9.10.4, 12.2.1

Definitions

1.1, 2.1.1, 3.1.1, 3.5, 3.12.1, 3.12.2, 3.12.3, 4.1.1, 5.1, 6.1.2, 7.2.1, 7.3.1, 8.1, 9.1, 9.8.1, 15.1.1

Delays and Extensions of Time

3.2, **3.7.4**, 5.2.3, 7.2.1, 7.3.1, **7.4**, **8.3**, 9.5.1, **9.7**, 10.3.2, **10.4**, 14.3.2, **15.1.6**, 15.2.5

Digital Data Use and Transmission

1.7

Disputes

6.3, 7.3.9, 15.1, 15.2

Documents and Samples at the Site

3.11

Drawings, Definition of

1.1.5

Drawings and Specifications, Use and Ownership of

3.11

Effective Date of Insurance

8.2.2

Emergencies

10.4, 14.1.1.2, 15.1.5

Employees, Contractor's

3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2, 10.3.3, 11.3, 14.1, 14.2.1.1

Equipment, Labor, or Materials

1.1.3, 1.1.6, 3.4, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1, 4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1, 10.2.4, 14.2.1.1, 14.2.1.2

Execution and Progress of the Work

1.1.3, 1.2.1, 1.2.2, 2.3.4, 2.3.6, 3.1, 3.3.1, 3.4.1, 3.7.1, 3.10.1, 3.12, 3.14, 4.2, 6.2.2, 7.1.3, 7.3.6, 8.2, 9.5.1, 9.9.1, 10.2, 10.3, 12.1, 12.2, 14.2, 14.3.1, 15.1.4

Extensions of Time

3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3, 7.4, 9.5.1, 9.7, 10.3.2, 10.4, 14.3, 15.1.6, **15.2.5**

Failure of Payment

9.5.1.3, **9.7**, 9.10.2, 13.5, 14.1.1.3, 14.2.1.2

Faulty Work

(See Defective or Nonconforming Work)

Final Completion and Final Payment

4.2.1, 4.2.9, 9.8.2, **9.10**, 12.3, 14.2.4, 14.4.3

Financial Arrangements, Owner's

2.2.1, 13.2.2, 14.1.1.4

GENERAL PROVISIONS

1

Governing Law

13.1

Guarantees (See Warranty)

Hazardous Materials and Substances

10.2.4, **10.3**

Identification of Subcontractors and Suppliers

5.2.1

Indemnification

3.17, **3.18**, 9.6.8, 9.10.2, 10.3.3, 11.3

Information and Services Required of the Owner

2.1.2, **2.2**, 2.3, 3.2.2, 3.12.10.1, 6.1.3, 6.1.4, 6.2.5,

9.6.1, 9.9.2, 9.10.3, 10.3.3, 11.2, 13.4.1, 13.4.2,

14.1.1.4, 14.1.4, 15.1.4

Initial Decision

15.2

Initial Decision Maker, Definition of

1.1.8

Initial Decision Maker, Decisions

14.2.4, 15.1.4.2, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5

Initial Decision Maker, Extent of Authority

14.2.4, 15.1.4.2, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5

Injury or Damage to Person or Property

10.2.8, 10.4

Inspections

3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3,

9.9.2, 9.10.1, 12.2.1, 13.4

Instructions to Bidders

1.1.1

Instructions to the Contractor

3.2.4, 3.3.1, 3.8.1, 5.2.1, 7, 8.2.2, 12, 13.4.2

Instruments of Service, Definition of

1.1.7

Insurance

6.1.1, 7.3.4, 8.2.2, 9.3.2, 9.8.4, 9.9.1, 9.10.2, 10.2.5,

11

Insurance, Notice of Cancellation or Expiration

11.1.4, 11.2.3

Insurance, Contractor's Liability

11.1

Insurance, Effective Date of

8.2.2, 14.4.2

Insurance, Owner's Liability

11.2

Insurance, Property

10.2.5, 11.2, 11.4, 11.5

Insurance, Stored Materials

9.3.2

INSURANCE AND BONDS

11

Insurance Companies, Consent to Partial Occupancy

9.9.1

Insured loss, Adjustment and Settlement of

11.5

Intent of the Contract Documents

1.2.1, 4.2.7, 4.2.12, 4.2.13

Interest

13.5

Interpretation

1.1.8, 1.2.3, **1.4**, 4.1.1, 5.1, 6.1.2, 15.1.1

Interpretations, Written

4.2.11, 4.2.12

Judgment on Final Award

15.4.2

Labor and Materials, Equipment

1.1.3, 1.1.6, **3.4**, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1,

5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1,

10.2.4, 14.2.1.1, 14.2.1.2

Labor Disputes

8.3.1

Laws and Regulations

1.5, 2.3.2, 3.2.3, 3.2.4, 3.6, 3.7, 3.12.10, 3.13, 9.6.4,

9.9.1, 10.2.2, 13.1, 13.3.1, 13.4.2, 13.5, 14, 15.2.8,

15.4

Liens

2.1.2, 9.3.1, 9.3.3, 9.6.8, 9.10.2, 9.10.4, 15.2.8

Limitations, Statutes of

12.2.5, 15.1.2, 15.4.1.1

Limitations of Liability

3.2.2, 3.5, 3.12.10, 3.12.10.1, 3.17, 3.18.1, 4.2.6,

4.2.7, 6.2.2, 9.4.2, 9.6.4, 9.6.7, 9.6.8, 10.2.5, 10.3.3,

11.3, 12.2.5, 13.3.1

Limitations of Time

2.1.2, 2.2, 2.5, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2.7,

5.2, 5.3, 5.4.1, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3,

9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 12.2, 13.4, 14, 15,

15.1.2, 15.1.3, 15.1.5

Materials, Hazardous

10.2.4, **10.3**

Materials, Labor, Equipment and

1.1.3, 1.1.6, 3.4.1, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1,

5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2,

10.2.1.2, 10.2.4, 14.2.1.1, 14.2.1.2

Means, Methods, Techniques, Sequences and

Procedures of Construction

3.3.1, 3.12.10, 4.2.2, 4.2.7, 9.4.2

Mechanic's Lien

2.1.2, 9.3.1, 9.3.3, 9.6.8, 9.10.2, 9.10.4, 15.2.8

Mediation

8.3.1, 15.1.3.2, 15.2.1, 15.2.5, 15.2.6, **15.3**, 15.4.1,

15.4.1.1

Minor Changes in the Work

1.1.1, 3.4.2, 3.12.8, 4.2.8, 7.1, **7.4**

MISCELLANEOUS PROVISIONS

13

Modifications, Definition of

1.1.1

Modifications to the Contract

1.1.1, 1.1.2, 2.5, 3.11, 4.1.2, 4.2.1, 5.2.3, 7, 8.3.1, 9.7, 10.3.2

Mutual Responsibility

6.2

Nonconforming Work, Acceptance of

9.6.6, 9.9.3, **12.3**

Nonconforming Work, Rejection and Correction of
2.4, 2.5, 3.5, 4.2.6, 6.2.4, 9.5.1, 9.8.2, 9.9.3, 9.10.4, 12.2

Notice

1.6, 1.6.1, 1.6.2, 2.1.2, 2.2.2., 2.2.3, 2.2.4, 2.5, 3.2.4, 3.3.1, 3.7.4, 3.7.5, 3.9.2, 3.12.9, 3.12.10, 5.2.1, 7.4, 8.2.2, 9.6.8, 9.7, 9.10.1, 10.2.8, 10.3.2, 11.5, 12.2.2.1, 13.4.1, 13.4.2, 14.1, 14.2.2, 14.4.2, 15.1.3, 15.1.5, 15.1.6, 15.4.1

Notice of Cancellation or Expiration of Insurance

11.1.4, 11.2.3

Notice of Claims

1.6.2, 2.1.2, 3.7.4, 9.6.8, 10.2.8, **15.1.3**, 15.1.5,

15.1.6, 15.2.8, 15.3.2, 15.4.1

Notice of Testing and Inspections

13.4.1, 13.4.2

Observations, Contractor's

3.2, 3.7.4

Occupancy

2.3.1, 9.6.6, 9.8

Orders, Written

1.1.1, 2.4, 3.9.2, 7, 8.2.2, 11.5, 12.1, 12.2.2.1, 13.4.2, 14.3.1

OWNER

2

Owner, Definition of

2.1.1

Owner, Evidence of Financial Arrangements

2.2, 13.2.2, 14.1.1.4

Owner, Information and Services Required of the

2.1.2, **2.2**, 2.3, 3.2.2, 3.12.10, 6.1.3, 6.1.4, 6.2.5, 9.3.2, 9.6.1, 9.6.4, 9.9.2, 9.10.3, 10.3.3, 11.2, 13.4.1, 13.4.2, 14.1.1.4, 14.1.4, 15.1.4

Owner's Authority

1.5, 2.1.1, 2.3.32.4, 2.5, 3.4.2, 3.8.1, 3.12.10, 3.14.2, 4.1.2, 4.2.4, 4.2.9, 5.2.1, 5.2.4, 5.4.1, 6.1, 6.3, 7.2.1, 7.3.1, 8.2.2, 8.3.1, 9.3.2, 9.5.1, 9.6.4, 9.9.1, 9.10.2, 10.3.2, 11.4, 11.5, 12.2.2, 12.3, 13.2.2, 14.3, 14.4, 15.2.7

Owner's Insurance

11.2

Owner's Relationship with Subcontractors

1.1.2, 5.2, 5.3, 5.4, 9.6.4, 9.10.2, 14.2.2

Owner's Right to Carry Out the Work

2.5, 14.2.2

Owner's Right to Clean Up

6.3

Owner's Right to Perform Construction and to

Award Separate Contracts

6.1

Owner's Right to Stop the Work

2.4

Owner's Right to Suspend the Work

14.3

Owner's Right to Terminate the Contract

14.2, 14.4

Ownership and Use of Drawings, Specifications and Other Instruments of Service

1.1.1, 1.1.6, 1.1.7, **1.5**, 2.3.6, 3.2.2, 3.11, 3.17, 4.2.12, 5.3

Partial Occupancy or Use

9.6.6, **9.9**

Patching, Cutting and

3.14, 6.2.5

Patents

3.17

Payment, Applications for

4.2.5, 7.3.9, 9.2, **9.3**, 9.4, 9.5, 9.6.3, 9.7, 9.8.5, 9.10.1, 14.2.3, 14.2.4, 14.4.3

Payment, Certificates for

4.2.5, 4.2.9, 9.3.3, **9.4**, 9.5, 9.6.1, 9.6.6, 9.7, 9.10.1, 9.10.3, 14.1.1.3, 14.2.4

Payment, Failure of

9.5.1.3, **9.7**, 9.10.2, 13.5, 14.1.1.3, 14.2.1.2

Payment, Final

4.2.1, 4.2.9, **9.10**, 12.3, 14.2.4, 14.4.3

Payment Bond, Performance Bond and

7.3.4.4, 9.6.7, 9.10.3, **11.1.2**

Payments, Progress

9.3, **9.6**, 9.8.5, 9.10.3, 14.2.3, 15.1.4

PAYMENTS AND COMPLETION

9

Payments to Subcontractors

5.4.2, 9.5.1.3, 9.6.2, 9.6.3, 9.6.4, 9.6.7, 14.2.1.2

PCB

10.3.1

Performance Bond and Payment Bond

7.3.4.4, 9.6.7, 9.10.3, **11.1.2**

Permits, Fees, Notices and Compliance with Laws

2.3.1, **3.7**, 3.13, 7.3.4.4, 10.2.2

PERSONS AND PROPERTY, PROTECTION OF

10

Polychlorinated Biphenyl

10.3.1

Product Data, Definition of

3.12.2

Product Data and Samples, Shop Drawings

3.11, **3.12**, 4.2.7

Progress and Completion

4.2.2, **8.2**, 9.8, 9.9.1, 14.1.4, 15.1.4

Progress Payments

9.3, **9.6**, 9.8.5, 9.10.3, 14.2.3, 15.1.4

Project, Definition of

1.1.4

Project Representatives
4.2.10
Property Insurance
10.2.5, 11.2
Proposal Requirements
1.1.1
PROTECTION OF PERSONS AND PROPERTY
10
Regulations and Laws
1.5, 2.3.2, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 9.6.4, 9.9.1,
10.2.2, 13.1, 13.3, 13.4.1, 13.4.2, 13.5, 14, 15.2.8,
15.4
Rejection of Work
4.2.6, 12.2.1
Releases and Waivers of Liens
9.3.1, 9.10.2
Representations
3.2.1, 3.5, 3.12.6, 8.2.1, 9.3.3, 9.4.2, 9.5.1, 9.10.1
Representatives
2.1.1, 3.1.1, 3.9, 4.1.1, 4.2.10, 13.2.1
Responsibility for Those Performing the Work
3.3.2, 3.18, 4.2.2, 4.2.3, 5.3, 6.1.3, 6.2, 6.3, 9.5.1, 10
Retainage
9.3.1, 9.6.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3
Review of Contract Documents and Field
Conditions by Contractor
3.2, 3.12.7, 6.1.3
Review of Contractor's Submittals by Owner and
Architect
3.10.1, 3.10.2, 3.11, 3.12, 4.2, 5.2, 6.1.3, 9.2, 9.8.2
Review of Shop Drawings, Product Data and
Samples by Contractor
3.12
Rights and Remedies
1.1.2, 2.4, 2.5, 3.5, 3.7.4, 3.15.2, 4.2.6, 5.3, 5.4, 6.1,
6.3, 7.3.1, 8.3, 9.5.1, 9.7, 10.2.5, 10.3, 12.2.1, 12.2.2,
12.2.4, 13.3, 14, 15.4
Royalties, Patents and Copyrights
3.17
Rules and Notices for Arbitration
15.4.1
Safety of Persons and Property
10.2, 10.4
Safety Precautions and Programs
3.3.1, 4.2.2, 4.2.7, 5.3, 10.1, 10.2, 10.4
Samples, Definition of
3.12.3
Samples, Shop Drawings, Product Data and
3.11, 3.12, 4.2.7
Samples at the Site, Documents and
3.11
Schedule of Values
9.2, 9.3.1
Schedules, Construction
3.10, 3.12.1, 3.12.2, 6.1.3, 15.1.6.2
Separate Contracts and Contractors
1.1.4, 3.12.5, 3.14.2, 4.2.4, 4.2.7, 6, 8.3.1, 12.1.2

Separate Contractors, Definition of
6.1.1
Shop Drawings, Definition of
3.12.1
Shop Drawings, Product Data and Samples
3.11, 3.12, 4.2.7
Site, Use of
3.13, 6.1.1, 6.2.1
Site Inspections
3.2.2, 3.3.3, 3.7.1, 3.7.4, 4.2, 9.9.2, 9.4.2, 9.10.1, 13.4
Site Visits, Architect's
3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.4
Special Inspections and Testing
4.2.6, 12.2.1, 13.4
Specifications, Definition of
1.1.6
Specifications
1.1.1, 1.1.6, 1.2.2, 1.5, 3.12.10, 3.17, 4.2.14
Statute of Limitations
15.1.2, 15.4.1.1
Stopping the Work
2.2.2, 2.4, 9.7, 10.3, 14.1
Stored Materials
6.2.1, 9.3.2, 10.2.1.2, 10.2.4
Subcontractor, Definition of
5.1.1
SUBCONTRACTORS
5
Subcontractors, Work by
1.2.2, 3.3.2, 3.12.1, 3.18, 4.2.3, 5.2.3, 5.3, 5.4,
9.3.1.2, 9.6.7
Subcontractual Relations
5.3, 5.4, 9.3.1.2, 9.6, 9.10, 10.2.1, 14.1, 14.2.1
Submittals
3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 7.3.4, 9.2, 9.3,
9.8, 9.9.1, 9.10.2, 9.10.3
Submittal Schedule
3.10.2, 3.12.5, 4.2.7
Subrogation, Waivers of
6.1.1, 11.3
Substances, Hazardous
10.3
Substantial Completion
4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, 9.8, 9.9.1, 9.10.3,
12.2, 15.1.2
Substantial Completion, Definition of
9.8.1
Substitution of Subcontractors
5.2.3, 5.2.4
Substitution of Architect
2.3.3
Substitutions of Materials
3.4.2, 3.5, 7.3.8
Sub-subcontractor, Definition of
5.1.2
Subsurface Conditions
3.7.4

Successors and Assigns

13.2

Superintendent

3.9, 10.2.6

Supervision and Construction Procedures

1.2.2, **3.3**, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4, 7.1.3, 7.3.4, 8.2, 8.3.1, 9.4.2, 10, 12, 14, 15.1.4

Suppliers

1.5, 3.12.1, 4.2.4, 4.2.6, 5.2.1, 9.3, 9.4.2, 9.5.4, 9.6, 9.10.5, 14.2.1

Surety

5.4.1.2, 9.6.8, 9.8.5, 9.10.2, 9.10.3, 11.1.2, 14.2.2, 15.2.7

Surety, Consent of

9.8.5, 9.10.2, 9.10.3

Surveys

1.1.7, 2.3.4

Suspension by the Owner for Convenience

14.3

Suspension of the Work

3.7.5, 5.4.2, 14.3

Suspension or Termination of the Contract

5.4.1.1, 14

Taxes

3.6, 3.8.2.1, 7.3.4.4

Termination by the Contractor

14.1, 15.1.7

Termination by the Owner for Cause

5.4.1.1, 14.2, 15.1.7

Termination by the Owner for Convenience

14.4

Termination of the Architect

2.3.3

Termination of the Contractor Employment

14.2.2

TERMINATION OR SUSPENSION OF THE CONTRACT

14

Tests and Inspections

3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 10.3.2, 12.2.1, **13.4**

TIME

8

Time, Delays and Extensions of

3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3.1, 7.4, **8.3**, 9.5.1, 9.7, 10.3.2, 10.4, 14.3.2, 15.1.6, 15.2.5

Time Limits

2.1.2, 2.2, 2.5, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2,

5.2, 5.3, 5.4, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3, 9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 12.2, 13.4, 14, 15.1.2, 15.1.3, 15.4

Time Limits on Claims

3.7.4, 10.2.8, 15.1.2, 15.1.3

Title to Work

9.3.2, 9.3.3

UNCOVERING AND CORRECTION OF WORK

12

Uncovering of Work

12.1

Unforeseen Conditions, Concealed or Unknown

3.7.4, 8.3.1, 10.3

Unit Prices

7.3.3.2, 9.1.2

Use of Documents

1.1.1, 1.5, 2.3.6, 3.12.6, 5.3

Use of Site

3.13, 6.1.1, 6.2.1

Values, Schedule of

9.2, 9.3.1

Waiver of Claims by the Architect

13.3.2

Waiver of Claims by the Contractor

9.10.5, 13.3.2, **15.1.7**

Waiver of Claims by the Owner

9.9.3, 9.10.3, 9.10.4, 12.2.2.1, 13.3.2, 14.2.4, **15.1.7**

Waiver of Consequential Damages

14.2.4, 15.1.7

Waiver of Liens

9.3, 9.10.2, 9.10.4

Waivers of Subrogation

6.1.1, **11.3**

Warranty

3.5, 4.2.9, 9.3.3, 9.8.4, 9.9.1, 9.10.2, 9.10.4, 12.2.2, 15.1.2

Weather Delays

8.3, 15.1.6.2

Work, Definition of

1.1.3

Written Consent

1.5.2, 3.4.2, 3.7.4, 3.12.8, 3.14.2, 4.1.2, 9.3.2, 9.10.3, 13.2, 13.3.2, 15.4.4.2

Written Interpretations

4.2.11, 4.2.12

Written Orders

1.1.1, 2.4, 3.9, 7, 8.2.2, 12.1, 12.2, 13.4.2, 14.3.1

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon written protocols governing the transmission and use of, and reliance on, Instruments of Service or any other information or documentation in digital form.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to written protocols governing the use of, and reliance on, the information contained in the model shall be at the using or relying party's

sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal

observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the

consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the

operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the

absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or

their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of

the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly

notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be

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based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the

Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid

Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 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.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time

within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault

of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable

to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of

the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§ 11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the

damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that

sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of

liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived

as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined

consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

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**SECTION 00 7300
SUPPLEMENTARY CONDITIONS**

PART 1 GENERAL

1.01 SUMMARY

- A. These Supplementary Conditions amend and supplement the General Conditions defined in Document 00 7200 - General Conditions and other provisions of Contract Documents as indicated below. Provisions that are not so amended or supplemented remain in full force and effect.
- B. The terms used in these Supplementary Conditions that are defined in the General Conditions have the meanings assigned to them in the General Conditions.

1.02 RELATED SECTIONS

- A. Section 00 5000 - Contracting Forms and Supplements.

1.03 MODIFICATIONS TO GENERAL CONDITIONS

- A. Refer to the following State Addendum to AIA Documents A101-2017 and A201-2017 for modifications to AIA Documents A101-2017 and A201-2017.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

OWNER'S ADDENDUM TO AIA® DOCUMENT A101®-2017 AND A201®-2017

Project Name: **State of North Dakota ND State Library Renovation**

Project No: J22525 (J2 Studio Project Number)

This Addendum is entered into between the State of North Dakota, acting through its Office of Management and Budget (State or Owner) and **[INSERT CONTRACTOR'S COMPANY NAME]**, (Contractor) to amend the AIA® Document A101®-2017 entitled "Standard Form of Agreement Between Owner and Contractor, where the basis of payment is a Stipulated Sum," and AIA® Document A201®-2017 entitled "General Conditions of the Contract for Construction."

The parties agree to the following terms and conditions and expressly agree that if any of the following terms and conditions are in conflict with any of the terms and conditions of the Contract, then, notwithstanding any term in the Contract, the following terms and conditions govern and control the rights and obligations of the parties. Any amendments to the Contract, this Addendum, or any other amendments, must be in writing and executed by both parties.

AIA® A101®-2017 Standard Form of Agreement Between Owner and Contractor, where the basis of payment is a Stipulated Sum

Section The following paragraphs are added to or amended as follows:

3.1 CHECK the following

☒ The date of this Agreement.

4.5 ADD the following:

Beginning on the first (1st) day following the date for Substantial Completion, as modified by the Contract Documents, the liquidated damages are **two hundred eighty-eight dollars and fifty cents (\$288.50)** per calendar day. The Parties agree that the payment of these liquidated damages are the Owner's sole and exclusive remedy for delay by the Contractor in the completion of the Work. Payment of liquidated damages under this section does not limit the Owner's right to pursue a claim for damages, pursuant to rights and remedies provided by law or under this Contract, which arises during the delay but is not caused by delay by Contractor. The Parties acknowledge and agree it is difficult or impossible to determine with precision the amount of damages that would or might be incurred by Owner as a result of Contractor's failure to timely achieve Substantial Completion. It is understood and agreed by the Parties that any sums that would be payable under this section are in the nature of liquidated damages, and not a penalty, and are fair and reasonable and such payment would represent a reasonable estimate of fair compensation for the losses that may reasonably be anticipated from such failure.

5.1.7.1 ADD the following:

Owner shall make payment within forty-five (45) calendar days after receipt of an undisputed Application for Payment.

Pursuant to N.D.C.C. § 48-01.2-13, the Contractor shall subtract retainage of ten percent (10%) from **all requests for payment** until the Project is fifty percent (50%) completed with no further retainage on progress payments during the continuance of the Contract unless unsatisfactory process or performance is documented. The Owner may, upon completion of ninety-five percent (95%) of the Contract, pay up to ninety-five percent (95%) of the amount retained from previous estimates. The remaining amount retained must be paid to the Contractor in the amounts and at the time approved by the Architect. The Owner shall make final payment of all moneys due to the Contractor following completion of all Work, acceptance of the Project by the Owner, and the provision of necessary releases.

- 5.3 DELETE the Section in its entirety.
- 6.1 DELETE the Section in its entirety.
- 6.2 DELETE the Section in its entirety.
- 7.1.1 DELETE the Section in its entirety.
- 8.2 ADD the following:
Facilities Mgmt Division Director
Office of Management and Budget – Facilities Management
600 East Boulevard Ave. Dept 110
Bismarck, ND 58505-0440
- 9.1.4 DELETE the Section in its entirety.

AIA® A201®-2017 General Conditions of the Contract for Construction

Section The following paragraphs are added to or amended as follows:

- 1.1.2 ADD the underlined to the last line of the paragraph.

The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract **between Architect and Owner** intended to facilitate performance of the Architect's duties.
- 1.1.5 ADD at the end:

The general character and scope of the Work is shown by the Drawings. Where a portion of the Work is fully drawn and the remainder is merely indicated, the portion fully drawn shall apply to all similar parts of the Work. Figured dimensions shall be followed in preference to scaled measurements. Dimensions on the Drawings are subject to field verification to suit adjacent elements.
- 1.1.6 ADD at the end:

Where Specifications are abbreviated type, they indicate complete sentences in the same manner as when a note occurs in the Drawings. Omissions of words, such as "the Contractor shall" and "as shown on the Drawings" is intentional. The words "shall" or "shall be" are to be supplied by inference. Where a number is listed in the Specifications (as for gauges, weights, temperatures, amount of time, etc.), the number shall be interpreted as that or better. Division 00 and Division 01 of the Specification Book apply to every Specification Section in the book.
- 1.2.3 ADD at the end:

'Furnish' means to supply and deliver to the Project Site ready for installation. 'Install' means to place in position for service or use. 'Provide' means furnish and install, complete and ready for intended use.

1.2.4 ADD the following new section after Section 1.2.3:

Codes and Standards:

The following codes and standards, latest issues, shall be followed, if applicable, during the course of construction by shall be regarded as minimum and not decrease the requirements set forth in these specifications.

1. North Dakota State Building Code.
2. Americans with Disabilities Act Accessibility Guidelines (ADAAG).
3. International Energy Conservation Code.
4. International Building Code.
5. International Existing Building Code.
6. International Fire Code.
7. International Fuel Gas Code.
8. International Mechanical Code.
9. International Property Maintenance Code
10. Uniform Plumbing Code and Laws.
11. North Dakota State Plumbing Code.
12. National Electric Code.
13. North Dakota State Wiring Standards
14. North Dakota Department of Health, Division of Life Safety and Construction (Health care Construction Projects in North Dakota)
15. North Dakota Department of Health, Division of Food and Lodging
16. National Board of Fire Underwriters.
17. Occupational Safety and Health Administration.
18. American Society of Testing and Materials.
19. Workforce Safety Regulations.
20. Environmental Protection Agency.
21. All codes and standards specifically referred to in each section of these specifications.

1.4.1 ADD the following new section after Section 1.4:

In the event of conflicting provisions, the more specific provision will take precedence over the less specific; the more stringent will take precedence over the less stringent; the more expensive item will take precedence over the less expensive. On all drawings, figures take precedence over scaled dimensions. Scaling of dimensions, if done, is done at the Contractor's own risk. In case of a conflict between the Contract Documents, if not reconciled by Addendum, the Architect/Engineer and the Owner will determine which document is the most specific and the Contractor shall do the Work accordingly, at no change in price.

1.7 REPLACE in its entirety with the following:

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form.

1.8 DELETE the Section in its entirety.

2.2.1 DELETE the Section in its entirety

2.2.4 DELETE the Section in its entirety

2.3.6 REPLACE in its entirety with the following:

The Contractor will be furnished as many sets of Drawings and Project Manuals as the Architect/Engineer has available for distribution, but in no case less than one. If the Contractor requires additional sets, they will be furnished to the Contractor at the cost of reproduction and postage and handling, which are to be paid by the Contractor.

3.3.4 ADD the following new section after Section 3.3.3:

The Contractor shall be responsible for the correct layout to line, level and dimension of all work as shown on the Drawings. The Contractor shall notify the Architect of any discrepancy that may exist between site conditions and the Drawings and shall obtain written instructions from the Architect before proceeding with this Work.

1. No trade shall commence Work until conditions are right for carrying out the Work properly, and surfaces affecting the Work of that trade are suitable.
2. Manufacturer's printed instructions covering details of installations shall be followed where not in conflict of the Specifications. If there is a conflict, notify the Architect and obtain the Architect's approval before proceeding.
3. Completed work shall be left plumb, level, true to line or plane, anchored securely in place, free from damage.
4. Unless otherwise called for, all pieces of material shall be as large as stock size, as is in conformity with standard good practice of the trade.
5. Except where in conflict with these specifications, current manufacturer's printed specifications of herein specified proprietary products are made part of the Specifications.
6. Deliver and store materials so as to protect from damage. Inspect materials for damage as delivered.
7. For items fabricated to fit the needs of this Project, verify dimensions by field measurements where practical. Establish Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabrication. Coordinate construction to ensure that actual dimensions correspond to established dimensions. Allow for trimming and fitting.
8. For brand name materials where purchase method allows: Deliver in original container with unbroken seals and with original labels with manufacturer's name, product brand and directions intact.
9. Where the Specifications call for products that meet national standards (such as ASTM, CS, Federal Specifications, etc.) furnish a certification from the manufacturer that those products do meet the specified standards.
10. Obtain each separate type of product from the same manufacturer.
11. Before each trade commences work, conduct a pre-installation conference at the area of the site where the work will begin. The conference shall include Contractor's Superintendent and representatives of all trades whose work interfaces with the trade about to begin work. The purpose will be to determine that conditions are proper for beginning the work and assure that other trades will coordinate as needed.

3.3.5 ADD the following new section after Section 3.3.4:

The Contractor shall inspect all materials as delivered to the premises and shall reject any materials that will not conform with the Contract Documents when properly installed.

3.3.6 ADD the following new section after Section 3.3.5:

The Contractor shall be responsible for and coordinate any and all inspections required for the Project. Failure to obtain any required permits or authorizations, licenses, or other approvals because of a failure of the Contractor to conform to this requirement shall not extend the Contract Time, and the Contractor shall not be entitled to an increase in the Contract Sum.

3.5.2 ADD the following after the last sentence in this section:

Warranties not issued in the name of the Owner shall be assigned by the Contractor to the Owner, on a non-exclusive basis, all third-party warranties pertaining to the Work and the materials and equipment incorporated into the Work that are not issued in the name of the Owner, including warranties of all Subcontractors and suppliers, and, upon completion of the Work, as a condition to final payment, the Contractor shall deliver to the Owner all such warranty documents. The Contractor shall perform the Work in such manner so as to preserve all such warranties. All warranty periods, including manufacturer and third-party warranties, shall commence as of the date of Substantial Completion.

3.5.3 ADD the following new sections after Section 3.5.2:

The Contractor shall guarantee and maintain the stability of all work and materials and keep same in reasonable repair and condition for the period of one (1) year from the date of Substantial Completion but with respect to any part of the Work which the Owner takes possession of prior to Substantial Completion. This is in addition to any manufacturer's warranty specified. The Contractor's warranties given herein are not in derogation of such longer warranties as may be provided by the Contractor's Subcontractors, suppliers, and manufacturers of equipment and materials incorporated into the Project. The Contractor's warranties will not be affected or limited by the terms of any manufacturer's warranty that has lesser terms or otherwise. The Contractor shall perform the Work in such a manner so as to preserve any and all such warranties.

3.5.4 ADD the following new section after Section 3.5.3:

Defects of any kind, due to faulty work or materials appearing during the above-mentioned period must be promptly made good by the Contractor at his own expense to the entire satisfaction of the Owner and the Architect. Any such construction and repairs shall include the costs of all damages to the finish or furnishings of the building resulting from the original defect or repairs to the building. Where equipment is required to be replaced, the one (1) year warranty shall be reinstated for that piece of equipment from the date of replacement.

3.5.5 ADD the following new section after Section 3.5.4:

The guarantee, as provided in paragraph 3.5.4, does not apply to injuries or damages occurring after final acceptance due to "acts of God," fire, violence, abuse, or carelessness of other Contractors or agents of the Owner; however, the Owner reserves the right to make temporary repairs as necessary to keep equipment in operating condition without voiding the Contractor's guarantee nor relieving the Contractor of the Contractor's responsibilities during the guarantee period.

3.5.6 ADD the following new section after Section 3.5.5:

The guarantee, as provided in paragraph 3.5.4, shall be extended if other guarantees for different lengths of time are specifically called for in the Contract Documents or if manufacturer's standard warranties extend for a longer period.

3.5.7 ADD the following new section after Section 3.5.6:

The Contractor is responsible for any Subcontractor's nonperformance of warranty Work. The Contractor shall assist the Owner without charge in asserting manufacturer and other third-party warranty claims. The refusal of a Subcontractor or supplier to correct defective Work for which it is responsible will not excuse the Contractor from performing under the Contractor's warranty.

3.6.1 ADD the following new section after Section 3.6:

Contractor shall pay the North Dakota use tax per the following: Where a Contractor or Subcontractor uses tangible personal property in the performance of this contract, or to fulfill contract or subcontract obligations, whether the title to such property be in the Contractor, Subcontractor, Contractor, Subcontractor, or any other person, or whether the titleholder of such property would be subject to pay the sales or use tax, such Contractor or Subcontractor shall pay a use tax at the rate prescribed by section N.D.C.C. 57-40.2-02.1 measured by the purchase price or fair market value of such property, whichever is greater, unless such property has been previously subjected to a sales tax or use tax by this state, and the tax due thereon has been paid.

3.7.1 REPLACE in its entirety with the following:

Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as other permits (if such permits are required by the Owner), fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

3.7.2 REPLACE in its entirety with the following:

The Contractor shall comply with and give notices required by applicable laws, statutes, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

3.7.3 REPLACE in its entirety with the following:

If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, codes, rules and regulation, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

3.7.6 ADD the following new section after Section 3.7.5:

Contractor shall provide, inspect and maintain all safeguards, safety devices, protective equipment, safety programs and other needed actions reasonably necessary to protect the life, health, and property of the Contractor, subcontractors, the Owner and the State, including their employees, officers, assigns and agents, and the public, in connection with the performance of work covered by the Contract. Contractor shall submit to the Owner a copy of the written safety program to be used as guidelines and direction of the Contractor's and subcontractors' worksite activities. This program must meet all federal, state and local laws and other legal requirements and include the following minimum provisions: (1) a worksite safety policy and mission statement; (2) assigned responsibilities among management, supervisors and employees; (3) a system for periodic self-inspections, including inspection of job sites, materials, work performance and equipment; (4) a thorough accident and injury reporting and investigation process; (5) a safety orientation program including first aid, medical attention, emergency facilities, fire protection and prevention, housekeeping, illumination, sanitation, personal protective equipment and occupation noise exposure; and (6) a safety training program including safety "toll box" meetings and other systems for ongoing training, including training for employees on the recognitions, avoidance and prevention of unsafe conditions.

The Owner assumes no liability relating to its receipt and review of the Contractor's safety plan. Safety remains the responsibility of the Contractor.

3.9.1 ADD the following:

The Contractor shall submit the name of the proposed Superintendent together with a resume of his or her experience to the Architect for approval before commencing Work. The Contractor will not commence Work at the site until the Superintendent has been approved. The Contractor may not change the Superintendent during the progress of the Project without first obtaining the written authorization of both the Owner and the Architect.

3.11 ADD the following:

1. Immediately upon receipt of the Contract Documents, identify each of the documents with the title, "RECORD DOCUMENTS—JOB SET." Update the record set with all Addenda items.
2. Through progress of the Work, the Contractor shall maintain an accurate record of changes in the Contract Documents, as described below. Upon completion of the Work, transfer the recorded change in ink to a set of record documents.
3. Changes that must be recorded are major concealed items from what is called for by the Contract Documents. This includes such items as main pipes and conduit or changed structural members, which cannot be observed on completion even with the use of access doors or removable panels.
4. Coordinate changes within the record documents, making adequate and proper entries on each page of specifications and each sheet of drawings and other documents where any such entry is required to show the change properly.
5. Accuracy of records shall be such that future searches for items shown in the Contract Documents may reasonably rely on information obtained for the approved project record documents.
6. Make entries within twenty-four (24) hours of receipt of information that the change has occurred. Prior to submitting request for final payment, submit the final project record documents to the Architect and secure the Architect's approval. Maintain the job set of record documents completely protected from loss and damage.

7. Submit the completed set of project record documents to the Architect.
8. Participate in review meetings as required.
9. Make required changes and promptly deliver the final project record documents to the Architect.
10. The Architect will review for completeness of record documents. The purpose of the final project record documents is to provide factual information regarding all aspects of the Work, both concealed and visible, to enable future modification of the Work to proceed without lengthy and expensive site investigation, measurement, and examination.

3.12.4 ADD the following:

All Shop Drawings shall (i) comply with performance specifications and other criteria established by the Architect, (ii) comply with all governmental requirements; and (iii) permit the Work, when completed, to perform as intended by the Contract Documents. Shop Drawings shall be modified at no cost to the Owner as necessary to obtain any permits or approvals and as required to comply with any requirement of the Contract Documents.

3.12.5 ADD the following:

The Contractor shall submit to the Architect ____ (#) copies of all shop drawings and similar submittals, ____ (#) of which will be returned to the Contractor by the Architect with comments. ____ (#) sets shall be maintained and marked as constructed and returned to the Owner in their sets of Record Documents.

The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect (with copies to the Owner), Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors. Shop Drawings found to be inaccurate or otherwise in error are to be returned for correction before submittal to the Architect. The Contractor shall verify the Shop Drawings of all Subcontractors or trades for interrelated work, as required for proper and complete performance of the Work. All Shop Drawings submitted by the Contractor shall be stamped by the Contractor with the wording "APPROVED FOR SUBMITTAL" or marked through some other means to clearly indicate to the Architect the submittals have been reviewed and approved by the Contractor and the date of submittal. Submittals not conforming to all the foregoing or which are not marked as received for compliance with the Contract Documents and approved by the Contractor may be returned by the Architect without action. Contractor shall be responsible for any delay as a result of any improper submittal.

The Contractor shall make submittals in the manner and number of copies specified in the Contract Documents.

3.12.6 ADD the following:

If shop drawings, samples, or similar submittals are not resubmitted to the Architect after the Architect has made corrections thereto, it will be assumed the Contractor has checked and approved all corrections made.

3.12.11 ADD the following new section after Section 3.12.10.2:

The Architect's review or approval of Shop Drawings and samples shall not be construed as authorizing additional work or increased cost to the Owner, as all changes to the Work, Contract Sum, and Contract Time may only be made by a duly executed Modification.

3.12.12 ADD the following new section after Section 3.12.11

Substitutions of material or equipment on an "or equal" basis shall not be proposed or requested in Shop Drawings or sample submittals unless (a) approval is requested within thirty (30) days after award of any subcontract, and (b) the Contractor provides the Owner and Architect with supporting data and documentation compliant with Sections 3.4.2 and 7.1.4 herein. Samples may not be employed in the Work without the expressed written permission of the Architect.

3.12.13 ADD the following new section after Section 3.12.12

If more than two (2) submittals are required for any Shop Drawings or other submittals, the Contractor shall be liable for all Architect's fees, costs, and expenses incurred as the result of such submittals. The Architect's costs shall be determined by using the Architect's hourly rates for fees for additional services as well as the Architect's standard fee for mileage, travel, copies, and all other expenses incurred. Any funds due under this paragraph shall be deducted by the Owner from the amounts due the Contractor for such additional Architect's fees and paid directly to the Architect.

