PROJECT MANUAL

Rehabilitate Elevators
MONG Headquarters Building
Ike Skelton Training Site
Jefferson City, Missouri

DESIGNED BY: Connell Architecture PC
2311 East Walnut St
Ste. B
Columbia, MO 65201

DATE ISSUED: 8/30/2019

PROJECT NO.: T1901-01

FOR: State of Missouri
Office of Administration
Division of Facilities Management,
Design and Construction
PROJECT NUMBER: T1901-01

THE FOLLOWING DESIGN PROFESSIONALS HAVE SIGNED AND SEALED THE ORIGINAL PLANS AND SPECIFICATIONS FOR THIS PROJECT, WHICH ARE ON FILE WITH THE DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION:

1. ARCHITECT:
   Brian D. Connell, AIA

   [Signature]
   [Address]
   08-30-2019

2. MECHANICAL-ELECTRICAL ENGINEER:
   Kevin D. McDonald, P.E.

   [Signature]
   [Address]
   29-19

3. ELEVATOR CONSULTANT:
   James A. Lemp, P.E.

   [Signature]
   [Address]
   8/30/2019
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END OF SECTION 000110
SECTION 000115 – LIST OF DRAWINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section provides a comprehensive list of the drawings that comprise the Bid Documents for this project.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 LIST OF DRAWINGS

A. The following list of drawings is a part of the Bid Documents:

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END OF SECTION 000115
SECTION 001116 - INVITATION FOR BID

1.0  OWNER:

A. The State of Missouri
   Office of Administration,
   Division of Facilities Management, Design and Construction
   Jefferson City, Missouri

2.0  PROJECT TITLE AND NUMBER:

A. Rehabilitate Elevators
   MONG Headquarters Building
   Ike Skelton Training Site
   Jefferson City, Missouri

   Project No.: T1901-01

3.0  BIDS WILL BE RECEIVED:

A. Until: 1:30 PM, Thursday, October 31, 2019

B. Place: Only electronic bids on MissouriBUYS shall be accepted: https://missouribuys.mo.gov. Bidder must be registered to bid.

4.0  DESCRIPTION:

A. Scope: The project includes replacement of all major components of two (2) elevators including but not limited to the cars, pumps, motor, sensors, operating panels, safety equipment, and wiring, and the alteration or repair of the existing elevator hoistways to bring them into compliance with current elevator codes.

B. Estimate: $396,000 to $545,000

C. MBE/WBE/SDVE Goals: MBE 10.00%, WBE 10.00%, & SDVE 3.00%. NOTE: Only MBE/WBE firms certified by a State of Missouri public entity as of the date of bid opening, or SDVE(s) meeting the requirements of Section 34.074, RSMo and 1 CSR 30-5.010, can be used to satisfy the MBE/WBE/SDVE participation goals for this project.

5.0  PRE-BID MEETING:

A. Place/Time: 10:00 AM; Wednesday, October 16, 2019; Ike Skelton Training Site-CFMO Office, 6819a North Boundary Road, Jefferson City, MO 65101.

B. Access to State of Missouri property requires presentation of a photo ID by all persons

6.0  HOW TO GET PLANS & SPECIFICATIONS:


   NOTE: Prime contractors will be allowed a maximum of two bid sets at the deposit rate shown above. Other requesters will be allowed only one bid set at this rate. Additional bid sets or parts thereof may be obtained by any bidder at the cost of printing and shipping by request to American Document Solutions at the address shown above.

B. Refunds: Return plans and specifications in unmarked condition within 15 working days of bid opening to American Document Solutions, 1400 Forum Blvd., Suite 7A, Columbia, Missouri 65203. Phone 573-446-7768, Fax 573-355-5433. Deposits for plans not returned within 15 working days shall be forfeited.

Information for upcoming bids is available on the Division’s web site -- http://oa.mo.gov/facilities

Plans, specifications and bidders lists are available on-line for bidders reference on American Document Solutions website – https://www.adsplanroom.net

7.0  POINT OF CONTACT:

A. Designer: Connell Architecture PC, BRIAN CONNELL, phone # 573-875-2455, fax # 573-875-5531

B. Project Manager: Craig Bock, phone # 573-751-7831, fax # 573-751-7277

8.0  GENERAL INFORMATION:

A. The State reserves the right to reject any and all bids and to waive all informalities in bids. No bid may be withdrawn for a period of 20 working days subsequent to the specified bid opening time. The contractor shall pay not less than the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed, as determined by the Missouri Department of Labor and Industrial Relations and as set out in the detailed plans and specifications.

Bid results will be available by the close of business the day following bid opening on the Division of Facilities Management, Design and Construction’s website – https://oa.mo.gov/facilities/bid-opportunities/bid-listing-electronic-plans
SECTION 002113 – INSTRUCTIONS TO BIDDERS

1.0 - SPECIAL NOTICE TO BIDDERS
   A. If awarded a contract, the Bidder’s employees, and the employees of all subcontractors, who perform the work on the project, will be required to undergo a fingerprint background check and obtain a State of Missouri identification badge prior to beginning work on site. The Bidder should review the information regarding this requirement in Section 013513 – Site Security and Health Requirements prior to submitting a bid.

2.0 - BID DOCUMENTS
   A. The number of sets obtainable by any one (1) party may be limited in accordance with available supply.
   B. For the convenience of contractors, sub-contractors and suppliers, copies of construction documents are on file at the office of the Director, Division of Facilities Management, Design and Construction and on the Division’s web site - http://oa.mo.gov/facilities/project-management.

3.0 - BIDDERS' OBLIGATIONS
   A. Bidders must carefully examine the entire site of the work and shall make all reasonable and necessary investigations to inform themselves thoroughly as to the facilities available as well as to all the difficulties involved in the completion of all work in accordance with the specifications and the plans. Bidders are also required to examine all maps, plans and data mentioned in the specifications. No plea of ignorance concerning observable existing conditions or difficulties that may be encountered in the execution of the work under this contract will be accepted as an excuse for any failure or omission on the part of the contractor to fulfill in every detail all of the requirements of the contract, nor accepted as a basis for any claims for extra compensation.
   B. Under no circumstances will contractors give their plans and specifications to another contractor. Any bid received from a contractor whose name does not appear on the list of plan holders will be subject to rejection.

4.0 - INTERPRETATIONS
   A. No bidder shall be entitled to rely on oral interpretations as to the meaning of the plans and specifications or the acceptability of alternate products, materials, form or type of construction. Every request for interpretation shall be made in writing and submitted with all supporting documents not less than five (5) working days before opening of bids. Every interpretation made to a bidder will be in the form of an addendum and will be sent as promptly as is practicable to all persons to whom plans and specifications have been issued. All such addenda shall become part of the contract documents.
   B. Approval for an “acceptable substitution” issued in the form of an addendum as per Paragraph 4A above, and as per Article 3.1 of the General Conditions; ACCEPTABLE SUBSTITUTIONS shall constitute approval for use in the project of the product.
   C. An “acceptable substitution” requested after the award of bid shall be approved if proven to the satisfaction of the Owner and the Designer as per Article 3.1, that the product is acceptable in design, strength, durability, usefulness, and convenience for the purpose intended. Approval of the substitution after award is at the sole discretion of the Owner.
   D. A request for “Acceptable Substitutions” shall be made on the Section 006325 Substitution Request Form. The request shall be sent directly to the project Designer. A copy of said request should also be mailed to the Owner, Division of Facilities Management, Design and Construction, Post Office Box 809, Jefferson City, Missouri 65102.

5.0 - BIDS AND BIDDING PROCEDURE
   A. Bidders shall submit all submission forms and accompanying documents listed in SECTION 004113 – BID FORM, Article 5.0, ATTACHMENTS TO BID by the stated time or their bid will be rejected for being non-responsive.

   Depending on the specific project requirements, the following is a GENERIC list of all possible bid forms that may be due with bid submittals and times when they may be due. Please check for specific project
requirements on the proposal form (Section 004113). *Not all of the following bid forms may be required to be submitted.*

**Bid Submittal – due before stated date and time of bid opening (see IFB):**
- 004113  Bid Form (all pages are always required)
- 004322  Unit Prices Form
- 004336  Proposed Subcontractors Form
- 004337  MBE/WBE/SDVE Compliance Evaluation Form
- 004338  MBE/WBE/SDVE Eligibility Determination for Joint Ventures
- 004339  MBE/WBE/SDVE GFE Determination
- 004340  SDVE Business Form
- 004541  Affidavit of Work Authorization

(NOTE: See Article 7.D below for submittal restrictions.)

B. All bids shall be submitted without additional terms and conditions, modification or reservation on the bid forms with each space properly filled. Bids not on these forms will be rejected.

C. All bids shall be accompanied by a bid bond executed by the bidder and a duly authorized surety company, certified check, cashier's check or bank draft made payable to the Division of Facilities Management, Design and Construction, State of Missouri, in the amount indicated on the bid form, Section 004113. Failure of the contractor to submit the full amount required shall be sufficient cause to reject his bid. The bidder agrees that the proceeds of the check, draft or bond shall become the property of the State of Missouri, if for any reason the bidder withdraws his bid after closing, or if on notification of award refuses or is unable to execute tendered contract, provide an acceptable performance and payment bond, provide evidence of required insurance coverage and/or provide required copies of affirmative action plans within ten (10) working days after such tender.

D. The check or draft submitted by the successful bidder will be returned after the receipt of an acceptable performance and payment bond and execution of the formal contract. Checks or drafts of all other bidders will be returned within a reasonable time after it is determined that the bid represented by same will receive no further consideration by the State of Missouri. Bid bonds will only be returned upon request.

**6.0 - SIGNING OF BIDS**

A. Bids from an individual shall be signed as noted on the Bid Form.

B. Bids from a partnership or joint venture shall require only one signature of a partner, an officer of the joint venture authorized to bind the venture or an attorney-in-fact. If the bid is signed by an officer of a joint venture or an attorney-in-fact, a document evidencing the individual’s authority to execute contracts should be included with the bid form.

C. Bids from a corporation shall have the correct corporate name thereon and the signature of an authorized officer of the corporation manually written. Title of office held by the person signing for the corporation shall appear, along with typed name of said individual. Corporate license number shall be provided and, if a corporation organized in a state other than Missouri, a Certificate of Authority to do business in the State of Missouri shall be attached. In addition, for corporate proposals, the President or Vice-President should sign as the bidder. If the signator is other than the corporate president or vice president, the bidder must provide satisfactory evidence that the signator has the legal authority to bind the corporation.

**7.0 - RECEIVING BID SUBMITTALS: Only bids submitted on MissouriBUYS shall be accepted; no hard copy bids shall be accepted.**

A. It is the bidder’s sole responsibility to assure receipt by Owner of bid submittals by the date and time specified in the Invitation for Bid.

B. Submittals will be received as shown in and required by the Bid Form. Submittals will be completed so as to include insertion of all amounts for alternate bids, unit prices and cost accounting data, etc. Failure to complete all required information may be cause for rejection of bid.

C. No Contractor shall stipulate in his bid any conditions not contained in the specifications or standard bid form contained in the contract documents. To do so may subject the Contractor’s bid to rejection.
D. Bidders prices shall include all city, state and federal sales, excise and similar taxes which may be lawfully assessed in connection with his performance of work and purchase of materials to be incorporated in the work. THIS PROJECT IS NOT TAX EXEMPT.

E. The completed forms shall be without interlineations, alterations or erasures.

F. The Owner reserves the right to waive informalities in bid submittals and to reject any or all bids.

8.0 - MODIFICATION AND WITHDRAWAL OF BIDS

A. Bidder may withdraw his bid at any time prior to scheduled closing time for receipt of bids, but no bidder may withdraw his bid for a period of twenty (20) working days after the scheduled closing time for receipt of bids.

B. The Bidder shall modify his or her original bid by submitting a revised bid on MissouriBUYS.

9.0 - AWARD OF CONTRACT

A. The Owner reserves the right to reject any and/or all bids and further to waive all informalities in bidding when deemed in the best interest of the State of Missouri.

B. The Owner reserves the right to let other contracts in connection with the work, including but not by way of limitation, contracts for the furnishing and installation of furniture, equipment, machines, appliances and other apparatus.

C. In awarding the contract the Owner may take into consideration the bidder's skill, facilities, capacity, experience, responsibility, previous work record, financial standing and the necessity of prompt and efficient completion of work herein described. Inability of any bidder to meet the requirements mentioned above may be cause for rejection of his bid. However, no contract will be awarded to any individual, partnership or corporation, who has had a contract with the State of Missouri declared in default within the preceding twelve months.

D. Award of alternates, if any, will be made in numerical order unless all bids received are such that the order of acceptance of alternates does not affect the determination of the low bidder.

E. No bid shall be considered binding upon the Owner until the written contract has been properly executed, a satisfactory bond has been furnished, evidence of required insurance coverage, submittal of executed Section 004541, Affidavit of Work Authorization form, documentation evidencing enrollment and participation in a federal work authorization program has been received and an affirmative action plan submitted. Failure to execute and return the contract and associated documents within the prescribed period of time shall be treated, at the option of the Owner, as a breach of bidder's obligation and the Owner shall be under no further obligation to bidder.

F. If the successful bidder is doing business in the State of Missouri under a fictitious name, he shall furnish to Owner, attached to the Bid Form, a properly certified copy of the certificate of Registration of Fictitious Name from the State of Missouri, and such certificate shall remain on file with the Owner.

G. Any successful bidder which is a corporation organized in a state other than Missouri shall furnish to the Owner, attached to the Bid Form, a properly certified copy of its current Certificate of Authority to do business in the State of Missouri, such certificate to remain on file with the Owner. No contract will be awarded by the Owner unless such certificate is furnished by the bidder.

H. Any successful bidder which is a corporation organized in the State of Missouri shall furnish at its own cost to the Owner, if requested, a Certificate of Good Standing issued by the Secretary of State, such certificate to remain on file with the Owner.

I. Transient employers subject to Sections 285.230 and 285.234, RSMo, (out-of-state employers who temporarily transact any business in the State of Missouri) may be required to file a bond with the Missouri Department of Revenue. No contract will be awarded by the Owner unless the successful bidder certifies that he has complied with all applicable provisions of Section 285.230-234.

J. Sections 285.525 and 285.530, RSMo, require business entities to enroll and participate in a federal work authorization program in order to be eligible to receive award of any state contract in excess of $5,000. Bidders should submit with their bid an Affidavit of Work Authorization (Section 004541) along with appropriate documentation evidencing such enrollment and participation. Section-004541, Affidavit of Work Authorization is located at – http://oa.mo.gov/facilities/vendor-links/contractor-forms.
Information regarding a Memorandum of Understanding which is one form of appropriate documentation located at [https://www.uscis.gov/e-verify/] Submittal of this form and appropriate documentation is required before the award of any contract. In addition the contractor shall be responsible for compliance of these requirements by all subcontractors and suppliers at any tier associated with this contract.

10.0 – SERVICE-DISABLED VETERANS

A. For the purposes of these instructions, the terms “service-disabled veteran” and “service-disabled veteran business” have the same meanings as set forth in section 34.074, RSMo.

B. The State of Missouri has a goal of awarding three percent of all construction projects to service-disabled veterans. Furthermore, service-disabled veteran businesses doing business as Missouri firms, corporations, or individuals, or which maintain Missouri offices or places of business shall receive a three-point bonus preference in the contract award evaluation process. The bonus preference will be calculated and applied by reducing any service-disabled veteran business’s bid amount(s) by three percent of the lowest bid amount(s). This reduction is for evaluation purposes only, and will have no impact on the actual amount(s) of the bid or the amount(s) of any contract awarded.

C. Any bidder who is qualified as a Missouri service-disabled veteran pursuant to Section 34.074, RSMo, must complete and submit with the bid the MISSOURI SERVICE DISABLED VETERAN BUSINESS form and provide the specified documentation in accordance with the instructions provided therein. This form can be obtained at: [http://oa.mo.gov/facilities/vendor-links/contractor-forms].

11.0 - CONTRACT SECURITY

A. The successful bidder shall furnish a performance/payment bond as set forth in General Conditions Article 6.1 on a condition prior to the State executing the contract and issuing a notice to proceed.

12.0 - LIST OF SUBCONTRACTORS

A. If required by “Section 004113 – Bid Form,” each bidder must submit as part of their bid a list of subcontractors to be used in performing the work (Section 004336). The list must specify the name of the single designated subcontractor, for each category of work listed in “Section 004336 - Proposed Subcontractors Form.” If work within a category will be performed by more than one subcontractor, the bidder must provide the name of each subcontractor and specify the exact portion of the work to be done by each. Failure to list the Bidder’s firm, or a subcontractor for each category of work identified on the Bid Form or the listing of more than one subcontractor for any category without designating the portion of work to be performed by each shall be cause for rejection of the bid. If the bidder intends to perform any of the designated subcontract work with the use of his own employees, the bidder shall make that fact clear, by listing his own firm for the subject category. **If any category of work is left vacant, the bid shall be rejected.**

13.0 - WORKING DAYS

A. Contract duration time is stated in working days and will use the following definition in determining the actual calendar date for contract completion:

SECTION 002213—SUPPLEMENTARY INSTRUCTIONS TO BIDDERS – MBE/WBE/SDVE INSTRUCTIONS

1.0 DEFINITIONS


2. "MINORITY":
   a. "Black Americans," which includes persons having origins in any of the black racial groups of Africa;
   b. "Hispanic Americans," which includes persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish culture or origin regardless of race;
   c. "Native Americans," which includes persons who are American Indians, Eskimos, Aleuts, or Native Hawaiians;
   d. "Asian-Pacific Americans, "which includes persons whose origins are from Japan, China, Taiwan, Korea, Vietnam, Laos, Cambodia, the Philippines, Samoa, Guam, the U.S. Trust Territories of the Pacific, or the Northern Marianas; or
   e. "Asian-Indian Americans," which includes persons whose origins are from India, Pakistan or Bangladesh.

3. "MINORITY BUSINESS ENTERPRISE": A business concern which is at least fifty-one percent (51%) owned by one (1) or more minority as defined in 2. "MINORITY" above or in the case of any publicly-owned business, fifty-one percent (51%) of the stock of which is owned by one (1) or more minority as defined in 2. "MINORITY" above AND whose management and daily business operations are controlled by one (1) or more minority as defined herein.


5. "WOMEN BUSINESS ENTERPRISE": A business concern which is at least fifty-one percent (51%) owned by one (1) or more women or in the case of any publicly-owned business at least fifty-one percent (51%) of the stock of which is owned by one (1) or more women AND whose management and daily business operations are controlled by one (1) or more women.


7. “SERVICE-DISABLED VETERAN”: Any individual who is service disabled as certified by the appropriate federal agency responsible for the administration of veterans’ affairs.

8. “SERVICE-DISABLED VETERANS ENTERPRISE”: A service disabled veteran business as defined by Section 34.074, RSMo, meaning a business concern which is at least fifty-one percent (51%) owned by one (1) or more service-disabled veterans or in the case of any publicly-owned business at least fifty-one percent (51%) of the stock of which is owned by one (1) or more service-disabled veterans AND whose management and daily business operations are controlled by one (1) or more service disabled veterans.

2.0 MBE/WBE/SDVE PROGRAM REQUIREMENTS

A. For bids where MBE, WBE and or SDVE goals are greater than zero percent (0%) as noted in the “Invitation for Bid,” the following provisions shall apply

1. MBE/WBE/SDVE Percentage Goals:
   a. The bidder shall have as a goal subcontracting not less than the percentages stated on the Bid Form for MBE, WBE and SDVE firms.

2. Computation of MBE/WBE/SDVE Percent Goal Participation:
   a. The total dollar value of the work granted to the MBE, WBE or SDVE by the successful bidder shall be counted towards the applicable goal of the entire contract.
   b. A bidder may count toward the MBE/WBE/SDVE goals only expenditures to certified MBE’s, WBE’s, or SDVE’s that perform a commercially useful function in the work of a contract. A MBE, WBE, or SDVE is considered to perform a commercially useful function when it is responsible for executing a distinct element of the work contract and carrying out its responsibilities by actually performing, managing and supervising the work or providing supplies or manufactured materials. A bidder who is a MBE, WBE or SDVE may count 100% of the contract towards the MBE, WBE or
SDVE goal. (NOTE: MBE firms who bid as general contractors are expected to obtain WBE and SDVE participation; WBE firms who bid as general contractors are expected to obtain MBE and SDVE participation; and SDVE firms who bid as general contractors are expected to obtain MBE and WBE participation to meet the project’s separate goals.)

c.  Bidder may count toward its MBE/WBE/SDVE goals expenditures for materials and supplies obtained from certified MBE, WBE, or SDVE suppliers and manufacturers, provided that the MBE, WBE, or SDVE assumes the actual and contractual responsibility for the provision of the materials and supplies.

d.  A bidder may count towards the MBE/WBE/SDVE goals that portion of the total dollar value of the work granted to a second or subsequent tier subcontractor or a supplier to any subcontractor at any tier, provided that the MBE, WBE, or SDVE properly assumes responsibility for the work as outlined in 2.A.2.b and 2.A.2.c above.

e.  A bidder may count towards the MBE/WBE/SDVE goals that portion of the total dollar value granted to a certified joint venture equal to the percentage of the ownership and control of the MBE, WBE, or SDVE partner in the joint venture.