3.13 REPLACE with the following new Sections:

3.13.1 The Contractor shall confine operations, including storage of material(s), at the site to areas permitted by applicable laws, statutes, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents as approved by the Architect and the Owner, and shall not unreasonably encumber the site with any materials or equipment.

3.13.2 The Contractor shall at all times conduct work as to insure the least possible obstruction to traffic and inconvenience to the general public and the residents in the vicinity of the Work, and to insure the protection of persons and property. No road or street shall be closed to the public except with the permission of the proper authorities. Fire hydrants on or adjacent to the Work shall be kept accessible to firefighting equipment at all times. Temporary provisions shall be made by the Contractor to ensure the use of sidewalks and the proper functioning of all gutters, sewer inlets, drainage ditches, irrigation ditches, etc., which shall not be obstructed.

3.15.1.1 ADD the following new section after Section 3.15.1:

The building and site shall be cleaned weekly and more often if necessary to provide a safe and hazard-free work place. Maintain floors broom clean. See also Section 6.3.

3.15.1.2 ADD the following new section after Section 3.15.1.1:

1. "Clean," for purposes of this Article, shall be interpreted on finished surfaces as meaning the level of cleanliness generally provided by skilled cleaners using quality building maintenance equipment and materials.
2. Remove all window stickers and labels.
3. Clean all plumbing, heating, and electrical items upon completion of the project, and before Owner's occupancy.

3.16.1 ADD the following new section after Section 3.16:

The Contractor shall confine the Work, the storage of items, and parking within the building and the "Contract Limit Lines" shown on the Site Plan.

3.18.1 REPLACE in its entirety with the following:

The Contractor agrees to defend, indemnify, and hold harmless the state of North Dakota, its agencies, officers and employees (State or Owner), from claims resulting from the performance of the Contractor or its agent, including all costs, expenses and attorneys' fees, which may in any manner result from or arise out of this Contract, except claims based upon the Owner's sole negligence or intentional misconduct. The legal defense provided by the Contractor to the Owner under this provision must be free of any conflicts of interest, even if retention of separate legal counsel for the Owner is necessary. Any attorney appointed to represent the Owner must first qualify as and be appointed by the North Dakota Attorney General as a Special Assistant Attorney General as required under N.D.C.C. § 54-12-08. Contractor also agrees to reimburse the State or Owner for all costs, expenses and attorneys' fees incurred in establishing and litigating the indemnification coverage provided herein. This obligation shall continue after the termination of this Contract.

4.1.2 ADD the following:

The Architect has no duties or responsibilities in regard to insurance or legal decisions, surveying, subsurface soil exploration, geophysical testing, soil analysis or soil testing, testing for contamination by airborne asbestos fibers, bulk sample analysis for asbestos identification, and content determination. The Architect's obligations are solely to the Owner. In meeting such obligations, the Architect may increase the burdens and expenses of the Contractor, Subcontractors or Employees or the Surety of any of them. Nothing in the performance of the Architect's services in connection with this project implies any undertaking for the benefit of, or which may be enforced by, the Contractor, Subcontractors, or Employees, or the Surety of any of them.

4.2.5 REPLACE in its entirety with the following:

Based on the Architect's evaluations of the Work and of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

5.4.4 ADD the following new section after Section 5.4.3:

Should any Assignee be a business or entity with whom the Owner is prohibited from conducting business, the Owner shall have the right to terminate for lack of authority in accordance with Section 16.2.

7.1.4 ADD the following new section after Section 7.1.3:

By signing a Change Order, the Contractor agrees that the changed Contract Amount is in full payment for the changed work and includes changes in the schedule, cost and time.

7.1.5 ADD the following new section after Section 7.1.4:

Neither the Owner nor the Architect is responsible to give notice of Change Orders or Construction Change Directives to the surety (if any).

7.2.2 ADD the following new section after Section 7.2.1:

The Contractor, in connection with any proposal he makes for a Change Order, shall furnish a price breakdown, itemized as required by paragraph 7.2.3 below. Unless otherwise directed, the breakdown shall be in sufficient detail to permit an analysis of all materials, labor, equipment, subcontract, and overhead costs, as well as profit, and shall cover all work involved in the change proposal, whether such work was deleted, added, or changed. Any amount claimed for subcontracts shall be supported by a similar price breakdown. In addition, if the change proposal includes a time extension, a justification therefore, shall also be furnished. The proposal, together with the price breakdown and time extension justification, shall be furnished by the date specified by the Architect.

7.2.3 ADD the following new section after Section 7.2.2:

Costs for proposals to perform changes in the Work consisting of additions, deletions, or other revisions shall be limited to the following:

1. Actual labor costs involved including fringe benefits required by agreement or custom plus ten percent (10%) for all labor overhead factors which include job superintendent salary and subsistence.
2. Actual costs of materials, supplies, and equipment, including all transportation costs and applicable taxes.
3. Actual rental costs of machinery and equipment, exclusive of hand tools.
4. Ten percent (10%) of direct labor, material, supplies, equipment, and rental gross amounts and ten percent (10%) of subcontracts for all overhead and profit factors, which includes all insurance costs.
5. Half of one percent (0.5%) for all insurance and bond premium adjustments unless actual costs are greater as evidenced by invoices or other data.
6. Credits are to be calculated in a similar manner, including overhead and profits on subcontracts (10%), but not on labor and materials (10%), except that when both additions and credits covering related Work or substitutions are involved in a change proposal, the allowance for overhead and profit (10%) shall be figured on the basis of net increase, if any, with respect to that change proposal.

8.3.1 REPLACE in its entirety with the following:

If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or the Architect, or of an employee of either, or of a Separate Contractor employed by the Owner; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay authorized by the Owner; or (4) by other causes which the Architect determines may justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

The following will not be considered justifications for extension of time unless due to one of the causes stated within this Article 8:

1. Delay caused by Subcontractors or Supplier, except if the Supplier goes out of business and another Supplier cannot be found in time to meet schedule.
2. Shortage of workmen.

9.2 REPLACE in its entirety with the following:

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect and the Owner before the first

Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect and the Owner. This schedule, unless objected to by the Architect and the Owner, shall be used as a basis for reviewing the Contractor's Applications for Payment. The description of the Work shall be sufficiently broken down to indicate labor and material costs associated with each area of Work. Any breakdown that fails to include sufficient detail, is unbalanced, or exhibits "front-loading" of the value of the Work, will be rejected. The Schedule of Value shall be revised if later determined by the Architect or the Owner to be inaccurate. Any changes to the schedule of values shall be submitted to the Architect and the Owner and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect or the Owner, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

9.3.3 REPLACE in its entirety with the following:

The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall be free and clear of liens, claims, security interests, or encumbrances in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

9.6.8 REPLACE in its entirety with the following:

The Contractor shall defend and indemnify the Owner from all loss, liability, damage, or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

9.6.9 ADD the following new section after Section 9.6.8:

Retainage and payments to Contractor shall be pursuant to North Dakota Century Code (N.D.C.C.) § 48-01.2-13.

9.7. REPLACE in its entirety with the following:

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven (7) days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within forty-five (45) days after the date established in the Contract Documents the amount certified by the Architect, then the Contractor may, upon fourteen (14) additional days' written notice to the Owner and the Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

9.8.1 ADD the following:

Minor corrective Work and the replacement of defective Work or materials, and the adjustment of control apparatus will not delay the determination that the Contract is Substantially Complete. See Section 12.2.2.

9.8.6 ADD the following new section after Section 9.8.5:

At 12:01 a.m., local time, on the Date of Substantial Completion, the Owner becomes responsible for the care and operation of the accepted Work.

9.10.5 ADD the following:

Items specifically required by the Owner to be submitted by the Contractor prior to final payment as a minimum are enumerated as follows:

1. Contractor's Affidavit of Payment of Debts and Claims, conditioned that the Contractor has satisfied all obligations for all materials and equipment furnished and all work, labor, and services performed in connection with the performance of this Contract, and further, that the Contractor will indemnify the Owner against all liability for any and all claims, judgments, and costs brought or obtained by Subcontractors, all suppliers of materials and equipment, and all performers of work, labor, or services arising in any manner out of the performance of the Contract.
2. Consent of Surety to Final Payment (if performance/payment bonds were required).
3. Contractor's Release or Waiver of Liens.
4. Current Statement of ND Tax Commissioner relating to income tax and sales tax clearance.
5. Current Certificate of Premium Payment to Workforce Safety & Insurance.

9.10.6 ADD the following new section after Section 9.10.5:

If the Work is not complete after submittal of the Contractor's written notice pursuant to Section 9.10.1, the Contractor shall be liable for any additional Architect's fees, costs, and expenses incurred for any inspection following the initial inspection after receipt of such notice. Additionally, if the Contractor submits an extensive number of claims and the majority of such claims are rejected, the Contractor shall be responsible for any additional Architect's fees, costs, and expenses for any such rejected claims. If the Contractor defaults and causes the Architect to provide additional services, the Contractor shall be responsible for additional Architect's fees, costs, and expenses. The Architect's costs shall be determined by using the Architect's hourly rates for fees for additional services as well as the Architect's standard fee for mileage, travel, copies, and all other expenses incurred. Any funds due under this paragraph shall be deducted by the Owner from the amounts due the Contractor for such additional Architect's fees and paid directly to the Architect.

10.1.2 ADD the following new section after Section 10.1:

No material, supplies, or equipment shall be furnished or installed by the Contractor for this project that contains hazardous materials. This includes asbestos and polychlorinated biphenyl (PCB).

10.2.8.1 ADD the following new section after Section 10.2.8:

Contractor shall submit to the Owner a copy of the written safety program to be used as guidelines and direction of the Contractor's and Subcontractors' worksite activities. This program must meet all federal, state, and local laws and other legal requirements and include the following minimum provisions: (1) a worksite safety policy and mission statement; (2) assigned responsibilities among management, supervisors, and employees; (3) a system for periodic self-inspections, including inspection of job sites, materials, work performance, and equipment; (4) a thorough accident and injury reporting and investigation process; (5) a safety orientation program, including first aid, medical attention, emergency facilities, fire protection and prevention, housekeeping, illumination, sanitation, personal protective equipment, and occupational noise exposure; and (6) a safety training program, including safety "tool box" meetings and other systems for ongoing training, including training for employees on the recognition, avoidance, and prevention of unsafe conditions.

It shall be a condition of the Contract, and shall be made a condition of each subcontract entered into pursuant to the Contract, that the Owner assumes no liability relating to its receipt and review of the Contractor's safety plan. Safety remains the responsibility of the Contractor. Furthermore, the right of the Owner to receive and review the safety plan shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.

10.3.3 DELETE the Section in its entirety.

10.3.4 ADD the following:

Asbestos containing materials are prohibited from use in the construction of this project. The Contractor shall certify that only non-asbestos materials were used. Typical materials likely to contain asbestos include roofing, acoustical treatments, fireproofing, drywall, plaster, resilient flooring, insulation's, mastics/adhesives, gaskets, mineral products, cementitious boards/pipes/mortar, etc. Lead containing materials are prohibited from use in the construction of this project.

10.3.6 REPLACE in its entirety with the following:

If, without negligence on the part of the Contractor, the Contractor is held liable for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense incurred.

11.1.1 REPLACE in its entirety with the following:

The Contractor shall purchase and maintain, from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located, such insurance as will protect the Contractor from claims set for below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- .1 Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;
- .2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;

- .3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- .4 Claims for damages insured by usual personal injury liability coverage;
- .5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- .6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
- .7 Claims for bodily injury or property damage arising out of completed operations; and
- .8 Claims involving the Contractor's indemnity obligations under Section 3.18.
- .9 The commercial liability insurance required in this Section 11.1.1 shall be written for not less than minimum liability of \$2,000,000 per occurrence for bodily injury, property damage, personal injury, contractual and completed operations/product liability, EXCEPT that these amounts may be higher if insurer furnishing the umbrella or excess coverage requires larger amounts.
- .10 Automobile liability, including Owned (if any), Hired, and Non-Owned automobiles, with minimum liability limits of \$500,000 per person and \$2,000,000 per occurrence.
- .11 Workers compensation coverage meeting all statutory requirements. The policy shall provide coverage for all states of operation that apply to the performance of this Contract.
- .12 Employer's liability or "stop gap" insurance of not less than \$2,000,000 as an endorsement on the workers compensation or commercial general liability insurance.
- .13 Builder's Risk insuring the interest of the Owner, contractor(s) and subcontractor(s) of all tiers including coverage on an All Risk basis, including but not limited to, coverage against fire, lightning, wind damage, hail, explosion, riot or civil commotions, aircraft and other vehicles, collapse, flood, earth movement, and coverage available under the so-called Installation Floater. The policy(ies) for such coverage shall be secured and maintained by Contractor in an amount equal to the Full Completed Value of the project. Any deductible amount under the policy(ies) shall be the sole responsibility of the Contractor.
- .14 Pollution Liability (if applicable to the Project): Contractor shall provide Contractor's Pollution Liability coverage for Personal Injury, Property Damage, and Cleanup Cost arising from pollution conditions caused by the operations of the Contractor for limits of \$5,000,000. Occurrence coverage is preferred by coverage may be provided on a claims-made form that includes a three-year tail coverage endorsement. Coverage shall include contractual liability coverage for claims arising out of liability of subcontractors, loading, and unloading, unlimited completed operations, and non-owned disposal site coverage (if applicable).

11.1.5 ADD the following new sections after Section 11.1.4:

Failure to provide insurance as required in this Contract is a material breach of contract entitling the Owner to terminate this Contract immediately.

11.1.6 ADD the following new sections after Section 11.1.5:

Certificates of Insurance. The Contractor shall provide certificates of insurance acceptable to the Owner at the following times: (1) prior to commencement of the Work; (2) upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. An additional certificate evidencing continuation of commercial liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the period for correction of Work. The certificates shall show the Owner as an additional insured on the Contractor's commercial general liability and excess or umbrella liability policy or policies.

11.1.7 ADD the following new sections after Section 11.1.6:

Additional Insured Obligations. To the fullest extent permitted by law, the Contractor shall cause the commercial general liability coverage to include (1) the state of North Dakota and its agencies, officers, and employees (State) as additional insureds. The additional insured coverage shall be primary and non-contributory to any of the Contractor's general liability insurance policies and shall apply to both ongoing and completed operations. The State shall have all the benefits, rights, and coverages of an additional insured under these policies that shall not be limited to the minimum limits of insurance required by this Contract or by the contractual indemnity obligations of the Contractor.

11.1.8 ADD the following new section after Section 11.1.7:

The insurance coverages listed above must meet the following additional requirements:

1. Any deductible or self-insured retention amount or other similar obligation under the policies shall be the sole responsibility of the Contractor. The amount of any deductible or self-retention is subject to approval by the Owner.
2. This insurance may be in policy or policies of insurance, primary and excess, including the so-called umbrella or catastrophe form, and must be placed with insurers rated "A-" or better by the A.M. Best Company, Inc., provided any excess policy follows form for coverage. Less than an "A-" rating must be approved by the Owner. The policies shall be in form and terms approved by the Owner.
3. The Owner will be defended, indemnified, and held harmless to the full extent of any coverage actually secured by the Contractor in excess of the minimum requirements set forth above. The duty to indemnify the Owner under this Contract shall not be limited by the insurance required in this Contract.
4. The legal defense provided to the Owner under the policy and any endorsements must be free of any conflicts of interest, even if retention of separate legal counsel for the Owner is necessary.
5. A provision that Contractor's insurance coverage shall be primary (i.e., pay first) as respects any insurance, self-insurance or self-retention maintained by the Owner and that any insurance, self-insurance or self-retention maintained by the State shall be in excess of the Contractor's insurance and shall not contribute with it.
6. Cross liability and severability of interest for all policies and endorsements.
7. The insolvency or bankruptcy of the insured Contractor shall not release the insurer from payment under the policy, even when such insolvency or bankruptcy prevents the insured Contractor from meeting the retention limit under the policy.

- 11.1.9 ADD the following new section after Section 11.1.8:

If Contractor's insurance carrier cannot provide the insurance requirements listed above, prior to commencement of Work, Contractor will be required to purchase a project-specific insurance policy on behalf of Owner including but not limited to an Owner's Protective Liability insurance policy or a Project Management Protective Liability insurance policy with an occurrence limit of not less than \$2,000,000 and an aggregate of \$2,000,000. Said insurance shall be kept in force until the project is accepted by Owner.

- 11.2.1 REPLACE in its entirety with the following:

Owner is an agency of the State of North Dakota and therefore is self-insured for liability coverage through the State of North Dakota Risk Management Fund pursuant to N.D.C.C. ch. 32-12.2. The Risk Management Fund carries equivalent minimum limits of \$1,000,000 per occurrence. Owner will provide a Certificate of Financial Responsibility upon request of the Contractor. Owner's property insurance shall be retained pursuant to N.D.C.C. ch. 26-22.1.

- 11.2.2 DELETE the Section in its entirety.

- 11.2.3 DELETE the Section in its entirety.

- 11.3.1 REPLACE in its entirety with the following:

WAIVERS OF SUBROGATION: The Owner does not waive any rights against the Contractor (term "Contractor" includes any of Contractor's subcontractors, sub-subcontractors, agents and employees, each of the other) for losses caused by Contractor's negligence or intentional act or failure to act.

- 11.3.2 DELETE the Section in its entirety.

- 13.1. REPLACE in its entirety with the following:

This Contract is governed by and construed in accordance with the laws of the State of North Dakota. Any action to enforce this Contract must be adjudicated exclusively in the state District Court of Burleigh County, North Dakota. Each party consents to the exclusive jurisdiction of such court and waives any claim of lack of jurisdiction or *forum non conveniens*.

Where the Contract Documents require Work better than that required by statute, the Contract Documents shall govern. If changes in laws, regulations, or codes made after the date of the Bid Opening require substantial revisions in the scope, extent, or complexity of the work called for by the Contract Documents, an equitable adjustment will be made in the terms of the Contract.

- 13.4.7 ADD the following new section after Section 13.4.6:

Notification of Renovations and Demolitions

For any project located in North Dakota, that will have either demolition or renovation - Federal and North Dakota regulations require that all affected parts of a facility being renovated or demolished must be inspected by a state-certified inspector for the presence of asbestos-containing materials prior to beginning a renovation or demolition project; all regulated asbestos-containing material that will be disturbed as part of a renovation or demolition must be properly removed by state-certified individuals before beginning the project; all asbestos-containing waste material must be properly disposed of in an approved landfill; and the Notification of Demolition and Renovation ([SFN17987](#)) form must be submitted to the North Dakota Department of Environmental Quality ten (10) days prior to beginning any demolition activity, whether or not asbestos is present, and for a renovation activity, it must be submitted ten (10) days prior to beginning the removal if more than 160 square feet of asbestos-containing surfacing material or more than 260 linear feet of asbestos-containing thermal system insulation will be disturbed.

- 14.1.3 REPLACE in its entirety with the following:

If one of the reasons described in paragraph 14.1.1 or 14.1.2 exists, the Contractor may, upon seven (7) days written notice to the Owner and Architect terminate the Contract and recover from the Owner payment for Work executed and for proven loss with respect to materials, equipment, tools, and construction equipment and machinery.

- 14.4.3 REPLACE in its entirety with following:

In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed prior to the date of termination together with compensation for any actual demobilization costs and costs attributable to termination of Subcontracts incurred by the Construction Manager.

- 15.1.2 DELETE the Section in its entirety.

- 15.1.7 REPLACE in its entirety with the following:

UNEXPECTED CONTINGENCY ASSURANCES: Both parties acknowledge that there may be unanticipated delays and each party has an obligation to address such contingency to avoid unexpected cost or expenses as a result of such contingency. The Owner shall maintain adequate space for ongoing operations in a manner that does not require unexpected rental or other costs as a result of any unexpected project delays, the Contractor shall anticipate the possibility of unexpected delays and not engage in financing or other business arrangements that do not take into account the possibility of project delays.

- 15.2 DELETE all references to arbitration, mediation, and binding dispute resolution.

- 15.2.5 REPLACE the last sentence with the following:

"The initial decision is final and binding on the parties but subject to litigation."

- 15.2.6 DELETE the Section in its entirety.

- 15.2.6.1 DELETE the Section in its entirety.

- 15.3 DELETE the Section in its entirety.

- 15.4 DELETE the Section in its entirety.

ARTICLE 16 – SUPPLEMENTAL TERMS AND CONDITIONS

ADD the following Additional Terms and Conditions:

- 16.1 **Limitations on Appropriations and Spending Authority.** Continuation of this Contract beyond June 30 of any odd-numbered year is contingent on continued legislative appropriation of funds for the purposes of this Contract. If those appropriations are not forthcoming, the Owner will notify the Contractor as soon as possible and the Contract will terminate on June 30 of that year. The Owner will not be penalized nor incur any liability because of termination of the Contract as provided above.
- 16.2 **Termination for Lack of Funding or Authority.** The Owner may terminate this Contract effective on delivery of written notice to the Contractor, or on any later date stated in the notice, if funding from federal, state, or other sources is not obtained and continued at levels sufficient to allow for the purchase of the commodities or services provided for in the Contract, if federal or state laws or rules are modified or interpreted in a way that the services or commodities are no longer allowable or appropriate for purchase under this Contract or no longer eligible for the funding proposed for payment of this Contract, or if any license, permit, or certificate required by law or rule, or the terms of the Contract, is for any reason denied, revoked, suspended, or not renewed. Termination of this Contract under this section 16.2 shall be considered a termination for convenience pursuant to section 14.4.
- 16.3 **Merger.** This Contract, including the Contract Documents, constitutes the entire agreement between the parties. There are no understandings, agreements, or representations, oral or written, not specified within this Contract.
- 16.4 **Severability.** If any term or provision of this Contract is declared by a court having jurisdiction to be illegal or unenforceable, the validity of the remaining terms and provisions shall not be affected, and, if possible, the rights and obligations of the parties are to be construed and enforced as if the Contract did not contain that term or provision.
- 16.5 **Time of Completion.** Time is of the essence for performance under this Contract unless otherwise agreed in writing by the Parties.
- 16.7 **Spoliation.** The Contractor shall promptly notify the Owner of all potential claims that arise from or result from this Contract. The Contractor shall also take all reasonable steps to preserve all physical evidence and information that may be relevant to the circumstances surrounding a potential claim, while maintaining public safety, and grants to the Owner the opportunity to review and inspect the evidence, including the scene of an accident.
- 16.8 **Contractor's Certificate.** The Contractor, as part of the basic services provided under this Contract, will prepare and provide the Owner and to the state agencies required by law or rule to receive it, the Contractor's certificate required under N.D.C.C. § 48-01.2-24 and § 54-21.3-04.1, that in the Contractor's professional judgment, the plans and specifications prepared by the Contractor under this Contract are in conformance with the Americans with Disabilities Act accessibility guidelines for buildings and facilities as contained in the appendix to Title 28 of the Code of Federal Regulations, part 36 (C.F.R. 36).
- 16.9 **Performance Bond.** Pursuant to N.D.C.C. § 48-01.2-10, the Contractor must obtain a Performance Bond. The bond must be for an amount equal at least to the price stated in the Contract. The bond must be conditioned to be void if the Contractor and all subcontractors fully perform all terms, conditions, and provisions of the Contract and pay all bills or claims on account of labor and materials, including supplies used for machinery and equipment, performed, furnished, and used in the performance of the Contract, including all demands of subcontractors. The requirement that bills and claims be paid must include the requirement that interest of the amount authorized under N.D.C.C. § 13-01-14 be paid on bills and claims not paid within 90 days. The bond is security for all bills, claims, and demands until fully paid, with preference to labor and material suppliers as to payment. The bond must run to the State, but any person having a lawful claim against the Contractor, or any subcontractor, as provided in this N.D.C.C. ch. 48-01.2, may sue on the bond.

- 16.10 **Alternative Dispute Resolution — Jury Trial.** The Owner does not agree to any form of binding arbitration, mediation, or other forms of mandatory alternative dispute resolution. The parties have the right to legal action to enforce available remedies. The Owner does not waive any right to a jury trial.
- 16.11 **Confidentiality.** The Contractor may not use or disclose any information it receives from Owner under this Contract that the Owner has previously identified as confidential or exempt from mandatory public disclosure except as necessary to carry out the purposes of this Contract or that the Owner has authorized in advance. The Owner may not disclose any information it receives from the Contractor that the Contractor has previously identified as confidential and that the Owner determines in its sole discretion is protected from mandatory public disclosure under a specific exception to the North Dakota public records law, N.D.C.C. ch. 44-04. The duty of the Owner and the Contractor to maintain confidentiality of information under this section continues beyond the Term of this Contract
- 16.12 **Compliance with Public Records Act.** Under the North Dakota public records law certain records may be open to the public upon request.
- Public records may include: (a) records the Owner receives from the Contractor under this Contract, (b) records obtained by either Party under this Contract, and (c) records generated by either Party under this Contract.
- The Contractor shall contact the Owner immediately upon receiving a request for information under the public records law and shall comply with the Owner's instructions on how to respond to that request..
- 16.13 **Work Product.** All work product, equipment, or materials created or purchased under this Contract belong to the Owner and must be delivered to the Owner at the Owner's request upon termination of this Contract. The Contractor agrees that all materials prepared under this Contract are "works for hire" within the meaning of the copyright laws of the United States and assigns to Owner all rights and interests the Contractor may have in the materials it prepares under this Contract, including any right to derivative use of the material.
- 16.14 **Independent Entity.** The Contractor shall perform as an independent entity under this Contract and not as an employee of the Owner for any purpose, including, but not limited to, the application of the Social Security Act, the Fair Labor Standards Act, the Federal Insurance Contribution Act, the North Dakota Unemployment Compensation Law, and the North Dakota Workers' Compensation Act. The Contractor will retain sole and absolute discretion in the manner and means of carrying out the Contractor's activities and responsibilities under this Contract, except to the extent specified in this Contract.
- 16.15 **Hiring Preference.** Pursuant to N.D.C.C. § 43-07-20, the Contractor must give preference to the employment of bona fide North Dakota residents, as determined by N.D.C.C. § 54-01-26, with preference given first to honorably discharged disabled veterans and veterans of the armed forces of the United States, as defined in N.D.C.C. § 37-19.1-01, who are deemed to be qualified in the performance of that work. The preference shall not apply to Engineering, superintendence, management, or office or clerical work.
- 16.16 **Americans with Disabilities Act (ADA) – Nondiscrimination – Compliance with Laws**
- a. The Contract shall comply with all applicable federal and state laws, rules, and policies, including those relating to nondiscrimination, accessibility, and civil rights (See N.D.C.C. Title 34 – Labor and Employment, specifically N.D.C.C. ch. 34-06.1 Equal Pay for Men and Women).

- b. **ADA Compliance** – The Contractor shall ensure that all user-facing components of the solution comply with the Americans with Disabilities Act (ADA) and conform to current Web Content Accessibility Guidelines (WCAG) at a minimum. The Contractor shall verify accessibility compliance through automated and manual testing prior to delivery and shall provide reports to the Owner quarterly or as mutually agreed by the Owner and the Contractor. If a compliance issue is discovered, the Contractor shall provide a remediation plan, including timelines and impacts, to the Owner.
- c. The Contractor shall file all required reports timely, make required payroll deductions, and pay all taxes and premiums owed timely, including sales and use taxes, and unemployment compensation and workers' compensation premiums.
- d. The Contractor shall have and keep current and in good standing all licenses and permits required by law during the Term of this Contract.
- e. The Contractor is prohibited from boycotting Israel for the duration of this Contract. (See N.D.C.C. § 54-44.4-15.) CONTRACTOR represents that it does not and will not engage in boycotting Israel during the term of this Contract. If the Owner receives evidence that the Contractor boycotts Israel, the Owner shall determine whether the company boycotts Israel. The foregoing does not apply to contracts with a total value of less than \$100,000 or if the Contractor has fewer than ten (10) full-time employees.

The Contractor's failure to comply with this section is a material breach by the Contractor and the Owner may terminate this Contract in accordance with its Termination for Cause section.

- 16.17 **Contractor's Payment of Taxes.** Pursuant to N.D.C.C. § 43-07-11.1, Contractor must file a certificate showing the Contractor has paid all applicable state taxes.
- 16.18 **Licensed Contractor.** Pursuant to N.D.C.C. § 43-07-02, the Contractor and any Subcontractors must be licensed contractors.
- 16.19 **State Audit.** Pursuant to N.D.C.C. § 54-10-19, all records, regardless of physical form, and the accounting practices and procedures of the Contractor relevant to this Contract are subject to examination by the North Dakota State Auditor, the Auditor's designee, or Federal auditors, if required. The Contractor shall maintain these records for at least three (3) years following completion of this Contract and be able to provide them upon reasonable notice. The Owner, State Auditor, or Auditor's designee shall provide reasonable notice to the Contractor prior to conducting examination.
- 16.20 **Prepayment.** The Owner will not make any advance payments before performance by the Contractor under this Contract.
- 16.21 **Payment of Taxes by State.** The Owner is not responsible for and will not pay local, state, or federal taxes. The State of North Dakota sales tax exemption number is E-2001, and a certificate will be furnished upon request by the Owner.

16.22 **Conflict of Interest.** The Contractor assures no Federal funds from the contract will be paid by or on behalf of the undersigned to any person for influencing or attempting to influence an officer or employee of any department, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

If any grant funds other than Federal funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any department, Member of Congress, an officer or employee of Congress, or any employee of a Member of Congress in connection with the Federal contract, grant, loan, or cooperative agreement, the Contractor will complete and submit Standard Form LLL, "Disclosure form to Report Lobbying," in accordance with its instructions.

The Contractor will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest or personal gain.

16.23 **Taxpayer Identification.** The Contractor's federal employer ID number is: _____.

CONTRACTOR

**STATE OF NORTH DAKOTA – OFFICE OF
MANAGEMENT AND BUDGET**

Signature

Signature

Typed Name

Typed Name

Title

Title

Date

Date

END OF DOCUMENT

**SECTION 01 1000
SUMMARY**

PART 1 GENERAL

1.01 PROJECT

- A. Project Name: State of North Dakota ND State Library Renovation
- B. Owner's Name: State of North Dakota.
- C. Architect's Name: J2 Studio Architecture + Design, PC.
- D. The Project consists of the renovation of renovation of the 15th floor of the Capitol tower for new offices and work areas using a modular wall system.

1.02 CONTRACT DESCRIPTION

- A. Contract Type: Multiple prime contracts, each based on a Stipulated Price as described in Document 00 5000 - Contracting Forms and Supplements.

1.03 DESCRIPTION OF ALTERATIONS WORK

- A. Scope of demolition and removal work is indicated on drawings and specified in Section 02 4100.
- B. Scope of alterations work is indicated on drawings.
- C. HVAC: Alter existing system and add new construction, keeping existing in operation.
- D. Electrical Power and Lighting: Alter existing system and add new construction, keeping existing in operation.
- E. Fire Suppression Sprinklers: Alter existing system and add new construction, keeping existing in operation.
- F. Fire Alarm: Alter existing system and add new construction, keeping existing in operation.
- G. Telephone: Alter existing system and add new construction, keeping existing in operation.
- H. Security System: Alter existing system and add new construction, keeping existing in operation.

1.04 OWNER OCCUPANCY

- A. Owner intends to continue to occupy adjacent portions of the existing building during the entire construction period.
- B. Owner intends to occupy the Project upon Substantial Completion.
- C. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- D. Schedule the Work to accommodate Owner occupancy.

1.05 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: Limited to areas noted on Drawings.
- B. Provide access to and from site as required by law and by Owner:
 - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- C. Existing building spaces may not be used for storage.
- D. Time Restrictions:
 - 1. Limit conduct of especially noisy exterior work to the hours of 5pm to 7am.
- E. Utility Outages and Shutdown:
 - 1. Limit disruption of utility services to hours the area is unoccupied.

State of North Dakota
ND State Library Renovation
Bismarck, North Dakota

J22525

2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.
3. Prevent accidental disruption of utility services to other facilities.

1.06 WORK SEQUENCE

- A. Construct Work in phases during the construction period.
 1. Refer to phasing plan on drawings.
- B. Coordinate construction schedule and operations with Owner.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 2000
PRICE AND PAYMENT PROCEDURES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Documentation of changes in Contract Sum and Contract Time.
- C. Change procedures.
- D. Correlation of Contractor submittals based on changes.
- E. Procedures for preparation and submittal of application for final payment.

1.02 SCHEDULE OF VALUES

- A. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect for approval.
- B. Forms filled out by hand will not be accepted.
- C. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.
- D. Revise schedule to list approved Change Orders, with each Application For Payment.

1.03 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.
- C. Forms filled out by hand will not be accepted.
- D. Execute certification by signature of authorized officer.
- E. Submit one electronic copy of each Application for Payment. No hard copies are required.
- F. Include the following with the application:
 - 1. Transmittal letter as specified for submittals in Section 01 3000.
 - 2. Construction progress schedule, revised and current as specified in Section 01 3000.

1.04 MODIFICATION PROCEDURES

- A. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect will issue instructions directly to Contractor.
- B. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
 - 1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
 - 2. Promptly execute the change.
- C. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 14 days.
- D. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
 - 1. For change requested by Architect for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
 - 2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect.

- E. Substantiation of Costs: Provide full information required for evaluation.
 - 1. Provide the following data:
 - a. Quantities of products, labor, and equipment.
 - b. Taxes, insurance, and bonds.
 - c. Overhead and profit.
 - d. Justification for any change in Contract Time.
 - e. Credit for deletions from Contract, similarly documented.
- F. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

1.05 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:
 - 1. All closeout procedures specified in Section 01 7000.

END OF SECTION

**SECTION 01 2300
ALTERNATES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Description of Alternates.

1.02 SCHEDULE OF ALTERNATES

- A. Alternate No. 1 - Carpet Replacement
 - 1. Base Bid Item: Existing flooring shall remain in indicated rooms on ground and first floors of the library. Refer to drawings for full scope of work.
 - 2. Alternate Bid Item: Replace existing flooring with CPT1 in the following rooms on the ground floor: 006 - 010, and first floor: 101 - 107. Refer to drawings for full scope of work.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 2500
SUBSTITUTION PROCEDURES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procedural requirements for proposed substitutions.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
 - 2. Agrees to provide the same warranty for the substitution as for the specified product.
 - 3. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension that may subsequently become apparent.
- B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
- C. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
- D. Limit each request to a single proposed substitution item.
- E. Post bid substitutions are not allowed.

3.02 RESOLUTION

- A. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.

3.03 ACCEPTANCE

3.04 CLOSEOUT ACTIVITIES

- A. See Section 01 7800 - Closeout Submittals, for closeout submittals.
- B. Include completed Substitution Request Forms as part of the Project record.

END OF SECTION

**SECTION 01 3000
ADMINISTRATIVE REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General administrative requirements.
- B. Preconstruction meeting.
- C. Progress meetings.
- D. Construction progress schedule.
- E. Coordination drawings.
- F. Submittals for review, information, and project closeout.
- G. Number of copies of submittals.
- H. Requests for Interpretation (RFI) procedures.
- I. Submittal procedures.

1.02 GENERAL ADMINISTRATIVE REQUIREMENTS

- A. Comply with requirements of Section 01 7000 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

- A. Attendance Required:
 - 1. Owner.
 - 2. Architect.
 - 3. Engineers.
 - 4. Contractors.
 - 5. Major subcontractors.
- B. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
 - 5. Designation of personnel representing the parties to Contract, Engineers and <1|A/E|>.
 - 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 - 7. Scheduling.
- C. Each Prime Contractor shall record minutes for their discipline and within two days after the meeting, forward the minutes in typewritten format to the General Contractor. The General Contractor shall compile these minutes and distribute copies to the Architect, Engineers, Owner, meeting participants, and those affected by decisions made.

3.02 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the work at maximum bi-monthly intervals.
- B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Attendance Required:

1. Contractors.
 2. Owner.
 3. Architect.
 4. Engineers.
 5. Contractor's superintendent.
 6. Major subcontractors.
- D. Agenda:
1. Review minutes of previous meetings.
 2. Review of work progress.
 3. Field observations, problems, and decisions.
 4. Identification of problems that impede, or will impede, planned progress.
 5. Review of submittals schedule and status of submittals.
 6. Review of RFIs log and status of responses.
 7. Maintenance of progress schedule.
 8. Corrective measures to regain projected schedules.
 9. Planned progress during succeeding work period.
 10. Coordination of projected progress.
 11. Maintenance of quality and work standards.
 12. Effect of proposed changes on progress schedule and coordination.
 13. Other business relating to work.
- E. Each Prime Contractor shall record minutes for their discipline and within two days after the meeting, forward the minutes in typewritten format to the General Contractor. The General Contractor shall compile these minutes and distribute copies to the Architect, Engineers, Owner, meeting participants, and those affected by decisions made.

3.03 CONSTRUCTION PROGRESS SCHEDULE

- A. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of work, with a general outline for remainder of work.
- B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
 1. Include written certification that major contractors have reviewed and accepted proposed schedule.
- D. Within 10 days after joint review, submit complete schedule.
- E. Submit updated schedule with each Application for Payment.
- F. Each Prime Contractor is responsible for coordinating and maintaining a comprehensive project schedule for all trades under their individual prime contract. The Mechanical and Electrical Prime Contractors shall submit an updated progress schedule to the General Contractor 2 days prior to each construction progress meeting for review and distribution to all parties. Prime Contractors are responsible to coordinate their work with their trades and the other Prime Contractors.

3.04 COORDINATION DRAWINGS

- A. Provide information required by Project Coordinator for preparation of coordination drawings.
- B. Review drawings prior to submission to Architect.

3.05 REQUESTS FOR INFORMATION (RFI)

- A. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.

3.06 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
 - 1. Product data.
 - 2. Shop drawings.
 - 3. Samples for selection.
 - 4. Samples for verification.
- B. Submit to Architect for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.
- C. Samples will be reviewed for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 7800 - Closeout Submittals.

3.07 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
 - 1. Design data.
 - 2. Certificates.
 - 3. Test reports.
 - 4. Inspection reports.
 - 5. Manufacturer's instructions.
 - 6. Manufacturer's field reports.
 - 7. Other types indicated.
- B. Submit for Architect's knowledge as contract administrator or for Owner.

3.08 SUBMITTALS FOR PROJECT CLOSEOUT

- A. Submit Correction Punch List for Substantial Completion.
- B. Submit Final Correction Punch List for Substantial Completion.
- C. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 7800 - Closeout Submittals:
 - 1. Project record documents.
 - 2. Operation and maintenance data.
 - 3. Warranties.
 - 4. Bonds.
 - 5. Other types as indicated.
- D. Submit for Owner's benefit during and after project completion.

3.09 NUMBER OF COPIES OF SUBMITTALS

- A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
- B. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect until the completion of the project.
 - 1. After review, produce duplicates.

3.10 SUBMITTAL PROCEDURES

- A. General Requirements:
 - 1. Transmit using approved form.
 - 2. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
 - 3. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.

4. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
 - a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
 5. Schedule submittals to expedite the Project, and coordinate submission of related items.
 - a. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
 6. Provide space for Contractor and Architect review stamps.
 7. When revised for resubmission, identify all changes made since previous submission.
 8. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
 9. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
- B. Shop Drawing Procedures:
1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
 2. Do not reproduce Contract Documents to create shop drawings.
 3. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.
 4. Shop drawings shall be printed to PDF whenever possible. Scanned PDFs that are not legible will not be accepted.

3.11 SUBMITTAL REVIEW

- A. Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.
- B. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
- C. Architect's and consultants' actions on items submitted for review:
1. Authorizing purchasing, fabrication, delivery, and installation:
 - a. "No Exceptions Taken", or language with same legal meaning.
 - b. "Make Corrections Noted", or language with same legal meaning.
 - 1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated. Resubmittal is not required.
 2. Not Authorizing fabrication, delivery, and installation:
 - a. "Revise and Resubmit".
 - 1) Resubmit revised item, with review notations acknowledged and incorporated.
 - b. "Rejected".
 - 1) Submit item complying with requirements of Contract Documents.

END OF SECTION

**SECTION 01 4000
QUALITY REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Submittals.
- B. Control of installation.
- C. Tolerances.
- D. Defect Assessment.

1.02 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- D. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- E. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

3.03 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not conforming to specified requirements.

END OF SECTION

**SECTION 01 5000
TEMPORARY FACILITIES AND CONTROLS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary utilities.
- B. Temporary sanitary facilities.
- C. Temporary Controls: Barriers and enclosures.
- D. Security requirements.
- E. Vehicular access and parking.
- F. Waste removal facilities and services.
- G. Project identification sign.
- H. Field offices.

1.02 TEMPORARY UTILITIES

- A. Existing facilities may be used.
- B. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.03 TEMPORARY SANITARY FACILITIES

- A. Use of existing facilities is permitted. Coordinated preferred locations with Owner.
- B. Maintain daily in clean and sanitary condition.
- C. At end of construction, return facilities to same or better condition as originally found.

1.04 INTERIOR ENCLOSURES

- A. Provide temporary partitions as indicated to separate work areas from Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.
- B. Construction: Framing and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces:

1.05 SECURITY

- A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.
- B. Coordinate with Owner's security program. Each contractor employee is required to have a security badge provided by Facilities Management. Cost is \$10.00/badge and non-refundable.
 - 1. Prior to commencement of the project, a separate email for each person needing a badge with a photo (not driver's license), name, address and company information shall be sent to Tom Job: tjob@nd.gov.
 - a. Highway Patrol will bill each Contractor separately.
 - b. If an employee already has a badge, but it is no longer active, it can be reactivated and the fee is not required.

1.06 VEHICULAR ACCESS AND PARKING

- A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
- B. Coordinate access and haul routes with governing authorities and Owner.
- C. Provide and maintain access to fire hydrants, free of obstructions.
- D. Existing parking areas may be used for construction parking. Coordinate approved locations with Owner.

1.07 WASTE REMOVAL

- A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- B. Provide containers with lids. Remove trash from site periodically.
- C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
- D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.08 PROJECT IDENTIFICATION

- A. No other signs are allowed without Owner permission except those required by law.

1.09 FIELD OFFICES

- A. A field office will not be required for this project. Contractor Superintendent shall be accessible by cellular phone. Contractor shall post all applicable documents required by law within one area within the construction zone.

1.10 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.
- B. Clean and repair damage caused by installation or use of temporary work.
- C. Restore existing facilities used during construction to original condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 5100
TEMPORARY UTILITIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary Utilities: Provision of electricity, lighting, heat, and ventilation.

1.02 REFERENCE STANDARDS

- A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.

1.03 TEMPORARY ELECTRICITY

- A. Cost: By Owner.
 - 1. All equipment and connections for temporary power shall be by Electrical Contractor.
- B. Connect to Owner's existing power service.
 - 1. Do not disrupt Owner's need for continuous service.
 - 2. Exercise measures to conserve energy.
- C. Complement existing power service capacity and characteristics as required.
- D. Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.
- E. Permanent convenience receptacles may be utilized during construction.
- F. Provide adequate distribution equipment, wiring, and outlets to provide single phase branch circuits for power and lighting.

1.04 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain incandescent lighting as suitable for the application for construction operations in accordance with requirements of 29 CFR 1926 and authorities having jurisdiction.
- B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
- C. Maintain lighting and provide routine repairs.

1.05 TEMPORARY HEATING

- A. Cost of Energy: By Owner.
- B. Provide heating devices and heat as needed to maintain specified conditions for construction operations.
- C. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless indicated otherwise in specifications.
- D. Owner's existing heat plant may be used.
 - 1. Exercise measures to conserve energy.
- E. Prior to operation of permanent equipment for temporary heating purposes, verify that installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

1.06 TEMPORARY VENTILATION

- A. Existing ventilation equipment may not be used.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 6000
PRODUCT REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Re-use of existing products.
- B. Transportation, handling, storage and protection.
- C. Product option requirements.
- D. Substitution limitations.
- E. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 RELATED REQUIREMENTS

- A. Section 01 2500 - Substitution Procedures: Substitutions made during procurement.

1.03 SUBMITTALS

- A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.
 - 2. Provide physical samples or chart for color selection from standard finishes. PDFs are not acceptable for color selection.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

- A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.

2.02 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by Contract Documents. Reuse of existing materials is not permitted without prior approval.

2.03 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.04 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION LIMITATIONS

- A. See Section 01 2500 - Substitution Procedures.
- B. Instructions for Bidders specifies time restrictions for submitting requests for substitutions during the bidding period and the documents required. Comply with requirements specified in Section 00 2113.
- C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
- D. A request for substitution constitutes a representation that the submitter:
 - 1. Has investigated the proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Agrees to provide the same warranty for the substitution as for the specified product.
 - 3. Agrees to coordinate installation and make changes to other Work that may be required for the Work to be completed with no additional cost to the Owner.
 - 4. Waives claims for additional costs or time extension that may subsequently become apparent.

3.02 TRANSPORTATION AND HANDLING

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.03 STORAGE AND PROTECTION

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 7419.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- G. Comply with manufacturer's warranty conditions, if any.
- H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- I. Prevent contact with material that may cause corrosion, discoloration, or staining.

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- J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

**SECTION 01 7000
EXECUTION AND CLOSEOUT REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Requirements for alterations work, including selective demolition.
- C. Cutting and patching.
- D. Cleaning and protection.
- E. Starting of systems and equipment.
- F. Demonstration and instruction of Owner personnel.
- G. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
- H. General requirements for maintenance service.

1.02 RELATED REQUIREMENTS

- A. Section 01 5000 - Temporary Facilities and Controls: Temporary exterior enclosures.
- B. Section 01 5000 - Temporary Facilities and Controls: Temporary interior partitions.
- C. Section 07 8400 - Firestopping.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Owner or separate Contractor.

1.04 PROJECT CONDITIONS

- A. Use of explosives is not permitted.
- B. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- C. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
 - 1. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.
 - 2. Provide 'sticky mats' at the entrance to the construction area, from the interior of the building, for reduction in tracking construction dust into occupied areas. Replace sticky mat when no longer functional.
- D. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
- E. Non-smoking facility: Smoking, vaping and use of smokeless tobacco is prohibited in the facility.

1.05 COORDINATION

- A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Notify affected utility companies and comply with their requirements.
- C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- F. Coordinate completion and clean-up of work of separate sections.
- G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 GENERAL INSTALLATION REQUIREMENTS

- A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.04 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 - 1. Verify that construction and utility arrangements are as indicated.
 - 2. Report discrepancies to Architect before disturbing existing installation.
 - 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.
 - 1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000 in locations indicated on drawings.
- C. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
 - 2. Relocate items indicated on drawings.
 - 3. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
 - 4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- D. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove, relocate, and extend existing systems to accommodate new construction.
 - 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
 - 2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
 - 3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 - a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
 - b. Provide temporary connections as required to maintain existing systems in service.
 - 4. Verify that abandoned services serve only abandoned facilities.
 - 5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.
- E. Protect existing work to remain.
 - 1. Prevent movement of structure; provide shoring and bracing if necessary.
 - 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.

3. Repair adjacent construction and finishes damaged during removal work.
- F. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
 1. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.
 2. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
- G. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- H. Refinish existing surfaces as indicated:
 1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
 2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
- I. Clean existing systems and equipment.
- J. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- K. Do not begin new construction in alterations areas before demolition is complete.
- L. Comply with all other applicable requirements of this section.

3.05 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.
- C. Perform whatever cutting and patching is necessary to:
 1. Complete the work.
 2. Fit products together to integrate with other work.
 3. Provide openings for penetration of mechanical, electrical, and other services.
 4. Match work that has been cut to adjacent work.
 5. Repair areas adjacent to cuts to required condition.
 6. Repair new work damaged by subsequent work.
 7. Remove samples of installed work for testing when requested.
 8. Remove and replace defective and non-complying work.
- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- E. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- G. Restore work with new products in accordance with requirements of Contract Documents.
- H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400, to full thickness of the penetrated element.
- J. Patching:

1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
2. Match color, texture, and appearance.
3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.06 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.07 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Prohibit traffic from landscaped areas.
- H. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.08 SYSTEM STARTUP

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Architect and Owner seven days prior to start-up of each item.
- C. Verify that 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 the equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
- G. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.09 DEMONSTRATION AND INSTRUCTION

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

- B. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
- C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- D. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of Owner's personnel.
- E. Utilize 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.
- F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

3.10 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.11 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
 - 1. G.C. to hire a professional cleaning company for final cleaning at substantial completion of each work area.
- B. Use cleaning materials that are nonhazardous.
- C. 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.
- D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- F. Clean filters of operating equipment.
- G. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.12 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
 - 1. Provide copies to Owner.
- B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.
- C. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.
- D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.
- E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.
- F. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
- G. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.

- H. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

3.13 MAINTENANCE

- A. Provide service and maintenance of components indicated in specification sections.
- B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.
- C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

**SECTION 01 7800
CLOSEOUT SUBMITTALS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Project Record Documents.
- B. Operation and Maintenance Data.
- C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

- A. Section 01 3000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- B. Individual Product Sections: Specific requirements for operation and maintenance data.
- C. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

- A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
- B. Operation and Maintenance Data:
 - 1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect 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 completed documents within ten days after acceptance.
- C. Warranties and Bonds:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 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.
- 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.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 - 1. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:

1. Field changes of dimension and detail.
2. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:
 1. Product data, with catalog number, size, composition, and color and texture designations.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
 1. Description of unit or system, and component parts.
 2. Identify function, normal operating characteristics, and limiting conditions.
 3. Include performance curves, with engineering data and tests.
 4. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- C. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- D. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- E. Provide servicing and lubrication schedule, and list of lubricants required.
- F. Include manufacturer's printed operation and maintenance instructions.
- G. Include sequence of operation by controls manufacturer.
- H. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- I. Additional Requirements: As specified in individual product specification sections.

3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

- A. Assembly described below is required for hard copies of operation and maintenance manual. Contractor shall confirm with Owner on preferred transmittal of hard copies or digital copy on CD, USB or other method.

- B. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- C. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- D. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- E. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- F. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.
- G. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- H. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- I. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.
- J. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- K. Arrangement of Contents: Organize each volume in parts as follows:
 - 1. Project Directory.
 - 2. Table of Contents, of all volumes, and of this volume.
 - 3. Operation and Maintenance Data: Arranged by system, then by product category.
 - a. Source data.
 - b. Operation and maintenance data.
 - c. Field quality control data.
 - d. Photocopies of warranties and bonds.

3.06 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.
- E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

END OF SECTION

**SECTION 02 4100
DEMOLITION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Selective demolition of building elements for alteration purposes.

1.02 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary: Limitations on Contractor's use of site and premises.
- B. Section 01 1000 - Summary: Description of items to be salvaged or removed for re-use by Contractor.
- C. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- D. Section 01 6000 - Product Requirements: Handling and storage of items removed for salvage and relocation.
- E. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 SCOPE

- A. Remove in their entirety, all materials required to execute demolition and construction of the project as indicated in the drawings.
- B. Remove other items indicated, for salvage, relocation, and recycling.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - 1. Obtain required permits.
 - 2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
 - 3. Provide, erect, and maintain temporary barriers and security devices.
 - 4. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 - 5. Do not close or obstruct roadways or sidewalks without permit.
 - 6. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
- B. Do not begin removal until receipt of notification to proceed from Owner.
- C. Protect existing structures and other elements that are not to be removed.
 - 1. Provide bracing and shoring.
 - 2. Prevent movement or settlement of adjacent structures.

3. Stop work immediately if adjacent structures appear to be in danger.
- D. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.
- E. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.
 1. Asbestos testing has been previously completed on the floor. There is asbestos in the red tile below the carpeting, but it is not being disturbed. There is no other asbestos in the clay tile walls, plaster, ceiling or any other known surfaces.
 - a. Refer to demolition notes regarding carpet for sequencing.

3.03 EXISTING UTILITIES

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.
- E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.
- F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
- G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

3.04 SELECTIVE DEMOLITION FOR ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 1. Verify that construction and utility arrangements are as indicated.
 2. Report discrepancies to Architect before disturbing existing installation.
 3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.
- B. Separate areas in which demolition is being conducted from other areas that are still occupied.
 1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000 in locations indicated on drawings.
- C. Remove existing work as indicated and as required to accomplish new work.
 1. Remove items indicated on drawings.
- D. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
 2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 3. Verify that abandoned services serve only abandoned facilities before removal.
 4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.
- E. Protect existing work to remain.

1. Prevent movement of structure; provide shoring and bracing if necessary.
2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
3. Repair adjacent construction and finishes damaged during removal work.
4. Patch as specified for patching new work.

3.05 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

**SECTION 06 1000
ROUGH CARPENTRY**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concealed wood blocking, nailers, and supports.

1.02 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.
- B. PS 20 - American Softwood Lumber Standard; 2025.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. Species: Douglas Fir-Larch, unless otherwise indicated.
 - 2. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
 - 3. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- A. Sizes: Nominal sizes as indicated on drawings, S4S.
- B. Moisture Content: S-dry or MC19.

2.03 ACCESSORIES

- A. Fasteners and Anchors:
 - 1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

END OF SECTION

**SECTION 06 2000
FINISH CARPENTRY**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Finish carpentry items.

1.02 RELATED REQUIREMENTS

- A. Section 09 9123 - Interior Painting: Painting of finish carpentry items.
- B. Section 09 9300 - Staining and Transparent Finishing: Staining and transparent finishing of finish carpentry items.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Samples: Submit two samples of wood trim 4 inch long.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect from moisture damage.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

- A. Interior Woodwork Items:
 - 1. Moldings, Bases, Casings, and Miscellaneous Trim: Oak, G.C. to verify; stained to match existing.

2.02 FASTENINGS

- A. Adhesive for Purposes Other Than Laminate Installation: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.

2.03 ACCESSORIES

- A. Wood Filler: Solvent base, tinted to match surface finish color.

2.04 FABRICATION

- A. Shop assemble work for delivery to site, permitting passage through building openings.
- B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

2.05 SHOP FINISHING

- A. Sand work smooth and set exposed nails and screws.
- B. Apply wood filler in exposed nail and screw indentations.
- C. Stain, seal, and varnish exposed to view surfaces. Brush apply only.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Set and secure materials and components in place, plumb and level.
- B. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

3.02 TOLERANCES

- A. Maximum Variation from True Position: 1/16 inch.
- B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

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END OF SECTION

**SECTION 06 4100
ARCHITECTURAL WOOD CASEWORK**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Specially fabricated cabinet units.
- B. Hardware.

1.02 RELATED REQUIREMENTS

- A. Section 12 3600 - Countertops.

1.03 REFERENCE STANDARDS

- A. ANSI A208.1 - American National Standard for Particleboard; 2022.
- B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).
- C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.
- D. BHMA A156.9 - Cabinet Hardware; 2020.
- E. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
- C. Product Data: Provide data for hardware accessories.
- D. Samples: Submit actual sample items of proposed laminate and edgebanding finishes, demonstrating hardware design, quality, and finish.

1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect units from moisture damage.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. TMI Systems Design Corporation.
- B. Woodside Industries.
- C. Northern Woodwork.
- D. Northwest Cabinets
- E. Sidney Millwork.
- F. Minot Sash and Door.
- G. Maloney Inc.
- H. Bismarck Kitchens
- I. Approved Equal.
- J. Substitutions: See Section 01 6000 - Product Requirements.
- K. Single Source Responsibility: Provide and install this work from single fabricator.

2.02 CABINETS

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Plastic Laminate Faced Cabinets: Custom grade.
- C. Cabinets:
 - 1. Finish - Exposed Exterior Surfaces: Decorative laminate.
 - 2. Finish - Exposed Interior Surfaces: Decorative laminate.
 - 3. Finish - Semi-Exposed Surfaces: Decorative laminate
 - a. Surfaces other than drawer bodies: TFM Thermally Fused Melamine.
 - b. Drawer sides and backs: TFM Thermally Fused Melamine.
 - c. Drawer bottoms: TFM Thermally Fused Melamine.
 - 4. Finish - Concealed Surfaces: Manufacturer's option.
 - 5. Door and Drawer Front Edge Profiles: Square edge with 3-mm PVC edging.
 - 6. Casework Construction Type: Type A - Frameless.
 - 7. Adjustable Shelf Loading: 50 psf.
 - a. Deflection: L/144.
 - 8. Cabinet Style: Flush overlay.
 - 9. Drawer Side Construction: Manufacturer's option.
 - 10. Drawer Construction Technique: As recommended by fabricator.

2.03 PANEL CORE MATERIALS

- A. Particleboard: Composite panel composed of cellulosic particles, additives, and bonding system; comply with ANSI A208.1.
 - 1. Panel Thickness: 3/4 inch or 1 1/8 inch thickness

2.04 THERMALLY FUSED LAMINATE PANELS

- A. Thermally Fused Laminate (TFL): Melamine-resin-saturated decorative papers; for fusion to composite wood substrates under heat and pressure.
 - 1. Panel Core Substrate: Particleboard.
 - 2. Color: White.

2.05 LAMINATE MATERIALS

- A. Manufacturers:
 - 1. Formica Corporation: www.formica.com/#sle.
 - 2. Panolam Industries International, Inc: www.panolam.com/#sle.
 - 3. Wilsonart: www.wilsonart.com.
 - 4. Substitutions: Not permitted.
- B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.
- C. Provide specific types as indicated.
 - 1. Horizontal Surfaces: HGS, 0.048 inch nominal thickness, colors as scheduled, finish as scheduled.
 - 2. Vertical Surfaces: VGS, 0.028 inch nominal thickness, colors as scheduled, finish as scheduled.
 - 3. Post-Formed Horizontal Surfaces: HGP, 0.039 inch nominal thickness, colors as scheduled, finish as scheduled.
 - 4. Cabinet Liner: CLS, 0.020 inch nominal thickness, colors as scheduled, finish as scheduled.
 - 5. Laminate Backer: BKL, 0.020 inch nominal thickness, undecorated; for application to concealed backside of panels faced with high pressure decorative laminate.
 - 6. Cabinet Interiors: Thermally fused melamine TFM laminate, NEMA Test LD 3-2005. (TFM allowed on casework interiors only)
 - 7. Pattern Direction: Vertically for drawer fronts, doors, and fixed panels.

2.06 COUNTERTOPS

- A. Solid surface countertops are specified in Section 12 3600.

2.07 ACCESSORIES

- A. Adhesive: Type recommended by fabricator to suit application.
- B. Plastic Edge Banding: Extruded PVC, convex shaped; smooth finish; self locking serrated tongue; of width to match component thickness.
 - 1. Color: As indicated on drawings.
 - 2. Thickness: 3-mm at all locations.
- C. Fasteners: Size and type to suit application.
- D. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel or chrome-plated finish in exposed locations.
 - 1. All hardware shall be aluminum within the MRI rooms.
- E. Concealed Joint Fasteners: Threaded steel.
- F. Screw Cap Covers: Provide for all locations where screws are visible after installation. Color to match laminate.
 - 1. Note: Not required within closed cabinets.
- G. File Suspension System: Extruded molding integral with top of drawer box sides to accept standard hanging file folders.
- H. Grommets: Flexible polypropylene or ABS grommets for cut-outs, in color to match adjacent surface, 2" diameter.
 - 1. Basis-of-Design: Wurth Baer Model #CWF2671, 2 3/8" diameter or Custom Accents Model #CPF-2670, 60mm.
 - 2. Color shall coordinate with adjacent countertop surface.
- I. Pencil Drawers: Provide molded pencil drawer; Similar to Custom Accents CPF89777; 18 3/4" wide x 17 1/8" deep x 1 3/4" high.
- J. Chain Stop: Provide at all tall and upper cabinet door locations with adjacent wall, and at locations indicated on drawings.
- K. Bulletin Board: Basis-of-Design - Forbo Bulletin Board
 - 1. Size: 1.22 m width, up to 28 m length
 - 2. Thickness: 6.0 mm
 - 3. Self healing with bacteriostatic capabilities.
 - 4. Color: As selected from manufacturer's standard.

2.08 HARDWARE

- A. Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified.
- B. Adjustable Shelf Supports: Standard side-mounted system using multiple holes for pin supports and coordinated self rests, clear polycarbonate finish finish, for nominal 2 inch spacing adjustments.
 - 1. Product: 3220 Double Pin manufactured by Bainbridge or approved equal.
- C. Countertop Support Brackets: Fixed, L-shaped, face-of-stud mounting.
 - 1. Materials: Steel plates.
 - a. Finish: Manufacturer's standard, factory-applied, powder coat.
 - b. Height and Support Length: As recommended for application.
- D. Drawer and Door Pulls: "U" shaped wire pull, steel with satin finish, 4 inch centers at all cabinets.
- E. Drawer Slides:

1. Type: Full extension type; zinc-plated steel ball-bearing slides at all drawers.
 2. Static Load Capacity: Commercial grade.
 3. Mounting: Side mounted.
 4. Stops: Integral type.
 5. Features: Provide self closing/stay closed type.
- F. Hinges: European style concealed self-closing type, BHMA No. A156.9, BO 1602, steel with polished finish.

2.09 FABRICATION

- A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.
- B. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.
- C. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.
- D. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners.
1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.
 2. Cap exposed plastic laminate finish edges with material of same finish and pattern.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify adequacy of backing and support framing.

3.02 INSTALLATION

- A. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.
- B. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.
- C. Secure cabinets to floor using appropriate angles and anchorages.
- D. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

3.03 ADJUSTING

- A. Adjust installed work.
- B. Adjust moving or operating parts to function smoothly and correctly.

3.04 CLEANING

- A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION

**SECTION 07 9200
JOINT SEALANTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Nonsag gunnable joint sealants.
- B. Joint backings and accessories.

1.02 REFERENCE STANDARDS

- A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015 (Reapproved 2022).
- B. ASTM C834 - Standard Specification for Latex Sealants; 2017 (Reapproved 2023).
- C. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2022.
- D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- E. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).
- F. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2008 (Reapproved 2012).
- G. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2018.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
 - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
 - 2. List of backing materials approved for use with the specific product.
 - 3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
 - 4. Substrates the product should not be used on.

1.04 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Non-Sag Sealants: Permits application in joints on vertical surfaces without sagging or slumping.
 - 1. Bostik Inc: www.bostik-us.com.
 - 2. Dow Corning Corporation: www.dowcorning.com/construction/sle.
 - 3. Hilti, Inc: www.us.hilti.com/#sle.
 - 4. Master Builders Solutions by BASF: www.master-builders-solutions.basf.us/en-us/#sle.
 - 5. Pecora Corporation: www.pecora.com.
 - 6. Sherwin-Williams Company: www.sherwin-williams.com.
 - 7. Sika Corporation: www.usa-sika.com.
 - 8. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
 - 9. W.R. Meadows, Inc: www.wrmeadows.com/sle.
 - 10. Substitutions: See Section 01 6000 - Product Requirements.

2.02 JOINT SEALANT APPLICATIONS

- A. Scope:
 - 1. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
 - a. Joints between door, window, and other frames and adjacent construction.
 - b. In sound-rated wall and ceiling assemblies, gaps at electrical outlets, wiring devices, piping, and other openings; between wall/ceiling and other construction; and other flanking sound paths.
 - 1) Exception: Through-penetrations in sound-rated assemblies that are also fire-rated assemblies.
 - c. Other joints indicated below.
 - 2. Do not seal the following types of joints.
 - a. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
 - b. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
 - c. Joints where installation of sealant is specified in another section.
 - d. Joints between suspended panel ceilings/grid and walls.
- B. Interior Joints: Use non-sag polyurethane sealant, unless otherwise indicated.
 - 1. Wall and Ceiling Joints in Non-Wet Areas: Acrylic emulsion latex sealant.
 - 2. Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; white.
 - 3. In Sound-Rated Assemblies: Acrylic emulsion latex sealant.

2.03 NONSAG JOINT SEALANTS

- A. Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
 - 1. Movement Capability: Plus and minus 50 percent, minimum.
 - 2. Non-Staining To Porous Stone: Non-staining to light-colored natural stone when tested in accordance with ASTM C1248.
 - 3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
 - 4. Color: Match adjacent finished surfaces.
 - 5. Manufacturers:
 - a. Pecora Corporation; 890 FTS Field Tintable Ultra Low Modulus Architectural Silicone Sealant - Class 100: www.pecora.com.
 - b. Sika Corporation; Sika WS-290 FPS: www.usa-sika.com/#sle.
 - c. Tremco Commercial Sealants & Waterproofing; Spectrem 4-TS: www.tremcosealants.com/#sle.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
- B. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
 - 1. Movement Capability: Plus and minus 35 percent, minimum.
 - 2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
 - 3. Color: Match adjacent finished surfaces.
 - 4. Manufacturers:
 - a. Pecora Corporation: www.pecora.com/#sle.
 - b. Sika Corporation; Sikaflex-2c NS: www.usa-sika.com/#sle.
 - c. Tremco Commercial Sealants & Waterproofing; Dymonic FC: www.tremcosealants.com/#sle.
 - d. Tremco Commercial Sealants & Waterproofing; Dymeric 240 FC: www.tremcosealants.com/#sle.
 - e. Substitutions: See Section 01 6000 - Product Requirements.

- C. Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
 - 1. Color: Standard colors matching finished surfaces, Type OP (opaque).
 - 2. Manufacturers:
 - a. Pecora Corporation; AC-20 + Silicone Acrylic Latex Caulking Compound: www.pecora.com.
 - b. Sherwin-Williams Company; 950A Siliconized Acrylic Latex Caulk: www.sherwin-williams.com/#sle.
 - c. Tremco Commercial Sealants & Waterproofing; Tremflex 834: www.tremcosealants.com/#sle.
 - d. Substitutions: See Section 01 6000 - Product Requirements.

2.04 ACCESSORIES

- A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
 - 1. Type for Joints Not Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type O - Open Cell Polyurethane.
 - 2. Open Cell: 40 to 50 percent larger in diameter than joint width.
- B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that joints are ready to receive work.
- B. Verify that backing materials are compatible with sealants.
- C. Verify that backer rods are of the correct size.

3.02 PREPARATION

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.03 INSTALLATION

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Perform acoustical sealant application work in accordance with ASTM C919.
- D. Install bond breaker backing tape where backer rod cannot be used.
- E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

END OF SECTION

**SECTION 08 1416
FLUSH WOOD DOORS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Flush wood doors; flush configuration; non-rated.

1.02 RELATED REQUIREMENTS

- A. Section 08 1113 - Hollow Metal Doors and Frames.
- B. Section 08 7100 - Door Hardware.

1.03 REFERENCE STANDARDS

- A. AWI (QCP) - Quality Certification Program; Current Edition.
- B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).
- C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.
- C. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.
 - 1. Provide information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
- D. Samples: Submit two samples of door veneer, 8 x 10 inch in size illustrating wood grain, stain color, and sheen.
- E. Test Reports: Show compliance with specified requirements for the following:
 - 1. Sound-retardant doors and frames; sealed panel tests are not acceptable.
- F. Specimen warranty.
- G. Warranty, executed in Owner's name.

1.05 QUALITY ASSURANCE

- A. Quality Certification:
 - 1. Comply with AWI (QCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section: www.awiqcp.org/#sle.
 - 2. Provide labels or certificates indicating that the installed work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Package, deliver and store doors in accordance with specified quality standard.
- B. Accept doors on site in manufacturer's packaging. Inspect for damage.
- C. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation.

1.07 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Interior Doors: Provide manufacturer's warranty for the life of the installation.

- C. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Wood Veneer Faced Doors:
 - 1. Masonite Architectural: www.masonite.com
 - 2. VT Industries, Inc: www.vtindustries.com/#sle.
 - 3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 DOORS

- A. Doors: Refer to drawings for locations and additional requirements.
 - 1. Wood Veneer Faced Doors: 5-ply or 7-ply unless otherwise indicated.
- B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
 - 1. Provide solid core doors at each location.

2.03 DOOR AND PANEL CORES

- A. Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated.

2.04 DOOR FACINGS

- A. Veneer Facing for Transparent Finish: White oak, G.C. to confirm existing wood veneer type and cut during bidding phase; veneer grade in accordance with quality standard indicated, plain sliced (flat cut), with book match between leaves of veneer, running match of spliced veneer leaves assembled on door or panel face.
 - 1. Vertical Edges: Any option allowed by quality standard for grade Same species as face veneer.
 - 2. "Running Match" each pair of doors and doors in close proximity to each other.

2.05 DOOR CONSTRUCTION

- A. Fabricate doors in accordance with door quality standard specified.
- B. Cores Constructed with stiles and rails:
 - 1. Provide solid blocks at lock edge for hardware reinforcement.
 - 2. Provide solid blocking for other throughbolted hardware.
- C. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
- D. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.
- E. Provide edge clearances in accordance with the quality standard specified.

2.06 FACTORY FINISHING - WOOD VENEER DOORS

- A. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
 - 1. Transparent:
 - a. System - 5, Varnish, Conversion.
 - b. Stain: As selected by Architect.
 - c. Sheen: Satin.
- B. Factory finish doors in accordance with approved sample to match existing doors.
- C. Seal door top edge with color sealer to match door facing.

2.07 ACCESSORIES

- A. Door Hardware: As specified in Section 08 7100.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions and specified quality standard.
- B. Use machine tools to cut or drill for hardware.
- C. Coordinate installation of doors with installation of frames and hardware.

3.03 TOLERANCES

- A. Comply with specified quality standard for fit and clearance tolerances.
- B. Comply with specified quality standard for telegraphing, warp, and squareness.

3.04 ADJUSTING

- A. Adjust doors for smooth and balanced door movement.
- B. Adjust closers for full closure.

END OF SECTION

**SECTION 08 7100
DOOR HARDWARE**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Hardware for wood doors.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. BHMA A156.1 - Standard for Butts and Hinges; 2025.
- C. BHMA A156.7 - Template Hinge Dimensions; 2022.
- D. BHMA A156.8 - Door Controls - Overhead Stops and Holders; 2021.
- E. BHMA A156.13 - American National Standard for Mortise Locks & Latches Series 1000; 2017.
- F. BHMA A156.18 - American National Standard for Materials and Finishes; 2016.
- G. DHI (H&S) - Sequence and Format for the Hardware Schedule; 1996.
- H. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.
- B. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.
- C. Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.
 - 1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
 - 2. Comply with DHI (H&S) using door numbers and hardware set numbers as indicated in construction documents.
 - 3. List groups and suffixes in proper sequence.
 - 4. Provide complete description for each door listed.
 - 5. Provide manufacturer's and product names, and catalog numbers; include functions, types, styles, sizes and finishes of each item.
 - 6. Include account of abbreviations and symbols used in schedule.
- D. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
- E. Keying Schedule:
 - 1. Submit for approval of Owner.
- F. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.

1.07 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Warranty against defects in material and workmanship for period indicated, from Date of Substantial Completion.
 - 1. Closers: Five years, minimum.
 - 2. Locksets and Cylinders: Three years, minimum.
 - 3. Other Hardware: Two years, minimum.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

- A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.
- B. Provide individual items of single type, of same model, and by same manufacturer.
- C. Provide door hardware products that comply with the following requirements:
 - 1. Applicable provisions of federal, state, and local codes.
 - 2. Accessibility: ADA Standards and ICC A117.1.
- D. Lock Function: Provide lock and latch function numbers and descriptions of manufacturer's series. Refer to Door Hardware Schedule.

2.02 HINGES

- A. Manufacturers:
 - 1. McKinney; an Assa Abloy Group company: www.assaabloydss.com/#sle.
 - 2. Bommer Industries, Inc: www.bommer.com/#sle.
 - 3. Hager Companies: www.hagerco.com/#sle.
 - 4. Ives Hardware, an Ingersol-Rand company.
 - 5. Substitutions: See Section 01 6000 - Product Requirements.
- B. Hinges: Comply with BHMA A156.1, Grade 1.
 - 1. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
 - a. Provide hinge width required to clear surrounding trim.
 - 2. Provide hinges on every swinging door.
 - 3. Provide five-knuckle full mortise butt hinges unless otherwise indicated.
 - 4. Provide non-removable pins on interior outswinging doors at locations as indicated in Door Hardware Schedule.
 - 5. Provide following quantity of butt hinges for each door:
 - a. Doors up to 60 inches High: Two hinges.
 - b. Doors From 60 inches High up to 90 inches High: Three hinges.

2.03 LOCK CYLINDERS

- A. Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.
 - 1. Provide cylinders from same manufacturer as locking device.
 - 2. Provide cams and/or tailpieces as required for locking devices.
 - 3. Provide F-81 Keso Core; Coordinate with Owner.

2.04 MORTISE LOCKS

- A. Manufacturers:
 - 1. Corbin Russwin, Sargent, or Yale; an Assa Abloy Group company: www.assaabloydss.com/#sle.
 - 2. Substitutions: Not permitted. Matches existing hardware.
- B. Mortise Locks: Comply with BHMA A156.13, Grade 1, Security, 1000 Series.

1. Latchbolt Throw: 3/4 inch, minimum.
2. Deadbolt Throw: 1 inch, minimum.
3. Backset: 2-3/4 inch unless otherwise indicated.
4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
 - a. Finish: To match lock or latch.
5. Provide F-81 Keso Core; Coordinate with Owner.

2.05 OVERHEAD STOPS AND HOLDERS

- A. Manufacturers:
 1. Rixson or Sargent; an Assa Abloy Group company: www.assaabloydss.com/#sle.
 2. C. R. Laurence Company, Inc: www.crl-arch.com/#sle.
 3. Glynn-Johnson, an Allegion brand: www.allegion.com/us/#sle.
 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Overhead Stops and Holders (Door Checks): Comply with BHMA A156.8, Grade 1.
 1. Provide stop for every swinging door, unless otherwise indicated.
 2. Stop is not required if positive stop feature is specified for door closer; positive stop feature of door closer is not an acceptable substitute for a stop, unless otherwise indicated.

2.06 FINISHES

- A. Finishes: Provide door hardware of same finish, unless otherwise indicated.
 1. Primary Finish: 626; satin chromium plated over nickel, with brass or bronze base material (former US equivalent US26D); BHMA A156.18.
 2. Secondary Finish: 630; satin stainless steel, with stainless steel 300 series base material (former US equivalent US32D); BHMA A156.18.
 3. Exceptions:
 - a. Where base material metal is specified to be different, provide finish that is an equivalent appearance in accordance with BHMA A156.18.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.

3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and applicable codes.
- B. Use templates provided by hardware item manufacturer.
- C. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.

3.03 ADJUSTING

- A. Adjust work under provisions of Section 01 7000 - Execution and Closeout Requirements.
- B. Adjust hardware for smooth operation.
- C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.04 CLEANING

- A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.

END OF SECTION

**SECTION 09 2116
GYPSUM BOARD ASSEMBLIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Performance criteria for gypsum board assemblies.
- B. Metal stud wall framing.
- C. Gypsum wallboard.
- D. Joint treatment and accessories.
- E. Textured finish system.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

- A. AISI S100-12 - North American Specification for the Design of Cold-Formed Steel Structural Members; 2012.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2019a.
- C. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017 (Reapproved 2022).
- D. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2018.
- E. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2017.
- F. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2020.
- G. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2023.
- H. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2022.
- I. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.
- J. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2019.
- K. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2024.
- L. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).
- M. ASTM E413 - Classification for Rating Sound Insulation; 2016.
- N. GA-216 - Application and Finishing of Gypsum Panel Products; 2024.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.
- C. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.
- B. Interior Partitions: Provide completed assemblies with the following characteristics:
 - 1. Acoustic Attenuation: STC of 45-49 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

2.02 METAL FRAMING MATERIALS

- A. Manufacturers - Metal Framing, Connectors, and Accessories:
 - 1. ClarkDietrich: www.clarkdietrich.com/#sle.
 - 2. Marino: www.marinoware.com/#sle.
 - 3. Phillips Manufacturing Co: www.phillipsmfg.com/#sle.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Non-structural Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/120 at 5 psf.
 - 1. Gauge: 20 gauge at all locations, unless noted otherwise.
 - 2. Studs: "C" shaped with knurled or embossed faces.
 - 3. Runners: U shaped, sized to match studs.
- C. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection using slotted holes, screws, and anti-friction bushings, preventing rotation of studs while maintaining structural performance of partition.
 - 1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI S100-12.
 - 2. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot-dipped galvanized coating.
 - 3. Provide top track preassembled with connection devices spaced to fit stud spacing indicated on drawings; minimum track length of 12 feet.

2.03 BOARD MATERIALS

- A. Manufacturers - Gypsum-Based Board:
 - 1. American Gypsum Company: www.americangypsum.com/#sle.
 - 2. CertainTeed Corporation: www.certainteed.com/#sle.
 - 3. Georgia-Pacific Gypsum: www.gpgypsum.com/#sle.
 - 4. National Gypsum Company: www.nationalgypsum.com/#sle.
 - 5. USG Corporation: www.usg.com/#sle.
 - 6. Substitutions: See Section 01 6000 - Product Requirements.
- B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 - 1. Application: Use for vertical surfaces, unless otherwise indicated.
 - 2. Thickness:
 - a. Vertical Surfaces: 5/8 inch.

2.04 GYPSUM WALLBOARD ACCESSORIES

- A. Beads, Joint Accessories, and Other Trim: ASTM C1047, rigid plastic, galvanized steel, or rolled zinc, unless noted otherwise.
- B. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
 - 1. Paper Tape: 2 inch wide, creased paper tape for joints and corners, except as otherwise indicated.
- C. Textured Finish Materials: Latex-based compound; plain.

- D. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inches in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion-resistant.
- E. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws, corrosion-resistant.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.

3.02 FRAMING INSTALLATION

- A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.
- B. Studs: Space studs at 16 inches on center.
 - 1. Extend partition framing to structure where indicated and to ceiling in other locations.
 - 2. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.
- C. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.

3.03 BOARD INSTALLATION

- A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
- C. Installation on Metal Framing: Use screws for attachment of gypsum board.

3.04 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
 - 1. Not more than 30 feet apart on walls and ceilings over 50 feet long.
- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials and as indicated.

3.05 JOINT TREATMENT

- A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
 - 1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
 - 2. Level 1: Wall areas above finished ceilings, whether or not accessible in the completed construction.
- B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
 - 1. Feather coats of joint compound so that camber is maximum 1/32 inch.

3.06 TEXTURE FINISH

- A. Apply finish texture coating by means of spraying apparatus in accordance with manufacturer's instructions and to match approved sample.
- B. Texture Required: Match existing texture of plaster.

3.07 TOLERANCES

State of North Dakota

ND State Library Renovation

J22525

Bismarck, North Dakota

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

**SECTION 09 5100
ACOUSTICAL CEILINGS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Suspended metal grid ceiling system.
- B. Acoustical units.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

- A. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2022.
- B. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2023.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on suspension system components and acoustical units.
- C. Samples: Submit two samples 6 by 6 inch in size illustrating material and finish of acoustical units.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acoustic Tiles/Panels:
 - 1. Armstrong World Industries, Inc: www.armstrongceilings.com/#sle.
 - 2. CertainTeed Corporation: www.certainteed.com/#sle.
 - 3. USG Corporation: www.usg.com/ceilings/#sle.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Suspension Systems:
 - 1. Armstrong World Industries, Inc: www.armstrongceilings.com/#sle.
 - 2. CertainTeed Corporation: www.certainteed.com/#sle.
 - 3. Rockfon, LLC: www.rockfon.com/#sle.
 - 4. USG Corporation: www.usg.com/ceilings/#sle.
 - 5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 ACOUSTICAL UNITS

- A. Acoustical Units - General: ASTM E1264, Class A.
- B. Acoustical Panels: Painted mineral fiber, with the following characteristics:
 - 1. Classification: ASTM E1264 Type III.
 - 2. Size: 24 by 24 inches.
 - 3. Thickness: 5/8 inches.
 - 4. NRC Range: .45 to .55, determined in accordance with ASTM E1264.
 - 5. Tile Edge: Tegular.
 - 6. Color: White.
 - 7. Suspension System: Exposed grid.
 - 8. Products:
 - a. Armstrong World Industries, Inc; Fine Fissured: www.armstrongceilings.com/#sle.
 - b. USG Corporation; Radar ClimaPlus Panels: www.usg.com/ceilings/#sle.
 - c. Substitutions: See Section 01 6000 - Product Requirements.

2.03 SUSPENSION SYSTEM(S)

- A. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, hold down clips, stabilizer bars, clips, and splices as required.
- B. Exposed Suspension System: Hot-dipped galvanized steel grid with aluminum cap.
 - 1. Structural Classification: Intermediate-duty, when tested in accordance with ASTM C635/C635M.
 - 2. Profile: Tee; 15/16 inch face width.
 - 3. Finish: Baked enamel.
 - 4. Color: White.

2.04 ACCESSORIES

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
- B. Hanger Wire: 12-gage 0.08 inch galvanized steel wire.
- C. Perimeter Moldings: Same metal and finish as grid.
 - 1. Angle Molding: L-shaped, as required for framing at existing windows.
- D. Touch-up Paint: Type and color to match acoustical and grid units.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that layout of hangers will not interfere with other work.

3.02 PREPARATION

- A. Install after major above-ceiling work is complete.
- B. Coordinate the location of hangers with other work.

3.03 INSTALLATION - SUSPENSION SYSTEM

- A. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- B. Locate system on room axis according to reflected plan.
- C. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
 - 1. Use longest practical lengths.
- D. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- E. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- F. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.
- G. Do not eccentrically load system or induce rotation of runners.

3.04 INSTALLATION - ACOUSTICAL UNITS

- A. **Where room size would require a double grid or small (less than 2" wide) sliver of acoustical tile at perimeter, installer shall cut a 24"x48" tile to fit.**
 - 1. **Ceiling contractor shall coordinate with electrical contractor to ensure that lighting layout is properly centered in room, while minimizing double grid or small slivers of ceiling tile wherever possible.**
- B. Install acoustical units in accordance with manufacturer's instructions.

- C. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- D. Fit border trim neatly against abutting surfaces.
- E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- F. Cutting Acoustical Units:
 - 1. Cut to fit irregular grid and perimeter edge trim.
 - 2. Make field cut edges of same profile as factory edges.

END OF SECTION

**SECTION 09 6500
RESILIENT FLOORING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Resilient base.
- B. Installation accessories.

1.02 REFERENCE STANDARDS

- A. ASTM F1861 - Standard Specification for Resilient Wall Base; 2021 (Reapproved 2025).

1.03 SUBMITTALS

- A. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
- B. Verification Samples: Submit two samples, 12 by 12 inch in size illustrating color and pattern for each resilient flooring product specified.
- C. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.

PART 2 PRODUCTS

2.01 RESILIENT BASE

- A. Resilient Base: ASTM F1861, Type TV, vinyl, thermoplastic; top set cove and straight.
 - 1. Manufacturers:
 - a. Johnsonite, a Tarkett Company: www.johnsonite.com.
 - b. Roppe Corp: www.roppe.com.
 - 2. Height: 4 inch.
 - 3. Thickness: 0.125 inch.
 - 4. Finish: Satin.
 - 5. Length: Roll.
 - 6. Color: As indicated on drawings.
 - 7. Attic Stock: Provide 5% of total length as attic stock for Owner.

2.02 ACCESSORIES

- A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.
- B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.
- C. Moldings, Transition and Edge Strips: Same material as flooring.
 - 1. Manufacturers:
 - a. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.

3.02 PREPARATION

- A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.

- B. Remove subfloor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with subfloor filler to achieve smooth, flat, hard surface.
- C. Prohibit traffic until filler is fully cured.

3.03 INSTALLATION - RESILIENT BASE

- A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.
- B. Miter internal corners. At external corners, 'V' cut back of base strip to 2/3 of its thickness and fold. At exposed ends, use premolded units.
- C. Install base on solid backing. Bond tightly to wall and floor surfaces.
- D. Scribe and fit to door frames and other interruptions.

3.04 CLEANING

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean in accordance with manufacturer's written instructions.

END OF SECTION

**SECTION 09 6813
TILE CARPETING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Carpet tile, fully adhered.
- B. Removal of existing carpet tile.

1.02 REFERENCE STANDARDS

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.
- C. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.
- D. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet tile with minimum three years documented experience.

1.05 FIELD CONDITIONS

- A. Store materials in area of installation for minimum period of 24 hours prior to installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Tile Carpeting:
 - 1. Basis-of-Design: Mannington Commercial.
 - 2. Milliken & Company: www.milliken.com/#sle.
 - 3. Mannington Commercial: www.mannington.com
 - 4. Substitutions: Not permitted.

2.02 MATERIALS

- A. Tile Carpeting, Type CPT1 - Basis of Design: Tufted, manufactured in one color dye lot.
 - 1. Product: Manufactured by Mannington Commercial
 - 2. Tile Size: 12 x48 inch, nominal.
 - 3. Color: Gauge #83728.
 - 4. Style: Gansey.
 - 5. Backing Type: 6G Cushion Backing.
 - 6. Install Pattern: To match other areas of the Capitol building.
- B. Tile Carpeting, Type CPT1 - Approved Alternate: Tufted, manufactured in one color dye lot.
 - 1. Product: Manufactured by Milliken.
 - 2. Tile Size: 36 x36 inch, nominal.
 - 3. Color: Island Reed #308.
 - 4. Style: Coir Palm.
 - 5. Install Pattern: To match other areas of the Capitol building.
- C. Attic Stock: Provide 2 boxes of attic stock for all types of carpet tile. Clearly label each box with Project Name, Type, Carpet Name, Style and Color.

2.03 ACCESSORIES

- A. Edge Strips: Vinyl, color as selected by Architect.
- B. Carpet Tile Adhesive: Recommended by carpet tile manufacturer; releasable type.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that subfloor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.
- B. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to subfloor surfaces.

3.02 PREPARATION

- A. Remove existing carpet tile.
 - 1. Existing carpet shall be protected and remain in place until all major demolition and construction is complete.
 - 2. Upon removal, full carpet tiles shall be salvaged and returned to the Owner. Partial tiles shall be tossed.
- B. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
- C. Remove subfloor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with subfloor filler.
- D. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.
- E. Vacuum clean substrate.

3.03 INSTALLATION

- A. Starting installation constitutes acceptance of subfloor conditions.
- B. Install carpet tile in accordance with manufacturer's instructions.
- C. Blend carpet from different cartons to ensure minimal variation in color match.
- D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.
- E. Lay carpet tile in indicated pattern.
- F. Locate change of color or pattern between rooms under door centerline.
- G. Trim carpet tile neatly at walls and around interruptions.
- H. Complete installation of edge strips, concealing exposed edges.

3.04 CLEANING

- A. Remove excess adhesive without damage, from floor, base, and wall surfaces.
- B. Clean and vacuum carpet surfaces.

END OF SECTION

**SECTION 09 7200
WALL COVERINGS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wall coverings.

1.02 RELATED REQUIREMENTS

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's data sheets for wall covering and adhesive. Indicate compliance with specified flame spread and smoke developed ratings.
- C. Samples: Submit two samples of wall covering, 6 by 6 inches in size, illustrating color, finish, and texture.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Inspect roll materials for damage upon arrival.
- B. Protect packaged adhesive from temperature cycling and cold temperatures.
- C. Do not store roll goods on end.

PART 2 PRODUCTS

2.01 WALL COVERINGS

- A. Wall Covering: Fabric-backed vinyl roll stock.
 - 1. Comply with ASTM F793/F793M, Category V, Type II.
 - 2. Roll Width: 52 inches.
 - 3. Backing: Woven, osnaburg fabric.
 - 4. Color: As indicated on drawings.
 - 5. Pattern: As indicated on drawings.
 - 6. Manufacturers:
 - a. Koroseal/RJF International: www.koroseal.com/#sle.
 - b. Substitutions: See Section 01 6000 - Product Requirements.

2.02 ACCESSORIES

- A. Adhesive: Type recommended by wall covering manufacturer.
- B. Substrate Filler: As recommended by adhesive and wall covering manufacturers; compatible with substrate.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify substrate surfaces are primed and meet manufacturer's requirements to receive work.
- B. Measure moisture content of substrates with electronic moisture meter. Do not apply wall coverings if moisture content of substrate exceeds level recommended by wall covering manufacturer.
- C. Verify flatness tolerance of surfaces does not vary more than 1/8 inch in 10 feet or at rate greater than 1/16 inch/ft.
- D. Notify Architect of detrimental conditions affecting wall covering installation.
- E. Correct detrimental conditions before starting installation.

3.02 PREPARATION

- A. Remove wall plates and accessories impeding wall covering installation.

- B. Wash impervious surfaces with tetra-sodium phosphate; rinse and neutralize; wipe dry.
- C. Surface Appurtenances: Remove or mask electrical plates, hardware, light fixture trim, escutcheons, and fittings before preparing surfaces or finishing.
- D. Correct surface defects affecting work of this section and clean surfaces. Remove existing coatings exhibiting loose surface defects.
- E. Vacuum surfaces to remove loose particles.

3.03 INSTALLATION

- A. Apply adhesive and wall covering in accordance with manufacturer's instructions.
- B. Apply adhesive to wall immediately before applying wall covering.
- C. Use wall covering in roll number sequence.
- D. Razor trim edges of wall covering. Do not razor trim on gypsum board surfaces.
- E. Smoothly apply wall covering without wrinkles, gaps, or overlaps. Eliminate air pockets and ensure full bond to substrate surface.
- F. Horizontal seams are not permitted.
- G. Do not seam within 2 inches of internal corners or within 6 inches of external corners.
- H. Cover spaces above and below windows and above doors in pattern sequence from roll.
- I. Where wall covering tucks into reveals, metal wallboard, or plaster stops, use contact adhesive within 6 inches of wall covering termination. Ensure complete contact bond.
- J. Remove excess adhesive from seams while wet and before proceeding to next wall covering sheet.
- K. Reinstall wall plates and accessories removed to accommodate work of this section.

3.04 CLEANING

- A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.
- B. Clean wall coverings of dust, dirt, excess adhesive, and other contaminants.

END OF SECTION

**SECTION 09 9123
INTERIOR PAINTING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints.
- C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
- D. Do Not Paint or Finish the Following Items:
 - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
 - 2. Items indicated to receive other finishes.
 - 3. Items indicated to remain unfinished.
 - 4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
 - 5. Floors, unless specifically indicated.
 - 6. Glass.
 - 7. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

- A. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2016.
- B. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
 - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
 - 2. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
- C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
 - 1. Where sheen is specified, submit samples in only that sheen.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.06 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Paints:
 - 1. Base Manufacturer: Sherwin Williams.
- B. Primer Sealers: Same manufacturer as top coats.
- C. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PAINTS AND FINISHES - GENERAL

- A. Paints and Finishes: Ready mixed, unless intended to be a field-catalyzed paint.
 - 1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 - 2. Supply each paint material in quantity required to complete entire project's work from a single production run.
 - 3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

2.03 PAINT SYSTEMS - INTERIOR

- A. Interior Surfaces to be Painted, Unless Otherwise Indicated: Including gypsum board, wood, and plaster.
 - 1. Two top coats and one coat primer.
 - 2. Top Coat(s): Interior Latex.
 - a. Products:
 - 1) Sherwin-Williams ProMar 200 Zero VOC Interior Latex, Egshell.

2.04 PRIMERS

- A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
 - 1. Interior Institutional Low Odor/VOC Primer Sealer.
 - a. Products:
 - 1) Sherwin Williams ProMar 200 Primer.
 - 2) Substitutions: Section 01 6000 - Product Requirements.

2.05 ACCESSORY MATERIALS

- A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.
- B. Patching Material: Latex filler.
- C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
- C. Test shop-applied primer for compatibility with subsequent cover materials.
- D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:

1. Gypsum Wallboard: 12 percent.
2. Plaster: 12 percent.
3. Interior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.
- F. Plaster: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.
- G. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

3.03 APPLICATION

- A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- C. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
- D. Sand wood and metal surfaces lightly between coats to achieve required finish.
- E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- F. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

**SECTION 12 3600
COUNTERTOPS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Countertops for architectural cabinet work.

1.02 RELATED REQUIREMENTS

- A. Section 06 4100 - Architectural Wood Casework.

1.03 REFERENCE STANDARDS

- A. ANSI A208.1 - American National Standard for Particleboard; 2022.
- B. ISFA 2-01 - Classification and Standards for Solid Surfacing Material; 2013.
- C. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
- D. PS 1 - Structural Plywood; 2023.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Specimen warranty.
- C. Shop Drawings: Complete details of materials and installation ; combine with shop drawings of cabinets and casework specified in other sections.
- D. Verification Samples: For each finish product specified, minimum size 6 inches square, representing actual product, color, and patterns.
- E. Test Reports: Chemical resistance testing, showing compliance with specified requirements.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

PART 2 PRODUCTS

2.01 COUNTERTOPS

- A. Solid Surfacing Countertops: Solid surfacing sheet or plastic resin casting over continuous substrate.
 - 1. Flat Sheet Thickness: 1/2 inch, standard.
 - 2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
 - a. Manufacturers:
 - 1) Dupont; Corian: www.corian.com.
 - 2) Substitutions: Not permitted.
 - b. Finish on Exposed Surfaces: Matte, gloss rating of 5 to 20.
 - c. Color and Pattern: As indicated on drawings.
 - 3. Exposed Edge Treatment: Built up to minimum 1 1/2 inch thick; radiused edge.
 - 4. Back and End Splashes: Same sheet material, square top; minimum 4 inches high.
 - a. End splashes shall be installed at all counters where a wall is located adjacent, unless noted otherwise.

5. Skirts: As indicated on drawings.
6. Fabricate in accordance with manufacturer's standard requirements.

2.02 MATERIALS

- A. Plywood for Supporting Substrate: PS 1 Exterior Grade, A-C veneer grade, minimum 5-ply; minimum 3/4 inch and 1 inch thick; join lengths using metal splines.
- B. Particleboard for Supporting Substrate: ANSI A208.1 Grade 2-M-2, 45 pcf minimum density; minimum 3/4 inch or 1 inch thick; join lengths using metal splines.
- C. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.

2.03 FABRICATION

- A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
 1. Join lengths of tops using best method recommended by manufacturer.
 2. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall.
 3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.
- B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
 1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
 2. Height: 4 inches, unless otherwise indicated.
- C. Solid Surfacing: Fabricate tops and wall panels up to 144 inches long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions.
- D. **Solid surface countertops shall be fabricated over a continuous plywood or melamine substrate. Intermittent blocking will not be accepted.**

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 INSTALLATION

- A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.
- B. Seal joint between back/end splashes and vertical surfaces.

3.03 CLEANING

- A. Clean countertops surfaces thoroughly.

3.04 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 23 0500
HVAC GENERAL PROVISIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Specification Format

1. These Specifications are written in imperative and abbreviated form. This imperative language of the technical sections is directed at the Contractors, unless specifically noted otherwise. Incomplete sentences shall be completed by inserting "shall", "the Contractor shall", and "shall be", and similar mandatory phrases by inference in the same manner as they are applied to notes on the Drawings. The words "shall be" shall be supplied by inference where a colon (:) is used within sentences or phrases. Except as worded to the contrary, perform all indicated requirements whether stated imperatively or otherwise.
2. Three Part Format
 - a. "Part 1 - General": Covers those areas which relate to the Work, and which define the general administrative and technical requirements specific to a particular section.
 - b. "Part 2 - Products": Defines, in detail, the acceptance equipment and materials to be incorporated into the Work.
 - c. "Part 3 - Execution": Describes, in detail, the manner in which items covered by Part 2 are to be incorporated into the Work.
3. Where Codes, Specifications and Drawings are in conflict, the Contractor will be deemed to have bid the more expensive method. Refer all such discrepancies immediately to the Engineer prior to commencing related work.

B. Definitions:

1. Furnish: Supply equipment as required by these Drawings and Specifications, delivered to the job site for installation or use by others.
2. Install: Fix in position for total operational use all apparatus as shown, specified or required. Provide all miscellaneous fittings and wiring supplies.
3. Or Approved Equal: Equipment or materials selected by Contractor subject to Engineer's acceptance.
4. Or Equivalent: Equipment or materials selected by Contractor matching the function and performance of equipment or materials listed.
5. Provide: Furnish and install in place, total and operational.
6. Complete/Completely: All pipes, fittings, ducts, wiring supplies, and accessories provided for the noted equipment from the equipment to the mains or noted termination points.

1.2 SCOPE OF WORK

- A. The work covered by this Division consists in furnishing all labor, equipment, accessories and materials and in performing all operations necessary for the installation of the HVAC systems, in strict accordance with Division 23 of this Specification and applicable Drawings and subject to the terms and conditions of the Contract.
- B. Work of this Division is subject to requirements of Instructions to Bidders, General Conditions, Supplementary Conditions, Division One, and all other sections of this Specification.

- C. Examine site and all Contract documents prior to submittal of bid.
 - 1. Submittal of a Bid shall indicate the Contractor has examined the Site and Drawings and has included all required allowances in this Bid. No allowance shall be made for errors resulting from the Contractor's failure to visit job sites and to review Drawings.
- D. Division 23 Work: Includes, but is not limited to, providing the following:
 - 1. Air Distribution System: Equipment and ductwork.
 - 2. Ventilation and Exhaust System: Equipment and ductwork.
 - 3. Building Automation System.
 - 4. Insulation System: Ductwork and piping.

1.3 ALTERNATES

- A. Refer to Division 1 for alternates.

1.4 CONTINGENCY

- A. Refer to Division 01 for amount to include in Mechanical Bid.

1.5 SUBMITTALS

- A. General:
 - 1. Preferred Submittal Format: PDF, unless otherwise noted.
 - 2. Preferred Submittal Nomenclature: Unless otherwise noted, PDF submittals are to be named according to the following:
 - a. [Specification Section Number] – [Specification Name or Equipment Included]
 - 3. Distribution: Unless otherwise noted, direct all correspondence concerning Division 23 submittals to:

MATT FISCHER
PRAIRIE ENGINEERING, P.C.
619 RIVERWOOD DRIVE, SUITE 205
BISMARCK, ND 58504
mfischer@prairieengineeringpc.com
- B. Substitution and Prior Approval to Quote:
 - 1. Format and Content: Complete descriptive technical data on the proposed item consisting of model numbers, type, size and performance characteristics.
 - 2. Submission Timing: Minimum of 192 hours (eight days) prior to bid opening.
 - a. Substitutions will not be permitted after bid opening except where such substitution is considered by the Engineer to be in the best interest of the Owner.
 - 3. Bidder Notification: Prior to bid opening via Addenda, sent to all planholders.
 - 4. Contractor Responsibility: This contractor will be responsible for all coordination, construction costs, and Architectural/Engineering design fees required to substitute equipment that has different characteristics than designed including weights, physical dimensions, clearances, mechanical characteristics, electrical characteristics, and other characteristics deemed important to the design by the Architect/Engineer.
 - 5. Alternative Format: Printed paper, two copies; Self-addressed, stamped envelope required for return reply.
- C. Schedule of Values
 - 1. Distribution: One copy to Engineer.
 - 2. Format and Content: When included with the Bid, at minimum the following categories shall be indicated:
 - a. "Project mobilization"

- b. "Start-up and Commissioning"
 - c. "Demolition"
 - d. "Excavation and Backfill"
 - e. "Insulation"
 - f. "Test and Balance"
 - g. "Building Automation System"
 - h. "Sheet Metal" (all ductwork, lining, dampers, hangers, installed in place)
 - i. "Terminal Units" (unit heaters, grilles, diffusers, radiation, installed in place)
 - j. "Air Distribution Equipment" (all fans, air handlers, heat pumps, VAVs, installed in place)
 - 3. Submission Timing: Prior to first payment application.
- D. Shop Drawings
- 1. Distribution: Engineer via the Prime Contractor for each item indicated.
 - 2. Format and Content: Include catalog numbers, performance data, dimensions and other descriptive information.
 - a. Contractor Review: Dated and signed cover sheet or review stamp for each Shop Drawing file to indicate thorough review. **Email message text not acceptable.**
 - b. Submit a separate shop drawing file for each Specification Section including only the items within that Section.
 - c. Non-Conforming: Returned to Contractor without review.
 - 3. Submission Timing: Prior to delivery of materials to job site.
- E. Record Drawings
- 1. Format and Content: Paper copy of Drawings project site.
 - a. As work progresses, Contractor's field supervisor shall mark Record Drawings in red pencil to indicate actual conditions of installation.
 - b. Give particular attention to marking actual locations of underground piping.
 - c. Affix all addendum and change order descriptions to appropriate record drawing sheet, utilizing spray adhesive.
 - d. Make Record Drawings available to Engineer during project visitation.
 - 2. Submission Timing: Close of project with Record Manuals.
- F. Spare Equipment and Devices
- 1. Distribution: Owner.
 - 2. Format and Content: List quantities on contractor letterhead or invoice, obtain signature of Owner's representative acknowledging receipt, and include with each Record Manual.
 - 3. Submission Timing: Close of project with Record Manuals.
- G. Operation and Maintenance Manuals
- 1. Submission Timing: Close of project, as condition of its acceptance.
 - 2. Record Manual information shall be included for all equipment/material where Shop Drawings are required.
 - 3. Format and Content: Two copies, Loose-leaf hardcover binders, **and** in PDF format on CDs or USB drive.
 - a. List project name, date, Contractor's name, address and telephone number on exterior label of each Record Manual and CD.
 - b. Include an index sheet indicating subcontractor and subcontractor's phone number and each major piece of equipment, supplier and supplier's telephone number. Provide tabbed dividers indicating major groupings of equipment.
 - c. Include a copy of the Shop Drawings.

- d. Include all installation, operation and maintenance data packaged with any equipment.
- e. Include all signed and dated final punch lists from walkthroughs performed by the Engineer.

1.6 APPLICATIONS FOR PAYMENT

- A. Refer to Division 1 "Applications for Payment".
- B. Provide one additional copy, sent directly to the Engineer.
- C. Schedule of Values: At minimum, include items in Submittal article.

1.7 CHANGES TO CONTRACT

- A. Any required changes to the contract after bid date shall be in accordance with General Conditions/Division 1 and this section. Where any discrepancies between the sections are encountered, the more restrictive section shall apply.
- B. Proposed changes shall be accompanied with complete substantiating documentation.
 - 1. Provide an itemized list of quantities for materials, equipment, and supplies.
 - a. Include unit costs for each item and extended price.
 - b. Include unit labor for each item and extended time.
 - 2. Provide subcontractor proposals that include the same substantiating documentation.
 - 3. Provide quotations from suppliers for any specially ordered equipment.
- C. Material costs shall be actual costs to the contractor, obtaining the materials through normal supply channels, including trade and quantity discounts. Utilizing "suggested pricing" from national pricing organizations for unit costs shall not be accepted. Upon request, the contractor or subcontractor shall submit evidence to substantiate the costs.
- D. Labor units shall be industry accepted standard labor hours to perform one unit of work. If the work is being performed in a location that is not considered to be standard working conditions for that specific task, additional labor shall be itemized.
- E. Labor rates shall be the actual rate paid for the workman category along with associated labor burden. Labor burden shall consist only of the mandatory fringe benefits, labor taxes, and labor insurances as affected by payroll. The owner reserves the right to reject any labor burden which is inconsistent with other similar contractors or where the fringe benefit cost is in excess of established labor agreements.
- F. Allowable markups for contractor and subcontractors: Refer to Division 1. In absence of published allowable markups, as follows:
 - 1. Overhead on work performed by own forces: 12% maximum.
 - 2. Profit on work performed by own forces: 10% maximum.
 - 3. Commission on work performed by Subcontractors: 5% maximum.
 - 4. Sales tax.
 - 5. Bond and permit increases where applicable.
 - 6. No additional markups shall be allowed for:
 - a. Field and/or office supervision/administration time.
 - b. Tool burden.
 - c. Shop burden.
 - d. Overhead/Profit applied to work performed by others.
 - 7. Additional costs for travel and subsistence shall only be allowed if the proposal includes a request for extension of the completion date. Furthermore, those costs shall be proportional to the number of working days of the extension.

- G. Subcontractors shall compute their costs in the same manner as the contractor. Subcontractors are subject to the same markup constraints as described herein.
- H. For changes resulting in credit to the costs, no restocking fees for materials shall be applied by the contractor or subcontractors.

1.8 QUALITY ASSURANCE

- A. Qualifications of Installers
 - 1. For installation and testing, use only trained licensed and experienced workmen familiar with items required and manufacturer's recommended methods.
 - 2. In acceptance or rejection of installed work, no allowance will be made for lack of skill on the part of the workmen.

1.9 AUTHORITIES AND AGENCIES

- A. Materials, workmanship and installation: comply with the latest editions of all applicable codes, local ordinances, industry standards, utility company regulations, insurance carrier requirements and these Specifications.
- B. Obtain and pay all permits, inspections, licenses and other charges pertaining to the Work. Upon completion of the Work, furnish proof of acceptance by proper agency having jurisdiction.
- C. Codes and standards shall include, but not necessarily be limited to, the following:
 - 1. International Energy Conservation Code (IECC);
 - 2. Uniform Plumbing Code;
 - 3. North Dakota State Building Code;
 - 4. International Building Code (IBC);
 - 5. International Mechanical Code (IMC);
 - 6. International Fuel Gas Code (IFC);
 - 7. National Fire Protection Association (NFPA) – Sections as adopted by authority having jurisdiction.
- D. The more stringent provisions shall govern where provisions of pertinent codes and standards conflict with these Specifications or Drawings. Where Codes, Specifications or Drawings differ with one another, the Contractor will be deemed to have bid the more expensive method. Refer all such discrepancies to the Engineer immediately.
 - 1. Pertinent codes and standards shall not be cited to furnish less than specifically shown or specified.
 - 2. Meeting the minimum standards of the above Codes does not permit a lower grade of construction where Plans or Specifications call for workmanship or materials in excess of Code Requirements.
- E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.10 GUARANTEE AND WARRANTY

- A. Except where otherwise noted, contractor shall guarantee materials, workmanship and the proper operation of equipment for a period of one year after Owner's beneficial use of the building or mechanical system. Contractor shall correct all equipment, material and workmanship found to be defective or non-conforming to the contract documents without cost to Owner during that one year period.
- B. Guarantee shall include trips to the project site by Contractor to adjust mechanical equipment as required, ensuring it is operating as intended.

- C. Specified guarantee shall not relieve Contractor from liability arising from improper installation or non-compliance with applicable codes.

1.11 TEMPORARY FACILITIES

- A. Refer to Special Conditions and/or Division 1 for details of temporary facilities.

1.12 NOMENCLATURE

- A. Pipe sizes listed are nominal pipe sizes throughout this Division except where otherwise noted.

PART 2 - PRODUCTS

2.1 MATERIAL

- A. Material and equipment shall be as shown or specified. Provide material not specifically described but required for a complete and proper installation of the Work, subject to the acceptance of the Engineer.
- B. Owner will not be liable for material installed in non-compliance with codes, standards, and these Contract Documents.
- C. Fire Stop System material shall be by 3M "Fire Barrier", Metacaulk, Hilti, Nelson Firestop Products, or AD Fire. See Division 07 for further details on approved materials.

2.2 ELECTRIC WIRING

- A. The Division 23 Contractor shall furnish all motors, special controls and electrical devices as specified herein for proper operation of the equipment furnished.
- B. Division 26 Contractor shall furnish and install, as required, disconnects, starters, switches, etc., and do all necessary power and control wiring including the installation of electrical devices such as thermostats, humidistats, remote control panels, etc., furnished separately by Division 23 Contractor, unless otherwise noted in Equipment Specifications or noted in Section 230900.

PART 3 - EXECUTION

3.1 GENERAL

- A. Engineer, Architect, or Owner shall not be responsible for the means, methods, techniques, sequences or procedures of construction selected by Contractor.
- B. Engineer, Architect, or Owner shall not be responsible for safety precautions and programs incidental to work of Contractor.
- C. It is the sole responsibility of Contractor to initiate, maintain, and supervise all safety precautions and programs in connection with the Work.
- D. In general, it is intended that ductwork and piping be installed parallel to building lines, unless otherwise shown on the Drawings, and that equipment be located symmetrical with the architectural elements of the building.
- E. Division 23 Contractor is to notify the Owners Staff of any work that may involve temporary disabling of the Fire Alarm System at least 1 week prior to the work occurring.

3.2 SURFACE CONDITIONS

- A. Prior to work of each Section of Division 23, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
- B. Verify that work of this Division may be installed in accordance with all pertinent codes, regulations and standards.

3.3 PRODUCT HANDLING

- A. Protection: Use all means necessary to protect the materials of this Division before, during and after installation and to protect the installed work and materials of all other trades.
- B. Plugs: Install in ends of uncompleted piping at end of each day or when work stops.
- C. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner.

3.4 COORDINATION

- A. Order equipment and material in a timely fashion to assure it is on the job site when required.
- B. Coordinate installation of material with schedule of other trades to prevent unnecessary delay in construction schedule.
- C. Division 23 piping, duct and equipment installations shall comply with National Electrical Code requirements 110.26 "working spaces" and "dedicated spaces". Mechanical ducts and pipes shall not be installed in the space near electrical panels/equipment defined as "working spaces" or "dedicated spaces".

3.5 DISCREPANCIES, CONSTRUCTION CONFLICTS AND DRAWINGS

- A. Discrepancies
 - 1. Prior to submitting bid, Contractor shall refer any apparent discrepancies or omissions to Engineer for clarification.
 - 2. The Architect, Engineer or Owner will not be responsible for any oral instructions or modifications to the contract documents prior to opening of bids.
 - 3. Written interpretation or clarification will be made by Addenda.
- B. Construction Conflicts
 - 1. Conflicts discovered during construction shall be immediately called to the attention of the Engineer for decision.
 - 2. Do not proceed with installation in area of question until conflict has been fully resolved.
 - 3. When so directed by Engineer, Contractor shall make minor adjustment to avoid interferences with other trades. Such minor adjustments shall be performed at no additional cost to the Architect, Engineer or Owner.
- C. Drawings
 - 1. Drawings indicate extent and general layout of mechanical systems for project. Due to small scale, it is not possible to indicate all fittings and accessories that may be required. Provide such fittings and accessories as required to form a complete and operating system in general conformance with Specifications and Drawings.
 - 2. Exact locations, distances, levels and other conditions will be governed by the structure. Field measurements shall take precedence over the Drawings. Use the Drawings and these Specifications for guidance. Secure the Architect's approval for all changes in locations.
 - 3. Verify all measurements at site. No compensation will be made because of difference between locations shown on the Drawings and measurements at the building.

4. Refer to the architectural drawings for dimensions and locations of walls, partitions, doors, windows, ceiling heights, door swings and other details of construction.

3.6 REMOVAL AND/OR REUSE OF EXISTING MATERIALS AND EQUIPMENT

- A. Existing equipment, which is indicated as being removed and not indicated for reuse, shall remain the property of the Owner, stored as directed. Any material the Owner does not wish to retain shall be removed and disposed by the Contractor.
- B. Contractor shall assume in his Bid that existing equipment and materials shown to be reused are in good working condition and can be installed without any repairs. If certain items are found to be in need of repair or in unusable condition, Contractor shall notify the Engineer for decision, however, Contractor shall be responsible for any damage by his personnel to equipment in removal or handling.
- C. Material and other equipment removed and to be reused shall be cleaned before reinstallation.

3.7 OFFSETS

- A. Where required to allow clearance of electrical conduit and outlet boxes, beams, etc., to avoid interference with work of other trades, to increase head room under mechanical systems or to improve the appearance of mechanical systems work, this Contractor shall offset his mechanical system as directed by the Architect/Engineer.

3.8 CUTTING AND PATCHING

- A. Refer to General Conditions. Unless specifically called out to be performed by other Contractors, the Division 23 Contractor shall perform all cutting and patching required for the installation of material and equipment furnished under his Contract.
- B. Opening/holes cut to allow passage of ducts and pipes through concrete floor shall be patched by the Contractor doing the cutting unless indicated otherwise on the Drawings.
- C. Fire-Barrier Penetrations
 1. Pipe penetrations through fire rated walls and floors shall be sealed with a UL classified Fire Stop System. Fire Stops shall be provided in accordance with the appropriate System No. as it relates to pipe size/Material and wall or floor rating/material.
 2. See Specification Section 230510 for other Fire-Barrier Penetration requirements.
 3. See Section 2 article "Materials" of this Specification for approved fire stop system material.
- D. Openings between ductwork and fire rated walls and floors shall be sealed with fire rated caulking or steel collars on both sides of wall or floor.
- E. Restore damaged surfaces to their original condition by skilled mechanics of the trade involved. Contractor at fault shall assume all cost.
- F. Use only rotary type drilling tools to cut concrete.
- G. Do not endanger the stability of the structure. Do not at any time cut or alter work of any other Contractor without Architect's consent.

3.9 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.10 CLEANING

- A. Clean interior of duct systems. Remove dirt and debris as work progresses.

3.11 INSTRUCTIONS

- A. Provide written and oral operating and maintenance instructions to Owner's representatives. The oral instructions shall be given before the Owner occupies the buildings. Instructions to include **all** building's mechanical systems and equipment.
- B. Copies of written operating and maintenance instructions shall be included with each Record Manual.
- C. Division 23 Contractor shall coordinate with Owner at Owner's convenience, formal instruction time for contractor personnel to instruct Owner's Representatives on all equipment. Provide similar equipment supplier's instructions where specified thus.
- D. Formal instructions shall be video recorded when required by other Sections of this Specification by this Contractor. Format shall be DVD. Formal instruction to be included with each Record Manual, being referenced to and a part of the Manual.

3.12 CLEAN UP

- A. Each Contractor shall be responsible for cleaning up after his work, including the removal of all scrap material left on the job by his men or Subcontractors. This will include the removal of all pipe and sheet metal cuttings, pieces of sheet metal, pipe, and insulation and other debris.
- B. Clean all heating units, clean and straighten fins on all coils, clean scale, dirt or debris off piping, motors, etc., oil or grease all motors, fan bearings, pump gear boxes, etc., and leave in a clean best possible working condition. Install clean filters in ventilation system prior to turning job over to Owner.
- C. After all tests have been made and the mechanical systems are operating properly, this Contractor shall go over the entire system and remove labels from all mechanical equipment.
- D. All equipment having finished paint surfaces shall be examined upon completion for scratches and other damage. Touch up all surfaces as required with paint of color to match factory finish.
- E. Perform all cleaning as required by other Sections of Division 23.

END OF HVAC GENERAL PROVISIONS

**SECTION 23 0510
COMMON WORK RESULTS FOR HVAC**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Escutcheons.
 - 2. Equipment and Warning labels.
 - 3. Fire-Barrier Penetrations.
 - 4. Steel nail plates.
- B. Nomenclature:
 - 1. SWP: Steam working pressure.
 - 2. CWP: Cold working pressure.

1.2 SUBMITTALS

- A. Shop Drawings: For equipment covered under this section as per Section 230500.
 - 1. Product Data: Each type of valve, gauge, strainer, sleeve, and sleeve-seal system.
 - 2. Fire-Barrier Penetrations: UL Classified System, System Number.
- B. Operation and Maintenance Data: To include in operation and maintenance manuals as per Section 230500.

PART 2 - PRODUCTS

2.1 DUCT HANGERS AND SUPPORTS

- A. Hanger Rods for Noncorrosive Environments: Cadmium-plated steel rods and nuts.
- B. Strap and Rod Sizes: 1", 16 gauge straps; 3/8" rod.
- C. Steel Cables for Galvanized-Steel Ducts: Galvanized steel complying with ASTM A 603.
- D. Steel Cables for Stainless-Steel Ducts: Stainless steel complying with ASTM A 492.
- E. Steel Cable End Connections: Cadmium-plated steel assemblies with brackets, swivel, and bolts designed for duct hanger service; with an automatic-locking and clamping device.
- F. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.

2.2 EQUIPMENT SUPPORTS

- A. Description: Welded, shop- or field-fabricated equipment support made from structural carbon-steel shapes.

2.3 MISCELLANEOUS MATERIALS

- A. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.

2.4 SLEEVES

- A. Galvanized-Steel Wall Pipes: ASTM A 53/A 53M, Schedule 40, with plain ends and welded steel collar; zinc coated.

- B. PVC-Pipe Sleeves: ASTM D 1785, Schedule 40.

2.5 ESCUTCHEONS

- A. One-Piece, Cast-Brass Type: With polished, chrome-plated finish and setscrew fastener.

2.6 EQUIPMENT AND WARNING LABELS

- A. General Requirements
 - 1. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 1-1/4 inch.
 - 2. Minimum Letter Size: 1 inch for name of units. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
 - 3. Fasteners: Stainless-steel rivets or self-tapping screws.
 - 4. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- B. Metal Labels for Equipment:
 - 1. Material and Thickness: Non-corroding metal, 20 gauge minimum thickness, and having predrilled or stamped holes for attachment hardware.
- C. Plastic Labels for Equipment and Warning:
 - 1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.
 - 2. Equipment Label Color: Black letters on white background.
 - 3. Warning Label Color: White letters on red background.
 - 4. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
- D. Warning Label Content: Include caution and warning information, plus emergency notification instructions.
- E. Equipment Label Content: Include equipment's Drawing designation or unique equipment number.
- F. Equipment Label Schedule: For each item of equipment to be labeled, on 8-1/2-by-11-inch bond paper. Tabulate equipment identification number and identify Drawing plan numbers where equipment is indicated, plus the Specification Section number and title where equipment is specified. Equipment schedule shall be provided to the Controls Contractor and included in operation and maintenance data.