3. Certification by bidder of MBE/WBE/SDVE Subcontractors:

a.  The bidder shall submit with his bid the information requested in the MBE/WBE/SDVE Compliance Evaluation Form for every MBE, WBE, or SDVE subcontractor or material supplier the bidder intends to use on the contract work.

b.  The bidder may determine the status of certification of a proposed MBE or WBE subcontractor or supplier by referring to the Office of Equal Opportunity (OEO) MBE/WBE directory (https://apps1.mo.gov/MWBCertifiedFirms/); and the eligibility of a SDVE subcontractor or supplier by referring to the Division of Purchasing and Materials Management SDVE directory (http://oa.mo.gov/purchasing/vendor-information/missouri-service-disabled-veteran-business-enterprise-sdve-information) or the Department of Veterans Affairs directory (https://www.vip.vetbiz.gov/). Additional information, clarifications, etc., regarding the listings in the Directory may be obtained by calling the Division at (573) 751-3339 and asking to speak to the Contract Specialist of record as shown in Section 007300, Supplementary Conditions.

c.  If the proposed subcontractor is certified as a MBE/WBE firm by any other State of Missouri agency or any Missouri city or county government agency, the bidder shall so note and provide particulars. Other known State of Missouri entities providing certification are:

- Mountain Plains Minority Supplier Development Council 816-221-4200
- Human Relations Department, KCMO 816-274-1432
- Lambert International Airport 314-551-5000
- Metro (formerly Bi-State Development Agency) 314-982-1457
- St. Louis Development Corporation 314-622-3400 Ext. 362
- St. Louis Minority Business Council 314-241-1073
- SBA 8/St. Louis, MO 314-539-6600
- Missouri Department of Transportation 573-751-2859
- National Women Business Owners Corp. 561-848-5066

   (Missouri firms only)

4. Waiver of MBE/WBE/SDVE Participation:

a.  The bidder is required to make a good faith effort to locate and contract with MBE’s, WBE’s and SDVE’s. If a bidder has made a good faith effort to secure the required MBE’s, WBE’s and SDVE’s and has failed, he may submit with his bid the information requested in “MBE/WBE/SDVE Good
Faith Effort (GFE) Determination.” The Director will review the bidder’s actions as set forth in the bidder's Application for Waiver, the ability or success of other bidders to obtain MBE, WBE, or SDVE participation in their bids, and any other factors deemed relevant by the Director, to determine if a good faith effort has been made to meet the applicable percentage goals. If the bidder is judged not to have made a good faith effort, the bid shall be rejected as being nonresponsive to the bid requirements. Bidders who demonstrate that they have made a good faith effort to include MBE, WBE, and SDVE participation will be determined to be responsive to the MBE/WBE/SDVE participation goals of the contract regardless of the percent of MBE/WBE/SDVE participation, provided the bid is otherwise acceptable.

b. In reaching a determination of good faith, the Director may evaluate, but is not limited to, the following factors:

1. How subcontractors were contacted initially, the specific project information provided and the documentation to support that contact;
2. How project plans and specifications were provided to MBE/WBE/SDVE subcontractors;
3. The names, addresses, phone numbers, and dates of contact for MBE/WBE/SDVE firms contacted for specific categories of work;
4. Attempts to follow-up with MBE, WBE or SDVE subcontractors prior to bid to negotiate price, scope of work, or make other adjustments or clarifications;
5. Amount of bids received from any of these subcontractors;
6. Bid accepted from one of these subcontractors or reasons for rejecting bids;
7. The MBE, WBE, or SDVE suppliers contacted, date of contact, material or equipment, amounts of quotes;
8. The ability or success of other bidders to obtain the MBE/WBE/SDVE participation in their bids.

c. If MBE/WBE/SDVE goals have been identified on Section 004113 - BID FORM, ALL bidders are required to submit all appropriate MBE/WBE/SDVE documentation before the stated time and date set forth in the “Invitation for Bid”. Failure to provide this information by the specified date and time will be grounds for rejecting the bid.

MBE/WBE/SDVE forms may be accessed at https://oa.mo.gov/facilities/vendor-links/contractor-forms. It is the bidder’s sole responsibility to assure receipt by Owner of bid submittals by the date and time specified in the “Invitation for Bid.”

d. The Director reserves the right to provide bidders the opportunity to correct or amplify the documented information received concerning MBE/WBE/SDVE goals. The additional information will be transmitted to Facilities Management Design and Construction within two (2) working days of a phone or facsimile or email request from the Director’s representative.

3.0 CONTRACTOR REQUIREMENTS

For contracts where there are MBE/WBE/SDVE participation goals as noted in the “Invitation for Bid,” the following provisions shall apply:

A. The Contractor is bound to subcontracting or obtaining materials in amounts not less than the dollar amount indicated in the awarded contract to MBE/WBE/SDVE (s) unless that amount is revised in writing by the Owner’s representative.

B. If the Contractor fails to meet or maintain the participation requirements contained in the Contractor’s bid, he must satisfactorily explain to the Director or his Designee why the requirement cannot be achieved and why meeting the requirement was beyond the Contractor’s control.

C. If the Director finds the Contractor's explanation unsatisfactory, the Director may take any appropriate action including, but not limited to:
1. Declaring the Contractor ineligible to participate in any Facilities Management, Design and Construction contracts for a period not to exceed twelve (12) months; and

2. Directing that the Contractor be declared non-responsive to the “Invitation for Bid,” or in breach of this contract.

D. If a MBE, WBE, or SDVE is replaced during the course of this contract, the Contractor shall replace it with a similar MBE, WBE, or SDVE OR make a good faith effort to replace it with another MBE, WBE, or SDVE. All substitutions shall be approved by the Owners Representative.

E. The Contractor shall provide the Owner with regular reports on its progress in meeting its MBE/WBE/SDVE obligations. As a minimum, the dollar-value of work completed by each MBE, WBE, or SDVE subcontractor during the preceding month and as a cumulative total shall be reported with each monthly application for payment. A final report shall include the total dollar-value of work completed by each MBE, WBE, and SDVE subcontractor during the total contract.
The MBE/WBE Directory for goods and services is maintained by the Office of Equal Opportunity (OEO). The current Directory can be accessed at the following web address:

https://apps1.mo.gov/MWB CertifiedFirms/

Please note that you may search by MBE, WBE, or both as well as by region, location of the business by city or state, as well as by commodity or service.

The SERVICE DISABLED VETERAN ENTERPRISE (SDVE) Directory (s) may be accessed at the following web addresses:

https://oa.mo.gov/sites/default/files/sdvelisting.pdf

https://www.vip.vetbiz.va.gov
THIS AGREEMENT, made (DATE) by and between:

Contractor Name and Address
hereinafter called the "Contractor,"

and the State of Missouri, hereinafter called the "Owner", represented by the Office of Administration, Division of Facilities Management, Design and Construction, on behalf of the Department of Public Safety-MO National Guard.

WITNESSETH, that the Contractor and the Owner, for the consideration stated herein agree as follows:

ARTICLE 1. STATEMENT OF WORK

The Contractor shall furnish all labor and materials and perform all work required for furnishing and installing all labor, materials, equipment and transportation and everything necessarily inferred from the general nature and tendency of the plans and specifications for the proper execution of the work for:

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<tr>
<th>Project Name:</th>
<th>Rehabilitate Elevators</th>
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<td>MONG Headquarters Building</td>
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<tr>
<td></td>
<td>Ike Skelton Training Site</td>
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<td></td>
<td>Jefferson City, Missouri</td>
</tr>
</tbody>
</table>

Project Number: T1901-01

in strict accordance with the Contract Documents as enumerated in Article 7, all of which are made a part hereof.

ARTICLE 2. TIME OF COMPLETION

The contract performance time is 170 working days from the transmittal date of this agreement. The contract completion date is MONTH, DAY, YEAR. This time includes ten (10) working days for the Contractor to receive, sign and return the contract form along with required bonding and insurance certificates. Failure of the Contractor to provide correct bonding and insurance within the ten (10) working days shall not be grounds for a time extension. Receipt of proper bonding and insurance is a condition precedent to the formation of the contract and if not timely received, may result in forfeiture of the Contractor's bid security. Work may not commence until the Owner issues a written Notice to Proceed and must commence within seven (7) working days thereafter.

ARTICLE 3. LIQUIDATED DAMAGES

Whenever time is mentioned in this contract, time shall be and is of the essence of this contract. The Owner would suffer a loss should the Contractor fail to have the work embraced in this contract fully completed on or before the time above specified. THEREFORE, the parties hereto realize in order to adjust satisfactorily the damages on account of such failure that it might be impossible to compute accurately or estimate the amount of such loss or damages which the Owner would sustain by reason of failure to complete fully said work within the time required by this contract. The Contractor hereby covenants and agrees to pay the Owner, as and for liquidated damages, the sum of $700 per day for each and every day, Sunday and legal holidays excepted, during which the work remains incomplete and unfinished. Any sum which may be due the Owner for such damages shall be deducted and retained by the Owner from any balance which may be due the Contractor when said work shall have been finished and accepted. But such provisions shall not release the Bond of the Contractor from liability according to its terms. In case of failure to complete, the Owner will be under no obligation to show or prove any actual or specific loss or damage.
ARTICLE 4. CONTRACT SUM

The Owner shall pay the Contractor for the prompt, faithful and efficient performance of the conditions and undertakings of this contract, subject to additions, and deductions as provided herein, in current funds the sum of:

Base Bid: $ 

DELETE THE ALTERNATE INFORMATION IF NOT USED

The Owner accepts the following Alternate Bids:

Alternate One: $ 

TOTAL CONTRACT AMOUNT: (SCONTRACT AMOUNT)

UNIT PRICES: The Owner accepts the following Unit Prices:

For changing specified quantities of work from those indicated by the contract drawings and specifications, upon written instructions of Owner, the following unit prices shall prevail. The unit prices include all labor, overhead and profit, materials, equipment, appliances, bailing, shoring, shoring removal, etc., to cover the finished work of the several kinds of work called for. Only a single unit price shall be given and it shall apply for either MORE or LESS work than that shown on the drawings and called for in the specifications or included in the Base Bid. In the event of more or less units than so indicated or included, change orders may be issued for the increased or decreased amount.

INSERT UNIT PRICE DESCRIPTIONS AND QUANTITY INCLUDED IN THE BASE BID FROM SECTION 01026

OR

IF NO Unit Prices are used, type “NOT APPLICABLE”

ARTICLE 5. PREVAILING WAGE RATE

It is understood and agreed by and between the parties that not less than the prevailing hourly rate of wages shall be paid for work of a similar character in the locality in which the work is performed, and not less than the prevailing hourly rate of wages for legal holiday and overtime work in the locality in which the work is performed, both as determined by the Department of Labor and Industrial Relations or as determined by the court on appeal, to all workmen employed by or on behalf of the Contractor or any subcontractor, exclusive of maintenance work. Only such workmen as are directly employed by the Contractor or his subcontractors, in actual construction work on the site shall be deemed to be employed.

When the hauling of materials or equipment includes some phase of the construction other than the mere transportation to the site of the construction, workmen engaged in this dual capacity shall be deemed to be employed directly on the project and entitled to the prevailing wage.

ARTICLE 6. MINORITY/WOMEN/SERVICE DISABLED VETERAN BUSINESS ENTERPRISE PARTICIPATION

The Contractor has been granted a waiver of the 10% MBE and 5% WBE and 3% SDVE participation goals. The Contractor agrees to secure the MBE/WBE/SDVE participation amounts for this project as follows: (OR)

The Contractor has met the MBE/WBE/SDVE participation goals and agrees to secure the MBE/WBE/SDVE participation amounts for this project as follows:

MBE/WBE/SDVE Firm: Subcontract Amt: $ 
MBE/WBE/SDVE Firm: Subcontract Amt: $
MBE/WBE/SDVE Firm: Subcontract Amt: $  
Total $ 

MBE/WBE/SDVE assignments identified above shall not be changed without a Contract Change signed by the Owner. 

The Director of the Division of Facilities Management, Design and Construction or his Designee shall be the final authority to resolve disputes and disagreements between the Contractor and the MBE/WBE/SDVE firms listed above when such disputes impact the subcontract amounts shown above. 

ARTICLE 7. CONTRACT DOCUMENTS 

Contract documents shall consist of the following component parts: 

1. Division 0, with executed forms 
2. Division 1 
3. Executed Construction Contract Form 
4. The Drawings 
5. The Technical Specifications 
6. Addenda 
7. Contractor's Proposal as accepted by the Owner 

By signature below, the parties hereby execute this contract document. 

APPROVED: 

________________________________________  ______________________  ____________________  
Mark Hill, P.E., Acting Director  Contractor’s Authorized Signature  
Division of Facilities Management,  
Design and Construction  

DELETE IF PRIVATE OR PARTNERSHIP 

I, Corporate Secretary, certify that I am Secretary of the corporation named above and that (CONTRACTOR NAME), who signed said contract on behalf of the corporation, was then (TITLE) of said corporation and that said contract was duly signed for and in behalf of the corporation by authority of its governing body, and is within the scope of its corporate powers. 

________________________________________  
Corporate Secretary
STATE OF MISSOURI
OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
AFFIDAVIT FOR AFFIRMATIVE ACTION

NAME

First being duly sworn on oath states: that

he/she is the □ sole proprietor □ partner □ officer or □ manager or managing member of

NAME

a □ sole proprietorship □ partnership
□ limited liability company (LLC)

or □ corporation, and as such, said proprietor, partner, or officer is duly authorized to make this

affidavit on behalf of said sole proprietorship, partnership, or corporation; that under the contract known as

PROJECT TITLE

Less than 50 persons in the aggregate will be employed and therefore, the applicable Affirmative Action

requirements as set forth in Article 1.4 of the General Conditions of the State of Missouri have been met.

PRINT NAME & SIGNATURE

DATE

NOTARY INFORMATION

NOTARY PUBLIC EMBOSSE SEAL

STATE OF
COUNTY (OR CITY OF ST. LOUIS)

SUBSCRIBED AND SWORN BEFORE ME, THIS

DAY OF

YEAR

NOTARY PUBLIC SIGNATURE

MY COMMISSION EXPIRES

NOTARY PUBLIC NAME (TYPED OR PRINTED)

MO 300-1401 (05/18) FILE/Construction Contract
SECTI9N 006113 - PERFORMANCE AND PAYMENT BOND FORM

KNOW ALL MEN BY THESE PRESENTS, THAT we ________________________________
as principal, and ___________________________________________________________________________________
as Surety, are held and firmly bound unto the
STATE OF MISSOURI. in the sum of ________________________________ Dollars ($               )
for payment whereof the Principal and Surety bind themselves, their heirs, executors, administrators and successors, jointly
and severally, firmly by these presents.

WHEREAS, the Principal has, by means of a written agreement dated the ________________________________
day of______________________________, 20__________, enter into a contract with the State of Missouri for

(Insert Project Title and Number)

NOW, THEREFORE, if the Principal shall faithfully perform and fulfill all the undertakings, covenants, terms, conditions and
agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the State of
Missouri, with or without notice to the Surety and during the life of any guaranty required under the contract; and shall also faithfully
perform and fulfill all undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said
contract that may hereafter be made with or without notice to the Surety; and shall also promptly make payment for materials
incorporated, consumed or used in connection with the work set forth in the contract referred to above, and all insurance premiums,
both compensation and all other kinds of insurance, on said work, and for all labor performed on such work, whether by subcontractor
or otherwise, at not less than the prevailing hourly rate of wages for work of a similar character (exclusive of maintenance work) in the
locality in which the work is performed and not less than the prevailing hourly rate of wages for legal holiday and overtime work
(exclusive of maintenance work) in the locality in which the work is performed both as determined by the Department of Labor and
Industrial Relations or determined by the Court of Appeal, as provided for in said contract and in any and all duly authorized
modifications of said contract that may be hereafter made, with or without notice to the Surety, then, this obligation shall be void and
of no effect, but it is expressly understood that if the Principal should make default in or should fail to strictly, faithfully and
efficiently do, perform and comply with any or more of the covenants, agreements, stipulations, conditions, requirements or
undertakings, as specified in or by the terms of said contract, and with the time therein named, then this obligation shall be valid and
binding upon each of the parties hereto and this bond shall remain in full force and effect; and the same may be sued on at the instance
of any material man, laborer, mechanic, subcontractor, individual, or otherwise to whom such payment is due, in the name of the State
of Missouri, to the use of any such person.
AND, IT IS FURTHER specifically provided that any modifications which may hereinafter be made in the terms of the contract or in the work to be done under it or the giving by the Owner of any extension of the time for the performance of the contract or any other forbearance on the part of either the Owner or the Principal to the other, shall not in any way release the Principal and the Surety, or either or any of them, their heirs, executors, administrators and successors, from their liability hereunder, notice to the Surety of any such extension, modifications or forbearance being hereby waived.

IN WITNESS WHEREOF, the above bounden parties have executed the within instrument this __________ day of __________________, 20____.

AS APPLICABLE:

AN INDIVIDUAL

Name: ____________________________
Signature: ________________________

A PARTNERSHIP

Name of Partner: __________________
Signature of Partner: ______________

Name of Partner: __________________
Signature of Partner: ______________

CORPORATION

Firm Name: _______________________
Signature of President: ____________

SURETY

Surety Name: _____________________
Attorney-in-Fact: ________________
Address of Attorney-in-Fact: ________
Telephone Number of Attorney-in-Fact: __________
Signature Attorney-in-Fact: __________

NOTE: Surety shall attach Power of Attorney
<table>
<thead>
<tr>
<th>CHECK APPROPRIATE BOX</th>
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<tr>
<td>☐ SUBSTITUTION PRIOR TO BID OPENING</td>
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<tr>
<td>(Minimum of (5) working days prior to receipt of Bids as per Article 4 – Instructions to Bidders)</td>
</tr>
<tr>
<td>☐ SUBSTITUTION FOLLOWING AWARD</td>
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<tr>
<td>(Maximum of (20) working days from Notice to Proceed as per Article 3 – General Conditions)</td>
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| FROM: BIDDER/CONTRACTOR (PRINT COMPANY NAME) |
| TO: ARCHITECT/ENGINEER (PRINT COMPANY NAME) |

Bidder/Contractor hereby requests acceptance of the following product or systems as a substitution in accordance with provisions of Division One of the Bidding Documents:

<table>
<thead>
<tr>
<th>SPECIFIED PRODUCT OR SYSTEM</th>
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<tr>
<td>SPECIFICATION SECTION NO.</td>
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SUPPORTING DATA

- [ ] Product data for proposed substitution is attached (include description of product, standards, performance, and test data)
- [ ] Sample
  - [ ] Sample will be sent, if requested

<table>
<thead>
<tr>
<th>QUALITY COMPARISON</th>
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<tr>
<td>SPECIFIED PRODUCT</td>
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<tr>
<td>NAME, BRAND</td>
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<td>CATALOG NO.</td>
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<td>MANUFACTURER</td>
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<td>VENDOR</td>
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<tr>
<th>PREVIOUS INSTALLATIONS</th>
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<td>PROJECT</td>
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<td>LOCATION</td>
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<th>SIGNIFICANT VARIATIONS FROM SPECIFIED PRODUCT</th>
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REASON FOR SUBSTITUTION


DOES PROPOSED SUBSTITUTION AFFECT OTHER PARTS OF WORK?

☐ YES  ☐ NO

IF YES, EXPLAIN


SUBSTITUTION REQUIRES DIMENSIONAL REVISION OR REDESIGN OF STRUCTURE OR A/E WORK

☐ YES  ☐ NO

BIDDER’S/CONTRACTOR’S STATEMENT OF CONFORMANCE OF PROPOSED SUBSTITUTION TO CONTRACT REQUIREMENT:

We have investigated the proposed substitution. We believe that it is equal or superior in all respects to specified product, except as stated above; that it will provide the same Warranty as specified product; that we have included complete implications of the substitution; that we will pay redesign and other costs caused by the substitution which subsequently become apparent; and that we will pay costs to modify other parts of the Work as may be needed, to make all parts of the Work complete and functioning as a result of the substitution.

BIDDER/CONTRACTOR  DATE

REVIEW AND ACTION

☐ Resubmit Substitution Request with the following additional information:


☐ Substitution is accepted.

☐ Substitution is accepted with the following comments:


☐ Substitution is not accepted.

ARCHITECT/ENGINEER  DATE
STATE OF MISSOURI
OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

FINAL RECEIPT OF PAYMENT AND RELEASE

KNOW ALL MEN BY THESE PRESENT THAT: hereinafter called “Subcontractor” who heretofore entered into an agreement with hereinafter called “Contractor”, for the performance of work and/or furnishing of material for the construction of the project entitled

(PROJECT TITLE, PROJECT LOCATION, AND PROJECT NUMBER)
at

(ADDRESS OF PROJECT)

for the State of Missouri (Owner) which said subcontract is by this reference incorporated herein, in consideration of such final payment by Contractor.

DOES HEREBY:

1. ACKNOWLEDGE that they have been PAID IN FULL all sums due for work and materials contracted or done by their Subcontractors, Material Vendors, Equipment and Fixture Suppliers, Agents and Employees, or otherwise in the performance of the Work called for by the aforesaid Contract and all modifications or extras or additions thereto, for the construction of said project or otherwise.

2. RELEASE and fully, finally, and forever discharge the Owner from any and all suits, actions, claims, and demands for payment for work performed or materials supplied by Subcontractor in accordance with the requirements of the above referenced Contract.

3. REPRESENT that all of their Employees, Subcontractors, Material Vendors, Equipment and Fixture Suppliers, and everyone else has been paid in full all sums due them, or any of them, in connection with performance of said Work, or anything done or omitted by them, or any of them in connection with the construction of said improvements, or otherwise.

DATED this day of , 20 .

NAME OF SUBCONTRACTOR

BY (TYPED OR PRINTED NAME)

SIGNATURE

TITLE

ORIGINAL: FILE/Closeout Documents
**MBE/WBE/SDVE Progress Report**

**Project Title**

**Project Location**

**Firm**

**Total Contract Amount**

$  

The percentage and dollar amount of this project that are to be MBE/WBE/SDVE as indicated in the original contract: % and $ .

<table>
<thead>
<tr>
<th>Check</th>
<th>MBE</th>
<th>WBE</th>
<th>SDVE</th>
<th>Item of Work</th>
<th>Total Amount of Subcontract</th>
<th>$ Amount &amp; % Complete (Paid-to-Date)</th>
<th>Consultant/Subconsultant or Contractor/Subcontractor/Supplier Name, Address, Contact, and Phone Number</th>
</tr>
</thead>
<tbody>
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Original: Attach to all Progress and Final Payments

Invoicing:

- **Submit with all invoices.**
  - Please check appropriate box below:
    - Consultant
    - Construction

Final Date:

☐ Final
Before me, the undersigned Notary Public, in and for the County of ____________________________

State of ____________________________ personally came and appeared ____________________________

(NAME)

of the ____________________________

(POSITION) ____________________________ (NAME OF THE COMPANY) (a corporation) (a partnership) (a proprietorship) and after being duly sworn did depose and say that all provisions and requirements set out in Chapter 290, Sections 290.210 through and including 290.340, Missouri Revised Statutes, pertaining to the payment of wages to workmen employed on public works project have been fully satisfied and there has been no exception to the full and completed compliance with said provisions and requirements and with Wage Determination No: ____________________________ issued by the Department of Labor and Industrial Relations, State of Missouri on the _______ day of _______ 20__

in carrying out the contract and working in connection with ____________________________

(NAME OF PROJECT)

Located at ____________________________ in ____________________________ County

(NAME OF THE INSTITUTION)

Missouri, and completed on the ________ day of ________ 20__

SIGNATURE

NOTARY INFORMATION

NOTARY PUBLIC EMBOSSER OR BLACK INK RUBBER STAMP SEAL

STATE

SUBSCRIBED AND SWORN BEFORE ME, THIS _______ DAY OF _______ YEAR

NOTARY PUBLIC SIGNATURE

MY COMMISSION EXPIRES

NOTARY PUBLIC NAME (TYPED OR PRINTED)

USE RUBBER STAMP IN CLEAR AREA BELOW
# GENERAL CONDITIONS

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A. These General Conditions apply to each section of these specifications. The Contractor is subject to the provisions contained herein.

B. The General Conditions are intended to define the relationship of the Owner, the Designer and the Contractor thereby establishing certain rules and provisions governing the operation and performance of the work so that the work may be performed in a safe, orderly, expeditious and workmanlike manner.

ARTICLE 1 – GENERAL PROVISIONS

ARTICLE 1.1 - DEFINITIONS

A. As used in these contract documents, the following terms shall have the meanings and refer to the parties designated in these definitions.

1. "COMMISSIONER": The Commissioner of the Office of Administration.

2. "CONSTRUCTION DOCUMENTS": The "Construction Documents" shall consist of the Project Manual, Drawings and Addenda.

3. "CONSTRUCTION REPRESENTATIVE": Whenever the term "Construction Representative" is used, it shall mean the Owner’s Representative at the work site.

4. "CONTRACTOR": Party or parties who have entered into a contract with the Owner to furnish work under these specifications and drawings.

5. "DESIGNER": When the term "Designer" is used herein, it shall refer to the Architect, Engineer, or Consultant of Record specified and defined in Paragraph 2.0 of the Supplemental Conditions, or his duly authorized representative. The Designer may be either a consultant or state employee.

6. "DIRECTOR": Whenever the term "Director" is used, it shall mean the Director of the Division of Facilities Management, Design and Construction or his Designee, representing the Office of Administration, State of Missouri. The Director is the agent of the Owner.


8. "INCIDENTAL JOB BURDENS": Shall mean those expenses relating to the cost of work, incurred either in the home office or on the job-site, which are necessary in the course of doing business but are incidental to the job. Such costs include office supplies and equipment, postage, courier services, telephone expenses including long distance, water and ice and other similar expenses.

9. "JOINT VENTURE": An association of two (2) or more businesses to carry out a single business enterprise for profit for which purpose they combine their property, capital, efforts, skills and knowledge.

10. "OWNER": Whenever the term “Owner” is used, it shall mean the State of Missouri.

11. "PROJECT": Wherever the term “Project” is used, it shall mean the work required to be completed by the construction contract.


13. "SUBCONTRACTOR": Party or parties who contract under, or for the performance of part or this entire Contract between the Owner and Contractor. The subcontract may or may not be direct with the Contractor.

14. "WORK": Labor, material, supplies, plant and equipment required to perform and complete the service agreed to by the Contractor in a safe, expeditious, orderly and workmanlike manner so that the project shall be complete and finished in the best manner known to each respective trade.


ARTICLE 1.2 DRAWINGS AND SPECIFICATIONS

A. In case of discrepancy between drawings and specifications, specifications shall govern. Should discrepancies in architectural drawings, structural drawings and mechanical drawings occur, architectural drawings shall govern and, in case of
conflict between structural and mechanical drawings, structural drawings shall govern.

B. Specifications are separated into titled divisions for convenience of reference only and to facilitate letting of contracts and subcontracts. The Contractor is responsible for establishing the scope of work for subcontractors, which may cross titled divisions. Neither the Owner nor Designer will establish limits and jurisdiction of subcontracts.

C. Figured dimensions take precedence over scaled measurements and details over smaller scale general drawings. In the event of conflict between any of the documents contained within the contract, the documents shall take precedence and be controlling in the following sequence: addenda, supplementary general conditions, general conditions, division 1 specifications, technical division specifications, drawings, bid form and instructions to bidders.

D. Anything shown on drawings and not mentioned in these specifications or vice versa, as well as any incidental work which is obviously necessary to complete the project within the limits established by the drawings and specifications, although not shown on or described therein, shall be performed by the Contractor at no additional cost as a part of his contract.

E. Upon encountering conditions differing materially from those indicated in the contract documents, the Contractor shall promptly notify the Designer and Construction Representative in writing before such conditions are disturbed. The Designer shall promptly investigate said conditions and report to the Owner, with a recommended course of action. If conditions do materially differ and cause an increase or decrease in contract cost or time required for completion of any portion of the work, a contract change will be initiated as outlined in Article 4 of these General Conditions.

E. Only work included in the contract documents is authorized, and the Contractor shall do no work other than that described therein or in accordance with appropriately authorized and approved contract changes.

ARTICLE 1.3 - COMPLIANCE WITH LAWS, PERMITS, REGULATIONS AND INSPECTIONS

A. Since the Owner is the State of Missouri, municipal or political subdivisions, zoning ordinances, construction codes (other than licensing of trades), and other like ordinances are not applicable to construction on Owner’s property, and Contractor will not be required to submit drawings and specifications to any municipal or political subdivision, authority, obtain construction permits or any other licenses (other than licensing of trades) or permits from or submit to inspections by any municipality or political subdivision relating to the construction for this project. All permits or licenses required by municipality or political subdivision for operation on property not belonging to Owner shall be obtained by and paid for by Contractor. Each Contractor shall comply with all applicable laws, ordinances, rules and regulations that pertain to the work of this contract.

B. Contractors, subcontractors and their employees engaged in the businesses of electrical, mechanical, plumbing, carpentry, sprinkler system work, and other construction related trades shall be licensed to perform such work by the municipal or political subdivision where the project is located, if such licensure is required by local code. Local codes shall dictate the level (master, journeyman, and apprentice) and the number, type and ratio of licensed tradesmen required for this project within the jurisdiction of such municipal or political subdivision.

C. Equipment and controls manufacturers and their authorized service and installation technicians that do not maintain an office within the jurisdiction of the municipal or political subdivision but are a listed or specified contractor or subcontractor on this project are exempt from Paragraph 1.3 B above.

D. The Contractor shall post a copy of the wage determination issued for the project and included as a part of the contract documents, in a prominent and easily accessible location at the site of construction for the duration of the project.

E. Any contractor or subcontractor to such contractor at any tier signing a contract to work on this project shall provide a ten-hour Occupational Safety and Health Administration (OSHA) construction safety program for their on-site employees which includes a course in construction safety and health approved by OSHA or a similar program approved by the Department of Labor and Industrial Relations which is at least as stringent as an approved OSHA program. The contractor shall forfeit as a penalty to the public body on whose behalf the contract is made or awarded, two thousand five hundred dollars plus one hundred dollars for each employee employed by the contractor or subcontractor, for each calendar day, or portion thereof, such employee is employed without the required training.

ARTICLE 1.4 - NONDISCRIMINATION IN EMPLOYMENT

A. The Contractor and his subcontractors will not discriminate against individuals based on race, color, religion, national origin, sex, disability, or
age, but may use restrictions which relate to bona fide occupational qualifications. Specifically, the Contractor and his subcontractors shall not discriminate:

1. Against recipients of service on the basis of race, color, religion, national origin, sex, disability or age.

2. Against any employee or applicant, for employment on the basis of race, color, religion, national origin, sex or otherwise qualified disability status.

3. Against any applicant for employment or employee on the basis of age, where such applicant or employee is between ages 40 and 70 and where such Contractor employs at least 20 persons.

4. Against any applicant for employment or employee on the basis of that person’s status as a disabled or Vietnam-era veteran.

The Contractor and his Subcontractors will take affirmative action to insure applicants for employment and employees are treated equally without regard to race, color, religion, national origin, sex, disability, or age. Such action shall include, but not be limited to, the following: employment, upgrading, demotion and transfer; recruitment or recruitment advertising; and selection for training, including apprenticeship.

The Contractor and his Subcontractors will give written notice of their commitments under this clause to any labor union with which they have bargaining or other agreements.

B. The Contractor and his Subcontractors shall develop, implement, maintain and submit in writing to the Owner an affirmative action program if at least fifty (50) persons in the aggregate are employed under this contract. If less than fifty (50) persons in the aggregate are to be employed under this contract, the Contractor shall submit, in lieu of the written affirmative action program, a properly executed Affidavit for Affirmative Action in the form included in the contract specifications. For the purpose of this section, an "affirmative action program" means positive action to influence all employment practices (including, but not limited to, recruiting, hiring, promoting and training) in providing equal employment opportunity regardless of race, color, sex, national origin, religion, age (where the person affected is between age 40 and 70), disabled and Vietnam-era veteran status, and disability. Such "affirmative action program" shall include:

1. A written policy statement committing the total organization to affirmative action and assigning management responsibilities and procedures for evaluation and dissemination;

2. The identification of a person designated to handle affirmative action;

3. The establishment of non-discriminatory selection standards, objective measures to analyze recruitment, an upward mobility system, a wage and salary structure, and standards applicable to lay-off, recall, discharge, demotion and discipline;

4. The exclusion of discrimination from all collective bargaining agreements; and

5. Performance of an internal audit of the reporting system to monitor execution and to provide for future planning.

In the enforcement of this non-discrimination clause, the Owner may use any reasonable procedures available, including, but not limited to: requests, reports, site visits and inspection of relevant documents of contractors and subcontractors.

C. In the event of the Contractor’s or his subcontractor's noncompliance with any provisions of this Article of the Contract, the Owner may cancel this contract in whole or in part or require the Contractor to terminate his contract with the subcontractor.

ARTICLE 1.5 - ANTI-KICKBACK

A. No employee of the division, shall have or acquire any pecuniary interest, whether direct or indirect, in this contract or in any part hereof. No officer, employee, designer, attorney, or administrator of or for the Owner who is authorized in such capacity and on behalf of the Owner to exercise any legislative, executive, supervisory or other similar functions in connection with the construction of the project, shall have or acquire any pecuniary interest, whether direct or indirect, in this contract, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the project.

ARTICLE 1.6 - PATENTS AND ROYALTIES

A. The Contractor shall hold and save the Owner and its officers, agents, servants and employees harmless from liabilities of any nature or kind, including cost and expenses, for, or on account of, any patented or unpatented invention, process, article or appliance manufactured or used in the performance of this contract, including its use by the Owner; unless otherwise specifically stipulated in the contract documents.

B. If the Contractor uses any design, device or materials covered by letters, patent or copyright,
the Contractor shall provide for such use by suitable agreement with the Owner of such patented or copyrighted design, device or material. It is mutually agreed and understood, without exception, that the contract prices shall include all royalties or costs arising from the use of such design, device or materials, in any way involved in the work. The Contractor and/or his sureties shall indemnify and save harmless the Owner of the project from any and all claims for infringement by reason of the use of such patented or copyrighted design, device or materials or any trademark or copyright in connection with work agreed to be performed under this contract and shall indemnify the Owner for any cost, expense or damage it may be obliged to pay by reason of such infringement at any time during the prosecution of the work or after completion of the work.

ARTICLE 1.7 - PREFERENCE FOR AMERICAN AND MISSOURI PRODUCTS AND SERVICES

A. By virtue of statutory authority a preference will be given to Missouri labor and to products of mines, forests and quarries of the state of Missouri when they are found in marketable quantities in the state, and all such materials shall be of the best quality and suitable character that can be obtained at reasonable market prices, all as provided for in Section 8.280, Missouri Revised Statutes and Cumulative Supplements.

B. Furthermore, pursuant to Section 34.076 Missouri Revised Statutes and Cumulative Supplements, a preference shall be given to those persons doing business as Missouri firms, corporations, or individuals, or which maintain Missouri offices or places of business, when the quality of performance promised is equal or better and the price quoted is the same or less. In addition, in order for a non-domiciliary bidder to be successful, his bid must be that same percentage lower than a domiciliary Missouri bidder's bid, as would be required for a Missouri bidder to successfully bid in the non-domiciliary state.

C. In accordance with the Missouri Domestic Products Procurement Act Section 34.350 RSMo and Cumulative Supplements any manufactured goods or commodities used or supplied in the performance of this contract or any subcontract thereto shall be manufactured, assembled or produced in the United States, unless the specified products are not manufactured, assembled or produced in the United States in sufficient quantities to meet the agency’s requirements or cannot be manufactured, assembled or produced in the United States within the necessary time in sufficient quantities to meet the contract requirements, or if obtaining the specified products manufactured, assembled or produced in the United States would increase the cost of this contract for purchase of the product by more than ten percent.

ARTICLE 1.8 - COMMUNICATIONS

A. All notices, requests, instructions, approvals and claims must be in writing and shall be delivered to the Designer and copied to the Construction Representative for the project except as required by Article 1.12 Disputes and Disagreements, or as otherwise specified by the Owner in writing as stated in Section 012600. Any such notice shall be deemed to have been given as of the time of actual receipt.

B. The Contractor shall attend on-site progress and coordination meetings, as scheduled by the Construction Representative, no less than once a month.

C. The Contractor shall ensure that major subcontractors and suppliers shall attend monthly progress meetings as necessary to coordinate the work, and as specifically requested by the Construction Representative.

ARTICLE 1.9 - SEPARATE CONTRACTS AND COOPERATION

A. The Owner reserves the right to let other contracts in connection with this work. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work and shall properly connect and coordinate his work with theirs.

B. The Contractor shall consult the drawings for all other contractors in connection with this work. Any work conflicting with the above shall be brought to the attention of the Owner’s Representative before the work is performed. If the Contractor fails to do this, and constructs any work which interferes with the work of another contractor, the Contractor shall remove any part so conflicting and rebuild same, as directed by the Owner’s Representative at no additional cost to the Owner.

C. Each contractor shall be required to coordinate his work with other contractors so as to afford others reasonable opportunity for execution of their work. No contractor shall delay any other contractor by neglecting to perform contract work at the proper time. If any contractor causes delay to another, they shall be liable directly to that contractor for such delay in addition to any liquidated damages which might be due the Owner.

D. Should the Contractor or project associated subcontractors refuse to cooperate with the instructions and reasonable requests of other Contractors or other subcontractors in the overall
coordinating of the work, the Owner may take such appropriate action and issue directions, as required, to avoid unnecessary and unwarranted delays.

E. Each Contractor shall be responsible for damage done to Owner's or other Contractor's property by him/her or workers in his employ through their fault or negligence.

F. Should a Contractor sustain any damage through any act or omission of any other Contractor having a contract with the Owner, the Contractor so damaged shall have no claim or cause of action against the Owner for such damage, but shall have a claim or cause of action against the other Contractor to recover any and all damages sustained by reason of the acts or omissions of such Contractor. The phrase "acts or omissions" as used in this section shall be defined to include, but not be limited to, any unreasonable delay on the part of any such contractors.

ARTICLE 1.10 - ASSIGNMENT OF CONTRACT
A. No assignment by Contractor of any amount or any part of this contract or of the funds to be received there under will be recognized unless such assignment has had the written approval of the Director and the surety has been given due notice of such assignment and has furnished written consent thereto. In addition to the usual recitals in assignment contracts, the following language must be set forth: "It is agreed that the funds to be paid to the assignee under this assignment are subject to performance by the Contractor of this contract and to claims or liens for services rendered or materials supplied for the performance of the work called for in said contract in favor of all persons, firms or corporations rendering such services or supplying such materials."

ARTICLE 1.11 - INDEMNIFICATION
A. Contractor agrees to indemnify and save harmless Owner and its respective commissioners, officers, officials, agents, consultants and employees and Designer, their agents, servants and employees, from and against any and all liability for damage arising from injuries to persons or damage to property occasioned by any acts or omissions of Contractor, any subcontractors, agents, servants or employees, including any and all expense, legal or otherwise, which may be incurred by Owner or Designer, its agents, servants or employees, in defense of any claim, action or suit.

B. The obligations of the Contractor under this paragraph shall not extend to the liability of the Designer, his agents or employees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, contract changes, design or specifications, or (2) giving of or the failure to give directions or instructions by the Designer, his agents or employees as required by this contract documents provided such giving or failure to give is the primary cause of the injury or damage.

ARTICLE 1.12 - DISPUTES AND DISAGREEMENTS
A. It is hereby expressly agreed and understood that in case any controversy or difference of opinion arises during construction, best efforts will be given to resolution at the field level. Should those efforts be unsuccessful, the Contractor has the right to appeal in writing, the decision of the Director's Designee to the Director at Room 730 Truman Building, P.O. Box 809, Jefferson City, Missouri 65102. The decision of the Director shall be final and binding on all parties.

ARTICLE 2 -- OWNER/DESIGNER RESPONSIBILITIES
A. The Owner shall give all orders and directions contemplated under this contract relative to the execution of the work. During progress of work the Owner will be represented at the project site by the Construction Representative and/or Designer, whose responsibilities are to see that this contract is properly fulfilled.

B. The Owner shall at all times have access to the work whenever it is in preparation or progress. The Contractors shall provide proper facilities for such access and for inspection and supervision.

C. All materials and workmanship used in the work shall be subject to the inspection of the Designer and Construction Representative, and any work which is deemed defective shall be removed, rebuilt or made good immediately upon notice. The cost of such correction shall be borne by the Contractor. Contractor shall not be entitled to an extension of the contract completion date in order to remedy defective work. All rejected materials shall be immediately removed from the site of the work.

D. If the Contractor fails to proceed at once with the correction of rejected defective materials or workmanship, the Owner may, by separate contract or otherwise, have the defects remedied or rejected. Materials removed from the site and charge the cost of the same against any monies which may be due the Contractor, without prejudice to any other rights or remedies of the Owner.

E. Failure or neglect on the part of Owner to observe faulty work, or work done which is not in accordance with the drawings and specifications shall not relieve the Contractor from responsibility
for correcting such work without additional compensation.

F. The Owner shall have the right to direct the Contractor to uncover any completed work.
   1. If the Contractor fails to adequately notify the Construction Representative and/or Designer of an inspection as required by the Contract Documents, the Contractor shall, upon written request, uncover the work. The Contractor shall bear all costs associated with uncovering and again covering the work exposed.
   2. If the Contractor is directed to uncover work, which was not otherwise required by the Contract Documents to be inspected, and the work is found to be defective in any respect, no compensation shall be allowed for this work. If, however, such work is found to meet the requirements of this contract, the actual cost of labor and material necessarily involved in the examination and replacement plus 10% shall be allowed the Contractor.

G. The Designer shall give all orders and directions contemplated under this contract relative to the scope of the work and shall give the initial interpretation of the contract documents.

H. The Owner may file a written notice to the Contractor to dismiss immediately any subcontractors, project managers, superintendents, foremen, workers, watchmen or other employees whom the Owner may deem incompetent, careless or a hindrance to proper or timely execution of the work. The Contractor shall comply with such notice as promptly as practicable without detriment to the work or its progress.

I. If in the Owner’s judgment it becomes necessary at any time to accelerate work, when ordered by the Owner in writing, the Contractor shall redirect resources to such work items and execute such portions of the work as may be required to complete the work within the current approved contract schedule.

ARTICLE 3 -- CONTRACTOR RESPONSIBILITIES

ARTICLE 3.1 -- ACCEPTABLE SUBSTITUTIONS

A. The Contractor may request use of any article, device, product, material, fixture, form or type of construction which in the judgment of the Owner and Designer is equal in all respects to that named. Standard products of manufacturers other than those specified will be accepted when, prior to the ordering or use thereof, it is proven to the satisfaction of the Owner and Designer that they are equal in design, strength, durability, usefulness and convenience for the purpose intended.