2.7 STEEL NAIL PLATES

- A. In concealed locations where piping, other than cast-iron or galvanized steel, is installed through holes or notches in studs, joists, rafters, or similar members less than 1-1/2" from the nearest edge of the member, the pipe shall be protected by steel shield plates.
- B. Plates shall have a thickness not less than 0.0575" (16-gauge mild steel).
- C. Plates shall cover the area of the pipe where the member is notched or bored, shall extend not less than 1-1/2" beyond the outside diameter of the pipe, and shall extend not less than 2" above sole plates and below top plates.

PART 3 - EXECUTION

3.1 DUCT HANGER AND SUPPORT INSTALLATION

- A. Hanger Spacing: Maximum of 10 feet apart:
 - 1. Rectangular Duct: Pair of straps or rods.
 - 2. Round Duct, up to 36" diameter: Single rod.

3. Round Duct, greater than 36" diameter: Double rods or straps.
- B. Install hangers and supports within 24 inches of each elbow and within 48 inches of each branch intersection.
- C. Hangers Exposed to View: Threaded rod and angle or channel supports.
- D. Support vertical ducts with steel angles or channel secured to the sides of the duct with welds, bolts, sheet metal screws, or blind rivets; support at each floor and at a maximum intervals of 16 feet.

3.2 EQUIPMENT SUPPORTS

- A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.
- B. Grouting: Place grout under supports for equipment and make bearing surface smooth.
- C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.3 SLEEVE INSTALLATION

- A. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.
- B. For sleeves that will have sleeve-seal system installed, select sleeves of size large enough to provide 1-inch annular clear space between piping and concrete slabs and walls.
- C. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.
 1. Cut sleeves to length for mounting flush with both surfaces.
 - a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 1 inches above finished floor level.
 2. Using grout, seal the space outside of sleeves in slabs and walls without sleeve-seal system.

3.4 EQUIPMENT LABEL INSTALLATION

- A. Install or permanently fasten labels on each major item of mechanical equipment.
- B. Locate equipment labels where accessible and visible.

3.5 FIRE-BARRIER PENETRATION PROTECTION

- A. Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials.
- B. Provide intumescent collars, wraps, fire bands, sealants, and other firestopping materials as required to maintain the fire ratings for the piping and insulation materials used.
- C. Install Fire Stop Systems per the manufacturers guidelines.

3.6 ESCUTCHEON AND FLOOR PLATE INSTALLATION

- A. Install escutcheons for exposed piping penetrations of walls, ceilings, and floors of finished areas.
- B. Install escutcheons for piping penetrations of walls within concealed cabinet spaces.
- C. Install escutcheons with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.
- D. Replace broken and damaged escutcheons using new materials.

3.7 STEEL NAIL PLATE INSTALLATION

- A. Install nail plates to protect all vulnerable piping routed in concealed locations within 1-1/2" from the nearest edge of the member the piping is routed through.
- B. Fasten plates to the member per the manufacturer's instructions.

END OF COMMON WORK RESULTS FOR HVAC

SECTION 23 0590
TESTING ADJUSTING AND BALANCING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Balance affected existing heat pump gpm's
 - 2. Balancing air systems of the affected systems as indicated on the plans.
- B. The work covered by this Specification consists in furnishing all labor, engineering and test equipment required to adjust and balance the following:
 - 1. New air distribution systems.
 - 2. Existing air distribution systems.
- C. The TAB Contractor shall be subcontractor of Division 23 Contractor.

1.2 DEFINITIONS

- A. Acronyms used in the specification are as follows:
 - 1. AABC: Associated Air Balance Council.
 - 2. NEBB: National Environmental Balancing Bureau.
 - 3. TAB: Testing, adjusting, and balancing.
 - 4. TABB: Testing, Adjusting, and Balancing Bureau.
 - 5. TAB Specialist: An entity engaged to perform TAB Work.

1.3 SUBMITTALS

- A. Shop Drawings shall be submitted on the work covered under this Section, as shown on the Drawings, as per Section 230500, and per instruction below:
 - 1. Submittals shall include PDF drawings and lists indicating equipment and CFM/GPM tally's done by the TAB Contractor. The submitted documents shall be similar to the final submittal documents required (refer to part 3 of this Section), less actual TAB results.
 - 2. Inform the Engineer of any discrepancies on the plans.
- B. Submit Certified TAB reports to the Engineer.
 - 1. Format: PDF preferred; provide three copies if paper.
 - 2. Certification: By AABC or NEBB.

1.4 PROJECT CONDITIONS

- A. Partial Owner Occupancy: Owner may occupy completed areas of building before completion of test and balance. Cooperate with Owner during TAB operations to minimize conflicts with Owner's operations.

1.5 QUALITY ASSURANCE

- A. Division 23 Contractor shall employ an independent TAB Contractor specializing in total system air and hydronic testing and balancing.
 - 1. All personnel involved in the execution of the work under the TAB Contract shall be experienced and factory-trained specifically in the total balancing of mechanical systems, as well as being regular employees of the TAB Contractor.

- B. The following contractors have been pre-approved to bid the TAB work:
 - 1. Air Dynamics; Granville, ND.
 - 2. Balancing Professionals; Fargo, ND.
 - 3. CL Linfoot; Grand Forks, ND.
 - 4. Design Control, Inc.; Fargo, ND.
 - 5. McFarlane, Inc.; Grand Forks, ND.
 - 6. Mechanical Data; Wayzata, MN.
 - 7. Statera Technical Services; Billings, MT.
- C. Calibrate all instruments and provide verification of calibration provided with submittal data.

1.6 WARRANTY

- A. The TAB agency shall provide an extended 90-day warranty after the completion of the TAB work, during which time the Owner or Engineer can request a rebalancing and retesting of any component listed in the report. The TAB agency shall provide a technician to assist the Owner and/or Engineer in making any tests they may require during this time period.

PART 2 - PRODUCTS (N/A)

PART 3 - EXECUTION

3.1 GENERAL PROCEDURES FOR TESTING AND BALANCING

- A. Perform testing and balancing procedures on each system according to the procedures contained in AABC's "National Standards for Total System Balance", ASHRAE 111, NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems", or SMACNA's "HVAC Systems - Testing, Adjusting, and Balancing" and in this Section.
- B. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary for TAB procedures.
 - 1. After testing and balancing, patch probe holes in ducts with same material and thickness as used to construct ducts. Rubber or metal snap-in plugs are also acceptable.
 - 2. Install and join new insulation that matches removed materials.
- C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.
- D. Verify interlocked systems are operating in conjunction.
- E. Take and report testing and balancing measurements in inch-pound (IP) units.
- F. Report deficiencies discovered before and during performance of testing, adjusting and balancing procedures.
- G. Provide assistance to mechanical contractor to troubleshoot systems with deficiencies outside the allowable limits set in this Specification.
- H. If initial TAB is not performed during near peak summer and winter conditions, perform additional TAB during peak summer and winter conditions.

3.2 REQUIREMENTS FOR AIR SYSTEMS

- A. System Diagrams: Include schematic layouts of air distribution systems. Present each system with minimum single-line diagram.

- B. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer. Record RPM and full load amperes.
 - 1. Measure total airflow in main supply ducts. Where sufficient space in ducts is unavailable for Pitot-tube traverse measurements, measure airflow at terminal outlets and inlets and calculate the total airflow.
- C. Adjust all supply and exhaust zones to design CFM.
- D. All main supply, return, exhaust and outside air ducts shall have a pitot tube traverse performed for accurate airflow performance. Identify the best locations in ducts for accurate duct airflow measurements.
- E. Test and adjust each diffuser, grille and register to within tolerance requirements and also adjust so as to minimize drafts in all areas.
- F. Verify that thermostats and humidistats are located to avoid adverse effects of sunlight, drafts, and heat generating appliances.

3.3 PROCEDURES FOR TESTING, ADJUSTING, AND BALANCING EXISTING SYSTEMS

- A. Perform an inspection of existing equipment that is to remain and be reused.
 - 1. Measure and record the operating speed, airflow, and static pressure of each fan.
 - 2. Measure motor voltage and amperage. Compare the values to motor nameplate information.
 - 3. Report on the operating condition of the equipment and the results of the measurements taken. Report deficiencies.
- B. Perform testing and balancing of existing systems to the extent that existing systems are affected by the renovation work.
 - 1. Compare the indicated airflow of the renovated work to the measured fan airflows.
 - 2. If calculations increase or decrease the air flow rates and water flow rates by more than 5 percent, make equipment adjustments to achieve the calculated rates. If increase or decrease is 5 percent or less, equipment adjustments are not required.
 - 3. Balance each air outlet.

3.4 TOLERANCES

- A. Set HVAC system airflow and water flow rates within the following tolerances:
 - 1. Supply, Return, and Exhaust Fans: +5% to -5%
 - 2. Air Outlets and Inlets: +10% to -10%
 - 3. Heating/Cooling Water Flow Rate: +10% to -10%

3.5 FINAL REPORT GENERAL

- A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.
 - 1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
 - 2. Include a list of instruments used for procedures, along with proof of calibration.
- B. General Report Data: In addition to form titles and entries, include the following data:
 - 1. Title page.
 - 2. Name and address of the TAB contractor.
 - 3. Project name.
 - 4. Project location.
 - 5. Architect's name and address.

6. Engineer's name and address.
7. Contractor's name and address.
8. Report date.
9. Signature of TAB supervisor who certifies the report.
10. Table of Contents with the total number of pages defined for each section of the report.
Number each page in the report.
11. Summary of contents including the following:
 - a. Indicated versus final performance.
 - b. Deviation of final performance from design as percentage.
 - c. Notable characteristics of systems.
 - d. Description of system operation sequence if it varies from the Contract Documents.
12. Notes to explain why certain final data in the body of reports vary from indicated values.

3.6 FINAL REPORT RECORDED DATA

- A. Air Systems:
 1. For each air inlet and outlet.
 - a. Reference Number/Mark and Location.
 - b. Design and measured CFM.
- B. Water balancing:
 1. For each flow control device location as indicated on the Drawings.
 - a. Manufacturer and Type.
 - b. Design and measured Pressure Drop.
 - c. Design and measured Flow Rate.
- C. Sound Level Reports:
 1. Libraries.

END OF TESTING ADJUSTING AND BALANCING

SECTION 23 0700
HVAC INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Duct Insulation.
- B. The work covered by this Specification consists in furnishing all labor, equipment, accessories and materials and in performing all operations necessary for the installation of all insulation for the HVAC systems, in strict accordance with Section 230700 of this Specification and applicable Drawings and subject to the terms and conditions of the Contract.

1.2 REFERENCE

1.3 SUBMITTALS

- A. Shop Drawings: For materials covered under this section as per Section 230500.
 - 1. Product Data: Each type of insulation.
- B. Operation and Maintenance Data: Per section 230500.
 - 1. Product Data: Each type of thermal and fire-rated insulation systems.

1.4 QUALITY ASSURANCE

- A. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84, by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.
 - 1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
 - 2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.
- B. All insulation shall be installed in a workmanlike manner by skilled workmen regularly engaged in this type of work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Except in other Part 2 articles where noted, the following manufacturers are acceptable:
 - 1. Owens-Corning Fiberglass.
 - 2. Johns Manville.
 - 3. Knauf Insulation.
- B. All manufacturers are subject to compliance with requirements.
- C. Provide products by one of the manufacturers specified or by prior approval.

2.2 COMMON INSULATION MATERIALS

- A. Products shall not contain asbestos, lead, mercury, or mercury compounds.

- B. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.
- C. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

2.3 INSULATION

- A. Fiberglass Wrap: Glass fibers bonded with a thermosetting resin; FSK or ASJ Max jacket. Comply with ASTM C 553, Type II and ASTM C 1290, Type I and Type III.
- B. Fiberglass Board: Glass fibers bonded with a thermosetting resin, semi-rigid; FSK or ASJ Max jacket. Comply with ASTM C 612, Type IA or Type IB.

2.4 INSULATION JACKETS

- A. ASJ Max Jacket: Poly-encapsulated paper jacket; Factory applied shall comply with ASTM C1136, Type I, II, III, IV.
- B. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; Factory applied shall comply with ASTM C1136, Type II.

2.5 INSULATING CEMENTS

- A. Mineral-Fiber, Hydraulic-Setting Insulating and Finishing Cement: Comply with ASTM C 449.

2.6 SEALANTS

- A. Joint Sealants: Permanently flexible, elastomeric sealant, compatible with insulation materials, jackets, and substrates.

2.7 MASTICS

- A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-PRF-19565C, Type II.

2.8 TAPES

- A. Tapes: Match jacket with compatible adhesive as recommended by jacket manufacturer.
- B. ASJ Max Tape: Foil-face, vapor-retarder tape; complying with ASTM C 1136, 3 inches wide.
- C. FSK Tape: Foil-face, vapor-retarder tape; complying with ASTM C 1136, 3 inches wide.
- D. Aluminum-Foil Tape: Vapor-retarder tape, 2 inches wide.
- E. PVC Tape: White vapor-retarder PVC tape, 2 inches wide.

2.9 SECUREMENTS

- A. Self-Sticking-Base Insulation Hangers: Baseplate welded to projecting spindle that is capable of holding insulation, of thickness indicated, securely in position indicated when self-locking washer is in place. Comply with the following requirements:
 - 1. Baseplate: Galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.
 - 2. Spindle: Copper- or zinc-coated, low-carbon steel, fully annealed, 0.106-inch-diameter shank, length to suit depth of insulation indicated.
 - 3. Adhesive-backed base with a peel-off protective cover.
- B. Staples: Outward-clinching insulation staples, nominal 3/4-inch-wide, stainless steel or Monel.
- C. Wire: 12 gauge nickel-copper alloy or 14 gauge soft-annealed, stainless steel or 14 gauge soft-annealed, galvanized steel.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

3.2 GENERAL INSTALLATION REQUIREMENTS

- A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of ducts and fittings.
- B. Install multiple layers of insulation with longitudinal and end seams staggered.
- C. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- D. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic. Install insulation continuously through hangers and around anchor attachments.
- E. Install insulation with jackets as follows:
 - 1. Cover circumferential joints with 3-inch-wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip.
 - 2. Overlap jacket longitudinal seams at least 1-1/2 inches. Staple laps with outward clinching staples along edge.
 - 3. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
 - 4. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to duct flanges and fittings.
- F. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

3.3 PENETRATIONS

- A. Roof/Wall Penetrations: Install insulation continuously through roof/wall penetrations.
 - 1. Seal penetrations with flashing sealant.
 - 2. For applications requiring only indoor insulation, terminate insulation above roof/wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
 - 3. Extend jacket of outdoor insulation outside flashing at least 2 inches.
 - 4. Seal jacket to roof flashing with flashing sealant.
- B. Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.
- C. Fire-Rated Wall and Partition Penetrations:
 - 1. Duct: Terminate insulation at fire damper sleeves for fire-rated wall and partition penetrations. Externally insulate damper sleeves to match adjacent insulation and overlap duct insulation at least 2 inches.
 - 2. Pipe: Terminate insulation at fire-rated wall and partition penetrations.
 - 3. See Specification Section 230510 for further Fire-Barrier Penetration requirements.

D. Floor Penetrations:

1. Duct: For penetrations through fire-rated assemblies, insulate with same procedure as with Fire-Rated Walls.
2. Pipe: Install insulation continuously through floor penetrations. Seal penetrations through fire-rated assemblies. Install insulation per UL Fire Stop System guidelines for pipe material and size.
3. See Specification Section 230510 for further Fire-Barrier Penetration requirements.

3.4 FIBERGLASS INSTALLATION

A. General Procedures:

1. Apply adhesives according to manufacturer's recommended coverage rates of duct and plenum surfaces.

B. Installation on Ducts and Plenums: Secure with adhesive and insulation pins.

1. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.
2. Install pins on sides and bottom of horizontal ducts and sides of vertical ducts wider than 12 inches. Cover exposed pins and washers with tape matching insulation facing.
3. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier.

3.5 INDOOR DUCT AND PLENUM SCHEDULE

A. Fiberglass wrap, with FSK jacket:

1. Supply-Air Ducts and Plenums in attics, concealed spaces and unconditioned spaces.
2. Tempered-Fresh-Air Ducts in attic spaces.
3. Exhaust-Air Ducts and Plenums between isolation damper and penetration of building exterior.
 - a. Exception: Lined Exhaust-Air Duct from power roof ventilators.
4. Mixed-Air Ducts and Plenums.
5. Dishwasher Exhaust-Air Duct back 10' from roof exhaust fan.
6. Return-Air Duct and Plenums in attic spaces.
7. Tempered-Fresh-Air Duct and Plenums in spaces other than attic.
8. Un-tempered Fresh-Air Duct from air-to-air heat exchangers.

B. Fiberglass board, welded board pins, with FSK facing and matching label-less FSK tape:

1. Outdoor-Air Duct and Plenums.
2. Ducts and Plenums in Mechanical Rooms.
 - a. Provide one of the following additional means of sealing and cladding:
 - i. Mastic-canvas-mastic.
 - ii. Mastic-fiberglass scrim cloth-mastic.
 - iii. Self-adhering, peel and stick, rubberized bitumen jacket.

C. Insulation not required:

1. Exhaust-Air Duct except as otherwise
2. Return-Air Duct and Plenums in indirectly conditioned spaces.
3. Supply-Air Ducts and Plenums in exposed, conditioned spaces.
4. Tempered-Fresh-Air Ducts.
5. Fibrous-glass ducts.
6. Metal ducts with duct liner of sufficient thickness to comply with energy code and ASHRAE/IESNA 90.1.
7. Factory-insulated flexible ducts.
8. Factory-insulated plenums and casings.

9. Flexible connectors.
10. Vibration-control devices.
11. Factory-insulated access panels and doors.

D. Minimum Duct Insulation R-Values

1. Supply ducts, installed in unconditioned spaces, ceiling plenums, and crawl spaces: R-6.
2. Supply ducts, installed in attic with roof insulation: R-2.
3. Return ducts, installed in unheated attics: R-4.
4. Outside air ducts: R-12.
5. Un-tempered Fresh-Air Ducts: R-4.

3.6 PIPING INSULATION SCHEDULE

A. Indoor, Aboveground:

1. Heat pump system (non-geothermal): Not required.
 - a. Exception: Combustible piping materials located in air plenums shall be completely insulated with approved materials for flame spread and smoke-development.

END OF HVAC INSULATION

SECTION 23 0900
HVAC DDC CONTROLS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. The Automatic Temperature Control (ATC) Company bidding this Section of Work shall be a Subcontractor to the Division 23 HVAC Contractor.
- B. Furnish all labor, materials, equipment, and service necessary for a complete and operating Building Automation System (BAS), utilizing Direct Digital Controls (DDC) for energy management, equipment monitoring and control, and subsystems as defined in Project Documents. In general, all material and equipment used shall be standard components, regularly manufactured and available and not custom designed especially for this project.
- C. Control system shall consist of sensors, indicators, actuators, final control elements, interface equipment, other apparatus, accessories, and software connected to distributed controllers.
- D. System points lists included in the Documents are intended to show the desired alarm, monitoring, and control points. Add any control points necessary and as required to accomplish the sequence of operations.
- E. See Section 230990 "Sequence of Operations for HVAC Controls" for requirements that relate to this Section.
- F. Additional items of work:
 - 1. This is an existing facility and will require interface with an existing control system and the existing host computer system.
 - 2. There is an existing duress system that will required the removal and relocation of duress button/switches.

1.2 DEFINITIONS

- A. Acronyms used in this specification are as follows:
 - 1. BAS: Building Automation System.
 - 2. NAC: Network Area Controller.
 - 3. ASC: Application Specific Controllers.
 - 4. GUI: Graphical User Interface.
 - 5. DDC: Direct Digital Controls.
 - 6. OEM: Original Equipment Manufacturer.
 - 7. VFD: Variable Frequency Drive.

1.3 DIVISION OF WORK

- A. Following divisions of work are generally applicable unless otherwise noted.
- B. ATC contractor provides:
 - 1. All controllers, control devices, control panels, controller programming, controller programming software.
 - 2. Control components for terminal heating and cooling units not supplied with factory-wired controls.
 - 3. Software and programming of BAS, GUI, development of all graphical screens, setup of schedules, logs and alarms, network management, global supervisory control applications, system integration and coordination and connection of the NAC to the local or wide area network.

4. BAS and Temperature Control wiring for a complete and operable system. All wiring shall be done in accordance with Division 26 of the specification and all local and national codes.
- C. Products furnished by ATC contractor for installation by the Mechanical contractor:
 1. Control valves.
 2. Control dampers.
 3. Wells for hydronic temperature sensors.
 4. Static and differential pressure sensors for piping systems.
- D. Products provided by Mechanical contractor:
 1. Balancing dampers.
 2. Smoke and smoke/fire dampers with actuators.
- E. Electrical contractor provides, in accordance with Division 26 and Division 28:
 1. Providing motor starters and disconnect switches.
 2. Power wiring and conduit.
 3. Provision, installation and wiring of smoke detectors.

1.4 SUBMITTALS

- A. Shop Drawings shall be submitted on the equipment covered under this section as per Section 230500.
 1. Schematic flow diagrams.
 2. Power, signal, and control wiring diagrams.
 3. Details of control panel faces.
 4. Input devices.
 5. Damper schedule.
 6. Valve schedule.
 7. DDC System Hardware: Wiring diagrams, schematic floor plans, and schematic control diagrams.
 8. Control System Software: Schematic diagrams, written descriptions, and points list.
- B. Operation and Maintenance Manuals: For system covered under this section as per Section 230500.

1.5 JOB CONDITIONS

- A. Cooperation with Other Trades: Coordinate the Work of this section with that of other sections to insure that the Work will be carried out in an orderly fashion. It shall be this Contractor's responsibility to check the Contract Documents for possible conflicts between his Work and that of other crafts in equipment location, pipe, duct and conduit runs, electrical outlets and fixtures, air diffusers, and structural and architectural features.

1.6 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. All products of the BAS shall be provided with the Agency and Code Approvals: following agency approvals. Verification that the approvals exist for all submitted products shall be provided with the submittal package. Systems or products not currently offering the following approvals are not acceptable.
 1. UL-916; Energy Management Systems
 2. ULC; UL - Canadian Standards Association

3. FCC, Part 15, Subpart J, Class A Computing Devices

1.7 WARRANTY

- A. All systems and components shall be guaranteed against defects in material, workmanship and installation for a period of one year after completion. The guarantee period shall start after final owner instruction and system certification of system operation.

PART 2 - PRODUCTS

2.1 BUILDING AUTOMATION SYSTEM (BAS)

- A. Manufacturers: Subject to compliance with requirements, the BAS shall be an extension of existing system manufactured by the following:
1. Energy Tech Systems; Schneider Electric.
- B. Upgrade the existing BAS system to the latest software version that the existing equipment is capable of handling.
- C. BAS shall be comprised of a network of interoperable, stand-alone digital controllers, a computer system, graphical user interface software, network devices and other devices as specified herein.
1. Network Area Controller: Manage the Energy and Building Management capabilities of the automation system as well as facilitate remote communications and central monitoring.
 2. Application Controllers: Provide distributed, engineered control to the mechanical equipment specified, capable of stand-alone operation.
 3. The Data Communications: Allow data to be shared between the various controllers in the architecture.
 4. System Software: Include system software and site licenses for global application functions, application software for distributed controllers, and operator interface software.
 5. End devices such as sensors, actuators, dampers, valves, and relays.
 6. The failure of any single component shall not interrupt the control strategies of other operational devices. System expansion shall be through the addition of end devices, controllers, and other devices described in this specification.
- D. System Accuracy and Display:
1. Space Temperature Accuracy: +/- 0.5°F.
 2. Duct Temperature Accuracy: +/- 1°F.
 3. Water Temperature Accuracy: +/- 1°F.
 4. Pressure Accuracy: +/- 5% of range.
 5. Airflow: +/- 4% of range; display to nearest 1 cfm.
 6. Humidity Accuracy: +/- 3% RH.

2.2 USER ACCESS AND INTERFACE

- A. User Access: Connect through the facility LAN and remotely.
1. Permit a minimum of 4 simultaneous users to access the system over the LAN.
 2. Access level based on passwords.
 - a. Appropriate levels of security (access) shall be maintained to insure the operability of the system.
 - b. Provide access for Engineer, owner, and temperature control contractor.

3. Capability to monitor parameters, change set points, view and set up trends, start/stop controlled equipment, modify calendars, view and acknowledge alarms.
 - a. Remote user shall have this capability without having the system data base loaded on remote computer.
- B. Remote Access: Include the capability for multiple users to access the BAS simultaneously from remote locations via standard Internet browsers without requiring proprietary operator interface and configuration programs.
- C. User Graphical Interface: Dynamic animated color graphic displays.
 1. Floor Plan: Color graphics. Display zone numbers and zone temperatures; color-code based on zone temperature and zone setpoint. Provide link from zones to screen depicting the equipment serving the zone.
 2. Mechanical Equipment: Display color graphics, animations to indicate on/off status, current values of monitored and control points. Setpoints shall be overridden or modified from this screen.
 3. System Selection/Penetration: Access the various system schematics and floor plans via a graphical penetration scheme or menu selection.
 4. Dynamic Animated Data Displays: Dynamic temperature values, humidity values, flow values, and status indication shall be shown in their actual respective locations and shall automatically update to represent current conditions without operator intervention.
 5. Alarm Annunciation: Any point in a state of alarm shall change the color of its symbol to red until it is no longer in alarm.
 6. Help System: Provide a context sensitive, on-line help system available for all applications with relevant data for that particular screen.
 7. Existing Graphics: On projects where existing temperature control systems and graphics are being revised or added to the existing temperature control system, the following shall be provided:
 - a. Update existing graphics with updated floor plan including changes and additions associated with this project.
 - b. Graphics for existing equipment and floor plans shall be consistent with the format of the graphics for new equipment and floor plans.
 - c. Display all relocated and new control devices, controls setpoints, and monitoring points on the new graphics floor plan.

2.3 ALARM MANAGEMENT

- A. Alerts: Include a paging feature with telephone/email alerts to selected personnel for critical alarms as defined by Owner.
- B. Alarm Management: Monitor, buffer, and direct alarm reports to operator devices.
- C. Alarm Message: Include control point's English language description, time and date of occurrence, and purpose of alarm.
- D. Prioritization:
 1. Fault Alarm: Highest priority alarm. Unit shutdown until condition is gone and fault is manually cleared.
 2. Problem Alarm: Unit operation is modified to compensate and alarm automatically clears when the condition is gone.
 3. Warning Alarm: Lowest priority alarms. Alarm is indicated to alert operator of condition that needs attention.
- E. Annunciation: Provide page to display all alarms from all equipment for operator to check on regular basis.
 1. Fault Alarms: Screen message text, email, pagers, graphic with flashing alarm objects, SMS texting, and/or other method selected by owner.

2. Problem Alarms: Screen message text, flashing graphic, and/or other method selected by owner.
3. Warning Alarms: Flashing graphic on equipment page.
4. Alarm Log: Record each alarm, available for review by the user, and containing the following information (at a minimum):
 - a. Time and date.
 - b. Location (building, floor, zone, office number, etc.).
 - c. Equipment (air handler #, accessway, etc.).

2.4 SYSTEM PERFORMANCE ANALYSIS

- A. Data Logging: Collect data for any property of any object and store this data for future use. All log data shall be available to the user in the following data formats:
 1. HTML.
 2. Plain Text.
 3. Comma or tab separated values.

2.5 NETWORK AREA CONTROLLER

- A. Control Units: Modular, comprising processor board with programmable, nonvolatile, random-access memory; integral interface equipment; and backup power source.
- B. Units monitor or control each I/O point; process information; execute commands from other control units, devices, and operator stations; and download from or upload to operator workstation.
- C. Stand-alone mode control functions operate regardless of network status.
- D. This Contractor shall supply one or more NAC as part of this contract. Number of area controllers required is dependent on the type and quantity of devices.

2.6 APPLICATION CONTROLLERS

- A. Local Control Units: Modular, comprising processor board with electronically programmable, nonvolatile, read-only memory; and backup power source.
 1. Scheduling, alarming, trending, and network management received from NAC.
- B. Units monitor or control each I/O point, process information, and download from or upload to operator workstation or diagnostic terminal unit.
 1. Stand-alone mode control functions operate regardless of network status.
 2. Battery backup for a minimum of 72 hours is also permissible.
- C. Hardware: Suitable for anticipated ambient conditions.

2.7 CONTROL PANELS

- A. Description: Wall-mounted, provide as required to contain all relays, terminal strips, power supplies and other equipment in the BAS.
- B. Materials: UL listed, NEMA 1 minimum, 14 gauge steel minimum with stiffeners, continuous hinge doors. Panels may be constructed of structural plastic meeting UL and NEMA requirements.
- C. Weatherproof: For control devices located in areas subject to outside weather conditions.

2.8 ELECTRICAL DEVICES

- A. Surge Protector: Provide; Diagnostic LED that indicates ground presence, system power and SPD function.

- B. Relays: Indicator light.

2.9 INPUT SENSORS

- A. General Requirements: Installation, testing, and calibration of all sensors, transmitters, and other input devices shall be provided to meet the system requirements; vibration and corrosion resistant.
 - 1. Wired sensors. Wireless sensors are not acceptable.
 - 2. Wired room temperature and humidity, and occupancy sensors. Wireless sensors are not acceptable.
 - 3. No digital readout display unless otherwise noted.
- B. Occupancy Sensor: Dual technology, with time delay, daylight sensor lockout, sensitivity control, and 180-degree field of view with vertical sensing adjustment; for flush mounting.
- C. Temperature Sensors: Furnish in scale ranges compatible with system operating range.
 - 1. Accuracy: Plus or minus 0.5°F at calibration point.
 - 2. Room Sensors:
 - a. Mounting: Surface or wallbox.
 - b. Blank Plate Type: Sensing only.
 - c. Integral Display Type: Wall mounting type with digital display showing simultaneous indication of space temperature and set-point in degree F. Allow local set-point adjustment of +/- 3°F from setpoint.
 - 3. Outside-Air Sensors: Watertight inlet fitting, shielded from direct sunlight; minimum range -45°F to 120°F.
 - 4. Duct Sensor:
 - a. Insertion Elements: Single point, 8 inches long.
 - b. Averaging Elements: 60 inches long, flexible.

2.10 OUTPUT DEVICES

- A. Damper and Valve Actuators:
 - 1. Electric Motors: Size to operate with sufficient reserve power to provide smooth modulating action or two-position action.
 - a. Comply with requirements in Section 230520 "Common Motor Requirements."
 - b. Permanent Split-Capacitor or Shaded-Pole Type: Gear trains completely oil immersed and sealed. Equip spring-return motors with integral spiral-spring mechanism in housings designed for easy removal for service or adjustment of limit switches, auxiliary switches, or feedback potentiometer.
 - 2. Electronic Actuators: Direct-coupled type designed for minimum 60,000 full-stroke cycles at rated torque.
 - a. Overload Protection: Electronic overload or digital rotation-sensing circuitry.
 - b. Fail-Safe Operation: Mechanical, spring-return mechanism at locations with freeze potential. Fail last position otherwise. Provide external, manual gear release on nonspring-return actuators.
- B. Control Valves: Factory fabricated, of type, body material, and pressure class based on maximum pressure and temperature rating of piping system, unless otherwise indicated.
 - 1. Terminal Unit Control Valves: Characterized ball, forged brass body, stainless steel trim, two- or three-port as indicated, replaceable plugs and seats, union and threaded ends.
 - a. Rating: Class 125 for service at 125 psig and 250°F operating conditions. Valves in plenums shall be rated for plenum use.

- b. Sizing: 5-psig maximum pressure drop at design flow rate, to close against pump shutoff head, not less than one-half the line size.
 - 2. Globe Valves 2 inches and Smaller: Bronze body, bronze trim, rising stem, renewable composition disc, and screwed ends with backseating capacity repackable under pressure.
 - 3. Globe Valves 2-1/2 inches and Larger: Iron body, bronze trim, rising stem, plug-type disc, flanged ends, and renewable seat and disc.
 - 4. Hydronic system globe valves shall have the following characteristics:
 - a. Rating: Pressure class based on maximum pressure and temperature rating of piping system.
 - b. Internal Construction: Replaceable plugs and seats of stainless steel or brass.
 - c. Sizing: 3-psig maximum pressure drop at design flow rate.
 - d. Flow Characteristics: Two-way valves shall have equal percentage characteristics; three-way valves shall have linear characteristics. Operators shall close valves against pump shutoff head.
 - 5. Butterfly Valves: 200-psig, 150-psig maximum pressure differential, ASTM A 126 cast-iron or ASTM A 536 ductile-iron body and bonnet, extended neck, stainless-steel stem, field-replaceable EPDM or Buna N sleeve and stem seals.
 - a. Disc Type: Nickel-plated ductile iron or Aluminum bronze.
 - b. Sizing: 5-psig maximum pressure drop at design flow rate.
- C. Control Dampers: AMCA-rated; tight closing, low leakage.
 - 1. Bearings: Stainless steel or oil-impregnated bronze.
 - 2. Damper Blades: Minimum 16 ga. galvanized steel or aluminum; maximum 6" width; maximum 48" length.
 - 3. Blade Construction: One piece rolled with exposed or concealed linkage for face velocities of 1500 FPM or below; Airfoil type with double skin construction and linkage out of airstream for face velocities above 1500 FPM.
 - 4. Damper Frames: Minimum 16 ga. galvanized steel or aluminum; provide stiffening or bracing for any section exceeding 48" in height.
 - 5. Edge Seals: Closed-cell elastomeric on blades, flexible stainless steel on sides.
 - 6. Opposed Blade Dampers: Use for throttling airflow.
 - 7. Parallel Blade Dampers: Use for two position, open/close control.
 - 8. Smoke Control Dampers: UL 555 listed.
- D. Control Relays: modular plug-in design with retaining springs or clips.
 - 1. Integral indicator light and check button.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION

- A. If any device, fixture, or panel is required to be wall mounted by this contractor, provide AC Plywood, 3/4" or 5/8" thickness, painted both sides with fireproof paint, color to be determined and coordinated with owner. Paint is required even if installed on a non-fire rated wall.

3.2 CONTROL PANEL INSTALLATION

- A. Locations shown on the drawings are recommended locations and do not indicate actual quantity or location. Generally, locate all panels in mechanical and electrical rooms. Control panels will not be installed in public areas unless otherwise noted. Control panels will not be recessed installed on an exterior wall where condensation can accumulate in panel.

- B. All control devices located in exposed areas subject to outside weather conditions shall be mounted inside weatherproof enclosures. Location of each panel shall be convenient for adjustment service.
- C. Engraved nameplates shall be provided beneath each panel face mounted control device describing the function of each device.
- D. All electrical devices within the panel shall pre-wired to terminal strips with all inter-device wiring within the panel completed prior to installation of the system.

3.3 INPUT SENSOR INSTALLATION

- A. Verify location of thermostats, humidistats, and other exposed control sensors with Drawings and room details before installation. Install devices with display approximately 48 inches above the floor; devices without display approximately same height as light switches. Provide one sensor for each zone of control.
- B. Mount duct mount sensors in an electrical box through a hole in the duct and position to be easily accessible for repair or replacement.
- C. Install averaging elements in ducts and plenums in crossing or zigzag pattern. Protect averaging or capillary tubes where they penetrate duct with rubber grommet and seal with clear silicon. Support with capillary clips and maintain minimum 1 inch tubing bending radius.
- D. Install outside air sensors out of direct sunlight.
- E. Calibrate current switches to show a positive run status only when the motor is operating under load. A motor running with a broken belt or coupling shall indicate a negative run status.

3.4 OUTPUT DEVICES INSTALLATION

- A. Install damper motors on outside of duct in warm areas, not in locations exposed to outdoor temperatures.
- B. All instrument wells, valves, and dampers are furnished by Controls Contractor and installed by the Division 23 contractor.

3.5 IDENTIFICATION

- A. Major Equipment: Provide label with associated DDC point name. Major equipment includes all mechanical equipment scheduled on the Drawings.
- B. DDC Control Panels: Provide label with ATC name, "Prairie Engineering, P.C.".
- C. Misc. Switches or Other Special Function Devices: Provide phenolic labels with indication of device function or as directed on the Drawings.
- D. Room Sensors: No label.

3.6 ELECTRICAL WIRING AND CONNECTION INSTALLATION

- A. Install raceways, boxes, and cabinets according to Division 26.
- B. Install building wire and cable according to Division 26.
- C. Install signal and communication cable according to Division 27.

- D. All junction boxes, junction box covers and raceway systems except those embedded directly in earth or concrete, or surface metal raceway systems (wiremold), shall be externally identified by permanent bright blue paint suitable for the purpose, to easily distinguish from other communication or power raceway systems. Items shall be painted prior to installation. In addition to field painted conduit, factory painted conduit as manufactured by Allied Tube & Conduit (Data Com Blue Steel EMT), acceptable.
- E. Provide conduit where cables are concealed in walls, in mechanical rooms, and in rooms without ceilings.
 - 1. All control wiring in exposed, accessible or in inaccessible areas in Nursing Home, Patient Care and Hospital facilities, and Dormitories with an occupancy of 16 people or greater shall be run in conduit.
- F. Bundle and harness exposed multiconductor instrument cable in place of single cables where several cables follow a common path.
- G. Fasten flexible conductors, bridging cabinets and doors, along hinge side; protect against abrasion. Tie and support conductors.
- H. Number-code or color-code conductors for future identification and service of control system, except local individual room control cables.
- I. Install wire and cable with sufficient slack and flexible connections to allow for vibration of piping and equipment.
- J. Connect manual-reset limit controls independent of manual-control switch positions. Automatic duct heater resets may be connected in interlock circuit of power controllers.
- K. Connect hand-off-auto selector switches to override automatic interlock controls when switch is in hand position.
- L. The Temperature Control Contractor shall provide any line voltage wiring required for local or central control panels. Power may be extended from the nearest receptacle circuit or spare circuit breaker in nearest normal power panel.
- M. The Division 26 Contractor shall furnish all power wiring to electrical starters and motors.

3.7 TREND LOGS

- A. Prepare trend logs for all points required to show system calibration and stability.
- B. These logs shall document building operation after the installation, balancing and calibration is completed and after the control system is fully operational.

3.8 CLEANING

- A. Remove all protective labels and coverings from room sensors.

3.9 FIELD QUALITY CONTROL

- A. Perform all necessary calibration, testing and de-bugging, and perform all required operational checks to insure that the system is functioning in full accordance with these specifications.
- B. Demonstrate complete and proper operation of all systems per the Sequence of Operations to Engineer. The demonstration shall include, but not necessarily be limited to, the following:
 - 1. Review of the trend logs.
 - 2. Complete and proper operation of control systems including setpoints, valve positions, etc. shall be adjusted to artificially induce the sequences to occur.
 - 3. Access to all devices for required maintenance.
 - 4. Review of associated graphics on Host.
 - 5. Identify and configure alarms.

- C. Upon project completion provide oral operating and maintenance instruction to the owner's representative for a minimum of 8 hours during normal working hours. The contractor shall assist the owner in videotaping the instruction if they choose to do so. Instructions shall include:
 - 1. A brief description of the controls' sequence of operation.
 - 2. A discussion and explanation of all alarms, switches and gauges.
 - 3. A summary and explanation of steps to be taken in response to specific alarms or control malfunctions.
 - 4. Building walk-through to physically locate and examine all control devices and demonstrate control setpoint adjustment procedures.
 - 5. Instructions regarding adjustment procedures shall emphasize methods for continual building "fine-tuning"
- D. Provide written operating and maintenance instruction including a copy of each of the above-mentioned submittals, inspection and calibration frequency and cleaning methods with recommended cleaning materials. Provide 2 copies to the Engineer in 3-ring binders.
- E. Satisfactory completion is when all required training and testing to show performance compliance with the requirements of the Contract Documents has been performed to the satisfaction of the Engineer. System acceptance shall be contingent upon completion and review of all corrected deficiencies.

3.10 ROOM SENSOR SCHEDULE

- A. Room Temperature Sensor, Blank Plate: Corridors, toilet rooms.
- B. Room Temperature Sensor, Display: Library, offices.

END OF HVAC DDC CONTROLS

SECTION 23 0990
HVAC SEQUENCE OF OPERATIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes control sequences for HVAC systems, subsystems, and equipment.
- B. It is the intent of this specification to describe the HVAC control system. The intent shall be met by providing a complete and properly operating system as described by the specifications and detailed on the drawings. Equipment shall be furnished as required and shall include all incidental items necessary to meet the intent, even though not completely detailed herein.
- C. See Section 230900 "HVAC Controls" for control equipment and devices and for submittal requirements

1.2 ABBREVIATIONS

- A. The following abbreviations may be used in this specification.
 - 1. ATC: Automatic temperature controls contractor.
 - 2. BAS: Building automation system.
 - 3. DAT: Discharge air temperature.
 - 4. SAT: Supply air temperature.
 - 5. RAT: Return air temperature.
 - 6. OAT: Outdoor ambient temperature.
 - 7. SWT: Supply water temperature.
 - 8. RWT: Return water temperature.
 - 9. CWS: Chilled water supply.
 - 10. CWR: Chilled water return.
 - 11. HPS: Heat pump supply water.
 - 12. HPR: Heat pump return water.
 - 13. VFD: Variable frequency drive.
 - 14. Occ/Unocc: Occupied/Unoccupied.
 - 15. Temp: Temperature.
 - 16. User adj: User adjustable.

PART 2 - PRODUCTS (N/A)

PART 3 - EXECUTION

3.1 OCCUPIED/UNOCCUPIED MODE

- A. Description: Method for setting occupied/unoccupied mode.
 - 1. Provide: Ceiling mounted room occupied sensors.
- B. Occ/Unocc Mode Sequence: Monitor room sensors.
 - 1. Condition: Space occupied. Action: Activate zone occupied mode.
 - 2. Condition: Space unoccupied. Action: Activate zone unoccupied mode.

3.2 ALARM MANAGEMENT AND CONTROL

- A. Description: Prioritization of alarms according to category.

- B. Alarm Categories:
 - 1. Faults: Highest priority alarm. Unit shutdown until condition is gone and fault is manually cleared.
 - 2. Problems: Unit operation is modified to compensate and alarm automatically clears when the condition is gone.
 - 3. Warnings: Lowest priority alarms. Alarm is indicated to alert operator of condition that needs attention.
- C. Alarm Annunciation: Provide page to display all alarms from all equipment for operator to check on regular basis.
 - 1. Faults: Screen message text, email, pagers, graphic with flashing alarm objects, SMS texting, and/or other method selected by owner.
 - 2. Problems: Screen message text, flashing graphic, and/or other method selected by owner.
 - 3. Warnings: Flashing graphic on equipment page.

3.3 HEAT PUMPS – WATER TO AIR

- A. Description: Packaged water-to-air heat pump with factory control package and low voltage terminal.
- B. Temperature Setpoint Sequence: Monitor Occ/Unocc mode.
 - 1. Condition: 1 hour before occupied mode. Action: Zone heating setpoint to 71°F (user adj.) and cooling setpoint to 73°F (user adj.).
 - 2. Condition: Unoccupied mode. Action: Zone heating setpoint to 70°F (user adj.) and cooling setpoint to 85°F (user adj.).
- C. Supply Fan Sequence: Monitor Occ/Unocc mode, zone temp.
 - 1. Condition: Occupied mode. Action: Activate fan.
 - 2. Condition: Unoccupied mode and 2°F below setpoint. Action: Activate fan.
 - 3. Condition: Unoccupied mode and above setpoint. Action: Deactivate fan.
- D. Heating/Cooling Sequence: Monitor zone temp.
 - 1. Condition: 2°F above setpoint. Action: Enable cooling.
 - 2. Condition: 1°F below setpoint. Action: Enable heating.
 - 3. Condition: Additional 1°F beyond setpoint. Action: Enable second stage (where applicable).
- E. Alarms:
 - 1. Fault Alarm: Heat pump alarm.
 - 2. Problem Alarm: Zone 10°F beyond setpoint.
- F. User Interface Display:
 - 1. Zone Temp: actual and set point.
 - 2. Occ/Unocc mode.
 - 3. Heating/Cooling status.
 - 4. Supply fan status.
 - 5. Alarms.
 - 6. BAS system graphic.

3.4 CIRCULATION DESK DURESS SYSTEM & MONITORING

- A. Description: Extend and update the existing circulation desk duress system as required for the remodeled floor plan and circulation desk. Monitor the duress activation buttons/switches and react to any activation of the duress system.
 - 1. Provide: Momentary Duress activation switches/buttons where indicated on the drawings.
 - 2. Provide: All wiring as required to ensure the system operates as intended.
- B. Monitor: Duress button status.
- C. Control Sequence
 - 1. If the duress button is activated for longer than 5 seconds (User Adjustable) then the system shall set in motion the current alarm process to alert capitol police/highway patrol.
 - 2. If the duress button is activated for less than 5 seconds (User Adjustable) then the system shall remain inactivated.
 - 3. Verify the exact sequence with the current sequence and adjust to match the current or adjust as required to meet the needs of the owner's representative.
- D. User Interface Display:
 - 1. Duress Button Locations.
 - 2. Activated duress situation (Red).
 - 3. Inactivated duress situation (Green).
 - 4. BAS System Graphic.

END OF HVAC SEQUENCE OF OPERATIONS

SECTION 23 3000
AIR DISTRIBUTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Ducts and fittings.
 - 2. Sheet metal materials.
 - 3. Sealants and gaskets.
 - 4. Duct Liners.
 - 5. Hangers and supports.
 - 6. Dampers.
 - 7. Access doors.
 - 8. Turning vanes.
 - 9. Duct-mounted access doors.
 - 10. Flexible ducts.

1.2 PERFORMANCE REQUIREMENTS

- A. Delegated Duct Design: Duct construction, including sheet metal thicknesses, seam and joint construction, reinforcements, and hangers and supports, shall comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and performance requirements and design criteria indicated in "Duct Schedule" Article.

1.3 SUBMITTALS

- A. Shop Drawings: For equipment covered under this section as per Section 230500.
 - 1. Round ducts and fittings: Materials, drawings of fittings with method of assembly.
 - 2. Duct Liners: Make and model, performance, materials.
 - 3. Dampers: Make and model, components, materials, drawings with dimensions and field connections.
- B. Operation and Maintenance Manuals: For equipment where shop drawings were submitted this section as per Section 230500.

1.4 WARRANTY

- A. Manufacturer's standard form in which manufacturer agrees to repair or replace components that fail in materials or workmanship within specified period.

PART 2 - PRODUCTS

2.1 RECTANGULAR DUCTS AND FITTINGS

- A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on 2" static-pressure class unless otherwise indicated.
- B. Ductwork shall be fabricated in accordance with the following schedule. Scheduled gauges are based on galvanized steel. For other materials, this contractor shall increase gauging as required to provide equivalent sheet metal thicknesses:
 - 1. Up to 12" Width: 26 Gauge (0.0217")
 - 2. Up to 30" Width: 24 Gauge (0.0276")
 - 3. Up to 60" Width: 22 Gauge (0.0336")
 - 4. Up to 90" Width: 20 Gauge (0.0396")

5. 90" Width and Up: 18 Gauge (0.0516")

2.2 ROUND DUCTS AND FITTINGS

- A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 3, "Round, Oval, and Flexible Duct," based on indicated static-pressure class unless otherwise indicated.
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following or other prior approved:
 1. Fabricated Duct Systems
 2. Norlock Metal Products, Inc.
 3. SEMCO Incorporated.
 4. Spiral Manufacturing Co., Inc.
 5. Tangent Air, Inc.
 6. United Sheet Metal
- C. Ductwork shall be fabricated in accordance with the following schedule. Scheduled gauges are based on galvanized steel. For other materials, this contractor shall increase gauging as required to provide equivalent sheet metal thicknesses:
 1. 3"-14" Diameter: 26 Gauge (0.0217")
 2. 15"-26" Diameter: 24 Gauge (0.0276")
 3. 28"-36" Diameter: 22 Gauge (0.0336")
 4. 38"-50" Diameter: 20 Gauge (0.0396")
 5. 52"-60" Diameter: 18 Gauge (0.0516")
 6. 61"and Above: 16 Gauge (0.0635")
- D. Transverse Joints in Ducts Larger Than 60 inches in Diameter: Flanged.
- E. Fabricate round ducts larger than 90 inches in diameter with butt-welded longitudinal seams.

2.3 SHEET METAL MATERIALS

- A. General Material Requirements: Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.
- B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.
 1. Galvanized Coating Designation: G60.
- C. Reinforcement Shapes and Plates: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
 1. Where black- and galvanized-steel shapes and plates are used to reinforce aluminum ducts, isolate the different metals with butyl rubber, neoprene, or EPDM gasket materials.
- D. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.4 RECTANGULAR DUCT CONNECTION SYSTEM

- A. Description: Roll-formed flanges, corner pieces, gasket and metal cleat.
 1. Sealer: Integral mastic meeting NFPA 90A and 90B Class I requirements.
 2. Gasket: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.
 3. Schedule: Rectangular ductwork with perimeter greater than 120".

2.5 METAL DUCT SEALANT AND GASKETS

- A. General Sealant and Gasket Requirements: Maximum flame-spread index of 25 and maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.
- B. Two-Part Tape Sealing System:
 - 1. Tape: Woven cotton fiber impregnated with mineral gypsum and modified acrylic/silicone activator to react exothermically with tape to form hard, durable, airtight seal.
 - 2. Tape Width: 4 inches.
 - 3. Water resistant, mold and mildew resistant.
 - 4. Maximum Static-Pressure Class: 6-inch wg, positive and negative.
 - 5. Service: Indoor and outdoor.
 - 6. Service Temperature: Minus 20 to plus 200 °F.
 - 7. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum.
- C. Water-Based Joint and Seam Sealant (Mastic):
 - 1. Application Method: Brush on.
 - 2. Solids Content: Minimum 65 percent.
 - 3. Water resistant, mold and mildew resistant.
 - 4. Maximum Static-Pressure Class: 6-inch wg, positive and negative.
 - 5. Service: Indoor or outdoor.
 - 6. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.
- D. Flanged Joint Sealant: Comply with ASTM C 920.
 - 1. General: Single-component, acid-curing, silicone, elastomeric.
 - 2. Type S, grade NS, class 25, use O.
- E. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.
- F. Round Duct Joint O-Ring Seals:
 - 1. Seal shall provide maximum 3 cfm/100 sq. ft. at 1-inch wg and shall be rated for 10-inch wg static-pressure class, positive or negative.

2.6 DUCT LINER

- A. General Requirements:
 - 1. The manufacturers product identification shall appear on the air stream surface.
 - 2. Duct liner adhesive shall conform to the requirements of ASTM C 916.
 - 3. The finished duct system shall meet the requirements of NFPA 90A and 90B.
 - 4. Maximum flame-spread index of 25 and smoke-developed index of 50.
- B. Fiberglass Duct Liner: Composed of glass fibers firmly bonded together with a thermosetting resin overlaid with a tough and durable fire-resistant black composite surface on the air stream side.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following or other prior approved:
 - a. Owens-Corning Fiberglass
 - b. Johns Manville
 - c. Knauf Insulation.
 - 2. Additional Requirements:
 - a. Duct liner products shall conform to the requirements of ASTM C1071.

- b. Water Vapor Sorption: Less than 3% by weight per ASTM C1104
 - c. Non-corrosive, bacterial resistant, mold and mildew resistant.
 - d. Operating Limits: Maximum 250 °F, maximum 6,000 fpm per UL 181.
 - e. Thickness and Density: 1/2" and 2.0 lbs/cf; 1" and 1.5 lbs/cf.
- C. Flexible Elastomeric Liner: Product shall be closed-cell, sponge- or expanded-rubber materials.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following or other prior approved:
 - a. Aeroflex USA, Inc.; Aerocel.
 - b. Armacell LLC; AP Armaflex.
 - 2. Additional Requirements:
 - a. UV Resistant: Required on outdoor installations.
 - b. Fungal and Bacterial Resistant:
 - i. UL181 for mold growth.
 - ii. ASTM G21/C 1338 for fungi resistance.
 - iii. ASTM G22 for bacterial resistance.

2.7 DAMPERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or other prior approved:
 - 1. Cesco Products; a division of Mestek, Inc.
 - 2. Greenheck Fan Corporation.
 - 3. NCA Manufacturing, Inc; Metal Industries, Inc.
 - 4. Nailor Industries Inc.
 - 5. Pottorff.
 - 6. Ruskin Company.
 - 7. Vent Products Company, Inc.
- B. Backdraft Dampers - Rectangular:
 - 1. Description: Gravity balanced.
 - 2. Up to 2" wg. System Pressure:
 - a. Frame: 0.125"-thick extruded aluminum.
 - b. Blades: Multiple single-piece blades, maximum 6-inch width, 0.050"-thick aluminum with sealed edges.
 - 3. Blade Action: Parallel.
 - 4. Blade Seals: Felt or Vinyl foam for silent operation.
 - 5. Blade Axles: Aluminum.
 - 6. Accessories: Adjustment device to permit setting for varying differential static pressure.
- C. Backdraft Dampers - Round:
 - 1. Description: Spring operated. Suitable for vertical airflow, up or down; and horizontal airflow.
 - 2. Frame: 20 ga. galvanized steel.
 - 3. Blades: Multiple single-piece blades, galvanized steel.
 - 4. Blade Seals: Closed cell neoprene foam for silent operation.
 - 5. Blade Axles: Plated steel.
- D. Manual Volume Dampers:
 - 1. Standard, Galvanized Steel, Manual Volume Dampers:
 - a. Suitable for horizontal or vertical applications.
 - b. Single blade, or multiple, opposed-blade design.

2. Adjustable quadrants or regulators: Plainly marked to indicate position of damper, with locking nut.
- E. Control Dampers:
 1. Furnished under Section 230900, installed by Division 23 except where otherwise noted.

2.8 ACCESS DOORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or other prior approved:
 1. Cesco Products; a division of Mestek, Inc.
 2. Ductmate Industries, Inc.
 3. Greenheck Fan Corporation.
 4. MIFAB.
 5. Nailor Industries Inc.
 6. Ward Industries, Inc.; a division of Hart & Cooley, Inc.
- B. Door: Foam gasket, galvanized sheet metal with 1" insulation fill.
 1. Vision panel where noted in Access Door Installation article.
 2. Hinges and Latches: Piano hinge and cam latches.
 3. Size: 12"x12", unless otherwise noted.
- C. Frame: Galvanized sheet steel, with foam gaskets.

2.9 TURNING VANES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or other prior approved:
 1. Ductmate Industries, Inc.
 2. SEMCO Incorporated.
 3. Tuttle & Bailey.
 4. Ward Industries, Inc.; a division of Hart & Cooley, Inc.
- B. Manufactured Turning Vanes for Metal Ducts: Curved blades of galvanized sheet steel; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.
- C. Manufactured Turning Vanes for Nonmetal Ducts: Fabricate curved blades of resin-bonded fiberglass with acrylic polymer coating; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.

2.10 FLEXIBLE CONNECTORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or other prior approved:
 1. Ductmate Industries, Inc.
 2. Duro Dyne Inc.
 3. Ward Industries, Inc.; a division of Hart & Cooley, Inc.
- B. Materials: Flame-retardant or noncombustible fabrics.
- C. Coatings and Adhesives: Comply with UL 181, Class 1.

- D. Metal-Edged Connectors: Either of the following:
 - 1. Factory fabricated with a fabric strip not less than 6" wide attached to two strips of metal compatible with connected ducts.
 - a. Field fabricated with a fabric strip not less than 6" wide clamped to duct by 1"x1"x1/8" angles attached with 5/16 bolts or self-tapping screws, 6" on center.
- E. Indoor System, Flexible Connector Fabric: Glass fabric double coated with neoprene.
 - 1. Minimum Weight: 26 oz./sq. yd.
 - 2. Service Temperature: Minus 40 to plus 200 °F.
- F. Outdoor System, Flexible Connector Fabric: Glass fabric double coated with weatherproof, synthetic rubber resistant to UV rays and ozone.
 - 1. Minimum Weight: 24 oz./sq. yd.
 - 2. Service Temperature: Minus 50 to plus 250 °F.

2.11 HIGH EFFICIENCY TAKEOFF

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or other equivalent:
 - 1. Ductmate Industries, Inc.
 - 2. Lukjan Metal Products.
 - 3. Sheet Metal Connectors, Inc.
- B. Manufactured to conform to SMACNA 2005 duct construction standards:
 - 1. Material: Match duct material, minimum 24 gauge.
 - 2. Body: 45° slope, rectangular opening transition to round.
 - 3. Gasket: EPDM rubber
 - 4. Damper: Minimum 24 gauge, manual volume damper.

2.12 FLEXIBLE DUCTS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or other prior approved:
 - 1. Flexmaster U.S.A., Inc.
 - 2. McGill AirFlow LLC.
 - 3. Thermaflex.
 - 4. Ward Industries, Inc.; a division of Hart & Cooley, Inc.
- B. Noninsulated, Flexible Duct: UL 181, Class 1, 2-ply vinyl film supported by helically wound, spring-steel wire.
 - 1. Pressure Rating: 10-inch wg positive and 1.0-inch wg negative.
 - 2. Maximum Air Velocity: 4000 fpm.
 - 3. Used for ventilation only systems.
- C. Insulated, Flexible Duct: UL 181, Class 1, aluminum laminate and polyester film with latex adhesive supported by helically wound, spring-steel wire; fibrous-glass insulation; aluminized vapor-barrier film.
 - 1. Pressure Rating: 10-inch wg positive and 1.0-inch wg negative.
 - 2. Maximum Air Velocity: 4000 fpm.
 - 3. Insulation: Minimum R-3.5, except in attics: R-6.
- D. Flexible Duct Connectors:
 - 1. Clamps: Stainless-steel band with cadmium-plated hex screw to tighten band with a worm-gear action.

PART 3 - EXECUTION

3.1 DUCTWORK INSTALLATION

- A. Ductwork shall be run as high as possible in all rooms to maintain proper headroom. Where two or more ducts cross each other, they must be arranged in such a manner as to maintain the greatest possible clearance underneath.
- B. Ductwork shall not cover any electrical outlets or junction boxes. Consult with other trades to avoid interference with piping runs, etc.
- C. Install ducts according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.
- D. Where ducts pass through non-fire-rated interior partitions and exterior walls and are exposed to view, cover the opening between the partition and duct or duct insulation with sheet metal flanges of same metal thickness as the duct. Overlap openings on four sides by at least 1-1/2 inches.
- E. Ducts shall conform to dimensions on the Drawings unless location of structural members prohibit. Make minor changes in run of certain ducts without extra cost to the Owner if necessary to avoid unforeseen structural or other interferences.
- F. All ductwork, where internal insulation is to be applied, shall be increased in size so the net internal dimension is that indicated on the Drawings.
- G. In case of a change in dimension, cross-sectional areas shall be maintained. Changes in size throughout shall be of perfect rectangular cross sections with a slope of approximately 1 to 4. Abrupt changes or offsets will not be accepted.
- H. All ducts shall be straight and smooth on the inside with finished joints. No inside standing seams will be permitted in ductwork. No single thickness partitions shall be allowed between ducts. The Engineer reserves the right to order any open seams or joints made tight by caulking or taping. No open joints at corners or elsewhere will be allowed.
- I. Where space permits, elbows shall have a centerline radius equal to 1½ times their width. Shorter radius and square throat elbows shall be used where required to fit restricted areas only and where required by the duct connection details on the Drawings. All short radius and square throat elbows shall be provided with turning vanes.
- J. All vertical ducts or risers shall be self-supporting.
- K. Watertight drip pans shall be provided below all power vent, relief vent, gravity vent, fresh air and exhaust openings through roof, either built into the ductwork or, if no duct is installed, independently suspended below opening. All fresh air, exhaust air and relief air louver plenums shall have watertight seams on bottom portion of plenums. All fresh air ductwork and other ductwork, as noted on the Plans, shall be caulked watertight.

3.2 METAL DUCT SEALING

- A. Seal ducts for duct static-pressure, and seal levels specified in "Duct Schedule" Article.
- B. Leakage Class Definition: Leakage class of 6 means that 6 cfm of leakage per 100 sq ft of duct surface is the maximum allowable threshold if tested at 1 inch test pressure.
- C. Duct Seal Levels Definitions:
 - 1. Level A: All transverse joints, longitudinal seams, and duct wall penetrations. Pressure sensitive tape shall not be used as the primary sealant, unless it has been certified to comply with UL-181A or UL-181B and the tape is used in accordance with that certification.

2. Level B: All transverse joints, and longitudinal seams. Pressure sensitive tape shall not be used as the primary sealant, unless it has been certified to comply with UL-181A or UL-181B and the tape is used in accordance with that certification.
3. Level C: Transverse joints only.

3.3 DUCT LINER INSTALLATION

- A. All ducts requiring insulation shall be lined by carefully adhering the liner in a continuous piece to clean, flat metal sheets with a quick tacking, fire-retardant adhesive.
- B. Coated side of duct liner shall face the air stream.
- C. All exposed edges shall be coated with adhesive.
- D. Ducts over 24" width or breadth shall have liner additionally secured with spot welded pins and washers, one pin and washer to each two square feet of duct liner.

3.4 CONNECTIONS

- A. Make connections to inlet and outlet of all fans and air handling units with flexible connectors.
 1. Exception: Fan housings that have the entire fan and motor assembly isolated for vibration.
- B. Connect supply flexible duct to main duct with high efficiency takeoff.
- C. Connect diffusers or light troffer boots to ducts with maximum 10-foot lengths of flexible duct.

3.5 ACCESS DOOR INSTALLATION

- A. Install duct access doors on sides of ducts to allow for inspecting, adjusting, and maintaining accessories and equipment at the following locations:
 1. Upstream of duct coils.
 2. Downstream from control dampers and backdraft dampers.
 3. Adjacent to and close enough to fire or smoke dampers, to reset or reinstall fusible links.
 4. Downstream from humidifiers. Include vision panel.
 5. Elsewhere as indicated.
- B. Label access doors according to Section 230510, Article "Equipment and Warning Labels" to indicate the purpose of access door.

3.6 FIELD QUALITY CONTROL

- A. Tests and Inspections:
 1. Operate dampers to verify full range of movement.
 2. Inspect locations of access doors and verify that purpose of access door can be performed.
 3. Operate fire and smoke dampers to verify full range of movement and verify that proper heat-response device is installed.

3.7 DUCT SCHEDULE

- A. Fabricate ducts with galvanized sheet steel.
- B. Supply Ducts:
 1. Pressure Class: Minimum of 0.25-inch wg. greater than scheduled static pressure of attached supply fan.

2. Duct seal levels for pressure class up to 2-inch w.c.:
 - a. Outdoor: A
 - b. Unconditioned Spaces: B
 - c. Conditioned Spaces: C
 3. Duct seal levels for pressure class greater than 2-inch w.c.:
 - a. Outdoor: A
 - b. Unconditioned Spaces: A
 - c. Conditioned Spaces: B
- C. Return Ducts:
1. Pressure Class: Minimum of 0.25-inch wg. greater than scheduled static pressure of attached supply fan.
 2. Duct seal levels for all pressure classes:
 - a. Outdoor: A
 - b. Unconditioned Spaces: B
 - c. Conditioned Spaces: C
- D. General Exhaust Ducts:
1. Pressure Class: Minimum of 0.25-inch wg. greater than scheduled static pressure of attached exhaust fan.
 2. Duct seal levels for all pressure classes:
 - a. Outdoor: C
 - b. Unconditioned Spaces: C
 - c. Conditioned Spaces: B
- E. Intermediate Reinforcement:
1. Reinforcement:
 - a. Angle type: 1-1/2" x 1-1/2" x 1/8" thick.
 - b. Zee type: 1" (h) x 3/4" (w) x 1/8" thick
 - c. Channel type: 1-1/8" (h) x 3" (w) x 1/8" thick
 2. Spacing: 5 feet
 - a. Up to 1" static: Ducts and plenums over 60".
 - b. Up to 3" static: Ducts and plenums over 48".
 - c. Over 3" static: Ducts and plenums over 36".
- F. Elbow Configuration:
1. Rectangular Duct, Elbow:
 - a. Supply: Mitered with vanes.
 - b. Return: Mitered with vanes where indicated.
 2. Rectangular Duct, Radius:
 - a. No Vanes: Minimum radius is equal to duct width.
 - b. With Vanes: Minimum radius is equal to 1/2 of duct width.
 3. Round Duct, Minimum Centerline Radius:
 - a. Up to 18" diameter duct: 1/2 duct diameter.
 - b. 19" diameter duct and larger: Same as duct diameter.
- G. Branch Configuration: high-efficiency take-off.
1. Saddle tap allowed on existing round duct.

3.8 DUCT LINER SCHEDULE

- A. 1/2" Duct Liner:
1. Where indicated on drawings.

- B. 1" Duct Liner:
 - 1. Where indicated on drawings.

END OF AIR DISTRIBUTION

SECTION 23 3700
AIR OUTLETS AND INLETS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Grilles, Registers, and Diffusers.

1.2 SUBMITTALS

- A. Shop Drawings: For equipment covered under this section as per Section 230500.
 - 1. Louver Product Data: Show frame profiles and blade profiles, angles, and spacing. Include color selection chart.
- B. Operation and Maintenance Manuals: For equipment covered under this section as per Section 230500.

1.3 REFERENCE STANDARDS

- A. ASHRAE 70 – Method of Testing the Performance of Air Outlets and Air Inlets
- B. ASTM 610 – Standard Practice for Evaluating Degree of Rusting on Painted Steel Surfaces
- C. ASTM 714 – Test Method for Evaluating Degree of Blistering of Paints
- D. ASTM D1308 – Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes
- E. ASTM D1654 – Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
- F. ASTM D4752 – Standard Practice for Measuring MEK Resistance of Ethyl Silicate (Inorganic) Zinc-Rich Primers by Solvent Rub

PART 2 - PRODUCTS

2.1 MANUFACTURERS AND GENERAL REQUIREMENTS

- A. Products: Subject to compliance with requirements, provide products by one of the following or other prior approved:
 - 1. Grilles, Registers, and Diffusers
 - a. Anemostat Products: a Mestek company.
 - b. Carnes.
 - c. Hart & Cooley Inc.
 - d. Krueger.
 - e. Nailor.
 - f. Price Industries.
 - g. Shoemaker.
 - h. Titus.
 - i. Tuttle & Bailey.
- B. General Diffuser Requirements:
 - 1. Devices shall be specifically designed for variable-air-volume flows.
 - 2. Material: Steel or aluminum.
 - 3. Finish: Baked enamel.

C. General Registers and Grilles Requirements:

1. Material: Steel or aluminum.
2. Finish: Baked enamel.
3. Damper Type: Adjustable opposed blade per Drawing schedule.

2.2 GRILLES AND REGISTERS

A. Adjustable Louvered Grilles and Registers

1. Description: Steel or aluminum louvered grille or register suitable for supply or return.
2. Construction
 - a. Steel
 - b. Single deflection or double deflection per the Drawings.
 - c. Supply Grilles:
 - i. Face Blades: adjustable horizontal or vertical spaced as scheduled on the Drawings.
 - ii. Rear Blades: adjustable horizontal or vertical spaces as scheduled on the Drawings.
 - d. Return Grilles:
 - i. One set of fixed deflection blades, deflection and spaces as scheduled on the Drawings.
 - e. Blade orientation: as scheduled on the Drawings.
3. Frame: Grilles are to be compatible with the ceiling type as scheduled on the Drawings and the architects Reflected Ceiling Plan.
4. Paint and Finish: as scheduled on the drawings.
5. Options: As scheduled on the drawings.
 - a. Opposed Blade Damper
 - b. Border: where grilles are smaller than the lay-in tile, the grille shall be mounted in a steel border of the same size as the ceiling. Paint and Finish to be same as grille.
 - c. Return air silencers.

2.3 CEILING DIFFUSERS

A. Square Plaque Ceiling Diffuser

1. Description: Square plaque diffuser for 360° radial, horizontal air delivery.
2. Construction:
 - a. Steel, consisting of a seamless, one-piece formed backpan with a round inlet collar.
 - b. Inner Plaque: Removable, installed no more than 1/4" below the ceiling plane
 - c. Face Panel: Smooth edged with rounded corners.
 - d. Diffusers are to be compatible with the ceiling type as scheduled on the Drawings and the architects Reflected Ceiling Plan.
3. Paint and Finish: As scheduled on the Drawings.
4. Options: As scheduled on the Drawings.
 - a. Steel Panel: where diffusers are smaller than the lay-in tile, the diffuser shall be mounted in a steel panel of the same size as the ceiling. Paint and Finish to be same as diffuser.

2.4 LINEAR SLOT DIFFUSER

A. Description: Linear slot diffuser with plenum attachment and blades for throw adjustment.

- B. Construction:
 - 1. Diffusers: Provide 1 to 10 discharge slots with $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1" or 1-1/2" slot width according to the schedule on the Drawings.
 - 2. Supply Diffusers: Include aerodynamically curved "ice-tong" shaped pattern controllers for 180° air pattern control and airflow dampering.
 - 3. Return Diffusers: Match supply units in appearance.
 - 4. Diffuser Border: Extruded aluminum construction with extruded aluminum spacers with the appropriate ends to match the requirements as indicated on the Drawings.
 - 5. Corner Modules, Splice and Alignment Plates: Provide for continuous slot assemblies.
 - 6. Linear slot diffusers are to be compatible with the ceiling type as scheduled on the Drawings and the architects Reflected Ceiling Plan.
- C. Paint and finish: as scheduled on the Drawings.
- D. Plenum:
 - 1. Sloped and Square Shoulder Diffuser Plenum:
 - a. Sloped shoulder required on all supply and return diffusers in ceilings 10 feet high or lower.
 - b. Square shoulder required on all supply and return in ceilings higher than 10 feet.
 - 2. Construction: zinc coated steel, internally lined with fiber free insulation.
 - 3. Plenum to suit both drywall and lay-in installations
- E. Options: As scheduled on the Drawings.
 - 1. Mitered Corners: where required
 - 2. Blank off: where required
 - 3. Alignment strips: where multiple sections are to be assembled to appear as one continuous diffuser.
 - 4. Plaster Frame Spacers: where installed in plaster frame
 - 5. Field Cut Diffusers: provide diffusers 6" longer than specified to allow the diffuser to be cut in the field. Field cutting shall be specified where a continuous run of diffusers is required.
 - 6. Equalizing Core: where installed on spiral ducts.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with manufacturer's product data, including technical bulletins, product catalog installation instructions.
- B. Install grilles, registers, and diffusers level and plumb.
- C. Install grilles, registers, and diffusers with an airtight connection to the duct system they serve, and to allow service and maintenance of any accessories, dampers, air extractors or fire dampers within.
- D. Install supply, return, and exhaust air grills/diffusers a minimum 3' away from all smoke/heat detection devices used in the fire alarm system. Field coordinate location of these devices with the pertinent contractors.
- E. Ceiling-Mounted Air Outlets and Inlets: The Drawings indicate a general arrangement of ducts, fittings and accessories. The locations of GRD elements shown on the Drawings are intended to achieve airflow pattern, air volume, noise criteria, throw patterns, and pressure drop design criteria. Place diffusers where indicated on the Drawings as much as is practical. If any other disciplines items or architectural feature interfere with the position or adversely affect the throw of a diffuser, notify the Architect/Engineer for a determination on final placement.

- F. For units installed within a lay-in ceiling tile, install the unit in the center of a manufacturer provided panel matching the construction, paint and finish of the unit. Size the manufacturer panel the same as the surrounding lay-in tile.

3.2 ADJUSTMENT

- A. General: Prior to Air Balancing, adjust all grille, register, and diffuser air patterns as indicated on the drawings, or as directed.
- B. Linear slot diffuser
 - 1. Adjust linear slot supply diffuser pattern controller prior to turnover to owner according to the following:
 - a. Single Slot: Adjust for horizontal throw
 - b. Two Slot:
 - i. Near exterior wall: adjust slot nearest exterior wall for downward throw angled at the wall, and interior slot for horizontal throw.
 - ii. Interior Spaces: Adjust both slots to throw horizontally away from each other.
 - c. Three Slot:
 - i. Near exterior wall: adjust slot nearest exterior wall and center slot to throw downward angled at the wall, and interior slot for horizontal throw.
 - ii. Interior spaces: Adjust all three slots for horizontal throw.

3.3 CLEANING

- A. Clean as recommended by manufacturer. Do not use material or methods which may damage finish surface or surrounding construction.

3.4 PROTECTION

- A. Protect installed product and finished surfaces from damage during construction to ensure that, except for normal weathering, devices will be without damage or deterioration at time of substantial completion.

END OF AIR OUTLETS AND INLETS

SECTION 26 0500
BASIC ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Basic Electrical Requirements specifically applicable to Division 26,27, and 28 Sections, in addition to Division 01 - General Requirements.

1.02 DEFINITIONS

- A. The meaning and intent of the word "provide" as used in these specifications is the same as the words "The Electrical Contractor (and/or Bidder) shall provide."
- B. The word "provide" shall carry the same meaning as "furnish and install."
- C. The word "Contractor" shall mean the "Electrical Contractor."

1.03 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code.

1.04 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Contractor shall submit Shop Drawings in PDF Format via disk, flash drive, or email. Shop drawings shall be in a searchable PDF format. Scanned copies of documentation shall not be accepted.
- C. Submit shop drawings and product data grouped to include complete submittals of related systems, products, and accessories.
- D. Mark dimensions and values in units to match those specified.
- E. Shop drawings shall be reviewed, commented on, and have a review stamp applied by the Electrical Contractor prior to submittal to Engineer.
 - 1. Shop drawings shall be submitted individually according to specification sections. Submittals of different sections grouped together will not be accepted and will be returned un-reviewed.
 - 2. Shop drawings are to be organized by specification section. Product cut sheets are to be arranged in the same sequential order as they are included in the specification section. Submittals that have product cut sheets that are not in order or are in an un-organized manner will be returned without review and require resubmittal.
 - 3. Shop drawings shall have all model and part numbers highlighted and/or marked. Listing of only the part number at top of page is not acceptable.
 - 4. Contractor shall affix a stamp to the shop drawings that confirms the Contractor's review.
 - 5. Failure to include these items in the review will result in shop drawings being returned un-reviewed and will require resubmittal.

1.05 TESTING

- A. Testing of systems is to be coordinated with the Owner at least two days in advance.
- B. Noise producing tests are to be completed during other than normal working hours.

1.06 REGULATORY REQUIREMENTS

- A. Conform to all applicable Building Codes, ordinances, laws and regulations.

- B. Electrical: Conform to NFPA 70 - National Electrical Code.
- C. Furnish products listed and classified by Underwriters, Inc., as suitable for purpose specified and shown.
- D. Obtain permits, and request inspections from authority having jurisdiction.
- E. If the drawings and/or specifications conflict with any regulatory requirement, the regulatory requirement shall be followed. This does not relieve the Contractor from complying with items in the drawings and/or specifications in excess of the regulatory requirements.

1.07 PROJECT/SITE CONDITIONS

- A. Install Work in locations shown on Drawings, unless prevented by Project conditions.
- B. Prepare drawings showing proposed rearrangement of Work to meet Project conditions, including changes to Work specified in other Sections. Obtain permission of Architect/Engineer before proceeding.

1.08 DRAWINGS

- A. The drawings indicate the general arrangement and extent of electrical work. Do not scale off the electrical drawings. All data shall be field verified with actual field conditions. Review drawings of other trades and adjust work to meet the requirements of conditions shown. Contractor shall be responsible to field measure and confirm mounting heights and location of electrical equipment with respect to counters, radiation and other Architectural, Mechanical or Structural work.
- B. Refer the drawings of all trades (Architectural, Mechanical, Civil, and Structural) for all work that would impact the electrical work required and adjust their bid accordingly.
- C. The drawings and specifications are complementary each to the other. What is called for by one shall be as binding as if called for by both.
- D. Omissions or discrepancies between different drawings or between drawings and specifications or between contract documents and regulations and/or codes shall be brought to the attention of the Architect/Engineer for a decision in writing. Interpretation before the bid shall be by addendum only. If an interpretation is not given by addendum, bid the greater quantity or better quality.

1.09 PERMITS AND LICENSES

- A. Obtain and pay for required licenses and permits. Pay for fees and charges for connection to outside services. Pay for use of property other than the site of the work for storage of materials or other purposes.
- B. Installation shall be performed by persons licensed and skilled in the trade.

1.10 PROGRESS OF WORK

- A. Organize electrical work such that the progress of the work will conform to the progress of other trades, and complete the entire installation as soon as the conditions of the building will permit. Any cost resulting from defective or ill-timed work performed under this section shall be born by this Contractor.
- B. Work will be required to be accomplished during other than normal working hours that affect the operation of the normal operation of the facility. This work is required to be scheduled with the

Owner and other trades a minimum of one week in advance. This work is to be complete after normal business hours and/or on weekends.

1.11 CORRELATION OF WORK

- A. Organize work so that it will not interfere with the work of other trades. Consult the drawings and specifications for work of other trades to correlate information, and consult the architectural and structural drawings for details and dimensions. Verify the location of all outlets. If interference develops, bring it to the attention of the Architect/Engineer for a decision. No additional compensation will be allowed for the moving of misplaced outlets, wiring or equipment.
- B. Before roughing-in for electrical equipment furnished by others, verify the voltage and current characteristics and control connections of this equipment, and provide the proper feeders and connections as recommended by the manufacturer of the equipment.