B. Any changes required in the details and dimensions indicated on the drawings for the substitution of products other than those specified shall be properly made at the expense of the Contractor requesting the substitution or change.

C. The Contractor shall submit a request for such substitutions in writing to the Owner and Designer within twenty (20) working days after the date of the "Notice to Proceed." Thereafter no consideration will be given to alternate forms of accomplishing the work. This Article does not preclude the Owner from exercising the provisions of Article 4 hereof.

D. Any request for substitution by the Contractor shall be submitted in accordance with SECTION 002113 - INSTRUCTIONS TO BIDDERS.

E. When a material has been approved, no change in brand or make will be permitted unless:
   1. Written verification is received from the manufacturer stating they cannot make delivery on the date previously agreed, or
   2. Material delivered fails to comply with contract requirements.

ARTICLE 3.2 -- SUBMITTALS

A. The Contractor’s submittals must be submitted with such promptness as to allow for review and approval so as not to cause delay in the work. The Contractor shall coordinate preparation and processing of submittals with performance of construction activities.

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

Submit four (4) copies to the Designer and additional copies as required for the subcontractors and material suppliers. Also provide copies to meet the requirements for maintenance manuals.

B. All subcontractors' shop drawings and schedules shall be submitted by the Contractor and shall bear evidence that Contractor has received, reviewed, and approved them. Any shop drawings and schedules submitted without this evidence will be returned to the Contractor for resubmission.

C. The Contractor shall include with the shop drawing, a letter indicating any and all deviations from the drawings and/or specifications. Failure to notify the Designer of such deviations will be grounds for subsequent rejection of the related work or materials. If, in the opinion of the Designer, the deviations are not acceptable, the Contractor will be required to furnish the item as specified and indicated on the drawings.
D. The Designer shall check shop drawings and schedules with reasonable promptness and approve them only if they conform to the design concept of the project and comply with the information given in the contract documents. The approval shall not relieve the Contractor from the responsibility to comply with the drawings and specifications, unless the Contractor has called the Designer's attention to the deviation, in writing, at the time of submission and the Designer has knowingly approved thereof. An approval of any such modification will be given only under the following conditions:

1. It is in the best interest of the Owner
2. It does not increase the contract sum and/or completion time
3. It does not deviate from the design intent
4. It is without prejudice to any and all rights under the surety bond.

E. No extension of time will be granted because of the Contractor's failure to submit shop drawings and schedules in ample time to allow for review, possible resubmission, and approval. Fabrication of work shall not commence until the Contractor has received approval. The Contractor shall furnish prints of approved shop drawings and schedules to all subcontractors whose work is in any way related to the work under this contract. Only prints bearing this approval will be allowed on the site of construction.

F. The Contractor shall maintain a complete file on-site of approved shop drawings available for use by the Construction Representative.

**ARTICLE 3.3 – AS-BUILT DRAWINGS**

A. The Contractor shall update a complete set of the construction drawings, shop drawings and schedules of all work monthly by marking changes, and at the completion of their work (prior to submission of request for final payment) note all changes and turn the set over to the Construction Representative. The updates shall show all addenda, all field changes that were made to adapt to field conditions, changes resulting from contract changes or supplemental instructions, and all locations of structures, buried installations of piping, conduit, and utility services. All buried and concealed items both inside and outside shall be accurately located as to depth and referenced to permanent features such as interior or exterior wall faces and dimensions shall be given in a neat and legible manner in a contrasting colored pencil or ink. If approved by the Designer, an electronic file format may be provided.

**ARTICLE 3.4 – GUARANTY AND WARRANTIES**

A. General Guaranty

1. Neither the final certificate of payment nor any provision in the contract documents nor partial use or occupancy of the premises by the Owner shall constitute an acceptance of work not done in accordance with contract requirements.

2. The Contractor or surety shall remedy any defects in the work and pay for any damage to property resulting there from which shall appear within a period of one (1) year from the date of substantial completion unless a longer period is otherwise specified or a differing guaranty period has been established in the substantial completion certificate. The Owner will give notice of observed defects with reasonable promptness.

3. In case of default on the part of the Contractor in fulfilling this part of this contract, the Owner may correct the work or repair the damage and the cost and expense incurred in such event shall be paid by or recoverable from the Contractor or surety.

4. The work will be free from defects not inherent in the quality required or permitted, and that the Work will conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor's guaranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. If required by the Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

B. Extended Warranty

Manufacturer's certificates of warranty shall be obtained for all major equipment. Warranty shall be obtained for at least one year. Where a longer period is offered at no additional cost or called for in the specific equipment specifications, the longer period shall govern.

**ARTICLE 3.5 -- OPERATION AND MAINTENANCE MANUALS**

A. Immediately after equipment submittals are approved and no later than ten (10) working days prior to the substantial completion inspection, the Contractor shall provide to the Designer three (3)
copies of operating instructions and service manuals, containing the following:

1. **Start-up and Shut-down Procedures:** Provide a step-by-step write up of all major equipment. When manufacturer’s printed start-up, trouble shooting and shut-down procedures are available; they may be incorporated into the operating manual for reference.

2. **Operating Instructions:** Written operating instructions shall be included for the efficient and safe operation of all equipment.

3. **Equipment List:** List of all major equipment as installed shall be prepared to include model number, capacities, flow rate, name place data, shop drawings and air and water balance reports.

4. **Service Instructions:** Provide the following information for all pieces of equipment.
   a. Recommended spare parts including catalog number and name of local supplier or factory representative.
   b. Belt sizes, types, and lengths.
   c. Wiring diagrams.

5. **Manufacturer’s Certificate of Warranty** as described in Article 3.4.

6. **Prior to the final payment, furnish to the Designer three (4) copies of parts catalogs for each piece of equipment furnished by him/her on the project with the components identified by number for replacement ordering.**

**B. Submission of operating instructions shall be done in the following manner.**

1. Manuals shall be in quadruplicate, and all materials shall be bound into volumes of standard 8½" x 11" hard binders. Large drawings too bulky to be folded into 8½" x 11" shall be separately bound or folded and in envelopes, cross referenced and indexed with the manuals.

2. The manuals shall identify project name, project number, and include the name and address of the Contractor, subcontractors and manufacturers who were involved with the activity described in that particular manual.

3. Internally subdivide the binder contents with permanent page dividers, logically organized with tab titles clearly printed under reinforced laminated plastic tabs.

4. **Contents:** Prepare a Table of Contents for each volume, with each product or system description identified.

**ARTICLE 3.6 – OTHER CONTRACTOR RESPONSIBILITIES**

A. The Contractor shall keep on site, during progress of the work, a competent superintendent satisfactory to the Construction Representative. The superintendent shall represent the Contractor and all agreements made by the superintendent shall be binding. The superintendent shall carefully study and compare all drawings, specifications and other instructions and shall promptly notify the Construction Representative and Designer, in writing, any error, inconsistency or omission which may be discovered. The superintendent shall coordinate all work on the project. Any change of the superintendent shall be approved by the Construction Representative.

B. **Contractor shall, at all times, enforce strict discipline and good order among his employees, and shall not employ on the work any unfit person or anyone not skilled in the work assigned to him/her.**

C. The Contractor shall supply sufficient labor, material, plant and equipment and pay when due any laborer, subcontractor or supplier for supplies furnished and otherwise prosecute the work with diligence to prevent work stoppage and insure completion thereof within the time specified.

D. The Contractor and each of his subcontractors shall submit to the Construction Representative, through the Designer such schedules of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data as the Owner may request concerning work performed or to be performed under this contract.

E. The Contractor, subcontractors, and material suppliers shall upon written request, give the Owner access to all time cards, material invoices, payrolls, estimates, profit and loss statements, and all other direct or indirect costs related to this work.

F. The Contractor shall be responsible for laying out all contract work such as layout of architectural, structural, mechanical and electrical work, which shall be coordinated with layouts of subcontractors for general construction work. The Contractor is also responsible for unloading, uncrating and handling of all materials and equipment to be erected or placed by him/her, whether furnished by Contractor or others. No extra charges or compensation will be allowed as a result of failure to verify dimensions before ordering materials or fabricating items.

G. The Contractor must notify the Construction Representative at least one working day before
placing concrete or burying underground utilities, pipelines, etc.

H. Contractors shall prearrange time with the Construction Representative for the interruption of any facility operation. Unless otherwise specified in these documents, all connections, alterations or relocations as well as all other portions of the work will be performed during normal working hours.

I. The Contractor shall coordinate all work so there will not be prolonged interruptions of existing equipment operation. Any existing plumbing, heating, ventilating, air conditioning or electrical disconnections necessary for the project, which affect portions of this construction or building or any other building must be scheduled with the Construction Representative to minimize or avoid any disruption of facility operations. In no case, unless previously approved in writing by the Construction Representative, shall utilities be left disconnected at the end of a work day or over a weekend. Any interruption of utilities either intentionally or accidentally shall not relieve the Contractor responsible for the interruption from the responsibility to repair and restore the utility to normal service. Repairs and restoration shall be made before the workers responsible for the repair and restoration leave the job.

J. Contractors shall limit operations and storage of materials to the area within the project, except as necessary to connect to existing utilities, and shall not encroach on neighboring property. The Contractor shall be responsible for repair of their damage to property on or off the project site occurring during construction of project. All such repairs shall be made to the satisfaction of the property owner.

K. Unless otherwise permitted, all materials shall be new and both workmanship and materials shall be of the best quality.

L. Unless otherwise provided and stipulated within these specifications, the Contractor shall furnish, construct, and/or install and pay for materials, devices, mechanisms, equipment, all necessary personnel, utilities including, but not limited to water, heat, light and electric power, transportation services, applicable taxes of every nature, and all other facilities necessary for the proper execution and completion of the work.

M. Contractor shall carefully examine the plans and drawings and shall be responsible for the proper fitting of his material, equipment and apparatus into the building.

N. The Contractor or subcontractors shall not overload, or permit others to overload, any part of any structure during the performance of this contract.

O. All temporary shoring, bracing, etc., required for the removal of existing work and/or for the installation of new work shall be included in this contract. The Contractor shall make good, at no cost to the Owner, any damage caused by improper support or failure of shoring in any respect. Each Contractor shall be responsible for shoring required to protect his work or adjacent property and improvements of Owner and shall be responsible for shoring or for giving written notice to adjacent property owners. Shoring shall be removed only after completion of permanent supports.

P. The Contractor shall provide at the proper time such material as is required for support of the work. If openings are required, whether shown on drawings or not, the Contractor shall see that they are properly constructed.

Q. During the performance of work the Contractor shall be responsible for providing and maintaining warning signs, lights, signal devices, barricades, guard rails, fences and other devices appropriately located on site which will give proper and understandable warning to all persons of danger of entry onto land, structure or equipment.

R. The Contractor shall be responsible for protection, including weather protection, and proper maintenance of all equipment and materials.

S. The Contractor shall be responsible for care of the finished work and shall protect same from damage or defacement until substantial completion by the Owner. If the work is damaged by any cause, the Contractor shall immediately begin to make repairs in accordance with the drawings and specifications. Contractor shall be liable for all damage or loss unless attributable to the acts or omissions of the Owner or Designer. Any claim for reimbursement shall be submitted in accordance with Article 4. After substantial completion the Contractor will only be responsible for damage resulting from acts or omissions of the Contractor or subcontractors through final warranty.

T. In the event the Contractor encounters an unforeseen hazardous material, the Contractor shall immediately stop work in the area affected and report the condition to the Owner and Designer in writing. The Contractor shall not be required, pursuant to Article 4, to perform, any work relating to hazardous materials.

U. 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
V. Before commencing work, Contractors shall confer with the Construction Representative and facility representative and review any facility rules and regulations which may affect the conduct of the work.

W. Project signs will only be erected on major projects and only as described in the specifications. If no sign is specified, none shall be erected.

ARTICLE 3.7 -- SUBCONTRACTS

A. Subcontractor assignments as identified in the bid form shall not be changed without written approval of the Owner. The Owner will not approve changes of a listed subcontractor unless the Contractor documents, to the satisfaction of the Owner that the subcontractor cannot or will not perform the work as specified.

B. The Contractor is fully responsible to the Owner for the acts and omissions of all subcontractors and of persons either directly or indirectly employed by them.

C. Every subcontractor shall be bound by the applicable terms and provisions of these contract documents, but no contractual relationship shall exist between any subcontractor and the Owner unless the right of the Contractor to proceed with the work is suspended or this contract is terminated as herein provided, and the Owner in writing elects to assume the subcontract.

D. The Contractor shall upon receipt of "Notice to Proceed" and prior to submission of the first payment request, notify the Designer and Construction Representative in writing of the names of any subcontractors to be used in addition to those identified in the bid form and all major material suppliers proposed for all parts of the work.

ARTICLE 4 -- CHANGES IN THE WORK

4.1 CHANGES IN THE WORK

A. The Construction Representative, without giving notice to the surety and without invalidating this contract, may order extra work or make changes by altering, adding to or deducting from the work, this contract sum being adjusted accordingly. All such work shall be executed under the conditions of the original contract. A claim for extension of time caused by any change must be adjusted at the time of ordering such change. No future request for time will be considered.

B. Each Contract Change shall include all costs required to perform the work including all labor, material, equipment, overheads and profit, delay, disruptions, or other miscellaneous expenses. No subsequent requests for additional compensation including claims for delay, disruption, or reduced efficiency as a result of each change will be considered. Values from the Schedule of Values will not be binding as a basis for additions to or deductions from the contract price.

C. The amount of any adjustment in this contract price for authorized changes shall be agreed upon before such changes become effective and shall be determined, through submission of a request for proposal, as follows:

1. By an acceptable fixed price proposal from the Contractor. Breakdown shall include all takeoff sheets of each Contractor and subcontractor. Breakdown shall include a listing of each item of material with unit prices and number of hours of labor for each task. Labor costs per hour shall be included with labor burden identified, which shall be not less than the prevailing wage rate, etc. Overhead and profit shall be shown separately for each subcontractor and the Contractor.

2. By a cost-plus-fixed-fee (time and material) basis with maximum price, total cost not to exceed said maximum. Breakdown shall include a listing of each item of material with unit prices and number of hours of labor for each task. Labor costs per hour shall be included with labor burden identified, which shall be not less than the prevailing wage rate, etc. Overhead and profit shall be shown separately for each subcontractor and the Contractor.

3. By unit prices contained in Contractor's original bid form and incorporated in the construction contract.

D. Overhead and Profit on Contract Changes shall be applied as follows:

1. The overhead and profit charge by the Contractor and all subcontractors shall be considered to include, but is not limited to: incidental job burdens, small truck (under 1 ton) expense, mileage, small hand tools, warranty costs, company benefits and general office overhead. Project supervision including field supervision and job site office expense shall be considered a part of overhead and profit unless a compensable time extension is granted.

2. The percentages for overhead and profit charged on Contract Changes shall be negotiated, and may vary according to the nature, extent, and complexity of the work...
involved. However, the overhead and profit for the Contractor or subcontractor actually performing the work shall not exceed 14%. When one or more tiers of subcontractors are used, in no event shall any Contractor or subcontractor receive as overhead and profit more than 3% of the cost of the work performed by any of his subcontractors. In no case shall the total overhead and profit paid by the Owner on any Contract Changes exceed twenty percent (20%) of the cost of materials, labor and equipment (exclusive of Contractor or any Subcontractor overhead and profit) necessary to put the contract change work in place.

3. The Contractor will be allowed to add the cost of bonding and insurance to their cost of work. This bonding and insurance cost shall not exceed 2% and shall be allowed on the total cost of the added work, including overhead and profit.

4. On proposals covering both increases and decreases in the amount of this contract, the application of overhead and profit shall be on the net change in the cost of the work.

5. The percentage for overhead and profit to be credited to the Owner on Contract Changes that are solely decreases in the quantity of work or materials shall be negotiated, and may vary according to the nature, extent and complexity of the work involved, but in no case shall be less than ten percent (10%). If the percentage for overhead and profit charged for work added by Contract Changes for this contract has been negotiated to less than 10%, the negotiated rate shall then apply to credits as well.

E. No claim for an addition to this contract sum shall be valid unless authorized as aforesaid in writing by the Owner. In the event that none of the foregoing methods are agreed upon, the Owner may order the Contractor to perform work on a time and material basis. The cost of such work shall be determined by the Contractor’s actual labor and material cost to perform the work plus overhead and profit as outlined herein. The Designer and Construction Representative shall approve the Contractor's daily time and material invoices for the work involved.

F. If the Contractor claims that any instructions involve extra cost under this contract, the Contractor shall give the Owner’s Representative written notice thereof within a reasonable time after the receipt of such instructions, and in any event before proceeding to execute the work. No such claim shall be valid unless so made and authorized by the Owner, in writing.

G. In an emergency affecting the safety of life or of the structure or of adjoining property, the Contractor, without special instruction or authorization from the Construction Representative, is hereby permitted to act at their discretion to prevent such threatened loss or injury. The Contractor shall submit a claim for compensation for such emergency work in writing to the Owner’s Representative.

ARTICLE 4.2 – CHANGES IN COMPLETION TIME

A. Extension of the number of work days stipulated in the Contract for completion of the work with compensation may be made when:

1. The contractor documents that proposed Changes in the work, as provided in Article 4.1, extends construction activities critical to contract completion date, OR

2. The Owner suspends all work for convenience of the Owner as provided in Article 7.3, OR

3. An Owner caused delay extends construction activities critical to contract completion (except as provided elsewhere in these General Conditions). The Contractor is to review the work activities yet to begin and evaluate the possibility of rescheduling the work to minimize the overall project delay.

B. Extension of the number of work days stipulated in the Contract for completion of the work without compensation may be made when:

1. Weather-related delays occur, subject to provisions for the inclusion of a specified number of "bad weather" days when provided for in Section 012100-Allowances, OR

2. Labor strikes or acts of God occur, OR

3. The work of the Contractor is delayed on account of conditions which were beyond the control of the Contractor, subcontractors or suppliers, and were not the result of their fault or negligence.

C. No time extension or compensation will be provided for delays caused by or within the control of the Contractor, subcontractors or suppliers and for concurrent delays caused by the Owner.

D. The Contractor shall notify the Owner promptly of any occurrence or conditions which in the Contractor's opinion results in a need for an extension of time. The notice shall be in writing and shall include all necessary supporting materials with details of any resultant costs and be submitted in time to permit full investigation and
evaluation of the Contractor's claim. The Owner shall promptly acknowledge the Contractor's notice and, after recommendation from the Owner’s Representative and/or Designer, shall provide a decision to the Contractor. Failure on the part of the Contractor to provide such notice and to detail the costs shall constitute a waiver by the Contractor of any claim. Requests for extensions of time shall be for working days only.

ARTICLE 5 - CONSTRUCTION AND COMPLETION

ARTICLE 5.1 – CONSTRUCTION COMMENCEMENT

A. Upon receipt of the "Intent to Award" letter, the Contractor must submit the following properly executed instruments to the Owner:

1. Contract;
2. Performance/payment bond as described in Article 6.1;
3. Certificates of Insurance, or the actual policies themselves, showing that the Contractor has obtained the insurance coverage required by Article 6.2.

Above referenced items must be received by the Owner within ten (10) working days after the effective date of the contract. If not received, the Owner may treat the failure to timely submit them as a refusal by the Contractor to accept a contract for this work and may retain as liquidated damages the Contractor's bid bond, cashier's check or certified check as provided in the Instructions to Bidders. Upon receipt the Owner will issue a "Notice to Proceed" with the work to the Contractor.

B. Within the time frame noted in Section 013200 - Schedules, following receipt of the "Notice to Proceed", the Contractor shall submit to the Owner a progress schedule and schedule of values, showing activities through the end of the contract period. Should the Contractor not receive written notification from the Owner of the disapproval of the schedule of values within fifteen (15) working days, the Contractor may consider it approved for purpose of determining when the first monthly Application and Certification for Payment may be submitted.

C. The Contractor may commence work upon receipt of the Division of Facilities Management, Design and Construction’s "Notice to Proceed" letter. Contractor shall prosecute the work with faithfulness and energy, and shall complete the entire work on or before the completion time stated in the contract documents or pay to the Owner the damages resulting from the failure to timely complete the work as set out within Article 5.4.

ARTICLE 5.2 -- PROJECT CONSTRUCTION

A. Each Contractor shall submit for the Owner's approval, in reproducible form, a progress schedule showing the rate of progress and the order of the work proposed to carry on various phases of the project. The schedule shall be in conformance with the requirements outlined in Section 013200 – Schedules.

B. Contractor shall employ and supply a sufficient force of workers, material, and equipment and shall pay when due, any worker, subcontractor or supplier and otherwise prosecute the work with such diligence so as to maintain the rate of progress indicated on the progress schedule, prevent work stoppage, and insure completion of the project within the time specified.

ARTICLE 5.3 -- PROJECT COMPLETION

A. Substantial Completion. A Project is substantially complete when construction is essentially complete and work items remaining to be completed can be done without interfering with the Owner's ability to use the Project for its intended purpose.

1. Once the Contractor has reached what they believe is Substantial Completion, the Contractor shall notify the Designer and the Construction Representative of the following:
   a. That work is essentially complete with the exception of certain listed work items. The list shall be referred to as the “Contractor’s Punch.”
   b. That all Operation and Maintenance Manuals have been assembled and submitted in accordance with Article 3.5A.
   c. That the Work is ready for inspection by the Designer and Construction Representative. The Owner shall be entitled to a minimum of ten working days notice before the inspection shall be performed.