1.12 CUTTING AND PATCHING

- A. Lay out all work in advance and where removal of door frames, portions of walls, ceilings or floors are required, and cutting, channeling, chasing, or drilling of building surfaces is necessary for the proper installation of electrical equipment, carefully perform this work in a manner which does not weaken floors and walls. Damaged surfaces shall be repaired at no cost to the Owner.
- B. Concrete shall be cut only with rotary type drilling tools. Electrical equipment shall not be cut with torches, and shall be joined only by bolting (i.e., do not weld wireways to panels).
- C. Patching, when required, shall be finished to match adjoining surfaces and is subject to approval by the Architect/Engineer.

1.13 EXAMINATION OF SITE

- A. Before submitting a bid, each bidder shall examine the site, check the means of installing electrical equipment within the building, making connections to services, and shall be familiar with the existing conditions and limitations. No extras will be allowed because of the Contractor's misunderstanding of the amount of work involved or lack of knowledge of any site conditions which may affect the work. Any apparent variance of the drawings or specifications from the existing conditions at the site shall be called to the attention of the Architect/Engineer before submitting a bid.

1.14 OPERATION AND MAINTENANCE DATA

- A. Format:
 - 1. Prepare data in the form of an instructional manual.
 - 2. Identify electronic folders/files by specification section number and name.
- B. Arrange contents by section numbers and in sequence of Table of Contents by the Project Manual.
- C. Operation and Maintenance Manual Contents:
 - 1. Table of Contents: Provide title of Project; names, addresses and telephone numbers of Engineer and Contractor and listing of products and systems indexed to tabbed flyleaves.
 - 2. Updated Subcontractor, Supplier and Manufacturer List: Indicate any changes made after original submission at start of Project.

3. Include description as to type and quantity of maintenance materials turned over to Owner in accordance with individual sections.
 4. Warranties and Bonds: Include all.
 5. Shop Drawings and Product Data: Include only those so required by individual sections.
 6. Operation and Maintenance Data for Equipment and Systems: Where required by individual sections, provide manufacturer's recommended operation procedures and maintenance requirements including guide for troubleshooting, disassembly, repair and assembly instructions and alignment, adjusting, balancing and checking instructions.
 7. System test reports as required by each individual section.
 8. Include a copy of ANSI/NFPA 70B Electrical Equipment Maintenance.
 9. Completed final electrical punchlist documentation.
- D. As-Built Drawings:
1. Provide one full size hard copy set of electrical plans with contractor redlines that indicate addendum items, change orders, supplemental instructions and field changes by the contractor.
 2. Contractor to provide scanned PDF set of the as-built drawings.
- E. Submittals:
1. Submit one copy of completed volumes in final form 15 days prior to final inspection. Copy will be returned after final inspection, with Engineer's comments. Revise contents of documents as required prior to final submittal.
 2. Provide an electronic PDF copy of all documents as noted on a disk or USB flash drive.

1.15 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, protect and handle Products to site under provisions of Section 01600.

1.16 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Section 01720.
- B. Include all changes and deviations from contract documents. Clearly mark in colored pencil. Include all addendum items and approved change orders.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

**SECTION 26 0505
ELECTRICAL DEMOLITION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical demolition.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Materials and equipment for patching and extending work: As specified in individual sections.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that abandoned wiring and equipment serve only abandoned facilities.
- B. Demolition drawings are based on casual field observation and existing record documents.
- C. Report discrepancies to Engineer before disturbing existing installation.
- D. Beginning of demolition means installer accepts existing conditions.

3.02 PREPARATION

- A. Disconnect electrical systems in walls, floors, and ceilings to be removed.
- B. Coordinate utility service outages with utility company.
- C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.
- D. Existing Electrical Service: Maintain existing system in service at all times. Disable system only to make switchovers and connections. Minimize outage duration.
 - 1. Obtain permission from Owner at least 72 hours before partially or completely disabling system. Work may be required to be completed after normal business hours.
 - 2. Make temporary connections to maintain service in areas adjacent to work area.
 - 3. All work required with the electrical service upgrade shall be phased in order to minimize outage duration to the facility.
- E. Existing Fire Alarm System: Maintain existing system in service at all times. Disable system only to make switchovers and connections. Minimize outage duration.
 - 1. Notify Owner before partially or completely disabling system.
 - 2. Make notifications at least 72 hours in advance. Work may be required to be completed after normal business hours.
 - 3. Make temporary connections to maintain service in areas adjacent to work area.
- F. Existing Telecommunications System: Maintain existing system in service at all times. Disable system only to make switchovers and connections. Minimize outage duration.
 - 1. Notify Owner at least 72 hours before partially or completely disabling system. Work may be required to be completed after normal business hours.

3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Perform work for removal and disposal of equipment and materials containing toxic substances regulated under the Federal Toxic Substances Control Act (TSCA) in accordance with applicable federal, state, and local regulations.
- B. Remove, relocate, and extend existing installations to accommodate new construction.
- C. Remove abandoned wiring to source of supply.
- D. Remove existing ductwork, gas piping, and exhaust piping to the extent noted. Cap and make watertight all systems removed.
- E. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
- F. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.
- G. Disconnect and remove abandoned panelboards and distribution equipment.
- H. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
- I. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.
- J. Repair adjacent construction and finishes damaged during demolition and extension work.
- K. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.
- L. Extend existing installations using materials and methods compatible with existing electrical installations, or as specified.

3.04 CLEANING AND REPAIR

- A. Clean and repair existing materials and equipment that remain or that are to be reused.

END OF SECTION

SECTION 26 0519
CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Single conductor building wire.
- B. Wiring connectors.
- C. Electrical tape.
- D. Heat shrink tubing.
- E. Wire pulling lubricant.
- F. Cable ties.

1.02 RELATED REQUIREMENTS

- A. Section 26 0505 - Electrical Demolition: Disconnection, removal, and/or extension of existing electrical conductors and cables.
- B. Section 26 0526 - Grounding and Bonding: Additional requirements for grounding conductors and grounding connectors.

1.03 REFERENCE STANDARDS

- A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire.
- B. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.
- C. ASTM B33 - Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes.
- D. ASTM B787/B787M - Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation.
- E. ASTM D3005 - Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape.
- F. ASTM D4388 - Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes.
- G. NECA 1 - Standard for Good Workmanship in Electrical Construction.
- H. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy.
- I. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems.
- J. NFPA 70 - National Electrical Code.
- K. UL 44 - Thermoset-Insulated Wires and Cables.
- L. UL 83 - Thermoplastic-Insulated Wires and Cables.
- M. UL 267 - Outline of Investigation for Wire-Pulling Compounds.
- N. UL 486A-486B - Wire Connectors.
- O. UL 486C - Splicing Wire Connectors.

- P. UL 486D - Sealed Wire Connector Systems.
- Q. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
 - 2. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
 - 3. Notify Engineer of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 CONDUCTOR AND CABLE APPLICATIONS

- A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.
- B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.
- C. Nonmetallic-sheathed cable is not permitted.
- D. Armored cable is not permitted.
- E. Metal-clad cable is not permitted.

2.02 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.
- D. Comply with NEMA WC 70.
- E. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.
- F. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.

- G. Conductors and Cables Installed Exposed in Spaces Used for Environmental Air (only where specifically permitted): Plenum rated, listed and labeled as suitable for use in return air plenums.
- H. Conductor Material:
 - 1. Provide copper conductors only. Aluminum conductors are not acceptable for this project. Conductor sizes indicated are based on copper.
 - 2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
 - 3. Tinned Copper Conductors: Comply with ASTM B33.
- I. Minimum Conductor Size:
 - 1. Branch Circuits: 12 AWG.
 - a. Exceptions:
 - 1) 20 A, 120 V circuits longer than 75 feet: 10 AWG, for voltage drop.
 - 2) 20 A, 120 V circuits longer than 150 feet: 8 AWG, for voltage drop.
 - 2. Control Circuits: 14 AWG.
- J. Conductor Color Coding:
 - 1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
 - 2. Color Coding Method: Integrally colored insulation.
 - a. Conductors size #8 AWG and larger may have black insulation color coded using vinyl color coding electrical tape.
 - 3. Color Code:
 - a. 208Y/120 V, 3 Phase, 4 Wire System:
 - 1) Phase A: Black.
 - 2) Phase B: Red.
 - 3) Phase C: Blue.
 - 4) Neutral/Grounded: White with phase matching stripe.
 - b. Equipment Ground, All Systems: Green.
 - c. Travelers for 3-Way and 4-Way Switching: Purple.
 - d. For control circuits, comply with manufacturer's recommended color code.

2.03 SINGLE CONDUCTOR BUILDING WIRE

- A. Manufacturers:
 - 1. Copper Building Wire:
 - a. Cerro Wire LLC: www.cerrowire.com.
 - b. Encore Wire Corporation: www.encorewire.com.
 - c. Southwire Company: www.southwire.com.
 - d. Or equal.
- B. Description: Single conductor insulated wire.
- C. Conductor Stranding:
 - 1. Feeders and Branch Circuits:
 - a. Size 12 AWG and Smaller: Solid.
 - b. Size 10 AWG and Larger: Stranded.

- 2. Control Circuits: Stranded.
- D. Insulation Voltage Rating: 600 V.
- E. Insulation:
 - 1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.
 - a. Size 4 AWG and Larger: Type THHN/THWN or THHN/THWN-2.
 - b. Installed Underground: Type XHHW-2 or THHN/THWN-2.
 - c. Fixture Wiring Within Luminaires: Type TFFN/TFN for luminaires with labeled maximum temperature of 90 degrees C; Approved suitable type for luminaires with labeled maximum temperature greater than 90 degrees C.

2.04 WIRING CONNECTORS

- A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.
- B. Wiring Connectors for Splices and Taps:
 - 1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated spring connectors.
 - 2. Copper Conductors Size 6 AWG and Larger: Use mechanical connectors or compression connectors.
- C. Wiring Connectors for Terminations:
 - 1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs.
 - 2. Provide compression adapters for connecting conductors to equipment furnished with mechanical lugs when only compression connectors are specified.
 - 3. Where over-sized conductors are larger than the equipment terminations can accommodate, provide connectors suitable for reducing to appropriate size, but not less than required for the rating of the overcurrent protective device.
 - 4. Provide motor pigtail connectors for connecting motor leads in order to facilitate disconnection.
 - 5. Stranded Conductors Size 10 AWG and Smaller: Use crimped terminals for connections to terminal screws.
- D. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F for standard applications and 302 degrees F for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.
 - 1. Manufacturers:
 - a. 3M: www.3m.com.
 - b. Ideal Industries, Inc: www.idealindustries.com.
 - c. NSI Industries LLC: www.nsiindustries.com.
 - d. Or equal.
- E. Mechanical Connectors: Provide bolted type or set-screw type.
 - 1. Manufacturers:
 - a. Burndy: www.burndy.com.
 - b. Ilsco: www.ilsco.com.
 - c. Thomas & Betts Corporation: www.tnb.com.
 - d. Or equal.

- F. Compression Connectors: Provide circumferential type or hex type crimp configuration.
 - 1. Manufacturers:
 - a. Burndy: www.burndy.com.
 - b. IlSCO: www.ilsco.com.
 - c. Thomas & Betts Corporation: www.tnb.com.
 - d. Or equal.
- G. Crimped Terminals: Nylon-insulated, with insulation grip and terminal configuration suitable for connection to be made.
 - 1. Manufacturers:
 - a. Burndy: www.burndy.com.
 - b. IlSCO: www.ilsco.com.
 - c. Thomas & Betts Corporation: www.tnb.com.
 - d. Or equal.

2.05 ACCESSORIES

- A. Electrical Tape:
 - 1. Manufacturers:
 - a. 3M: www.3m.com.
 - b. Or equal.
 - 2. Vinyl Color Coding Electrical Tape: Integrally colored to match color code indicated; listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; suitable for continuous temperature environment up to 221 degrees F.
 - 3. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; conformable for application down to 0 degrees F and suitable for continuous temperature environment up to 221 degrees F.
 - 4. Rubber Splicing Electrical Tape: Ethylene Propylene Rubber (EPR) tape, complying with ASTM D4388; minimum thickness of 30 mil; suitable for continuous temperature environment up to 194 degrees F and short-term 266 degrees F overload service.
 - 5. Electrical Filler Tape: Rubber-based insulating moldable putty, minimum thickness of 125 mil; suitable for continuous temperature environment up to 176 degrees F.
 - 6. Varnished Cambric Electrical Tape: Cotton cambric fabric tape, with or without adhesive, oil-primed and coated with high-grade insulating varnish; minimum thickness of 7 mil; suitable for continuous temperature environment up to 221 degrees F.
 - 7. Moisture Sealing Electrical Tape: Insulating mastic compound laminated to flexible, all-weather vinyl backing; minimum thickness of 90 mil.
- B. Heat Shrink Tubing: Heavy-wall, split-resistant, with factory-applied adhesive; rated 600 V; suitable for direct burial applications; listed as complying with UL 486D.
 - 1. Manufacturers:
 - a. 3M: www.3m.com.
 - b. Burndy: www.burndy.com.
 - c. Thomas & Betts Corporation: www.tnb.com.
 - d. Or equal.
- C. Wire Pulling Lubricant:
 - 1. Manufacturers:

- a. 3M: www.3m.com.
 - b. American Polywater Corporation: www.polywater.com.
 - c. Ideal Industries, Inc: www.idealindustries.com.
 - d. Or equal.
 2. Listed and labeled as complying with UL 267.
 3. Suitable for use with conductors/cables and associated insulation/jackets to be installed.
 4. Suitable for use at installation temperature.
- D. Cable Ties: Material and tensile strength rating suitable for application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that work likely to damage wire and cable has been completed.
- C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.
- D. Verify that field measurements are as indicated.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

3.03 INSTALLATION

- A. Circuiting Requirements:
 1. Unless dimensioned, circuit routing indicated is diagrammatic.
 2. When circuit destination is indicated without specific routing, determine exact routing required.
 3. Arrange circuiting to minimize splices.
 4. Include circuit lengths required to install connected devices within 10 ft of location indicated.
 5. Maintain separation of wiring for emergency systems in accordance with NFPA 70.
 6. Circuiting Adjustments: Unless otherwise indicated, when branch circuits are indicated as separate, combining them together in a single raceway is not permitted unless prior approval is received from the Engineer in the field.
 - a. Provide no more than six current-carrying conductors in a single raceway. Dedicated neutral conductors are considered current-carrying conductors.
 - b. Increase size of conductors as required to account for ampacity derating.
 - c. Size raceways, boxes, etc. to accommodate conductors.
 7. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among up to three single phase branch circuits of different phases installed in the same raceway is not permitted. Provide dedicated neutral/grounded conductor for each individual branch circuit.
- B. Install products in accordance with manufacturer's instructions.
- C. Perform work in accordance with NECA 1 (general workmanship).
- D. Installation in Raceway:

1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
 2. Pull all conductors and cables together into raceway at same time.
 3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
 4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.
- E. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.
- F. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
- G. Install conductors with a minimum of 12 inches of slack at each outlet.
- H. Where conductors are installed in enclosures for future termination by others, provide a minimum of 5 feet of slack.
- I. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.
- J. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.
- K. Make wiring connections using specified wiring connectors.
1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
 2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
 3. Do not remove conductor strands to facilitate insertion into connector.
 4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.
 5. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
 6. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- L. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
1. Dry Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
 - a. For taped connections, first apply adequate amount of rubber splicing electrical tape or electrical filler tape, followed by outer covering of vinyl insulating electrical tape.
 - b. For taped connections likely to require re-entering, including motor leads, first apply varnished cambric electrical tape, followed by adequate amount of rubber splicing electrical tape, followed by outer covering of vinyl insulating electrical tape.

2. Damp Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
 - a. For connections with insulating covers, apply outer covering of moisture sealing electrical tape.
 - b. For taped connections, follow same procedure as for dry locations but apply outer covering of moisture sealing electrical tape.
- M. Insulate ends of spare conductors using vinyl insulating electrical tape.
- N. Field-Applied Color Coding: Where vinyl color coding electrical tape is used in lieu of integrally colored insulation as permitted in Part 2 under "Color Coding", apply half overlapping turns of tape at each termination and at each location conductors are accessible.
- O. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
- P. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Inspect and test in accordance with NETA ATS, except Section 4.
- C. Correct deficiencies and replace damaged or defective conductors and cables.

END OF SECTION

SECTION 26 0526
GROUNDING AND BONDING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Grounding and bonding requirements.
- B. Conductors for grounding and bonding.
- C. Connectors for grounding and bonding.

1.02 RELATED REQUIREMENTS

- A. Section 26 0519 - Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.
- B. Section 26 0553 - Electrical Identification: Identification products and requirements.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction.
- B. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems.
- C. NFPA 70 - National Electrical Code.
- D. UL 467 - Grounding and Bonding Equipment.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Verify exact locations of underground metal water service pipe entrances to building.
 - 2. Coordinate the work with other trades to provide steel reinforcement complying with specified requirements for concrete-encased electrode.
 - 3. Notify Engineer of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

PART 2 PRODUCTS

2.01 GROUNDING AND BONDING REQUIREMENTS

- A. Existing Work: Where existing grounding and bonding system components are indicated to be reused, they may be reused only where they are free from corrosion, integrity and continuity are verified, and where acceptable to the authority having jurisdiction.
- B. Do not use products for applications other than as permitted by NFPA 70 and product listing.

- C. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.
- D. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- E. Bonding and Equipment Grounding:
 - 1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.
 - 2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
 - 3. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.
 - 4. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
 - 5. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
 - 6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.

2.02 GROUNDING AND BONDING COMPONENTS

- A. General Requirements:
 - 1. Provide products listed, classified, and labeled as suitable for the purpose intended.
 - 2. Provide products listed and labeled as complying with UL 467 where applicable.
- B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 26 0526:
 - 1. Use insulated copper conductors unless otherwise indicated.
 - a. Exceptions:
 - 1) Use bare copper conductors where installed underground in direct contact with earth.
 - 2) Use bare copper conductors where directly encased in concrete (not in raceway).
- C. Connectors for Grounding and Bonding:
 - 1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
 - 2. Unless otherwise indicated, use exothermic welded connections or irreversible crimp connections for underground, concealed and other inaccessible connections.
 - 3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that work likely to damage grounding and bonding system components has been completed.

- B. Verify that field measurements are as indicated.
- C. Verify that conditions are satisfactory for installation prior to starting work.
- D. Verify existing conditions prior to beginning work.
- E. Verify that final backfill and compaction has been completed before driving rod electrodes.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Make grounding and bonding connections using specified connectors.
 - 1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
 - 2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
 - 3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
 - 4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
 - 5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- D. Identify grounding and bonding system components in accordance with Section 26 0553.
- E. Provide exothermic welding or irreversible crimp connections of all electrical grounding connections. Exothermically weld connections between copper conductors, copper conductors and ground rods, copper connections to building(structural) steel.
- F. Utilize exothermic welds in all concealed locations. Mechanical crimp connections shall be allowed in exposed locations.

3.03 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Perform inspection, testing, and adjusting in accordance with Section 01 4000.
- C. Investigate and correct deficiencies where measured ground resistances do not comply with specified requirements.

END OF SECTION

SECTION 26 0529
HANGERS AND SUPPORTS

PART 1 GENERAL

1.01 Section Includes

- A. Support and attachment requirements and components for equipment, conduit, cable, boxes, and other electrical work.

1.02 Related Requirements

- A. Section 26 0534 - Conduit: Additional support and attachment requirements for conduits.
- B. Section 26 0537 - Boxes: Additional support and attachment requirements for boxes.

1.03 Reference Standards

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.
- D. MFMA-4 - Metal Framing Standards Publication.
- E. ICC-ES AC01 - Acceptance Criteria for Expansion Anchors in Masonry Elements; 2009.
- F. ICC-ES AC106 - Acceptance Criteria for Predrilled Fasteners (Screw Anchors) in Masonry Elements; 2006
- G. ICC-ES AC193 - Acceptance Criteria for Mechanical Anchors in Concrete Elements; 2010
- H. ICC-ES AC308 - Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements; 2009.
- I. NECA 1 - Standard for Good Workmanship in Electrical Construction.
- J. NFPA 70 - National Electrical Code.

1.04 Administrative Requirements

- A. Coordination:
 - 1. Coordinate sizes and arrangement of supports and bases with actual equipment and components to be installed.
 - 2. Coordinate work to provide additional framing and materials required for installation.
 - 3. Coordinate compatibility of support and attachment components with mounting surfaces at installed locations.
 - 4. Coordinate arrangement of supports with ductwork, piping, equipment and other potential conflicts.
 - 5. Notify Engineer of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Sequencing:
 - 1. Do not install products on or provide attachment to concrete surfaces until concrete has cured; see Section 03 3000.

1.05 Quality Assurance

- A. Comply with NFPA 70.
- B. Comply with applicable building code.
- C. Product Listing Organization Qualifications: Organization recognized by OSHA as Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

PART 2 PRODUCTS

2.01 Support and Attachment Components

- A. General Requirements:
 - 1. Comply with the following. Where requirements differ, comply with most stringent.
 - a. NFPA 70.
 - b. Requirements of authorities having jurisdiction.
 - 2. Provide required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for complete installation of electrical work.
 - 3. Provide products listed, classified, and labeled as suitable for purpose intended, where applicable.
 - 4. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported with a minimum safety factor of 15%. Include consideration for vibration, equipment operation, and shock loads where applicable.
 - 5. Do not use products for applications other than as permitted by NFPA 70 and product listing.
 - 6. Do not use wire, chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.
 - 7. Steel Components: Use corrosion-resistant materials suitable for environment where installed.
 - a. Indoor Dry Locations: Use zinc-plated steel or approved equivalent unless otherwise indicated.
 - b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel, stainless steel, or approved equivalent unless otherwise indicated.
 - c. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
 - d. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
- B. Conduit and Cable Supports: Straps and clamps suitable for conduit or cable to be supported.
 - 1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
 - 2. Conduit Clamps: Bolted type unless otherwise indicated.
- C. Outlet Box Supports: Hangers and brackets suitable for boxes to be supported.
- D. Metal Channel/Strut Framing Systems:
 - 1. Description: Factory-fabricated, continuous-slot, metal channel/strut and associated fittings, accessories, and hardware required for field assembly of supports.
 - 2. Comply with MFMA-4.
 - 3. Channel Material:
 - a. Indoor Dry Locations: Use zinc-plated steel or galvanized steel. Painted channel is not acceptable.

- b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel.
- 4. Minimum Channel Thickness: Steel sheet, 12 gauge, 0.1046 inch.
- 5. Minimum Channel Dimensions: 1-5/8 inch wide by 13/16 inch high.
- E. Hanger Rods: Threaded, zinc-plated steel unless otherwise indicated.
- F. Anchors and Fasteners:
 - 1. Unless otherwise indicated and where not otherwise restricted, use anchor and fastener types indicated for specified applications.
 - 2. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.
 - 3. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.
 - 4. Hollow Masonry: Use toggle bolts.
 - 5. Hollow Stud Walls: Use toggle bolts.
 - 6. Steel: Use beam clamps, machine bolts, or welded threaded studs.
 - 7. Sheet Metal: Use sheet metal screws.
 - 8. Wood: Use wood screws.
 - 9. Powder-actuated fasteners are not permitted.
 - 10. Hammer-driven anchors and fasteners are not permitted.
 - 11. Post-Installed Concrete and Masonry Anchors: Evaluated and recognized by ICC Evaluation Service, LLC (ICC-ES) for compliance with applicable building code.

PART 3 EXECUTION

3.01 Examination

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive support and attachment components.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 Installation

- A. Install products in accordance with manufacturer's instructions.
- B. Install hangers and supports in accordance with NECA 1.
- C. Install anchors and fasteners in accordance with ICC Evaluation Services, LLC (ICC-ES) evaluation report conditions of use where applicable.
- D. Provide independent support from building structure. Do not provide support from equipment, piping, ductwork, or other systems.
- E. Unless specifically indicated or approved by Engineer, do not provide support from suspended ceiling support system or ceiling grid.
- F. Unless specifically indicated or approved by Engineer, do not provide support from roof deck.
- G. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- H. Equipment Support and Attachment:
 - 1. Use metal, fabricated supports or supports assembled from metal channel/strut to support equipment as required.
 - 2. Use metal channel/strut secured to studs to support equipment surface mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.

- 3. Use metal channel/strut to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
- 4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.
- I. Conduit Support and Attachment: See Section 26 0534 for additional requirements.
- J. Box Support and Attachment: See Section 26 0537 for additional requirements.
- K. Interior Luminaire Support and Attachment: See Section 26 5100 for additional requirements.
- L. Secure fasteners in accordance with manufacturer's recommended torque settings.
- M. Remove temporary supports.

3.03 Field Quality Control

- A. See Section 01 4000 - Quality Requirements for additional requirements.
- B. Inspect support and attachment components for damage and defects.
- C. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- D. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION

SECTION 26 0534
CONDUIT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Galvanized steel rigid metal conduit (RMC).
- B. Flexible metal conduit (FMC).
- C. Liquidtight flexible metal conduit (LFMC).
- D. Galvanized steel electrical metallic tubing (EMT).
- E. Conduit fittings.
- F. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 07 8400 - Firestopping.
- B. Section 26 0519 - Conductors and Cables.
- C. Section 26 0526 - Grounding and Bonding.
- D. Section 26 0529 - Hangers and Supports.
- E. Section 26 0537 - Boxes.
- F. Section 26 0553 - Electrical Identification: Identification products and requirements.

1.03 REFERENCE STANDARDS

- A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC).
- B. ANSI C80.3 - American National Standard for Electrical Metallic Tubing -- Steel (EMT-S).
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction.
- D. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT).
- E. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable.
- F. NFPA 70 - National Electrical Code.
- G. UL 1 - Flexible Metal Conduit.
- H. UL 6 - Electrical Rigid Metal Conduit-Steel.
- I. UL 360 - Liquid-Tight Flexible Metal Conduit.
- J. UL 514B - Conduit, Tubing, and Cable Fittings.
- K. UL 651 - Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings.
- L. UL 797 - Electrical Metallic Tubing-Steel.
- M. UL 2419 - Outline of Investigation for Electrically Conductive Corrosion Resistant Compounds.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate minimum sizes of conduits with actual type and quantity of conductors to be installed, including adjustments for conductor sizes increased for voltage drop.

2. Coordinate arrangement of conduits with structural members, ductwork, piping, equipment, and other potential conflicts.
 3. Verify exact conduit termination locations required for boxes, enclosures, and equipment.
 4. Coordinate work to provide roof penetrations that preserve integrity of roofing system and do not void roof warranty.
 5. Notify Engineer of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Sequencing:
1. Do not begin installation of conductors and cables until installation of conduit between termination points is complete.

1.05 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.
- B. Accept conduit on site. Inspect for damage.
- C. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
- D. Protect PVC conduit from sunlight.

PART 2 PRODUCTS

2.01 CONDUIT APPLICATIONS

- A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70, manufacturer's instructions, and product listing.
- B. Unless otherwise indicated and where not otherwise restricted, use conduit types indicated for specified applications. Where more than one listed application applies, comply with most restrictive requirements. Where conduit type for particular application is not specified, use galvanized steel rigid metal conduit.
- C. Concealed Within Masonry Walls: Use galvanized steel rigid metal conduit (RMC) or galvanized steel electrical metallic tubing (EMT).
- D. Concealed Within Hollow Stud Walls: Use galvanized steel electrical metallic tubing (EMT).
- E. Concealed Above Accessible Ceilings: Use galvanized steel electrical metallic tubing (EMT).
- F. Interior, Damp or Wet Locations: Use galvanized steel rigid metal conduit or electrical metallic tubing (EMT) with wet location listed fittings and where noted as acceptable on the plans.
- G. Exposed, Interior, Not Subject to Physical Damage: Use galvanized steel electrical metallic tubing (EMT).
- H. Exposed, Interior, Subject to Physical Damage: Use galvanized steel rigid metal conduit (RMC) or stainless steel electrical metallic tubing (EMT).
1. Locations subject to physical damage include, but are not limited to:
 - a. Where exposed below 8 feet, except within electrical and communication rooms or closets.

- I. Flexible Connections to Luminaires Above Accessible Ceilings: Use flexible metal conduit (FMC).
 - 1. Maximum Length: 6 feet.
- J. Flexible Connections to Vibrating Equipment:
 - 1. Dry Locations: Use flexible metal conduit (FMC).
 - 2. Damp, Wet, or Corrosive Locations: Use liquidtight flexible metal conduit (LFMC).
 - 3. Maximum Length: 6 feet unless otherwise indicated.
 - 4. Vibrating equipment includes, but is not limited to:
 - a. Transformers.
 - b. Motors.
 - c. HVAC Equipment.
- K. Fished in Existing Walls, Where Necessary: Use flexible metal conduit with length as required.
- L. The use of flexible conduit types shall be limited to a maximum length of 6 feet unless otherwise noted.

2.02 CONDUIT - GENERAL REQUIREMENTS

- A. Comply with NFPA 70.
- B. Provide conduit, fittings, supports, and accessories required for complete raceway system.
- C. Provide products listed, classified, and labeled as suitable for purpose intended.
- D. Minimum Conduit Size, Unless Otherwise Indicated:
 - 1. Branch Circuits: 3/4-inch trade size.
 - 2. Branch Circuit Homeruns: 3/4-inch trade size.
 - 3. Control Circuits: 1/2-inch trade size.
 - 4. Flexible Connections to Luminaires: 3/8-inch trade size.
 - 5. Underground, Interior: 3/4-inch trade size.
 - 6. Underground, Exterior: 1-inch trade size.
- E. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.03 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

- A. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.
- B. Fittings:
 - 1. Manufacturers:
 - a. Bridgeport Fittings Inc: www.bptfittings.com.
 - b. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com.
 - c. _____.
 - 2. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 6.
 - 3. Hazardous/Classified Locations: Use fittings listed and labeled as complying with UL 1203 for classification of installed location.
 - 4. Material: Use steel with insulated throats or bushings.
 - 5. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

2.04 FLEXIBLE METAL CONDUIT (FMC)

- A. Description: NFPA 70, Type FMC standard-wall steel flexible metal conduit listed and labeled as complying with UL 1, and listed for use in classified firestop systems.
- B. Fittings:
 - 1. Manufacturers:
 - a. Bridgeport Fittings Inc: www.bptfittings.com.
 - b. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com.
 - c. _____.
 - 2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 - 3. Material: Use steel with insulated throats.
- C. Description: Interlocked steel construction.

2.05 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

- A. Description: NFPA 70, Type LFMC polyvinyl chloride (PVC) jacketed steel flexible metal conduit listed and labeled as complying with UL 360.
- B. Fittings:
 - 1. Manufacturers:
 - a. Bridgeport Fittings Inc: www.bptfittings.com.
 - b. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com.
 - c. _____.
 - 2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 - 3. Material: Use steel with insulated throats.
- C. Description: Interlocked steel construction with PVC jacket.

2.06 GALVANIZED STEEL ELECTRICAL METALLIC TUBING (EMT)

- A. Description: NFPA 70, Type EMT galvanized steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.
- B. Fittings:
 - 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 - 2. Material: Use steel or malleable iron.
 - 3. Connectors and Couplings: Use compression/gland or set-screw type.
 - a. Do not use indenter type connectors and couplings.
 - 4. Damp or Wet Locations, Where Permitted: Use fittings listed for use in wet locations.
- C. Description: ANSI C80.3; galvanized tubing.
- D. Fittings and Conduit Bodies: NEMA FB 1; steel set screw type with insulated throats. Provide compression type fittings when specified to be used in damp locations.

2.07 ACCESSORIES

- A. Conduit Joint Compound: Corrosion-resistant, electrically conductive compound listed as complying with UL 2419; suitable for use with conduit to be installed.

- B. Pull Strings: Use nylon or polyester tape with average breaking strength of not less than 1,250 lbf.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive conduits.
- C. Verify that conditions are satisfactory for installation prior to starting work.
- D. Verify routing and termination locations of conduit prior to rough-in.
- E. Conduit routing is shown on drawings in approximate locations unless dimensioned. Route as required to complete wiring system.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install conduit in accordance with NECA 1.
- C. Galvanized Steel Rigid Metal Conduit (RMC): Install in accordance with NECA 101.
- D. Conduit Routing:
 - 1. Unless dimensioned, conduit routing indicated is diagrammatic.
 - 2. When conduit destination is indicated without specific routing, determine exact routing required.
 - 3. Conceal conduits unless specifically indicated to be exposed.
 - 4. Conduits in the following areas may be exposed, unless otherwise indicated:
 - a. Electrical rooms.
 - b. Mechanical equipment rooms.
 - c. Within joists in areas with no ceiling.
 - 5. Conduits installed underground or embedded in concrete may be routed in shortest possible manner unless otherwise indicated. Route other conduits parallel or perpendicular to building structure and surfaces, following surface contours where practical.
 - 6. Arrange conduit to maintain adequate headroom, clearances, and access.
 - 7. Arrange conduit to provide no more than equivalent of four 90-degree bends between pull points.
 - 8. Route conduits above water and drain piping where possible.
 - 9. Arrange conduit to prevent moisture traps. Provide drain fittings at low points and at sealing fittings where moisture may collect.
 - 10. Maintain minimum clearance of 6 inches between conduits and piping for other systems.
 - 11. Maintain minimum clearance of 12 inches between conduits and hot surfaces.
 - 12. Group parallel conduits in same area on common rack.
 - 13. Maximum length for flexible metal conduit or liquidtight flexible metal conduits shall be six feet(6'-0"). Longer lengths require the approval of the Engineer prior to installation. All flexible conduits shall be routed neatly and secured.
- E. Conduit Support:
 - 1. Secure and support conduits in accordance with NFPA 70 using suitable supports and methods approved by authorities having jurisdiction; see Section 26 0529.

2. Provide independent support from building structure. Do not provide support from equipment, piping, ductwork, or other systems.
 3. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conduits to lay on ceiling tiles.
 4. Use conduit strap to support single surface-mounted conduit.
 - a. Use clamp back spacer with conduit strap for damp and wet locations to provide space between conduit and mounting surface.
 5. Use metal channel/strut with accessory conduit clamps to support multiple parallel surface-mounted conduits.
 6. Use trapeze hangers assembled from threaded rods and metal channel/strut with accessory conduit clamps to support multiple parallel suspended conduits.
 7. Use nonpenetrating rooftop supports to support conduits routed across rooftops, where approved.
 8. Use of spring steel conduit clips for support of conduits is not permitted.
 9. Use of wire for support of conduits is not permitted.
 10. Where conduit support intervals specified in NFPA 70 and NECA standards differ, comply with most stringent requirements.
- F. Connections and Terminations:
1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
 2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
 3. Use suitable adapters where required to transition from one type of conduit to another.
 4. Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors.
 5. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
 6. Where spare conduits stub up through concrete floors and are not terminated in box or enclosure, provide threaded couplings equipped with threaded plugs set flush with finished floor.
 7. Provide bell ends, insulating bushings or insulated throats at all conduit terminations based on each application to protect conductors (C.T. cabinets, switchboards, panelboards, in-ground boxes, etc.).
 8. Secure joints and connections to provide mechanical strength and electrical continuity.
- G. Penetrations:
1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
 2. Make penetrations perpendicular to surfaces unless otherwise indicated.
 3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
 4. Conceal bends for conduit risers emerging above ground.
 5. Seal interior and exterior of conduits entering the building from underground at first accessible point to prevent entry of moisture and gases.
 6. Seal interior of conduits located exterior to the building located in in-ground boxes utilizing the specified product.

7. Provide suitable sealing system where conduits penetrate exterior wall below grade.
 8. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
 9. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty.
 10. Install firestopping to preserve fire resistance rating of partitions and other elements; see Section 07 8400.
- H. Underground Installation:
1. Provide trenching and backfilling.
 2. Minimum Cover, Unless Otherwise Indicated or Required:
 - a. Underground, Exterior: 18 inches.
 - b. Under Slab on Grade: 12 inches to bottom of slab.
 3. Provide underground warning tape along entire conduit length for service entrance where not concrete-encased; see Section 26 0553.
- I. Hazardous (Classified) Locations: Where conduits cross boundaries of hazardous (classified) locations, provide sealing fittings located as indicated or in accordance with NFPA 70.
- J. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
 2. Where conduits are subject to earth movement by settlement or frost.
- K. Conduit Sealing:
1. Use foam conduit sealant to prevent entry of moisture and gases. This includes, but is not limited to:
 - a. Where conduits enter building from outside.
 - b. Where service conduits enter building from underground distribution system.
 - c. Where conduits enter building from underground.
 - d. Where conduits may transport moisture to contact live parts.
 2. Where conduits cross barriers between areas of potential substantial temperature differential, use foam conduit sealant at accessible point near penetration to prevent condensation. This includes, but is not limited to:
 - a. Where conduits pass from outdoors into conditioned interior spaces.
 - b. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.
- L. Condensation Prevention: Where conduits cross barriers between areas of potential substantial temperature differential, provide sealing fitting or approved sealing compound at an accessible point near the penetration to prevent condensation. This includes, but is not limited to:
1. Where conduits pass from outdoors into conditioned interior spaces.
 2. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.
- M. Provide pull string in each empty conduit and in conduits where conductors and cables are to be installed by others. Leave minimum slack of 12 inches at each end.

- N. Provide grounding and bonding; see Section 26 0526.
- O. Identify conduits; see Section 26 0553.

3.03 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for additional requirements.
- B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- C. Correct deficiencies and replace damaged or defective conduits.

3.04 CLEANING

- A. Clean interior of conduits to remove moisture and foreign matter.

3.05 PROTECTION

- A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.

END OF SECTION

SECTION 26 0537
BOXES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Outlet and device boxes up to 100 cubic inches, including those used as junction and pull boxes.
- B. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches.
- C. Wall and ceiling outlet boxes.
- D. Pull and junction boxes.

1.02 RELATED REQUIREMENTS

- A. Section 26 0529 - Hangers and Supports.
- B. Section 26 0534 - Conduit:
 - 1. Conduit bodies and other fittings.
 - 2. Additional requirements for locating boxes to limit conduit length and/or number of bends between pulling points.
- C. Section 26 0553 - Electrical Identification: Identification products and requirements.
- D. Section 26 2726 - Wiring Devices:
 - 1. Wall plates.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction.
- B. NECA 130 - Standard for Installing and Maintaining Wiring Devices.
- C. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- D. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- E. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable.
- F. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
- G. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports.
- H. NFPA 70 - National Electrical Code.
- I. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations.
- J. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations.
- K. UL 508A - Industrial Control Panels.
- L. UL 514A - Metallic Outlet Boxes.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.