2. If the work is acceptable, the Owner shall issue a Certificate of Substantial Completion, which shall set forth the responsibilities of the Owner and the Contractor for utilities, security, maintenance, damage to the work and risk of loss. The Certificate shall also identify those remaining items of work to be
C. Final Completion. The Project is finally complete when the Certificate of Substantial Completion has been issued and all work items identified therein as incomplete have been completed, and when all administrative items required by the contract have been completed. Final Completion entitles the Contractor to payment of the outstanding balance of the contract amount including all change orders and retainage. Within five (5) working days of the date of the Certificate of Substantial Completion, the Contractor shall identify the cost to complete any outstanding items of work. The Designer shall review the Contractor’s estimate and either approve it or provide an independent estimate for all such items. If the Contractor fails to complete the remaining items within the time specified in the Certificate, the Owner may terminate the contract and go to the surety for project completion in accordance with Article 7.2 or release the contract balance to the Contractor less 150% of the approved estimate to complete the outstanding items. Upon completion of the outstanding items, when a final cost has been established, any monies remaining shall be paid to the Contractor. Failure to complete items of work does not relieve the Contractor from the obligation to complete the administrative requirements of the contract, such as the provisions of Article 5.3. FAILURE TO COMPLETE ALL ITEMS OF WORK UNDER THE CONTRACT SHALL BE CONSIDERED A DEFAULT AND BE GROUNDS FOR CONTRACT TERMINATION AND DEBARMENT.

D. Liquidated Damages. Contractor agrees that the Owner may deduct from the contract price and retain as liquidated damages, and not as penalty or forfeiture, the sum stipulated in this contract for each work day after the Contract Completion Date on which work is not Substantially Complete. Assessment of Liquidated Damages shall not relieve the Contractor or the surety of any responsibility or obligation under the Contract. In addition, the Owner may, without prejudice to any other rights, claims, or remedies the Owner may have including the right to Liquidated Damages, charge the Contractor for all additional expenses incurred by the Owner and/or Designer as the result of the extended contract period through Final Completion. Additional Expenses shall include but not be limited to the costs of additional inspections.

E. Early Completion. The Contractor has the right to finish the work before the contract completion date; however, the Owner assumes no liability for any hindrances to the Contractor unless Owner caused delays result in a time extension to the contract completion date. The Contractor shall not be entitled to any claims for lost efficiencies or for delay if a Certificate of Substantial Completion is given on or before the Contract Completion Date.

ARTICLE 5.4 -- PAYMENT TO CONTRACTOR

A. Payments on account of this contract will be made monthly in proportion to the work which has been completed. Request for payment must be submitted on the Owner's forms. No other pay request will be processed. Supporting breakdowns must be in the same format as Owner’s forms and must provide the same level of detail. The Designer will, within five (5) working days from receipt of the contractor’s request for payment either issue a Certificate for Payment to the Owner, for such amount as the Designer determines is properly due, or notify the Contractor in writing of reasons for withholding a Certificate. The Owner shall make
payment within 30 calendar days after the "Application and Certification for Payment" has been received and certified by the Designer. The following items are to be attached to the contractor's pay request:

1. Updated construction schedule
2. Certified payrolls consisting of name, occupation and craft, number of hours worked and actual wages paid for each individual employee, of the Contractor and all subcontractors working on the project

B. The Owner shall retain 5 percent of the amount of each such payment application, except as allowed by Article 5.4, until final completion and acceptance of all work covered by this contract.

C. Each payment made to Contractor shall be on account of the total amount payable to Contractor and all material and work covered by paid partial payment shall thereupon become the sole property of Owner. This provision shall not be construed as relieving Contractor from sole responsibility for care and protection of materials and work upon which payments have been made or restoration of any damaged work or as a waiver of the right of Owner to require fulfillment of all terms of this contract.

D. Materials delivered to the work site and not incorporated in the work will be allowed in the Application and Certification for Payment on the basis of one hundred (100%) percent of value, subject to the 5% retainage providing that they are suitably stored on the site or in an approved warehouse in accordance with the following requirements:

1. Material has previously been approved through submittal and acceptance of shop drawings conforming to requirements of Article 3.2 of General Conditions.
2. Delivery is made in accordance with the time frame on the approved schedule.
3. Materials, equipment, etc., are properly stored and protected from damage and deterioration and remain so - if not, previously approved amounts will be deleted from subsequent pay applications.
4. The payment request is accompanied by a breakdown identifying the material equipment, etc. in sufficient detail to establish quantity and value.

E. The Contractor shall be allowed to include in the Application and Certification for Payment, one hundred (100%) of the value, subject to retainage, of major equipment and material stored off the site if all of the following conditions are met:

1. The request for consideration of payment for materials stored off site is made at least 15 working days prior to submittal of the Application for Payment including such material. Only materials inspected will be considered for inclusion on Application for Payment requests.
2. Materials stored in one location off site are valued in excess of $25,000.
3. That a Certificate of Insurance is provided indicating adequate protection from loss, theft, conversion or damage for materials stored off site. This Certificate shall show the State of Missouri as an additional insured for this loss.
4. The materials are stored in a facility approved and inspected, by the Construction Representative.
5. Contractor shall be responsible for, Owner costs to inspect out of state facilities, and any delays in the completion of the work caused by damage to the material or for any other failure of the Contractor to have access to this material for the execution of the work.

F. The Owner shall determine the amount, quality and acceptability of the work and materials which are to be paid for under this contract. In the event any questions shall arise between the parties, relative to this contract or specifications, determination or decision of the Owner or the Construction Representative and the Designer shall be a condition precedent to the right of the Contractor to receive any money or payment for work under this contract affected in any manner or to any extent by such question.

G. Payments Withheld: The Owner may withhold or nullify in whole or part any certificate to such extent as may be necessary to protect the Owner from loss on account of:

1. Defective work not remedied. When a notice of noncompliance is issued on an item or items, corrective action shall be undertaken immediately. Until corrective action is completed, no monies will be paid and no additional time will be allowed for the item or items. The cost of corrective action(s) shall be borne by the Contractor.
2. A reasonable doubt that this contract can be completed for the unpaid balance.
3. Failure of the Contractor to update as-built drawings monthly for review by the Construction Representative.
4. Failure of the Contractor to update the construction schedule.
When the Construction Representative is satisfied the Contractor has remedied above deficiencies, payment shall be released.

H. Final Payment: Upon receipt of written notice from the Contractor to the Designer and Project Representative that the work is ready for final inspection and acceptance, the Designer and Project Representative, with the Contractor, shall promptly make such inspection. If the work is acceptable and the contract fully performed, the Construction Representative shall complete a final acceptance report and the Contractor will be directed to submit a final Application and Certification for Payment. If the Owner approves the same, the entire balance shall be due and payable, with the exception of deductions as provided for under Article 5.4.

1. Where the specifications provide for the performance by the Contractor of (certain tests for the purpose of balancing and checking the air conditioning and heating equipment and the Contractor shall have furnished and installed all such equipment in accordance with the specifications, but said test cannot then be made because of climatic conditions, such test shall may be considered as required under the provisions of the specifications, Section 013300 and this contract may be substantial. Full payment will not be made until the tests have been made and the equipment and system is finally accepted. If the tests are not completed when scheduled, the Owner may deduct 150% of the value of the tests from the final payment.

2. The final payment shall not become due until the Contractor delivers to the Construction Representative:
   a) A complete file of releases, on the standard form included in the contract documents as "Final Receipt of Payment and Release Form", from subcontractors and material suppliers evidencing payment in full for services, equipment and materials, as the case may require, if the Owner approves, or a consent from the Surety to final payment accepting liability for any unpaid amounts.
   b) An Affidavit of Compliance with Prevailing Wage Law, in the form as included in this contract specifications, properly executed by each subcontractor, and the Contractor
   c) Certified copies of all payrolls
   d) As-built drawings

3. If any claim remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all monies that the latter may be compelled to pay in discharging such a claim including all costs and a reasonable attorney's fee.

4. Missouri statute requires prompt payment from the Owner to the Contractor within thirty calendar days and from the Contractor to his subcontractors within fifteen calendar days. Failure to make payments within the required time frame entitles the receiving party to charge interest at the rate of one and one half percent per month calculated from the expiration of the statutory time period until paid.

5. The value of all unused unit price allowances and/or 150% of the value of the outstanding work items, and/or liquidated damages may be deducted from the final pay request without executing a Contract Change. Any unit price items which exceed the number of units in the contract may be added by Contract Change.

ARTICLE 6 -- INSURANCE AND BONDS

ARTICLE 6.1 -- BOND

A. Contractor shall furnish a performance/payment bond in an amount equal to 100% of the contract price to guarantee faithful performance of the contract and 100% of the contract price to guarantee the payment of all persons performing labor on the project and furnishing materials in connection therewith under this contract as set forth in the standard form of performance and payment bond included in the contract documents. The surety on such bond shall be issued by a surety company authorized by the Missouri Department of Insurance to do business in the state of Missouri.

B. All Performance/Payment Bonds furnished in response to this provision shall be provided by a bonding company with a rating of B+ or higher as established by A.M. Best Company, Inc. in their most recent publication.

ARTICLE 6.2 -- INSURANCE

A. The successful Contractor shall procure and maintain for the duration of the contract issued a policy or policies of insurance for the protection of both the Contractor and the Owner and their respective officers, officials, agents, consultants and employees. The Owner requires certification of insurance coverage from the Contractor prior to commencing work.

B. Minimum Scope and Extent of Coverage
1. General Liability

Commercial General Liability, ISO coverage form number or equivalent CG 00 01 ("occurrence" basis), or I-SO coverage form number CG 00 02, or ISO equivalent.

If ISO equivalent or manuscript general liability coverage forms are used, minimum coverage will be as follows:
- Premises/Operations; Independent Contractors; Products/Completed Operations; personal Injury; Broad Form Property Damage including Completed Operations; Broad Form Contractual Liability Coverage to include Contractor's obligations under Article 1.11 Indemnification and any other Special Hazards required by the work of the contract.

2. Automobile Liability

Business Automobile Liability Insurance, ISO Coverage form number or equivalent CA 00 01 covering automobile liability, code 1 "ANY AUTO".

3. Workers' Compensation and Employer's Liability

Statutory Workers' Compensation Insurance for Missouri and standard Employer's Liability Insurance, or the authorization to self-insure for such liability from the Missouri Division of Workers' Compensation.

4. Builder's Risk or Installation Floater Insurance

Insurance upon the work and all materials, equipment, supplies, temporary structures and similar items which may be incident to the performance of the work and located at or adjacent to the site, against loss or damage from fire and such other casualties as are included in extended coverage in broad "All Risk" form, including coverage for Flood and Earthquake, in an amount not less than the replacement cost of the work or this contract price, whichever is greater, with loss payable to Contractor and Owner as their respective interests may appear.

Contractor shall maintain sufficient insurance to cover the full value of the work and materials as the work progresses, and shall furnish Owner copies of all endorsements. If Builder's Risk Reporting- Form of Endorsement is used, Contractor shall make all reports as required therein so as to keep in force an amount of insurance which will equal the replacement cost of the work, materials, equipment, supplies, temporary structures, and other property covered thereby; and if, as a result of Contractor's failure to make any such report, the amount of insurance so recoverable shall be less than such replacement cost, Contractor's interest in the proceeds of such insurance, if any, shall be subordinated to Owner's interest to the end that Owner may receive full reimbursement for its loss.

C. Minimum Limits of Insurance

1. General Liability

Contractor

- $2,000,000 combined single limit per occurrence for bodily injury, personal injury, and property damage
- $2,000,000 annual aggregate

2. Automobile Liability

- $2,000,000 combined single limit per occurrence for bodily injury and property damage

3. Workers' Compensation and Employers Liability

Workers' Compensation limits as required by applicable State Statutes (generally unlimited) and minimum of $1,000,000 limit per accident for Employer's Liability.

General Liability and Automobile Liability insurance may be arranged under individual policies for the full limits required or by a combination of underlying policies with the balance provided by a form-following Excess or Umbrella Liability policy.

D. Deductibles and Self-Insured Retentions

All deductibles, co-payment clauses, and self-insured retentions must be declared to and approved by the Owner. The Owner reserves the right to request the reduction or elimination of unacceptable deductibles or self-insured retentions, as they would apply to the Owner, and their respective officers, officials, agents, consultants and employees. Alternatively, the Owner may request Contractor to procure a bond guaranteeing payment of losses and related investigations, claims administration, and defense expenses.

E. Other Insurance Provisions and Requirements

The respective insurance policies and coverage, as specified below, must contain, or be endorsed to contain the following conditions or provisions:

1. General Liability

The Owner, and its respective commissioners, officers, officials, agents, consultants and employees shall be endorsed as additional insured’s by ISO form CG 20 26 Additional
Insured - Designated Person or Organization. As additional insured’s, they shall be covered as to work performed by or on behalf of the Contractor or as to liability which arises out of Contractor's activities or resulting from the performance of services or the delivery of goods called for by the Contract.

Contractor's insurance coverage shall be primary with respect to all additional insured’s. Insurance of self-insurance programs maintained by the designated additional -insured’s shall be excess of the Contractor’s insurance and shall not contribute with it.

Additionally, the Contractor and Contractor's general liability insurer shall agree to waive all rights of subrogation against the Owner and any of their respective officers, officials, agents, consultants or employees for claims, losses, or expenses which arise out of Contractor's activities or result from the performance of services or the delivery of goods called for by the Contract.

Contractor's failure to comply with the terms and conditions of these insurance policies shall not affect or abridge coverage for the Owner, or for any of its officers, officials, agents, consultants or employees.

3. Workers' Compensation/Employer's Liability

Contractor's workers' compensation insurance shall be endorsed with NCCI form WC 00 03 01 A - Alternative Employer Endorsement. The Alternative Employer Endorsement shall designate the Owner as "alternate employers."

4. All Coverages

Each insurance policy required by this section of the Contract shall contain a stipulation, endorsed if necessary, that the Owner will receive a minimum of a thirty (30) calendar day advance notice of any policy cancellation. Ten (10) calendar days advance notice is required for policy cancellation due to non-payment of premium.

F. Insurer Qualifications and Acceptability

Insurance required hereunder shall be issued by an A.M. Best, “B+” rated, Class IX insurance company approved to conduct insurance business in the state of Missouri.

G. Verification of Insurance Coverage

Prior to Owner issuing a Notice to Proceed, the Contractor shall furnish the Owner with Certificate(s) of Insurance and with any applicable original endorsements evidencing the required insurance coverage. The insurance certificates and endorsements are to be signed by a person authorized by that insurer to bind coverage on its behalf. All certificates and endorsements received by the Owner are subject to review and approval by the Owner. The Owner reserves the right to require certified copies of all required policies at any time. If the scope of this contract will exceed one (1) year - or, if any of Contractor's applicable insurance coverage expires prior to completion of the work or services required under this contract - the Contractor will provide a renewal or replacement certificate before continuing work or services hereunder. If the Contractor fails to provide documentation of required insurance coverage, the Owner may issue a stop work order and no additional contract completion time and/or compensation shall be granted as a result thereof.
ARTICLE 7 – SUSPENSION OR TERMINATION OF CONTRACT

ARTICLE 7.1 - FOR SITE CONDITIONS
A. When conditions at the site of the proposed work are considered by the Owner to be unsatisfactory for prosecution of the work, the Contractor may be ordered in writing to suspend the work or any part thereof until reasonable conditions exist. When such suspension is not due to fault or negligence of the Contractor, time allowed for completion of such suspended work will be extended by a period of time equal to that lost due to delay occasioned by ordered suspension. This will be a no cost time extension.

ARTICLE 7.2 - FOR CAUSE
A. Termination or Suspension for Cause:
1. If the Contractor shall file for bankruptcy, or should make a general assignment for the benefit of the creditors, or if a receiver should be appointed on account of insolvency, or if the contractor should persistently or repeatedly refuse or fail to supply enough properly skilled workers or proper materials, or if the contractor should fail to make prompt payment to subcontractors or for material or labor, or persistently disregard laws, ordinances or the instructions of the Owner, or otherwise be guilty of a substantial violation of any provision of this contract, then the Owner may serve notice on the Contractor and the surety setting forth the violations and demanding compliance with this contract. Unless within ten (10) consecutive calendar days after serving such notice, such violations shall cease and satisfactory arrangements for correction be made, the Owner may suspend the Contractor’s right to proceed with the work or terminate this contract.
2. In the event the Owner suspends Contractor’s right to proceed with the work or terminates the contract, the Owner may demand that the Contractor’s surety take over and complete the work on this contract, after the surety submits a written proposal to the Owner and receives written approval and upon the surety’s failure or refusal to do so within ten (10) consecutive calendar days after demand therefore, the Owner may take over the work and prosecute the same to completion by bid or negotiated contract, or the Owner may elect to take possession of and utilize in completing the work such materials, supplies, appliances and plant as may be on the site of the work, and all subcontractors, if the Owner elects, shall be bound to perform their contracts.

B. The Contractor and its surety shall be and remain liable to the Owner for any excess cost or damages occasioned to the Owner as a result of the actions above set forth.

C. The Contractor in the event of such suspension or termination shall not be entitled to receive any further payments under this contract until the work is wholly finished. Then if the unpaid balance under this contract shall exceed all expenses of the Owner as certified by the Director, such excess shall be paid to the Contractor; but, if such expenses shall exceed the unpaid balance as certified by the Director, the Contractor and their surety shall be liable for and shall pay the difference and any damages to the Owner.

D. In exercising Owner’s right to secure completion of the work under any of the provisions hereof, the Director shall have the right to exercise Owner’s sole discretion as to the manner, methods and reasonableness of costs of completing the work.

E. The rights of the Owner to suspend or terminate as herein provided shall be cumulative and not exclusive and shall be in addition to any other remedy provided by law.

F. The Contractor in the event of such suspension or termination may be declared ineligible for Owner contracts for a minimal period of twelve (12) months. Further, no contract will be awarded to any Contractor who lists in their bid form any subcontractor whose prior performance has contributed, as determined by the Owner, to a breach of a contract. In order to be considered for state-awarded contracts after this period, the Contractor/subcontractor will be required to forward acceptance reports to the Owner regarding successful completion of non-state projects during the intervening twelve (12) months from the date of default. No contracts will be awarded to a subcontractor/Contractor until the ability to perform responsibly in the private sector has been proven to the Owner.

ARTICLE 7.3 -- FOR CONVENIENCE
A. The Owner may terminate or suspend the Contract or any portion of the Work without cause at any time, and at the Owner’s convenience. Notification of a termination or suspension shall be in writing and shall be given to the Contractor and their surety. If the Contract is suspended, the notice will contain the anticipated duration of the suspension or the conditions under which work will be permitted to resume. If appropriate, the Contractor will be requested to demobilize and re-mobilize and will be reimbursed time and costs associated with the suspension.

B. Upon receipt of notification, the Contractor shall:
1. Cease operations when directed.
2. Take actions to protect the work and any stored materials.
3. Place no further subcontracts or orders for material, supplies, services or facilities except as may be necessary to complete the portion of the Contract that has not been terminated. No claim for payment of materials or supplies ordered after the termination date shall be considered.
4. Terminate all existing subcontracts, rentals, material, and equipment orders.
5. Settle all outstanding liabilities arising from termination with subcontractors and suppliers.
6. Transfer title and deliver to the Owner, work in progress, completed work, supplies and other material produced or acquire for the work terminated, and completed or partially completed plans, drawings information and other property that, if the Contract had been completed, would be required to be furnished to the Owner.

C. For termination without cause and at the Owner's convenience, in addition to payment for work completed prior to date of termination, the Contractor may be entitled to payment of other documented costs directly associated with the early termination of the contract. Payment for anticipated profit and unapplied overhead will not be allowed.
SECTION 007300 - SUPPLEMENTARY CONDITIONS

1.0 GENERAL:
   A. These Supplementary General Conditions clarify, add, delete, or otherwise modify standard terms and conditions of DIVISION 0, BIDDING AND CONTRACTING REQUIREMENTS.

2.0 CONTACTS:

   Designer: Brian Connell
   Connell Architecture PC
   2311 East Walnut St., Ste. B
   Columbia, MO 65201
   Telephone: 573-875-2455; Fax: 573-875-5531
   Email: brianconnell@connellarchitecture.com

   Construction Representative: Walter Johannpeter
   Division of Facilities Management, Design and Construction
   Simpson Building, 709 Missouri Blvd, Jefferson City, MO 65109
   Telephone: 573-751-2655; Fax: 573-522-1763
   Email: walter.johannpeter@oa.mo.gov

   Project Manager: Craig Bock
   Division of Facilities Management, Design and Construction
   301 West High Street, Room 730
   Jefferson City, Missouri 65102
   Telephone: 573-751-7831; Fax: 573-751-7277
   Email: craig.bock@oa.mo.gov

   Contract Specialist: Marlene Blackburn
   Division of Facilities Management, Design and Construction
   301 West High Street, Room 730
   Jefferson City, Missouri 65102
   Telephone: 573-522-6035; Fax: 573-751-7277
   Email: marlene.blackburn@oa.mo.gov

3.0 NOTICE: ALL BID MATERIALS ARE DUE AT THE TIME OF BID SUBMITTAL. THERE IS NO SECOND SUBMITTAL FOR THIS PROJECT.

4.0 FURNISHING CONSTRUCTION DOCUMENTS:
   A. The Owner will furnish the Contractor with approximately 10 complete sets of drawings and specifications at no charge.
   B. The Owner will furnish the Contractor with approximately 10 sets of explanatory or change drawings at no charge.
   C. The Contractor may make copies of the documents as needed with no additional cost to the Owner.

5.0 ILLEGAL IMMIGRATION REFORM AND IMMIGRANT RESPONSIBILITY ACT
   The Contractor understands and agrees that by signing a contract for this project, they certify the following:
   A. The Contractor shall only utilize personnel authorized to work in the United States in accordance with applicable federal and state laws. This includes but is not limited to the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA) and INA Section 274A.
   B. If the Contractor is found to be in violation of this requirement or the applicable laws of the state, federal and local laws and regulations, and if the State of Missouri has reasonable cause to believe that the Contractor has knowingly employed individuals who are not eligible to work in the United States, the state shall have the right to cancel the contract immediately without penalty or recourse and suspend or debar the contractor from doing business with the state.
   C. The Contractor agrees to fully cooperate with any audit or investigation from federal, state or local law enforcement agencies.

6.0 SAFETY REQUIREMENTS
   Contractor and subcontractors at any tier shall comply with RSMo 292.675 and Article 1.3, E, of Section 007213, General Conditions.
7.0 ENVIRONMENTAL MANAGEMENT SYSTEM (eMS):

The Missouri Army National Guard (MOARNG) has implemented an Environmental Management System (eMS). One of the key components of the eMS is the establishment of an Environmental Policy that must be communicated to all persons working for or on behalf of the organization including all suppliers and contractors. This policy stresses commitment to compliance with accepted environmental practices, and meeting or exceeding applicable environmental requirements, legal and otherwise. This policy also stresses commitment to waste minimization, pollution prevention, and management of personnel, processes, real property, and materials in a manner to reduce environmental impacts. The policy is available upon request to all parties by contacting the Environmental Management Office at (573) 638-9514.
Missouri
Division of Labor Standards
WAGE AND HOUR SECTION

MICHAEL L. PARSON, Governor

Annual Wage Order No. 26
Section 026
COLE COUNTY

In accordance with Section 290.262 RSMo 2000, within thirty (30) days after a certified copy of this Annual Wage Order has been filed with the Secretary of State as indicated below, any person who may be affected by this Annual Wage Order may object by filing an objection in triplicate with the Labor and Industrial Relations Commission, P.O. Box 599, Jefferson City, MO 65102-0599. Such objections must set forth in writing the specific grounds of objection. Each objection shall certify that a copy has been furnished to the Division of Labor Standards, P.O. Box 449, Jefferson City, MO 65102-0449 pursuant to 8 CSR 20-5.010(1). A certified copy of the Annual Wage Order has been filed with the Secretary of State of Missouri.

Original Signed by
Taylor Burks, Director
Division of Labor Standards

Filed With Secretary of State: _____________________________ March 8, 2019

Last Date Objections May Be Filed: April 8, 2019

Prepared by Missouri Department of Labor and Industrial Relations
<table>
<thead>
<tr>
<th>OCCUPATIONAL TITLE</th>
<th>** Date of Increase</th>
<th>Basic Hourly Rates</th>
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<tr>
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<td>Electrician Outside Lineman</td>
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<tr>
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*The Division of Labor Standards received less than 1,000 reportable hours as required by RSMo 290.257.4(b).
Public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center, in accordance with RSMo 290.257.2.

**Annual Incremental Increase
<table>
<thead>
<tr>
<th>OCCUPATIONAL TITLE</th>
<th>** Date of Increase</th>
<th>Basic Hourly Rates</th>
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<td>Carpenter</td>
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<td>Group IV</td>
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</tbody>
</table>

Use Heavy Construction Rates on Highway and Heavy construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(3).

Use Building Construction Rates on Building construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(2).

If a worker is performing work on a heavy construction project within an occupational title that is not listed on the Heavy Construction Rate Sheet, use the rate for that occupational title as shown on the Building Construction Rate Sheet.

*The Division of Labor Standards received less than 1,000 reportable hours as required by RSMo 290.257.4(b). Public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center, in accordance with RSMo 290.257.2.*
OVERTIME

For all work performed on a Sunday or a holiday, not less than twice (2x) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work.

For all overtime work performed, not less than one and one-half (1½) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work or contractual obligation. For purposes of this subdivision, "overtime work" shall include work that exceeds ten hours in one day and work in excess of forty hours in one calendar week; and

A thirty-minute lunch period on each calendar day shall be allowed for each worker on a public works project, provided that such time shall not be considered as time worked.

HOLIDAYS

January first;
The last Monday in May;
July fourth;
The first Monday in September;
November eleventh;
The fourth Thursday in November; and
December twenty-fifth;

If any holiday falls on a Sunday, the following Monday shall be considered a holiday.
SECTION 011000 – SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. The Project consists of REHABILITATE ELEVATORS – MONG HEADQUARTERS BUILDING (Project Number T1901-01).

   1. Project Location: Ike Skelton Training Site, 2302 Militia Drive, Jefferson City, Missouri 65101.
   2. Owner: State of Missouri, Office of Administration, Division of Facilities Management, Design and Construction, Harry S Truman State Office Building, Post Office Box 809, 301 West High Street, Jefferson City, Missouri 65102.

B. Contract Documents dated August 30, 2019 were prepared for the Project by Connell Architecture, P.C., 2311 East Walnut Street, Suite B, Columbia, Missouri 65201.

C. The Work consists of modernizing two elevators in the Missouri National Guard Headquarters Building located at the Ike Skelton Training Site, 2302 Militia Drive, Jefferson City, Missouri.

   1. The Work includes the replacement of all major components of the elevators including but not limited to the cars, pumps, motor, sensors, operating panels, safety equipment, and wiring, and the alteration or repair of the existing elevator hoistways to bring them into compliance with current elevator codes.

D. The Work will be constructed under a single prime contract.

1.3 DESIGNER’S ESTIMATE OF CONSTRUCTION COSTS

A. The project designer has estimated a range of $396,000 to $545,000 for the construction cost of this project.

1.4 WORK SEQUENCE

A. The Work will be conducted in one phase.

   1. PHASE ONE: The replacement of all major components of the elevators including but not limited to the cars, pumps, motor, sensors, operating panels, safety equipment, and wiring, and the alteration or repair of the elevator hoistways to bring them into compliance with current elevator codes.
   2. The Contractor shall implement the measures necessary to ensure that at least one elevator remains fully operational at all times during the entire construction period for use by the Owner, Owner’s employees, and emergency personnel.
1.5 CONTRACTOR USE OF PREMISES

A. Use of the Site: Limit use of the premises to work in areas indicated. Confine operations to areas within contract limits indicated. Do not disturb portions of the site beyond the areas in which the Work is indicated.

1. Owner Occupancy: Allow for Owner occupancy and use by the public.
2. Driveways and Entrances: Keep driveways and entrances serving the premises clear and available to the Owner, the Owner’s employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

B. Use of the Existing Building: Maintain the existing building in a weathertight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the building and its occupants during the construction period.

C. Work Hours: Tuesday – Friday, 6:00 am to 5:00 pm (10 hours).

1.6 OCCUPANCY REQUIREMENTS

A. Full Owner Occupancy: The Owner will occupy the site and existing building during the entire construction period. Cooperate with the Owner during construction operations to minimize conflicts and facilitate owner usage. Perform the Work so as not to interfere with the Owner’s operations.

B. At least one elevator shall remain fully operational at all times during the entire construction period for use by the Owner, Owner’s employees, and emergency personnel.

1.7 MISCELLANEOUS PROVISIONS

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 SCHEDULE OF PRODUCTS ORDERED IN ADVANCE

END OF SECTION 011000
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements governing allowances.

B. Types of allowances include the following:
   1. Weather allowances.

C. Related Sections include the following:
   1. Division 1 Section "Contract Modification Procedures" for procedures for submitting and handling Contract Changes for allowances.

1.3 WEATHER ALLOWANCE

A. Included within the completion period for this project are a specified number of “bad weather” days (see Schedule of Allowances).

B. The Contractor’s progress schedule shall clearly indicate the bad weather day allowance as an “activity” or “activities”. In the event weather conditions preclude performance of critical work activities for 50% or more of the Contractor’s scheduled workday, that day shall be declared unavailable for work due to weather (a “bad weather” day) and charged against the above allowance. Critical work activities will be determined by review of the Contractor’s current progress schedule.

C. The Contractor’s Representative and the Construction Representative shall agree monthly on the number of “bad weather” days to be charged against the allowance. This determination will be documented in writing and be signed by the Contractor and the Construction Representatives. If there is a failure to agree on all or part of the “bad weather” days for a particular month, that disagreement shall be noted on this written document and signed by each party’s representative. Failure of the Contractor’s representative to sign the “bad weather” day documentation after it is presented, with or without the notes of disagreement, shall constitute agreement with the “bad weather” day determination contained in that document.

D. There will be no modification to the time of contract performance due solely to the failure to deplete the “bad weather” day allowance.

E. Once this allowance is depleted, a no cost Contract Change time extension will be executed for “bad weather” days, as defined above, encountered during the remainder of the Project.
PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALLOWANCES

A. Weather Allowance: Included within the completion period for this Project are Five (5) “bad weather” days.

END OF SECTION 012100
SECTION 012200 – UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

B. Quantities of Units to be included in the Base Bid are indicated in Section 004322 – Unit Prices.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for Unit Prices.

B. Related Sections include the following:
   1. Division 1 Section "Allowances" for procedures for using Unit Prices to adjust quantity allowances.
   2. Division 1 Section "Contract Modification Procedures" for procedures for submitting and handling Contract Changes.

1.3 DEFINITIONS

A. Unit Price is a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

A. Unit Prices include all necessary material plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of Unit Prices. Methods of measurement and payment for Unit Prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of Work in-place that involves use of established Unit Prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

D. List of Unit Prices: A list of Unit Prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each Unit Price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES

A. Unit Price No. 1 – Gypsum Board Repair:
1. Description: The interior face of the existing elevator hoistway walls are sheathed with 1” gypsum liner panel. Contractor shall patch the existing 1” gypsum liner panel where it is missing or damaged and seal all edges with fire caulk in accordance with Detail 3/A-500 in the drawings and Section 092900 Gypsum Board in the specifications.

2. Unit of Measurement: per square foot.

3. Base Bid Quantity: 100 square feet.

END OF SECTION 012200
SECTION 012600 – CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract Modifications.

B. Related Sections include the following:

1. Division 1, Section 012100 "Allowances" for procedural requirements for handling and processing Allowances.
2. Division 1, Section 012200 "Unit Prices" for administrative requirements for using Unit Prices.
3. Division 0, Section 007213, Article 3.1 "Acceptable Substitutions" for administrative procedures for handling Requests for Substitutions made after Contract award.
4. Division 0, Section 007213, Article 4.0 "Changes in the Work" for Contract Change requirements.

1.3 REQUESTS FOR INFORMATION

A. In the event that the Contractor or Subcontractor, at any tier, determines that some portion of the Drawings, Specifications, or other Contract Documents requires clarification or interpretation, the Contractor shall submit a “Request for Information” (RFI) in writing to the Designer. A RFI may only be submitted by the Contractor and shall only be submitted on the RFI forms provided by the Owner. The Contractor shall clearly and concisely set forth the issue for which clarification or interpretation is sought and why a response is needed. In the RFI, the Contractor shall set forth an interpretation or understanding of the requirement along with reasons why such an understanding was reached.

B. Responses to RFI shall be issued within ten (10) working days of receipt of the Request from the Contractor unless the Designer determines that a longer time is necessary to provide an adequate response. If a longer time is determined necessary by the Designer, the Designer will, within five (5) working days of receipt of the request, notify the Contractor of the anticipated response time. If the Contractor submits a RFI on a time sensitive activity on the current project schedule, the Contractor shall not be entitled to any time extension due to the time it takes the Designer to respond to the request provided that the Designer responds within the ten (10) working days set forth above.

C. Responses from the Designer will not change any requirement of the Contract Documents. In the event the Contractor believes that a response to a RFI will cause a change to the requirements of the Contract Document, the Contractor shall give written notice to the Designer requesting a Contract Change for the work. Failure to give such written notice within ten (10) working days, shall waive the Contractor’s right to seek
additional time or cost under Article 4, “Changes in the Work” of the General Conditions.

1.4 MINOR CHANGES IN THE WORK

A. Designer will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Amount or the Contract Time, on “Designer’s Supplemental Instructions” (DSI).

1.5 PROPOSAL REQUESTS

A. The Designer or Owner Representative will issue a detailed description of proposed Changes in the Work that may require adjustment to the Contract Amount or the Contract Time. The proposed Change Description will be issued using the “Request for Proposal” (RFP) form. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Proposal Requests issued by the Designer or Owner Representative are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.

2. Within ten (10) working days after receipt of Proposal Request, submit a proposal for the cost adjustments to the Contract Amount and the Contract Time necessary to execute the Change. The Contractor shall submit his proposal on the appropriate Contract Change Detailed Breakdown form. Subcontractors may use the appropriate Contract Change Detailed Breakdown form or submit their proposal on their letterhead provided the same level of detail is included. All proposals shall include:

   a. A detailed breakdown of costs per Article 4.1 of the General Conditions.
   b. If requesting additional time per Article 4.2 of the General Conditions, include an updated Contractor's Construction Schedule that indicates the effect of the Change including, but not limited to, changes in activity duration, start and finish times, and activity relationship.

1.6 CONTRACT CHANGE PROCEDURES

A. On Owner’s approval of a Proposal Request, the Designer or Owner Representative will issue a Contract Change for signatures of Owner and Contractor on the “Contract Change” form.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REFERENCED FORMS

A. The following forms can be found on our website at https://oa.mo.gov/facilities/vendor-links/architectengineering-forms or https://oa.mo.gov/facilities/vendor-links/contractor-forms:

   1. Request for Information
   2. Designer’s Supplemental Instructions
   3. Request for Proposal
4. Contract Change
5. Contract Change Detailed Breakdown – SAMPLES
6. Contract Change Detailed Breakdown – General Contractor (GC)
7. Contract Change Detailed Breakdown – Subcontractor (SUB)

END OF SECTION 012600
SECTION 013100 – COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Projects including, but not limited to, the following:
   1. Coordination Drawings.
   2. Administrative and supervisory personnel.
   3. Project meetings.

B. Each Contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific Contractor.

C. Related Sections include the following:
   1. Division 1, Section 013200 "Schedules" for preparing and submitting Contractor's Construction Schedule.
   3. Article 5.4.H of Section 007213 "General Conditions" for coordinating Closeout of the Contract.

1.3 COORDINATION

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections, which depend on each other for proper installation, connection, and operation.

B. Coordination: Each Contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each Contractor shall coordinate its operations with operations included in different Sections that depend on each other for proper installation, connection, and operation.

   1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.

   2. Coordinate installation of different components with other Contractors to ensure maximum accessibility for required maintenance, service, and repair.

   3. Make adequate provisions to accommodate items scheduled for later installation.

   4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required
maintenance, service, and repair of all components including mechanical and electrical.

C. Prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate Contractors if coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other Contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Startup and adjustment of systems.
8. Project Closeout activities.

E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.4 SUBMITTALS

A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.

B. Key Personnel Names: Within fifteen (15) work days of starting construction operations, submit a list of key personnel assignments including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.5 PROJECT MEETINGS

A. The Owner’s Construction Representative will schedule a Pre-Construction Meeting prior to beginning of construction. The date, time, and exact place of this meeting will be determined after Contract Award and notification of all interested parties. The
Contractor shall arrange to have the Job Superintendent and all prime Subcontractors present at the meeting. During the Pre-Construction Meeting, the construction procedures and information necessary for submitting payment requests will be discussed and materials distributed along with any other pertinent information.

1. Minutes: Designer will record and distribute meeting minutes.

B. Progress Meetings: The Owner’s Construction Representative will conduct Monthly Progress Meetings as stated in Articles 1.8.B and 1.8.C of Section 007213 “General Conditions”.

1. Minutes: Designer will record and distribute to Contractor the meeting minutes.

C. Preinstallation Conferences: Contractor shall conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of Manufacturers and Fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Designer and Construction Representative of scheduled meeting dates.

2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration including requirements for the following:

a. Contract Documents
b. Options
c. Related RFIs
d. Related Contract Changes
e. Purchases
f. Deliveries
g. Submittals
h. Review of mockups
i. Possible conflicts
j. Compatibility problems
k. Time schedules
l. Weather limitations
m. Manufacturer’s written recommendations
n. Warranty requirements
o. Compatibility of materials
p. Acceptability of substrates
q. Temporary facilities and controls
r. Space and access limitations
s. Regulations of authorities having jurisdiction
t. Testing and inspecting requirements
u. Installation procedures
v. Coordination with other Work
w. Required performance results
x. Protection of adjacent Work
y. Protection of construction and personnel

3. Contractor shall record significant conference discussions, agreements, and disagreements including required corrective measures and actions.

4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.

5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

6. Revise paragraph below if Project requires holding progress meetings at different intervals. Insert special intervals such as "every third Tuesday" to suit special circumstances.

7. Project name
8. Name and address of Contractor
9. Name and address of Designer
10. RFI number including RFIs that were dropped and not submitted
11. RFI description
12. Date the RFI was submitted
13. Date Designer's response was received
14. Identification of related DSI or Proposal Request, as appropriate

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100
SECTION 013200 – SCHEDULE – BAR CHART

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes requirements for a Bar Chart Schedule for the project construction activities, schedule of submittals, and schedule for testing.

PART 2 - PRODUCTS – (Not Applicable)

PART 3 - EXECUTION

3.1 SUBMITTAL PROCEDURES

A. The Contractor shall submit to the Designer, within ten (10) working days following the Notice to Proceed, a Progress Schedule including Schedule of Values showing the rate of progress the Contractor agrees to maintain and the order in which he proposed to carry out the various phases of Work. No payments shall be made to the Contractor until the Progress Schedule has been approved by the Owner.

B. The Contractor shall submit an updated Schedule for presentation at each Monthly Progress Meeting. The Schedule shall be updated by the Contractor as necessary to reflect the current Schedule and its relationship to the original Schedule. The updated Schedule shall reflect any changes in the logic, sequence, durations, or completion date. Payments to the Contractor shall be suspended if the Progress Schedule is not adequately updated to reflect actual conditions.

C. The Contractor shall submit Progress Schedules to Subcontractors to permit coordinating their Progress Schedules to the general construction Work. The Contractor shall coordinate preparation and processing of Schedules and reports with performance of other construction activities.

3.2 CONSTRUCTION PROGRESS SCHEDULE – BAR CHART SCHEDULE

A. Bar-Chart Schedule: The Contractor shall prepare a comprehensive, fully developed, horizontal bar chart-type Contractor’s Construction Schedule. The Contractor for general construction shall prepare the Construction Schedule for the entire Project. The Schedule shall show the percentage of work to be completed at any time, anticipated monthly payments by Owner, as well as significant dates (such as completion of excavation, concrete foundation work, underground lines, superstructure, rough-ins, enclosure, hanging of fixtures, etc.) which shall serve as check points to determine compliance with the approved Schedule. The Schedule shall also include an activity for the number of “bad” weather days specified in Section 012100 – Allowances.
1. The Contractor shall provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week.
   a. If practical, use the same Schedule of Values breakdown for schedule time bars.

2. The Contractor shall provide a base activity time bar showing duration for each construction activity. Each bar is to indicate start and completion dates for the activity. The Contractor is to place a contrasting bar below each original schedule activity time for indicating actual progress and planned remaining duration for the activity.

3. The Contractor shall prepare the Schedule on a minimal number of separate sheets to readily show the data for the entire construction period.

4. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on schedule with other construction activities. Include minor elements involved in the overall sequence of the Work. Show each activity in proper sequence. Indicate graphically the sequences necessary for completion of related portions of the Work.

5. Coordinate the Contractor’s Construction Schedule with the Schedule of Values, list of subcontracts, Submittal Schedule, progress reports, payment requests, and other required schedules and reports.

6. Indicate the Intent to Award and the Contract Substantial Completion dates on the schedule.

B. Phasing: Provide notations on the schedule to show how the sequence of the Work is affected by the following:
   1. Requirement for Phased completion
   2. Work by separate Contractors
   3. Work by the Owner
   4. Pre-purchased materials
   5. Coordination with existing construction
   6. Limitations of continued occupancies
   7. Un-interruptible services
   8. Partial Occupancy prior to Substantial Completion
   9. Site restrictions
   10. Provisions for future construction
   11. Seasonal variations
   12. Environmental control

C. Work Stages: Use crosshatched bars to indicate important stages of construction for each major portion of the Work. Such stages include, but are not necessarily limited to, the following:
   1. Subcontract awards
   2. Submittals
   3. Purchases
4. Mockups
5. Fabrication
6. Sample testing
7. Deliveries
8. Installation
9. Testing
10. Adjusting
11. Curing
12. Startup and placement into final use and operation

D. Area Separations: Provide a separate time bar to identify each major area of construction for each major portion of the Work. For the purposes of this Article, a “major area” is a story of construction, a separate building, or a similar significant construction element.

1. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
   a. Structural completion.
   b. Permanent space enclosure
   c. Completion of mechanical installation
   d. Completion of the electrical portion of the Work
   e. Substantial Completion

3.3 SCHEDULE OF SUBMITTALS

A. Upon acceptance of the Construction Progress Schedule, prepare and submit a complete schedule of submittals. Coordinate the submittal schedule with Section 013300 SUBMITTALS, the approved Construction Progress Schedule, list of subcontracts, Schedule of Values and the list of products.

B. Prepare the schedule in chronological order. Provide the following information

1. Scheduled date for the first submittal
2. Related Section number
3. Submittal category
4. Name of the Subcontractor
5. Description of the part of the Work covered
6. Scheduled date for resubmittal
7. Scheduled date for the Designer’s final release or approval

C. Distribution: Following the Designer’s response to the initial submittal schedule, print and distribute copies to the Designer, Owner, subcontractors, and other parties required to comply with submittal dates indicated.

1. Post copies in the Project meeting room and temporary field office.
2. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned part of the Work and are no longer involved in construction activities.

D. Schedule Updating: Revise the schedule after each meeting or other activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

3.4 SCHEDULE OF INSPECTIONS AND TESTS

A. Prepare a schedule of inspections, tests, and similar services required by the Contract Documents. Submit the schedule with (15) days of the date established for commencement of the Contract Work. The Contractor is to notify the testing agency at least (5) working days in advance of the required tests unless otherwise specified.

B. Form: This schedule shall be in tabular form and shall include, but not be limited to, the following:

1. Specification Section number
2. Description of the test
3. Identification of applicable standards
4. Identification of test methods
5. Number of tests required
6. Time schedule or time span for tests
7. Entity responsible for performing tests
8. Requirements for taking samples
9. Unique characteristics of each service

C. Distribution: Distribute the schedule to the Owner, Architect, and each party involved in performance of portions of the Work where inspections and tests are required.

END OF SECTION 013200
SECTION 013300 – SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for submittals required for performance of the Work including the following:

1. Shop Drawings
2. Product Data
3. Samples
4. Quality Assurance Submittals
5. Construction Photographs
6. Operating and Maintenance Manuals
7. Warranties

B. Administrative Submittals: Refer to General and Supplementary Conditions other applicable Division 1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to, the following:

1. Construction Progress Schedule including Schedule of Values
2. Performance and Payment Bonds
3. Insurance Certificates
4. Applications for Payment
5. Certified Payroll Reports
6. Partial and Final Receipt of Payment and Release Forms
7. Affidavit – Compliance with Prevailing Wage Law
8. Record Drawings
9. Notifications, Permits, etc.

C. The Contractor is obliged and responsible to check all shop drawings and schedules to assure compliance with contract plans and specifications. The Contractor is responsible for the content of the shop drawings and coordination with other contract work. Shop drawings and schedules shall indicate, in detail, all parts of an Item or Work including erection and setting instructions and integration with the Work of other trades.

D. The Contractor shall at all times make a copy, of all approved submittals, available on site to the Construction Representative.
1.3 SUBMITTAL PROCEDURES

A. The Contractor shall comply with the General and Supplementary Conditions and other applicable sections of the Contract Documents. The Contractor shall submit, with such promptness as to cause no delay in his work or in that of any other contractors, all required submittals indicated in Part 3.1 of this section and elsewhere in the Contract Documents. Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
   2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
      a. The Designer reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.

B. Each drawing and/or series of drawings submitted must be accompanied by a letter of transmittal giving a list of the titles and numbers of the drawings. Each series shall be numbered consecutively for ready reference and each drawing shall be marked with the following information:

   1. Date of Submission
   2. Name of Project
   3. Location
   4. Section Number of Specification
   5. State Project Number
   6. Name of Submitting Contractor
   7. Name of Subcontractor
   8. Indicate if Item is submitted as specified or as a substitution

1.4 SHOP DRAWINGS

A. Comply with the General Conditions, Article 3.2.

B. The Contractor shall submit newly prepared information drawn accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.

C. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates, and similar drawings including the following information:

   1. Dimensions
   2. Identification of products and materials included by sheet and detail number
   3. Compliance with specified standards
   4. Notation of coordination requirements
5. Notation of dimensions established by field measurement
6. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8½”x11” but no larger than 36”x48”.

1.5 PRODUCT DATA

A. The Contractor shall comply with the General Conditions, Article 3.2.

B. The Contractor shall collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information, such as manufacturer’s installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves.

1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information including the following information:
   a. Manufacturer’s printed recommendations
   b. Compliance with Trade Association standards
   c. Compliance with recognized Testing Agency standards
   d. Application of Testing Agency labels and seals
   e. Notation of dimensions verified by field measurement
   f. Notation of coordination requirements

2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.

1.6 SAMPLES

A. The Contractor shall comply with the General Conditions, Article 3.2.

B. The Contractor shall submit full-size, fully fabricated samples, cured and finished as specified, and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture, and pattern.

1. The Contractor shall mount or display samples in the manner to facilitate review of qualities indicated. Prepare samples to match the Designer’s sample including the following:
   a. Specification Section number and reference
   b. Generic description of the Sample
   c. Sample source
   d. Product name or name of the Manufacturer
   e. Compliance with recognized standards
   f. Availability and delivery time

2. The Contractor shall submit samples for review of size, kind, color, pattern, and texture. Submit samples for a final check of these characteristics with other elements and a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
a. Where variation in color, pattern, texture, or other characteristic is inherent in the material or product represented, submit at least three (3) multiple units that show approximate limits of the variations.

b. Refer to other Specification Sections for requirements for samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.

c. Refer to other Sections for samples to be returned to the Contractor for incorporation in the Work. Such samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of sample submittals.

d. Samples not incorporated into the Work, or otherwise designated as the Owner’s property, are the property of the Contractor and shall be removed from the site prior to Substantial Completion.

3. Field samples are full-size examples erected onsite to illustrate finishes, coatings, or finish materials and to establish the Project standard.

   a. The Contractor shall comply with submittal requirements to the fullest extent possible. The Contractor shall process transmittal forms to provide a record of activity.

1.7 QUALITY ASSURANCE DOCUMENTS

   A. The Contractor shall comply with the General Conditions, Article 3.2

   B. The Contractor shall submit quality control submittals including design data, certifications, manufacturer’s instructions, manufacturer’s field reports, and other quality-control submittals as required under other Sections of the Specifications.

   C. Certifications: Where other Sections of the Specifications require certification that a product, material, or installation complies with specified requirements, submit a notarized certification from the Manufacturer certifying compliance with specified requirements.

      1. Signature: Certification shall be signed by an officer of the Manufacturer or other individual authorized to contractually bind the Company.

   D. Inspection and Test Reports: The Contractor shall submit the required inspection and test reports from independent testing agencies as specified in this Section and in other Sections of the Contract Documents.

   E. Construction Photographs: The Contractor shall submit record construction photographs as specified in this Section and in other Sections of the Contract Documents.

      1. The Contractor shall submit two (2) sets of prints, black and white, glossy; 8”x10” size; mounted on 8½”x11” soft card stock with left edge binding margin for 3-hole punch.

      2. The Contractor shall identify each photograph with project name, location, number, date, time, and orientation.

      3. The Contractor shall submit progress photographs monthly unless specified otherwise. Photographs shall be taken one (1) week prior to submitting.
4. The Contractor shall take four (4) site photographs from differing directions and a minimum of five (5) interior photographs indicating the relative progress of the Work.

1.8 OPERATING AND MAINTENANCE MANUALS AND WARRANTIES

A. The Contractor shall submit all required manufacturer’s operating instructions, maintenance/service manuals, and warranties in accordance with the General Conditions, Article 3.5, and Supplementary Conditions along with this and other Sections of the Contract Documents.

PART 2 - PRODUCTS (Not Applicable)
PART 3 - EXECUTION

3.1 REQUIRED SUBMITTALS

A. Contractor shall submit the following information for materials and equipment to be provided under this contract.

<table>
<thead>
<tr>
<th>SECTION</th>
<th>DESCRIPTION</th>
<th>Shop Drawings</th>
<th>Product Data</th>
<th>Sample</th>
<th>Certifications</th>
<th>Manufacturer’s Instructions</th>
<th>Test Report</th>
<th>Inspection Report</th>
<th>Wiring Diagrams</th>
<th>Record Photographs</th>
<th>Maintenance Data</th>
<th>Operating Instructions</th>
<th>Warranty</th>
</tr>
</thead>
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END OF SECTION 013300
PART 1 - GENERAL

1.1 RELATED DOCUMENTS
   A. Drawings and general provisions of the Contract including General and Supplementary
      Conditions, Bid Form, and other Division 1 Specification Sections apply to this 
      Section.

1.2 SUBMITTALS
   A. List of required submittals:
      1. Materials Safety Data Sheets for all hazardous materials to be brought onsite.
      2. Schedule of proposed shutdowns, if applicable.
      3. Required fingerprinting for criminal background and warrants check. A list of 
         the names of all employees who will submit fingerprints for a background 
         check and the signed privacy documents identified below for each employee.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 ACCESS TO THE SITE
   A. The Contractor shall arrange with the Construction Representative and appropriate 
      Facility Representatives for the controlled entry of construction personnel, materials, 
      and equipment into the work areas.
   
   B. The Contractor shall establish regular working hours with the Construction 
      Representative and the Facility. Working hour changes or overtime are to be reported 
      and approved (48) hours ahead of time. Emergency overtime is to be reported as soon 
      as it is evident that overtime is needed. Normal working hours will be between 6:00 
      a.m. and 5:00 p.m. Tuesday through Friday (10 hours) unless specifically agreed upon 
      in advance with both the Construction Representative and the Facility.
   
   C. The Contractor shall provide the name and phone number of the individual(s) who is 
      in charge onsite and who can be contacted in case of an emergency. This individual(s) 
      must be able to furnish names and addresses of all construction personnel upon request.
   
   D. All construction personnel shall be identified to the Facility Representative and, when 
      the Facility Representative feels it is necessary, they will be issued identification cards.

3.2 FIRE PROTECTION, SAFETY, AND HEALTH CONTROLS
   A. The Contractor shall be responsible and take all necessary precautions to guard against 
      and eliminate possible fire hazards. Onsite burning is prohibited.
   
   B. Store all flammable or hazardous materials in proper container located outside the 
      buildings or offsite, if possible.
   
   C. Provide and maintain in good order, during construction, all fire extinguishers as 
      required by the National Fire Protection Association. In areas of flammable liquids,
asphalt, or electrical hazards, extinguishers of the 15-pound carbon dioxide type or 20-pound dry chemical type shall be provided.

D. Fire exits, alarm systems, and sprinkler systems shall remain fully operational at all times unless written approval is received from the Construction Representative and the appropriate Facility Representative at least (24) hours in advance. The Contractor shall submit a written time schedule for any proposed shutdowns.

E. Conduct operations and removal of debris to ensure minimum interference with roads, streets, walks, and other adjacent facilities. Do not obstruct streets or walks or use facilities without permission from the Facility.

F. Construction personnel shall not exceed the Facility speed limit of 15mph unless posted otherwise.

G. Take all necessary reasonable measures to reduce air and water pollution by any material or equipment use during construction. Keep volatile wastes in covered containers. Do not dispose of volatile wastes or oils in storm or sanitary drains.

H. Keep project neat, orderly, and in a safe condition at all times. Immediately remove all hazardous waste. Do not allow rubbish to accumulate. Provide onsite containers for collection of rubbish and dispose of it at frequent intervals during progress of Work.

I. For all hazardous materials brought onsite, Material Safety Data Sheets shall be on site and readily available upon request at least a day before delivery.

J. Intoxicating beverages or narcotics shall not be brought upon the premises nor shall Contractor’s personnel be under the influence of these substances while on the premises.

3.3 DISRUPTION OF UTILITIES

A. The Contractor shall give minimum (72) hours written notice to the Construction Representative and Facility Representative before disconnecting electric, gas, water, fire protection, or sewer service to any building.

B. The contractor shall give minimum (72) hours written notice to the Construction Representative and Facility Representative before closing any access drives and shall make temporary access available if possible. Do not obstruct streets, walks, or parking.

3.4 REQUIRED FINGERPRINTING FOR CRIMINAL BACKGROUND AND WARRANTS CHECK

A. All employees of the Contractor are required to submit fingerprints to the Missouri State Highway Patrol to enable the Office of Administration, Division of Facilities Management, Design and Construction (FMDC) to receive state and national criminal background checks on such employees. FMDC will also check with law enforcement to determine if any of the Contractor’s employees has an outstanding warrant for his or her arrest. FMDC reserves the right to prohibit any employee of the Contractor from performing work in or on the premises of any facility owned, operated, or utilized by the State of Missouri for any reason.

B. The Contractor shall ensure all of its employees submit fingerprints to the Missouri State Highway Patrol and pay for the cost of such background checks. The Contractor shall submit to FMDC a list of the names of the Contractor’s employees who will be
fingerprinted and a signed Missouri Applicant Fingerprint Privacy Notice, Applicant Privacy Rights and Privacy Act Statement for each employee. All employees of the Contractor approved by FMDC to work at a State facility must obtain a contractor ID badge from FMDC prior to beginning work on-site, unless the Director of FMDC, at the Director’s discretion, waives the requirement for a contractor ID badge. The Contractor and its employees must comply with the process for background checks and contractor ID badges found on FMDC’s website at: https://oa.mo.gov/fmdc-contractor-id-badges

C. Pursuant to section 43.540, RSMo, FMDC participates in the Missouri Rap Back and National Rap Back programs as of August 28, 2018. This means that the Missouri State Highway Patrol, Central Records Repository, and the Federal Bureau of Investigation will retain the fingerprints submitted by each of the Contractor’s employees, and those fingerprints will be searched against other fingerprints on file, including latent fingerprints. While retained, an employee’s fingerprints may continue to be compared against other fingerprints submitted or retained by the Federal Bureau of Investigation, including latent fingerprints.

D. As part of the Missouri and National Rap Back programs, FMDC will receive notification if a new arrest is reported for an employee whose fingerprints have been submitted for FMDC after August 28, 2018. If the employee is performing work on a State contract at the time of the arrest notification, FMDC will request and receive the employee’s updated criminal history records. If the employee is no longer performing work on a State contract, FMDC will not obtain updated criminal records.

E. Pursuant to section 43.540, RSMo, the Missouri State Highway Patrol will provide the results of the employee’s background check directly to FMDC. FMDC may NOT release the results of a background check to the Contractor or provide the Contractor any information obtained from a background check, either verbally or in writing. FMDC will notify the Contractor only whether an employee is approved to work on State property.

F. Each employee who submits fingerprints to the Missouri State Highway Patrol has a right to obtain a copy of the results of his or her background check. The employee may challenge the accuracy and completeness of the information contained in a background check report and obtain a determination from the Missouri State Highway Patrol and/or the FBI regarding the validity of such challenge prior to FMDC making a final decision about his or her eligibility to perform work under a State contract.

G. The Contractor shall notify FMDC if an employee is terminated or resigns from employment with the Contractor. If the Contractor does not anticipate performing work on a State contract in the future, the Contractor may request that FMDC remove its employees from the Rap Back programs. However, if removed from the Rap Back programs, employees will be required to submit new fingerprints should the contractor be awarded another State contract.

H. Upon award of a Contract, the Contractor should contact FMDC to determine if its employees need to provide a new background check. If a Contractor’s employee has previously submitted a fingerprint background check to FMDC as part of the Missouri and National Rap Back programs, the employee may not need to submit another fingerprint search for a period of three to six years, depending upon the circumstances. The Contractor understands and agrees that FMDC may require more frequent background checks without providing any explanation to the Contractor. The fact that an additional background check is requested by FMDC does not indicate that the employee has a criminal record.
SECTION 015000 – CONSTRUCTION FACILITIES & TEMPORARY CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes requirements for construction facilities and temporary controls including temporary utilities, support facilities, security, and protection.

B. Temporary utilities include, but are not limited to, the following:
   1. Water service and distribution
   2. Temporary electric power and light
   3. Temporary heat
   4. Ventilation
   5. Telephone service
   6. Sanitary facilities, including drinking water
   7. Storm and sanitary sewer

C. Support facilities include, but are not limited to, the following:
   1. Field offices and storage sheds
   2. Temporary roads and paving
   3. Dewatering facilities and drains
   4. Temporary enclosures
   5. Hoists and temporary elevator use
   6. Temporary project identification signs and bulletin boards
   7. Waste disposal services
   8. Rodent and pest control
   9. Construction aids and miscellaneous services and facilities

D. Security and protection facilities include, but are not limited to, the following:
   1. Temporary fire protection
   2. Barricades, warning signs, and lights
   3. Sidewalk bridge or enclosure fence for the site
   4. Environmental protection

1.3 SUBMITTALS

A. Temporary Utilities: Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.
B. Implementation and Termination Schedule: Within (15) days of the date established for commencement of the Work, submit a schedule indicating implementation and termination of each temporary utility.

1.4 QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations including, but not limited to, the following:
   1. Building code requirements
   2. Health and safety regulations
   3. Utility company regulations
   4. Police, fire department, and rescue squad rules
   5. Environmental protection regulations

   1. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 “National Electric Code”.

C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.5 PROJECT CONDITIONS

A. Temporary Utilities: Prepare a schedule indicating dates for implementation and termination of each temporary utility. At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of permanent service.

B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist onsite.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide new materials. If acceptable to the Designer, the Contractor may use undamaged, previously used materials in serviceable condition. Provide materials suitable for use intended.

B. Lumber and Plywood: Comply with requirements in Division 6 Section “Rough Carpentry”.
   1. For job-built temporary office, shops, and sheds within the construction area, provide UL-labeled, fire-treated lumber and plywood for framing, sheathing, and siding.
2. For signs and directory boards, provide exterior-type, Grade B-B high-density concrete form overlay plywood of sized and thicknesses indicated.

3. For fences and vision barriers, provide minimum 3/9” (9.5mm) thick exterior plywood.

4. For safety barriers, sidewalk bridges, and similar uses, provide minimum 5/8” (16mm) thick exterior plywood.

C. Gypsum Wallboard: Provide gypsum wallboard on interior walls of temporary offices.

D. Paint: Comply with requirements of Division 9 Section “Painting”.
   1. For job-built temporary offices, shops, sheds, fences, and other exposed lumber and plywood, provide exterior-grade acrylic-latex emulsion over exterior primer.
   2. For sign panels and applying graphics, provide exterior-grade alkyd gloss enamel over exterior primer.
   3. For interior walls of temporary offices, provide two (2) quarts interior latex-flat wall paint.

E. Tarpaulins: Provide waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of (15) or less. For temporary enclosures, provide translucent, nylon-reinforced laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.

F. Water: Provide potable water approved by local health authorities.

2.2 EQUIPMENT

A. General: Provide new equipment. If acceptable to the Designer, the Contractor may use undamaged, previously used equipment in serviceable condition. Provide equipment suitable for use intended.

B. Water Hoses: Provide ¾” (19mm), heavy-duty, abrasion-resistant, flexible rubber hoses 100’ (30m) long, with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.

C. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110 to 120V plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.

D. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage rating.

E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered-glass enclosures where exposed to breakage. Provide exterior fixture where exposed to moisture.

F. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM, or another recognized trade association related to the type of fuel being consumed.
G. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers, or a combination of extinguishers of NFPA-recommended classes for the exposures.

1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

B. Provide each Facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Engage the appropriate local utility company to install temporary service or connect to existing service. Where company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with company recommendations.

1. Arrange with company and existing users for a time when service can be interrupted, if necessary, to make connections for temporary services.

2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.

3. Obtain easements to bring temporary utilities to the site where the Owner’s easements cannot be used for that purpose.

4. Use Charges: Cost or use charges for temporary facilities are not chargeable to the Owner or Designer. Neither the Owner nor Designer will accept cost or use charges as a basis of claims for Contract Change.

B. Temporary Water Service: The Owner will provide water for construction purposes from the existing building system. All required temporary extensions shall be provided and removed by the Contractor. Connection points and methods of connection shall be designated and approved by the Construction Representative.

C. Temporary Electric Power Service: The Owner will provide electric power for construction lighting and power tools. Contractors using such services shall pay all costs of temporary services, circuits, outlet, extensions, etc.

D. Temporary Lighting: When overhead floor or roof deck has been installed, provide temporary lighting with local switching.

1. Install and operate temporary lighting that will fulfill security and protection requirements without operating the entire system. Provide temporary lighting that will provide adequate illumination for construction operations and traffic conditions.
E. Temporary Heating: Provide temporary heat required by construction activities for
curing or drying of completed installations or for protection of installed construction
from adverse effects of low temperatures or high humidity. Select safe equipment that
will not have a harmful effect on completed installations or elements being installed.
Coordinate ventilation requirements to produce the ambient condition required and
minimize consumption of energy.

1. Heating Facilities: Except where the Owner authorizes use of the permanent
system, provide vented, self-contained, LP gas or fuel-oil heaters with
individual space thermostatic control.

2. Use of gasoline-burning space heaters, open flame, or salamander heating units
is prohibited.

F. Temporary Heating and Cooling: The normal heating and/or cooling system of the
building shall be maintained in operation during the construction. Should the
Contractor find it necessary to interrupt the normal HVAC service to spaces, which
have not been vacated for construction, such interruptions shall be pre-scheduled with
the Construction Representative.

G. Temporary Telephones: Provide temporary telephone service throughout the
construction period for all personnel engaged in construction activities.