2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
3. Coordinate minimum sizes of boxes with the actual installed arrangement of conductors, clamps, support fittings, and devices, calculated according to NFPA 70.
4. Coordinate minimum sizes of pull boxes with the actual installed arrangement of connected conduits, calculated according to NFPA 70.
5. Coordinate the placement of boxes with millwork, furniture, devices, equipment, etc. installed under other sections or by others.
6. Coordinate the work with other trades to preserve insulation integrity.
7. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted boxes where indicated.
8. Notify Engineer of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for cabinets and enclosures and floor boxes.
- C. Project Record Documents: Record actual locations and mounting heights of outlet, pull, and junction boxes on project record documents.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

2.01 BOXES

- A. General Requirements:
 1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
 2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
 3. Provide products listed, classified, and labeled as suitable for the purpose intended.
 4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
 5. Provide grounding terminals within boxes where equipment grounding conductors terminate.
- B. Outlet and Device Boxes Up to 100 cubic inches, Including Those Used as Junction and Pull Boxes:
 1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
 2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
 3. Use suitable concrete type boxes where flush-mounted in concrete.
 4. Use suitable masonry type boxes where flush-mounted in masonry walls.
 5. Use raised covers suitable for the type of wall construction and device configuration where required.
 6. Use shallow boxes where required by the type of wall construction.

7. Do not use "through-wall" boxes designed for access from both sides of wall.
 8. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
 9. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
 10. Boxes for Supporting Luminaires and Ceiling Fans: Listed as suitable for the type and weight of load to be supported; furnished with fixture stud to accommodate mounting of luminaire where required.
 11. Boxes for Ganged Devices: Use multigang boxes of single-piece construction. Do not use field-connected gangable boxes unless specifically indicated or permitted.
 12. Minimum Box Size, Unless Otherwise Indicated:
 - a. Wiring Devices (Other Than Communications Systems Outlets): 4 inch square by 2-1/8 inch deep (100 by 54 mm) trade size.
 - b. Communications Systems Outlets: Comply with Section 27 1001.
 - c. Ceiling Outlets: 4 inch octagonal or square by 2-1/8 inch deep (100 by 54 mm) trade size.
 13. Wall Plates: Comply with Section 26 2726.
- C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches:
1. Comply with NEMA EN 10250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
 2. NEMA EN 10250 Environment Type, Unless Otherwise Indicated:
 - a. Indoor Clean, Dry Locations: Type 1, painted steel.
 3. Junction and Pull Boxes Larger Than 100 cubic inches:
 - a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.
 4. Finish for Painted Steel Enclosures: Manufacturer's standard grey unless otherwise indicated.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive boxes.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install boxes in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Unless otherwise indicated, provide separate boxes for line voltage and low voltage systems.
- E. Flush-mount boxes in finished areas unless specifically indicated to be surface-mounted.
- F. Unless otherwise indicated, boxes may be surface-mounted where exposed conduits are indicated or permitted.

G. Box Locations:

1. Locate boxes to be accessible. Provide access panels in accordance with Section 08 3100 as required where approved by the Architect.
2. Unless dimensioned, box locations indicated are approximate. Adjust box locations up to five feet if required to accommodate intended purpose.
3. Locate boxes as required for devices installed under other sections or by others.
4. Locate boxes so that wall plates do not span different building finishes.
5. Locate boxes so that wall plates do not cross masonry joints.
6. Unless otherwise indicated, where multiple outlet boxes are installed at the same location at different mounting heights, install along a common vertical center line.
7. Do not install flush-mounted boxes on opposite sides of walls back-to-back. Provide minimum 16 inches horizontal separation unless otherwise indicated.
8. Acoustic-Rated Walls: Do not install flush-mounted boxes on opposite sides of walls back-to-back; provide minimum 24 inches horizontal separation.
9. Fire Resistance Rated Walls: Install flush-mounted boxes such that the required fire resistance will not be reduced.
 - a. Do not install flush-mounted boxes on opposite sides of walls back-to-back; provide minimum 24 inches separation where wall is constructed with individual noncommunicating stud cavities or protect both boxes with listed putty pads.
 - b. Do not install flush-mounted boxes with area larger than 16 square inches or such that the total aggregate area of openings exceeds 100 square inches for any 100 square feet of wall area.
10. Locate junction and pull boxes as indicated, as required to facilitate installation of conductors, and to limit conduit length and/or number of bends between pulling points in accordance with Section 26 0534.
11. Locate junction and pull boxes in the following areas, unless otherwise indicated or approved by the Architect:
 - a. Concealed above accessible suspended ceilings.
 - b. Within joists in areas with no ceiling.
 - c. Electrical rooms.
 - d. Mechanical equipment rooms.

H. Box Supports:

1. Secure and support boxes in accordance with NFPA 70 and Section 26 0529 using suitable supports and methods approved by the authority having jurisdiction.
2. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in accordance with NFPA 70. Do not provide support from piping, ductwork, or other systems.

I. Install boxes plumb and level.

J. Flush-Mounted Boxes:

1. Install boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that front edge of box or associated raised cover is not set back from finished surface more than 1/4 inch or does not project beyond finished surface.
2. Install boxes in combustible materials such as wood so that front edge of box or associated raised cover is flush with finished surface.

- 3. Repair rough openings around boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that there are no gaps or open spaces greater than 1/8 inch at the edge of the box.
- K. Install boxes as required to preserve insulation integrity.
- L. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.
- M. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
- N. Close unused box openings.
- O. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.
- P. Provide grounding and bonding in accordance with Section 26 0526.
- Q. Orient boxes to accommodate wiring devices oriented as specified in Section .
- R. Maintain headroom and present neat mechanical appearance.
- S. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than from ceiling access panel or from removable recessed luminaire.

3.03 ADJUSTING

- A. Adjust flush-mounting outlets to make front flush with finished wall material.
- B. Install knockout closures in unused box openings.

3.04 CLEANING

- A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material.

END OF SECTION

**SECTION 26 0553
ELECTRICAL IDENTIFICATION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical identification requirements.
- B. Identification nameplates and labels.

1.02 RELATED REQUIREMENTS

- A. Section 26 0519 - Conductors and Cables: Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.

1.03 REFERENCE STANDARDS

- A. NFPA 70 - National Electrical Code.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Verify final designations for equipment, systems, and components to be identified prior to fabrication of identification products.
- B. Sequencing:
 - 1. Do not conceal items to be identified, in locations such as above suspended ceilings, until identification products have been installed.
 - 2. Do not install identification products until final surface finishes and painting are complete.

PART 2 PRODUCTS

2.01 IDENTIFICATION REQUIREMENTS

- A. Identification for Equipment:
 - 1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
 - a. Panelboards:
 - 1) Provide updated typewritten circuit directory to identify load(s) served for panelboards with a door. Identify spares and spaces using pencil.
 - b. Enclosed switches, circuit breakers, and motor controllers:
 - 1) Identify voltage and phase.
 - 2) Identify name, power source and circuit number.
 - 2. Use identification label or handwritten text using indelible marker on inside of door at each fused switch to identify required NEMA fuse class and size.
 - 3. Use identification label or handwritten text using indelible marker on inside of door at each motor controller to identify nameplate horsepower, full load amperes, code letter, service factor, voltage, and phase of motor(s) controlled.
- B. Identification for Conductors and Cables:
 - 1. Color Coding for Power Conductors 600 V and Less: Comply with Section 26 0519.
 - 2. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or branch-circuit distribution equipment when premises has feeders or branch circuits served by more than one nominal voltage system.

- C. Identification for Raceways:
 - 1. Use color coded conduit to identify systems other than the normal power and lighting systems. The following color code shall be utilized:
 - a. Fire Alarm System: Red conduit.
 - 2. Use identification labels, handwritten text using indelible marker, or plastic marker tags to identify spare conduits at each end. Identify purpose and termination location.
 - 3. Use underground warning tape to identify underground raceways.
- D. Identification for Boxes:
 - 1. Use identification labels or handwritten text using indelible marker to identify circuits enclosed.

2.02 IDENTIFICATION NAMEPLATES AND LABELS

- A. Identification Nameplates:
 - 1. Materials:
 - a. Indoor Clean, Dry Locations: Use plastic nameplates.
 - 2. Plastic Nameplates: Two-layer or three-layer laminated acrylic or electrically non-conductive phenolic with beveled edges; minimum thickness of 1/8 inch; engraved text.
 - 3. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch high; Four, located at corners for larger sizes.
- B. Identification Labels:
 - 1. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
 - a. Use only for indoor locations.
 - 2. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.
- C. Format for Equipment Identification:
 - 1. Minimum Size: 1 inch by 2.5 inches.
 - 2. Legend:
 - a. Equipment designation or other approved description.
 - 3. Text: All capitalized unless otherwise indicated.
 - 4. Minimum Text Height:
 - a. Equipment Designation: 1/2 inch.
 - 5. Color:
 - a. Normal Power System: White text on black background.
 - b. Emergency Power System: White text on red background.

PART 3 EXECUTION

3.01 PREPARATION

- A. Clean surfaces to receive adhesive products according to manufacturer's instructions.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
 - 1. Surface-Mounted Equipment: Enclosure front.

2. Flush-Mounted Equipment: Inside of equipment door.
 3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
 4. Elevated Equipment: Legible from the floor or working platform.
 5. Interior Components: Legible from the point of access.
 6. Conduits: Legible from the floor.
 7. Boxes: Outside face of cover when concealed above accessible ceiling. Inside face of cover when exposed to view.
 8. Conductors and Cables: Legible from the point of access.
- C. Install identification products centered, level, and parallel with lines of item being identified.
 - D. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing or epoxy cement.
 - E. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.
 - F. Mark all handwritten text, where permitted, to be neat and legible.

END OF SECTION

**SECTION 26 2726
WIRING DEVICES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wall switches.
- B. Receptacles.
- C. Wall plates and covers.

1.02 RELATED REQUIREMENTS

- A. Section 26 0537 - Boxes.

1.03 REFERENCE STANDARDS

- A. FS W-C-596 - Connector, Electrical, Power, General Specification for.
- B. FS W-S-896 - Switches, Toggle (Toggle and Lock), Flush Mounted (General Specification).
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction.
- D. NECA 130 - Standard for Installing and Maintaining Wiring Devices.
- E. NEMA WD 1 - General Color Requirements for Wiring Devices.
- F. NEMA WD 6 - Wiring Devices - Dimensional Specifications.
- G. NFPA 70 - National Electrical Code.
- H. UL 20 - General-Use Snap Switches.
- I. UL 498 - Attachment Plugs and Receptacles.
- J. UL 514D - Cover Plates for Flush-Mounted Wiring Devices.
- K. UL 943 - Ground-Fault Circuit-Interrupters.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the placement of outlet boxes with millwork, furniture, equipment, etc. installed under other sections or by others.
 - 2. Coordinate wiring device ratings and configurations with the electrical requirements of actual equipment to be installed.
 - 3. Coordinate the installation and preparation of uneven surfaces, such as split face block, to provide suitable surface for installation of wiring devices.
 - 4. Notify Engineer of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.
- C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Store in a clean, dry space in original manufacturer's packaging until ready for installation.

PART 2 PRODUCTS

2.01 Wiring Devices - General Requirements

- A. Provide wiring devices suitable for intended use with ratings adequate for load served.

2.02 MANUFACTURERS

- A. Hubbell Incorporated: www.hubbell-wiring.com.
- B. Leviton Manufacturing Company, Inc: www.leviton.com.
- C. Pass & Seymour, a brand of Legrand North America, Inc: www.legrand.us
- D. Substitutions: See Section 01 6000 - Product Requirements.
- E. Source Limitations: Where possible, provide products for each type of wiring device produced by a single manufacturer and obtained from a single supplier.

2.03 WIRING DEVICE APPLICATIONS

- A. Provide wiring devices suitable for intended use and with ratings adequate for load served.
- B. For single receptacles installed on an individual branch circuit, provide receptacle with ampere rating not less than that of the branch circuit.
- C. Provide tamper resistant receptacles.
- D. Provide GFCI protection in the following locations
 - 1. Receptacles installed within 6 feet of sinks.
 - 2. Receptacles installed in kitchens and bathrooms/restrooms.
 - 3. Receptacles serving electric drinking fountains/wash basins. Utilize dead front GFCI module adjacent to equipment in an accessible location.
 - 4. Receptacles located in mechanical rooms/spaces.

2.04 ALL WIRING DEVICES

- A. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.
 - 1. All Wiring Devices: Color as selected by Architect with nylon wall plate to match device unless otherwise indicated.
 - 2. Wiring Devices Installed in Finished Spaces: Color as selected by Architect with nylon wall plate unless otherwise indicated.
 - 3. Wiring Devices Installed in Unfinished Spaces: Color as selected by the Architect with galvanized steel or galvanized wall plate unless otherwise indicated.

2.05 WALL SWITCHES

- A. Wall Switches - General Requirements: AC only, quiet operating, general-use snap switches with silver alloy contacts, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 20 and where applicable FS W-S-896; types as indicated on the drawings.
 - 1. Wiring Provisions: Terminal screws for side wiring and screw actuated binding clamp for back wiring with separate ground terminal screw.
- B. Standard Wall Switches: Commercial specification grade, 20 A, 120/277 V with standard toggle type switch actuator and maintained contacts; single pole single throw, double pole single throw, three way, or four way as indicated on the drawings.
- C. Pilot Light Wall Switches: Commercial specification grade, 20 A, 120/277 V with red illuminated standard toggle type switch actuator and maintained contacts; illuminated with load on; single pole single throw, double pole single throw, three way, or four way as indicated on the drawings.

2.06 RECEPTACLES

- A. Manufacturers:
 - 1. Hubbell Incorporated: www.hubbell.com.
 - 2. Leviton Manufacturing Company, Inc: www.leviton.com.
 - 3. Pass & Seymour, a brand of Legrand North America, Inc: www.legrand.us.
- B. Receptacles - General Requirements: Self-grounding, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 498 and where applicable FS W-C-596; types as indicated on the drawings.
 - 1. Wiring Provisions: Terminal screws for side wiring or screw actuated binding clamp for back wiring with separate ground terminal screw.
 - 2. NEMA configurations specified are according to NEMA WD 6.
- C. Convenience Receptacles:
 - 1. Tamper Resistant Convenience Receptacles: Commercial specification grade, 20A, 125V, NEMA 5-20R, listed and labeled as tamper resistant type; single or duplex as indicated on the drawings. Smooth face design.
- D. GFCI Receptacles:
 - 1. GFCI Receptacles - General Requirements: Self-testing, with feed-through protection and light to indicate ground fault tripped condition and loss of protection; listed as complying with UL 943, class A.
 - 2. Tamper Resistant GFCI Receptacles: Commercial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style, listed and labeled as tamper resistant type.

2.07 WALL PLATES AND COVERS

- A. Wall Plates: Comply with UL 514D.
 - 1. Configuration: One piece cover as required for quantity and types of corresponding wiring devices.
 - 2. Size: Standard.
 - 3. Screws: Metal with slotted heads finished to match wall plate finish.
- B. Nylon Wall Plates: Smooth finish, high-impact thermoplastic.

- C. Galvanized Steel Wall Plates: Rounded corners and edges, with corrosion resistant screws.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.
- C. Verify that wall openings are neatly cut and will be completely covered by wall plates.
- D. Verify that final surface finishes are complete, including painting.
- E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.
- F. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Perform work in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.
- B. Coordinate locations of outlet boxes provided under Section 26 0537 as required for installation of wiring devices provided under this section.
 - 1. Mounting Heights: Unless otherwise indicated, as follows:
 - a. Wall Switches: 48 inches above finished floor.
 - b. Receptacles: 18 inches above finished floor or 6 inches above counter.
 - 2. Orient outlet boxes for vertical installation of wiring devices unless otherwise indicated.
 - 3. Locate wall switches on strike side of door with edge of wall plate 3 inches from edge of door frame. Where locations are indicated otherwise, notify Engineer to obtain direction prior to proceeding with work.
 - 4. Locate receptacles for electric drinking fountains concealed behind drinking fountain according to manufacturer's instructions. Provide GFCI protection of receptacle at an accessible location as noted on the Drawings.
- C. Install wiring devices in accordance with manufacturer's instructions.
- D. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.
- E. Where required, connect wiring devices using pigtails not less than 6 inches long. Do not connect more than one conductor to wiring device terminals.
- F. Connect wiring devices by wrapping conductor clockwise 3/4 turn around screw terminal and tightening to proper torque specified by the manufacturer. Where present, do not use push-in pressure terminals that do not rely on screw-actuated binding.
- G. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
- H. Provide GFCI receptacles with integral GFCI protection at each location indicated. Do not use feed-through wiring to protect downstream devices.
- I. Install wiring devices plumb and level with mounting yoke held rigidly in place.
- J. Install wall switches with OFF position down.

- K. Install vertically mounted receptacles with grounding pole on bottom and horizontally mounted receptacles with grounding pole on left.
- L. Install wall plates to fit completely flush to wall with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.
- M. Install blank wall plates on junction boxes and on outlet boxes with no wiring devices installed or designated for future use.

3.03 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Perform field inspection, testing, and adjusting in accordance with Section 01 4000.
- C. Inspect each wiring device for damage and defects.
- D. Operate each wall switch and wall dimmer with circuit energized to verify proper operation.
- E. Test each receptacle to verify operation and proper polarity.
- F. Test each GFCI receptacle for proper tripping operation according to manufacturer's instructions.
- G. Correct wiring deficiencies and replace damaged or defective wiring devices.

3.04 ADJUSTING

- A. Adjust devices and wall plates to be flush and level.

END OF SECTION

**SECTION 26 5100
INTERIOR LIGHTING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Interior luminaires.
- B. Exit signs.
- C. LED Drivers.
- D. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 26 0529 - Hangers and Supports.
- B. Section 26 0537 - Boxes.
- C. Section 26 0923 - Lighting Control Devices: Automatic controls for lighting including occupancy sensors, outdoor motion sensors, time switches, outdoor photo controls, and daylighting controls.
- D. Section 26 2726 - Wiring Devices: Manual wall switches and wall dimmers.

1.03 REFERENCE STANDARDS

- A. IES LM-79 - Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products.
- B. IES LM-80 - Approved Method: Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays, and Modules; Illuminating Engineering Society.
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction.
- D. NECA/IESNA 500 - Standard for Installing Indoor Commercial Lighting Systems.
- E. NECA/IESNA 502 - Standard for Installing Industrial Lighting Systems.
- F. NEMA LE 4 - Recessed Luminaires, Ceiling Compatibility.
- G. NFPA 70 - National Electrical Code.
- H. NFPA 101 - Life Safety Code.
- I. IEC 61347-2-13 – Particular requirements for electronic control gear for LED modules.
- J. IEC 62384 - DC or AC supplied electronic control gear for LED modules – performance requirements.
- K. UL 924 - Emergency Lighting and Power Equipment.
- L. UL 1598 - Luminaires.
- M. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the installation of luminaires with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc. required for mounting. Coordinate compatibility of luminaires and associated trims with mounting surfaces at installed locations.

2. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
3. Coordinate the placement of exit signs with furniture, equipment, signage or other potential obstructions to visibility installed under other sections or by others.
4. Notify Engineer of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

1.05 SUBMITTALS

- A. Shop Drawings:
 1. Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.
 1. LED Luminaires:
 - a. Include estimated useful life, calculated based on IES LM-80 test data.
- C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- D. Operation and Maintenance Data: Instructions for each product including information on replacement parts.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Receive, handle, and store products according to NECA/IESNA 500 (commercial lighting), NECA/IESNA 502 (industrial lighting), and manufacturer's written instructions.
- B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.08 WARRANTY

- A. Provide manufacturer's warranty covering 5 years on LED's and LED drivers from date of substantial completion. Luminaire manufacturer to operate driver at or below the required driver warranty temperature. Luminaire manufacturers failing to operate the driver, at the project required ambient temperature, within the driver manufacturer warranty parameters will be responsible for all driver warranty related costs over the warranty period.

PART 2 PRODUCTS

2.01 LUMINAIRE TYPES

- A. Furnish products as indicated in luminaire schedule included on the drawings.

2.02 LUMINAIRES

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- C. Provide products listed, classified, and labeled as suitable for the purpose intended.
- D. All luminaires must be painted after fabrication to avoid having sharp tooling edges.
- E. Unless otherwise indicated, provide complete luminaires including LED modules, drivers, reflectors, lenses, housings and other components required to position, energize and protect the lamp/LED light engine and distribute the light.
- F. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.
- G. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.
- H. Recessed Luminaires:
 - 1. Ceiling Compatibility: Comply with NEMA LE 4.
 - 2. Luminaires Recessed in Insulated Ceilings: Listed and labeled as IC-rated, suitable for direct contact with insulation and combustible materials.
 - 3. Luminaires Recessed in Sloped Ceilings: Provide suitable sloped ceiling adapters.
- I. LED Luminaires:
 - 1. Components: UL 8750 recognized or listed as applicable.
 - 2. Tested in accordance with IES LM-79 and IES LM-80.
 - 3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.
- J. LED Luminaire Components: UL 8750 recognized or listed as applicable.
- K. Luminaires Mounted in Continuous Rows: Provide quantity of units required for length indicated, with all accessories required for joining and aligning. Ensure that luminaires are jointed tightly together using factory furnished hardware.

2.03 EXIT SIGNS

- A. Description: Exit signs and similar signs for special purpose applications such as area of refuge/rescue assistance.
- B. Description: Exit signs complying with NFPA 101 and applicable state and local codes, and listed and labeled as complying with UL 924.
 - 1. Number of Faces: Single- or double-face as indicated or as required for installed location.
 - 2. Directional Arrows: As indicated or as required for installed location.
- C. Powered Exit Signs: Internally illuminated with LEDs unless otherwise indicated.

2.04 LED DRIVERS

- A. General Requirements

1. LED dimming shall be equal in range and quality to a commercial grade incandescent dimmer. Quality of dimming to be defined by dimming range, freedom from perceived flicker or visible stroboscopic flicker, smooth and continuous change in level (no visible steps in transitions), natural square law response to control input, and stable when input voltage conditions fluctuate over what is typically experience in a commercial environment. Demonstration of this compliance to dimming performance will be necessary for substitutions or prior approval.
 2. Ten-year expected life while operating at maximum case temperature and 90 percent non-condensing relative humidity.
 3. Driver must limit inrush current.
 - a. Base specification: Meet or exceed NEMA 410 driver inrush standard of 430 Amps per 10 Amps load with a maximum of 370 Amps² - seconds.
 - b. Preferred Specification: Meet or exceed 30mA²s at 277VAC for up to 50 watts of load and 75A at 240us at 277VAC for 100 watts of load.
 4. Withstand up to a 1,000 volt surge without impairment of performance as defined by ANSI C62.41 Category A.
 5. No visible change in light output with a variation of plus/minus 10 percent line voltage input.
 6. Total Harmonic Distortion less than 20% percent and meet ANSI C82.11 maximum allowable THD requirements at full output. THD shall at no point in the dimming curve allow imbalance current to exceed full output THD.
 7. Driver must support automatic adaptation, allowing for future luminaire upgrades and enhancements and deliver improved performance:
 - a. Adjustment of forward LED voltage, supporting 3V through 55V.
 - b. Adjustment of LED current from 200mA to 1.05A at the 100 percent control input point in increments of 1mA
 - c. Adjustment for operating hours to maintain constant lumens (within 5 percent) over the 50,000 hour design life of the system, and deliver up to 20 percent energy savings early in the life cycle.
 8. Driver must be able to operate for a (+/- 10%)supply voltage of 120V through 277VAC at 60Hz.
 9. Driver should be UL Recognized under the component program and shall be modular for simple field replacement. Drivers that are not UL Recognized or not suited for field replacement will not be considered.
- B. Light Quality
1. Over the entire range of available drive currents, driver shall provide step-free, continuous dimming to black from 100 percent to 0.1 percent and 0% relative light output, or 100 - 1% light output and step to 0% where indicated. Driver shall respond similarly when raising from 0% to 100%
 - a. Driver must be capable of 20 bit dimming resolution for white light LED drivers or 15 bit resolution for RGBW LED drivers.
 2. Driver must be capable of configuring a linear or logarithmic dimming curve, allowing fine grained resolution at low light levels
 3. Drivers to track evenly across multiple fixtures at all light levels, and shall have an input signal to output light level that allows smooth adjustment over the entire dimming range.

4. Driver and luminaire electronics shall deliver illumination that is free from objectionable flicker as measured by flicker index (ANSI/IES RP-16-10). At all points within the dimming range from 100-0.1 percent luminaire shall have:
 - a. LED dimming driver shall provide continuous step-free, flicker free dimming similar to incandescent source.
 - b. Base specification: Flicker index shall less than 5% at all frequencies below 1000 Hz.
 - c. Preferred specification: Flicker index shall be equal to incandescent, less than 1% at all frequencies below 1000 Hz.
- C. Control Input
 1. 4-Wire (0-10V DC Voltage Controlled) Dimming Drivers
 - a. Must meet IEC 60929 Annex E for General White Lighting LED drivers
 - b. Connect to devices compatible with 0 to 10V Analog Control Protocol, Class 2, capable of sinking 0.6 ma per driver at a low end of 0.3V. Limit the number of drivers on each 0-10V control output based on voltage drop and control capacity.
 - c. Must meet ESTA E1.3 for RGBW LED drivers
 2. The 0-10V input shall be protected from line voltage miswire, and shall be immune and output unresponsive to induced AC voltage on the control leads.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
- C. Verify that suitable support frames are installed where required.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 26 0537 as required for installation of luminaires provided under this section.
- B. Install products in accordance with manufacturer's instructions.
- C. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting) and NECA 502 (industrial lighting).
- D. Provide required support and attachment in accordance with Section 26 0529.
- E. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- F. Suspended Ceiling Mounted Luminaires:
 1. Do not use ceiling tiles to bear weight of luminaires.

2. Do not use ceiling support system to bear weight of luminaires unless ceiling support system is certified as suitable to do so.
 3. Secure lay-in luminaires to ceiling support channels using listed safety clips at four corners.
 4. See appropriate Division 9 section where suspended grid ceiling is specified for additional requirements.
- G. Recessed Luminaires:
1. Install trims tight to mounting surface with no visible light leakage.
 2. Non-IC Rated Luminaires: Maintain required separation from insulation and combustible materials according to listing.
 3. Luminaires Recessed in Fire-Rated Ceilings: Install using accessories and firestopping materials to meet regulatory requirements for fire rating.
- H. Suspended Luminaires:
1. Install using the suspension method indicated, with support lengths and accessories as required for specified mounting height.
 2. Provide minimum of two supports for each luminaire equal to or exceeding 4 feet nominal length, with no more than 4 feet between supports.
 3. Install canopies tight to mounting surface.
- I. Install accessories furnished with each luminaire.
- J. Bond products and metal accessories to branch circuit equipment grounding conductor.
- K. Exit Signs:
1. Unless otherwise indicated, connect unit to unswitched power from circuit indicated. Bypass local switches, contactors, or other lighting controls.

3.04 FIELD QUALITY CONTROL

- A. Inspect each product for damage and defects.
- B. Operate each luminaire after installation and connection to verify proper operation.
- C. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Engineer.

3.05 ADJUSTING

- A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Engineer. Secure locking fittings in place.
- B. Exit Signs with Field-Selectable Directional Arrows: Set as indicated or as required to properly designate egress path as directed by Engineer or authority having jurisdiction.

3.06 CLEANING

- A. Clean surfaces according to NECA 500 (commercial lighting), NECA 502 (industrial lighting), and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

3.07 CLOSEOUT ACTIVITIES

- A. Just prior to Substantial Completion, replace all lamps that have failed.

3.08 PROTECTION

- A. Protect installed luminaires from subsequent construction operations.

3.09 LUMINAIRE SCHEDULE

- A. See plan sheets.

END OF SECTION

**SECTION 27 1001
COMMUNICATIONS RACEWAY SYSTEM**

PART 1 GENERAL

1.01 SECTION INCLUDES

This section includes the furnishing and installation of the following:

- A. Empty raceway distribution system.

1.02 RELATED SECTIONS

- A. Section 26 0534 - Conduit.
- B. Section 26 0537 - Boxes.
- C. Section 26 2726 - Wiring Devices.
- D. Section 26 0529 - Hanger and Supports.
- E. Section 26 0573 - Identification for Electrical Systems.

1.03 PROJECT RECORD DOCUMENTS

- A. Submit record documents under provisions of Division 01.
- B. Accurately record location of service entrance conduit outlets and termination backboards.

PART 2 PRODUCTS

2.01 CONDUIT

- A. As specified in Section 26 0534 - Conduit.
- B. Size: Minimum 1 inch with larger sizes where noted on Drawings.

2.02 OUTLETS

- A. As specified in Section 26 0537 - Boxes.
- B. 3-1/2 inch deep 4-inch square box with single gang plaster ring.

2.03 OUTLET COVER PLATES

- A. As specified in Section 26 2726 - Wiring Devices
- B. Blank plate. Same finish as other device cover plates in space. Provide for all un-used openings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work.
- B. Verify that field measurements are as shown on Drawings.

3.02 INSTALLATION

- A. Prior to beginning work, coordinate all rough-ins with the Owner's IT staff and contractor.
- B. In exposed ceiling spaces and where subject to physical damage, install a conduit system complete from outlet to above the nearest accessible lay-in grid type ceiling space. Terminate with an insulated bushing.

- C. Install conduit to extend only from the outlet box to an accessible location above to approximately 12 inches above the nearest lay-in grid type ceiling with a 90 degree elbow. Terminate with an insulated bushing.
- D. Provide conduit sleeve with insulated bushings for all penetrations where cable is routed thru walls and floors. Provide insulated bushings on each end of conduit sleeve. Minimum size shall be 1" with larger sizes as required and/or as noted on the drawings. Routing of unprotected cable thru openings for other conduits or mechanical piping and ductwork shall not be allowed.
- E. Support raceways, backboards, and cabinets under the provisions of Section 26 0529.
- F. Install pullwire or polyethylene pulling string in each empty telephone conduit containing a bend or over 10 feet in length.

END OF SECTION

SECTION 28 4600
FIRE DETECTION AND ALARM

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Modifications to existing fire alarm system design and installation, including all components, wiring, and conduit.
- B. Modifications and extension to existing fire alarm system components, wiring, and conduit indicated.
 - 1. Existing fire alarm system device layout and circuitry to be modified to provide coverage for the renovated floor plan.

1.02 RELATED REQUIREMENTS

- A. Section 07 8400 - Firestopping: Materials and methods for work to be performed by this installer.

1.03 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design.
- B. NFPA 70 - National Electrical Code.
- C. NFPA 72 - National Fire Alarm and Signaling Code.
- D. NFPA 101 - Life Safety Code.
- E. UL 268 - Standard for Smoke Detectors for Fire Alarm Systems.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Proposal Documents: Submit the following with cost/time proposal:
 - 1. NFPA 72 "Record of Completion", filled out to the extent known at the time.
 - 2. Manufacturer's detailed data sheet for each control unit, initiating device, and notification appliance.
- C. Drawings must be prepared using AutoCAD Release 2016.
- D. Design Documents: Submit all information required for plan review and permitting by authorities having jurisdiction, including but not limited to floor plans, riser diagrams, and description of operation:
 - 1. NFPA 72 "Record of Completion", filled out to the extent known at the time.
 - 2. Clear and concise description of operation, with input/output matrix similar to that shown in NFPA 72 Appendix A-7-5-2.2(9), and complete listing of software required.
 - 3. Location of all components, circuits, and raceways; mark components with identifiers used in control unit programming.
 - 4. Circuit layouts; number, size, and type of raceways and conductors; conduit fill calculations; spare capacity calculations; notification appliance circuit voltage drop calculations.
 - 5. List of all devices on each signaling line circuit, with spare capacity indicated.
 - 6. Manufacturer's detailed data sheet for each component, including wiring diagrams, installation instructions, and circuit length limitations.

7. Description of power supplies; if secondary power is by battery include calculations demonstrating adequate battery power.
 8. Certification by either the manufacturer of the control unit or by the manufacturer of each other component that the components are compatible with the control unit.
- E. Evidence of installer qualifications.
- F. Inspection and Test Reports:
1. Submit inspection and test plan prior to closeout demonstration.
 2. Submit documentation of satisfactory inspections and tests.
 3. Submit NFPA 72 "Inspection and Test Form," filled out.
- G. Project Record Documents: See Section 01 7800 for additional requirements; have one set available during closeout demonstration:
1. Complete set of floor plans showing actual installed locations of components, conduit, and zones.
 2. "As installed" wiring and schematic diagrams, with final terminal identifications.
 3. "As programmed" operating sequences, including control events by device, updated input/output chart, and voice messages by event.
- H. Closeout Documents:
1. Certification by manufacturer that the system has been installed in compliance with manufacturer's installation requirements, is complete, and is in satisfactory operating condition.

1.05 QUALITY ASSURANCE

- A. Copies of Design Criteria Documents: Maintain at the project site for the duration of the project, bound together, an original copy of NFPA 72, the relevant portions of applicable codes, and instructions and guidelines of authorities having jurisdiction; deliver to Owner upon completion.
- B. Installer Qualifications: Firm with minimum 3 years documented experience installing fire alarm systems of the specified type and providing contract maintenance service as a regular part of their business.
1. Authorized representative of control unit manufacturer; submit manufacturer's certification that installer is authorized; include name and title of manufacturer's representative making certification.
 2. Installer Personnel: At least 2 years of experience installing fire alarm systems.
 3. Supervisor: NICET level III or IV (3 or 4) certified fire alarm technician; furnish name and address.
 4. Contract maintenance office located within 100 miles of project site.
 5. Certified in the State in which the Project is located as fire alarm installer.
- C. Maintenance Contractor Qualifications: Same entity as installer or different entity with specified qualifications.
- D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.06 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:

1. During the Bidding process, Contractor shall verify with fire alarm system supplier for the type and quantities of conductors required throughout the fire alarm system. All costs with furnishing the conductors, installation, and termination shall be included in the bid amount. No additional compensation will be made for lack of understanding of the work required with the installation of this system.
- B. Fire Alarm System Permit
 1. Contractor shall obtain fire alarm system permit from the local fire department or authority having jurisdiction.
 2. Provide all necessary documentation (product shop drawings, layout drawings, calculations, etc.) as required by the fire alarm system permit submittal process.
 3. Pay all fees associated with the fire alarm system permit.
 4. Provide a copy of the fire alarm permit in the Operation and Maintenance Manuals.

1.07 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide control panel manufacturer's warranty that system components other than wire and conduit are free from defects and will remain so for 1 year after date of Substantial Completion.
- C. Provide installer's warranty that the installation is free from defects and will remain so for 1 year after date of Substantial Completion.

PART 2 PRODUCTS

2.01 CONDUIT

- A. Refer to section 26 0534 - Conduit for conduit requirements.
- B. Refer to section 26 0553 - Identification for Electrical Systems for color coding of raceway system.
- C. The entire fire alarm system shall be installed in a metallic raceway system.

2.02 MANUFACTURERS

- A. Fire Alarm Control Units and Accessories - Basis of Design: Existing Simplex 4100 by JCI.
- B. Substitutions: Not permitted.

2.03 FIRE ALARM SYSTEM

- A. Fire Alarm System: Provide modifications and extensions to the existing automatic fire detection and alarm system:
 1. Provide all components necessary, regardless of whether shown in Contract Documents or not.
 2. Protected Premises: Entire building shown on drawings.
 3. Comply with the following; where requirements conflict, order of precedence of requirements is as listed:
 - a. The requirements of the State Fire Marshal.
 - b. The requirements of the local authority having jurisdiction .
 - c. Applicable local codes.
 - d. Contract Documents (drawings and specifications).

- e. NFPA 72; where the word "should" is used consider that provision mandatory; where conflicts between requirements require deviation from NFPA 72, identify deviations clearly on design documents.
- 4. Evacuation Alarm: Single smoke zone; general evacuation of entire premises.
- 5. Master Control Unit (Panel): Existing, located in the shown on the drawings located on ground floor.
- B. Supervising Stations and Fire Department Connections:
 - 1. Public Fire Department Notification: By remote supervising station.
- C. Circuits:
 - 1. Initiating Device Circuits (IDC): Class B, Style A. T-Tapping is allowed.
 - 2. Notification Appliance Circuits (NAC): Class B, Style W.
- D. Spare Capacity:
 - 1. Initiating Device Circuits: Minimum 25 percent spare capacity.
 - 2. Notification Appliance Circuits: Minimum 25 percent spare capacity.
- E. Power Sources:
 - 1. Primary: Dedicated branch circuits of the facility power distribution system.
 - 2. Secondary: Storage batteries.

2.04 EXISTING COMPONENTS

- A. Existing Fire Alarm System: Remove existing components indicated and incorporate remaining components into modified system, under warranty as if they were new; do not take existing portions of system out of service until new portions are fully operational, tested, and connected to existing system.

2.05 COMPONENTS

- A. General:
 - 1. Provide flush mounted units where installed in finish areas; in unfinished areas, surface mounted unit are acceptable.
- B. Fire Alarm Control Units: Analog, addressable type; listed, classified, and labeled as suitable for the purpose intended.
- C. Master Control Unit: Existing Simplex 4100.
- D. Initiating Devices:
 - 1. Addressable Systems:
 - a. Addressable Devices: Individually identifiable by addressable fire alarm control unit.
 - 2. Smoke Detectors: <>.
 - a. Salvage existing detectors for re-installation.
- E. Notification Appliances:
 - 1. Alarm Stobes: <>.
 - a. Strobe shall be listed to UL 1971. The strobe shall consist of a xenon flash tube and associated lens/reflector system. The strobe enclosure shall be white with 'ALERT' in red letters and mount directly to standard single gang, double gang or 4" square electrical box, without the use of special adapters or trim rings. Strobe appliances shall be provided with different minimum flash intensities of 15cd, 75cd and 110cd. Provide a label inside the strobe lens to indicate the listed candela rating.

- b. Strobe shall be synchronized.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with applicable codes, NFPA 72, NFPA 70, and Contract Documents.
- B. Install conduit system continuous for the entire Fire Alarm System.
- C. Conceal all conduit, boxes, and supports where installed in finished areas.

3.02 INSPECTION AND TESTING FOR COMPLETION

- A. Notify Owner 7 days prior to beginning completion inspections and tests.
- B. Notify authorities having jurisdiction and comply with their requirements for scheduling inspections and tests and for observation by their personnel.
- C. Provide the services of the installer's supervisor or person with equivalent qualifications to supervise inspection and testing, correction, and adjustments.
- D. Prepare for testing by ensuring that all work is complete and correct; perform preliminary tests as required.
- E. Provide all tools, software, and supplies required to accomplish inspection and testing.
- F. Perform inspection and testing in accordance with NFPA 72 and requirements of local authorities; document each inspection and test.
- G. Correct defective work, adjust for proper operation, and retest until entire system complies with Contract Documents.
- H. Diagnostic Period: After successful completion of inspections and tests, Operate system in normal mode for at least 14 days without any system or equipment malfunctions.
 - 1. Record all system operations and malfunctions.
 - 2. If a malfunction occurs, start diagnostic period over after correction of malfunction.
 - 3. At end of successful diagnostic period, fill out and submit NFPA 72 "Inspection and Testing Form."

3.03 CLOSEOUT

- A. Closeout Demonstration: Demonstrate proper operation of all functions to Owner.
 - 1. Be prepared to conduct any of the required tests.
 - 2. Have at least one copy of operation and maintenance data, preliminary copy of project record drawings, input/output matrix, and operator instruction chart(s) available during demonstration.
 - 3. Have authorized technical representative of control unit manufacturer present during demonstration.
- B. Owner's staff will occupy the facility for the entire duration of the project

END OF SECTION