H. Temporary Toilets: Use of the Owner’s existing toilet facilities will be permitted, so
long as facilities are cleaned and maintained in a condition acceptable to the Owner.
All construction personnel will be allowed access only to those specific facilities
designated by the Construction Representative. At substantial completion, restore
these facilities to the condition prevalent at the time of initial use.

I. Wash Facilities: The Owner will provide wash facilities within the building. All
construction personnel will be allowed access only to those specific facilities
designated by the Construction Representative.

J. Drinking-Water Facilities: The Owner will provide drinking water facilities within the
building. All construction personnel will be allowed access only to those specific
facilities designated by the Construction Representative.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Locate field offices, storage sheds, and other temporary construction and
support facilities for easy access.

1. Maintain support facilities until near Substantial Completion. Remove prior
to Substantial Completion. Personnel remaining after Substantial Completion
will be permitted to use permanent facilities, under conditions acceptable to
the Owner.

B. Storage Facilities: Limited areas for storage of building materials are available onsite.
Available storage areas are shown on the drawings. The Contractor shall provide his
own security. Specific locations for storage and craning operations will be discussed
at the Pre-Bid Meeting and the Pre-Construction Meeting.

C. Construction Parking: Parking at the site will be provided in the areas designated at
the Pre-Construction Meeting.
D. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities.

1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and materials drying or curing requirements to avoid dangerous conditions and effects.

2. Install tarpaulins securely with incombustible wood framing and other materials. Close openings of 25SqFt (2.3SqM) or less with plywood or similar materials.

3. Close openings through floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.

4. Where temporary wood or plywood enclosure exceeds 100SqFt (9.2SqM) in area, use UL-labeled, fire-retardant-treated material for framing and main sheathing.

E. Temporary Lifts and Hoists: Provide facilities for hoisting materials and employees. Truck cranes and similar devices used for hoisting materials are considered “tools and equipment” and not temporary facilities.

F. Temporary Elevator Use: The Owner will allow use of elevators within the building. All construction personnel will be allowed access only to those specific elevators designated by the Construction Representative.

G. Project Identification and Temporary Signs: Prepare project identification and other signs of size indicated. Install signs where indicated to inform the public and persons seeking entrance to the Project. Support on posts or framing of preservative-treated wood or steel. Do not permit installation of unauthorized signs.

1. Project Identification Signs: Engage an experienced sign painter to apply graphics. Comply with details indicated.

2. Temporary Signs: Prepare signs to provide directional information to construction personnel and visitors.

H. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than seven (7) days during normal weather or three (3) days when the temperature is expected to rise above 80°F (27°C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer, as requested by the Designer.

B. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of the types needed to protect against reasonable predictable and controllable fire losses. Comply with NFPA 10 “Standard for Portable Fire Extinguishers” and NFPA 241 “Standard for Safeguarding Construction, Alterations, and Demolition Operations”.
1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one (1) extinguisher on each floor at or near each usable stairwell.

2. Store combustible materials in containers in fire-safe locations.

3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for fighting fires. Prohibit smoking in hazardous fire-exposure areas.

4. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.

C. Permanent Fire Protection: At the earliest feasible date in each area of the Project complete installation of the permanent fire-protection facility including connected services and place into operation and use. Instruct key personnel on use of facilities.

D. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting including flashing red or amber lights.

E. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

1. Storage: Where materials and equipment must be stored and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

F. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result. Avoid use of tools and equipment that produce harmful noise. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.5 OPERATION, TERMINATION AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

2. Protection: Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

C. Termination and Removal: Unless the Designer requests that it be maintained longer, remove each temporary facility when the need has ended, when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of
interference with the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are the Contractor’s property. The Owner reserves the right to take possession of project identification signs.

2. At Substantial Completion, clean and renovate permanent facilities used during the construction period including, but not limited to, the following:
   a. Replace air filters and clean inside of ductwork and housing.
   b. Replace significantly worn parts and parts subject to unusual operating conditions.
   c. Replace lamps burned out or noticeably dimmed by hours of use.

END OF SECTION 015000
SECTION 017400 – CLEANING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for cleaning during the Project.

B. Environmental Requirements: Conduct cleaning and waste-disposal operations in compliance with local laws and ordinances. Comply fully with federal and local environmental and anti-pollution regulations.

1. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.

2. Burning or burying of debris, rubbish, or other waste material on the premises is not permitted.

PART 2 - PRODUCTS

2.1 MATERIALS

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

PART 3 - EXECUTION

3.1 PROGRESS CLEANING

A. General

1. Retain all stored items in an orderly arrangement allowing maximum access, not impending drainage or traffic, and providing the required protection of materials.

2. Do not allow the accumulation of scrap, debris, waste material, and other items not required for construction of this Work.

3. At least once each week, and more often if necessary, completely remove all scrap, debris, and waste material from the jobsite.

4. Provide adequate storage for all items awaiting removal from the jobsite, observing all requirements for fire protection and protection of the ecology.

B. Site

1. Daily, inspect the site and pick up all scrap, debris, and waste material. Remove all such items to the place designated for their storage.
2. Weekly, inspect all arrangements of materials stored onsite. Re-stack, tidy, or otherwise service all material arrangements.

3. Maintain the site in a neat and orderly condition at all times.

C. Structures

1. Daily, inspect the structures and pick up all scrap, debris, and waste material. Remove all such items to the place designated for their storage.

2. Weekly, sweep all interior spaces clean. “Clean” for the purposes of this paragraph, shall be interpreted as meaning free from dust and other material capable of being removed by use of reasonable effort and handheld broom.

3. In preparation for installation of succeeding materials, clean the structures or pertinent portions thereof to the degree of cleanliness recommended by the manufacturer of the succeeding material, using all equipment and materials required to achieve the required cleanliness.

4. Following the installation of finish floor materials, clean the finish floor daily while work is being performed in the space in which finish materials have been installed. “Clean” for the purposes of this subparagraph, shall be interpreted as meaning free from all foreign material which, in the opinion of the Construction Representative, may be injurious to the finish of the finish floor material.

3.2 FINAL CLEANING

A. General: Provide final cleaning operations when indicated. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of Work to the condition expected from a commercial building cleaning and maintenance program. Comply with manufacturer’s instructions.

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

1. Clean the Project Site, yard and grounds, in areas disturbed by construction activities including landscape development areas, of rubbish, waste material, litter, and foreign substances.

2. Sweep paved areas broom clean. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.

3. Remove petrochemical spills, stains, and other foreign deposits.

4. Remove tools, construction equipment, machinery, and surplus material from the site.

5. Remove snow and ice to provide safe access to the building.

6. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

7. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

9. Vacuum clean carpet and similar soft surfaces removing debris and excess nap. Shampoo, if required.

10. Clean transparent material, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.

11. Remove labels that are not permanent labels.

12. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
   a. Do not paint over “UL” and similar labels, including mechanical and electrical nameplates.

13. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

14. Clean plumbing fixtures to a sanitary condition free of stains, including stains resulting from water exposure.

15. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

16. Clean ducts, blowers, and coils if units were operated without filters during construction

17. Clean food-service equipment to a sanitary condition, ready and acceptable for its intended use.

18. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs and defective and noisy starters in fluorescent and mercury vapor fixtures.

19. Leave the Project clean and ready for occupancy.

C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid the Project of rodents, insects, and other pests. Comply with regulations of local authorities.

D. Removal of Protection: Remove temporary protection and facilities installed during construction to protect previously completed installations during the remainder of the construction period.

E. Compliances: Comply with governing regulations and safety standards for cleaning operations. Remove waste materials from the site and dispose of lawfully.

1. Where extra materials of value remain after Final Acceptance by the Owner, they become the Owner’s property.

END OF SECTION  017400
PART 1 - GENERAL

1.1 SUMMARY
A. Section Includes:

1. Demolition and removal of selected portions of building or structure.

1.2 DEFINITIONS
A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.

C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.

D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.3 PRE-INSTALLATION MEETINGS
A. Pre-demolition Conference: Conduct conference at Project site.

1.4 INFORMATIONAL SUBMITTALS
A. Qualification Data: For refrigerant recovery technician.

B. Pre-demolition Photographs or Video: Submit before Work begins.

1.5 CLOSEOUT SUBMITTALS
A. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.6 FIELD CONDITIONS
A. Owner will occupy portions of buildings immediately adjacent to and below selective demolition areas. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Storage or sale of removed items or materials on-site is not permitted.

E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
1. Maintain fire-protection facilities in service during selective demolition operations.

1.7 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

1. Comply with requirements for existing services/systems interruptions specified in Section 011000 "Summary of Work."

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Comply with requirements for access and protection specified in Section 015000 "Temporary Facilities and Controls."

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.

2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.

3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.

4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, roofs, or framing.

5. Dispose of demolished items and materials promptly.

B. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.

2. Pack or crate items after cleaning and repairing. Identify contents of containers.

3. Protect items from damage during transport and storage.

4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

1. Do not allow demolished materials to accumulate on-site.

2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.
3.6 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119
SECTION 078400 - FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

   A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Section, apply to work specified in this section.

1.2 DEFINITIONS

   A. Firestopping: Material or combination of materials used to retain integrity of fire-rated construction by maintaining an effective barrier against the spread of flame, smoke, and hot gases through penetrations in, or construction joints between, fire rated wall and floor assemblies.

1.3 GENERAL DESCRIPTION OF THE WORK OF THIS SECTION

   Only tested firestop systems shall be used in specific locations as follows:

   A. Penetrations for the passage of duct, cable, cable tray, conduit, piping, electrical busways and raceways through fire-rated vertical barriers (walls and partitions), horizontal barriers (floor/ceiling assemblies), and vertical service shaft walls and partitions.

   B. Safing slot gaps between edge of floor slabs and curtain walls.

   C. Openings between structurally separate sections of wall or floors.

   D. Gaps between the top of walls and ceilings or roof assemblies.

   E. Expansion joints in walls and floors.

   F. Openings and penetrations in fire-rated partitions or walls containing fire doors.

   G. Openings around structural members which penetrate floors or walls.

1.4 RELATED WORK OF OTHER SECTIONS

   A. Coordinate work of this section with work of other sections as required to properly execute the work and as necessary to maintain satisfactory progress of the work of other sections, including:

      1. Section 092900 - Gypsum Board
      2. Section 210000 - Fire Suppression
      3. Section 220000 - Plumbing
      4. Section 260000 - Electrical

1.5 REFERENCES

   A. Test Requirements: ASTM E 814, "Standard Method of Fire Tests of Through Penetration Fire Stops"
B. Test Requirements: UL 1479, “Fire Tests of Through-Penetration Firestops”


D. Underwriters Laboratories (UL) of Northbrook, IL publishes tested systems in their "FIRE RESISTANCE DIRECTORY" that is updated annually.

1. UL Fire Resistance Directory:
   a. Firestop Devices (XHJI)
   b. Fire Resistance Ratings (BXRH)
   c. Through-Penetration Firestop Systems (XHEZ)
   d. Fill, Voids, or Cavity Material (XHHW)
   e. Forming Materials (XHKU)
   f. Joint Systems (XHBN)
   g. Perimeter Fire Containment Systems (XHDG)


1.6 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Provide through-penetration fire stop systems and fire-resistive joint systems that comply with specified requirements of tested systems.

B. Fire stop System installation must meet requirements of ASTM E 814, UL 1479 or UL 2079 tested assemblies that provide a fire rating equal to that of construction being penetrated.

C. Proposed fire stop materials and methods shall conform to applicable governing codes having local jurisdiction.

D. Fire stop Systems do not reestablish the structural integrity of load bearing partitions/assemblies or support live loads and traffic. Installer shall consult the structural engineer prior to penetrating any load bearing assembly.

E. For those firestop applications that exist for which no qualified tested system is available through a manufacturer, an engineering judgment derived from similar qualified tested system designs or other tests will be submitted to local authorities having jurisdiction for their review and approval prior to installation. Engineering judgment documents must follow requirements set forth by the International Firestop Council.

1.7 SUBMITTALS

A. Submit Product Data: Manufacturer's specifications and technical data for each material including the composition and limitations, documentation of qualified tested firestop systems to be used and manufacturer's installation instructions to comply with Section 1300.
B. Manufacturer's engineering judgment identification number and document details when no qualified tested system is available for an application. Engineering judgment must include both project name and contractor’s name who will install firestop system as described in document.

D. Submit material safety data sheets provided with product delivered to job-site.

1.8 INSTALLER QUALIFICATIONS

A. Engage an experienced Installer who is certified, licensed, or otherwise qualified by the firestopping manufacturer as having been provided the necessary training to install manufacturer’s products per specified requirements. A supplier’s willingness to sell its firestopping products to the Contractor or to an Installer engaged by the Contractor does not in itself confer qualification on the buyer.

B. The work is to be installed by a contractor with at least one of the following qualifications:
   - FM 4991 Approved Contractor
   - UL Approved Contractor
   - Firm with not less than 3 years experience with fire stop installation.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials undamaged in manufacturer's clearly labeled, unopened containers, identified with brand, type, and UL label where applicable.

B. Coordinate delivery of materials with scheduled installation date to allow minimum storage time at job site.

C. Store materials under cover and protect from weather and damage in compliance with manufacturer's requirements, including temperature restrictions.

D. Comply with recommended procedures, precautions or remedies described in material safety data sheets as applicable.

E. Do not use damaged or expired materials.

1.10 PROJECT CONDITIONS

A. Do not use materials that contain flammable solvents.

B. Schedule installation of firestopping after completion of penetrating item installation but prior to covering or concealing of openings.

C. Verify existing conditions and substrates before starting work. Correct unsatisfactory conditions before proceeding.

D. Weather conditions: Do not proceed with installation of firestop materials when temperatures exceed the manufacturer's recommended limitations for installation printed on product label and product data sheet.
E. During installation, provide masking and drop cloths to prevent firestopping materials from contaminating any adjacent surfaces.

PART 2 - PRODUCTS

2.1 FIRESTOPPING, GENERAL

A. Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by the firestopping manufacturer based on testing and field experience.

B. Provide components for each firestopping system that are needed to install fill material. Use only components specified by the firestopping manufacturer and approved by the qualified testing agency for the designated fire-resistance-rated systems.

C. Firestopping Materials are either “cast-in-place” (integral with concrete placement) or “post installed.” Provide cast-in-place firestop devices prior to concrete placement.

2.2 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with through penetration firestop systems (XHEZ), joint systems (XHBN), and perimeter firestop systems (XHDG) listed in Volume 2 of the UL Fire Resistance Directory; provide products of the following manufacturers as identified below:

1. Hilti Inc., Tulsa, Oklahoma
2. Specified Technologies, Inc., Somerville, NJ
3. Grace Construction Products, Cambridge, MA
4. Johns Manville Corporation, Denver, CO
5. 3M Sealants, St. Paul, MN
6. Or equal.

2.3 MATERIALS

A. Use only firestop products that have been UL 1479, ASTM E 814 or UL 2079 tested for specific fire-rated construction conditions conforming to construction assembly type, penetrating item type, annular space requirements, and fire-rating involved for each separate instance.

PART 3 - EXECUTION

3.1 PREPARATION

A. Verification of Conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.

1. Verify penetrations are properly sized and in suitable condition for application of materials.
2. Surfaces to which firestop materials will be applied shall be free of dirt, grease, oil, rust, laitance, release agents, water repellents, and any other substances that may affect proper adhesion.
3. Provide masking and temporary covering to prevent soiling of adjacent surfaces by firestopping materials.

4. Comply with manufacturer's recommendations for temperature and humidity conditions before, during and after installation of firestopping.

3. Do not proceed until unsatisfactory conditions have been corrected.

3.2 COORDINATION

A. Coordinate construction of openings, penetrations and construction joints to ensure that the fire stop systems are installed according to specified requirements.

B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration fire stop systems. Coordinate construction and sizing of joints to ensure that fire-resistive joint systems are installed according to specified requirements.

C. Coordinate fire stopping with other trades so that obstructions are not placed in the way prior to the installation of the fire stop systems.

D. Do not cover up through-penetration fire stop and joint system installations that will become concealed behind other construction until each installation has been examined.

3.3 INSTALLATION


B. Manufacturer's Instructions: Comply with manufacturer's instructions for installation of through-penetration and construction joint materials.

3.4 FIELD QUALITY CONTROL

A. Examine sealed penetration areas to ensure proper installation before concealing or enclosing areas.

C. Inspection of through-penetration firestopping shall be performed in accordance with ASTM E 2174, “Standard Practice for On-Site Inspection of Installed Fire Stops” or other recognized standard.

D. Perform under this section patching and repairing of firestopping caused by cutting or penetrating of existing firestop systems already installed by other trades.

3.5 IDENTIFICATION & DOCUMENTATION

A. Identify through-penetration firestop systems with pressure-sensitive, self-adhesive, preprinted vinyl labels. Attach labels permanently to surfaces of penetrated construction on both sides of each firestop system installation where labels will be visible to anyone seeking to remove penetrating items or firestop systems. Include the following information on labels:


2. Through-Penetration firestop system designation of applicable testing and inspecting agency.
4. Date of Installation.

3.6 ADJUSTING AND CLEANING

A. Remove equipment, materials and debris, leaving area in undamaged, clean condition.

B. Clean all surfaces adjacent to sealed holes and joints to be free of excess firestop materials and soiling as work progresses.

END OF SECTION 078400
SECTION 079200 - JOINT SEALANTS

PART 1: GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 DESCRIPTION OF WORK

A. Furnish all labor, material, plant and services required to complete caulking and sealing and as necessary to make building completely watertight.

B. Refer to drawings for particular items requiring caulking and sealant, but joints requiring caulking and sealants shall not be limited to those shown on drawings.

1.3 RELATED WORK

A. All in-seam sealant, lap sealant, splicing cement, and cut-off mastic shall be provided by roof membrane manufacturer or approved for compatibility with roofing membrane.

1.4 QUALITY ASSURANCE

A. Basis of Specification:
   1. Pecora Corporation

B. Acceptable Manufacturers:
   1. Sonneborn, Division of Contech, Inc.
   2. Tremco Manufacturing Company
   3. W. R. Grace & Company
   4. or acceptable substitution.

C. Standards:
   1. Related Standards: Provide work in accordance with applicable standards specified and product manufacturer's specifications for materials and workmanship unless Project Documents require conformance with more stringent requirements. Provide the most stringent requirements.

D. Quality Control:
   1. Seal sample areas in project as directed by Owner's Representative for each type of sealant required, in accordance with project requirements and colors selected, and obtain Architect's approval for appearance before proceeding.

1.5 SUBMITTALS

A. Product Data:
   1. Submit two copies of manufacturer's specifications and installation instructions for each type material required and proposed for use. Include description of material, physical properties and limitations for use of such materials. Include in-
formation regarding the need for and use of primers with sealants proposed, and time limit in which material must be used after date of manufacturing.

B. Guarantee:
   1. Submit written guarantee signed jointly by Sealant Installer and General Contractor agreeing that all caulking and sealant work will be free of defective material and workmanship for a period of three (3) years from date of Certificate of Substantial Completion for project, and that defective work, if any, occurring during guarantee period will be corrected at no additional cost to Owner.
   2. Submit written guarantee to Owner, through Owner's Representative prior to final acceptance of project work by Owner.

1.6 DELIVERY, STORAGE AND HANDLING

A. Sealant Contractor shall cooperate with Owner's Representative in delivery and storage of his equipment on Project. Equipment shall be handled by qualified and experienced worker.

B. Products shall be delivered in original cartons or containers bearing original labels, and shall be delivered, stored and handled to prevent damage of any nature and as recommended by manufacturer.

C. Deliver sealant materials in sealed containers with date of manufacture clearly shown on each package. Store materials in cool, dry, covered or shaded area, assigned exclusively to this Contractor. Packages and containers showing evidence of contamination due to damage shall be removed from Project Site immediately and replaced with fresh, damage-free material. Materials containing flammable and volatile solvents shall be kept away from heat, sparks and flame. Proper safety precautions must be taken in storage and application.

PART 2: PRODUCTS

2.1 SEALANT MATERIALS

A. Type A Sealant: Two-component, modified polyurethane sealant, non-sag type, conforming to Federal Specification TT-S-277 E - Type II and ANSI All6.1; Pecora "Dynatrol II".

B. Sealant colors as selected by Architect from standard available colors.

2.2 JOINT-SEALANT BACKING

A. General: Provide sealant backings of material and type that are non-staining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F. Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and otherwise contribute to optimum sealant performance.

2.3 ACCESSORY MATERIALS
A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Joint Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants with joint substrates.

C. Bond Breaker Tape: Self-adhesive, polyethylene film tape as recommended by sealant manufacturer.

D. Masking Tape: Non-staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3: EXECUTION

3.1 INSPECTION

A. Examine premises before start of work and ascertain conditions as they actually exist.

B. Verify that other trades have completed their work as necessary before application of sealant work.

C. Examine joint surfaces and conditions to ascertain adequate bond can be obtained, and that surfaces are free of defects or foreign substances which would be detrimental to satisfactory application of sealants specified. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

D. Report any unsatisfactory conditions or defects and do not proceed with work until such conditions or defects are corrected. Starting of work shall constitute acceptance of surfaces and conditions.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION AND INSTALLATION, GENERAL

A. Prepare joint surfaces and install materials in strict accordance with manufacturer's instructions and as specified, to achieve properly sealed joints with neat, even appearance.

B. Do not proceed with installation of sealants under adverse weather conditions, or when temperatures are below or above manufacturer's recommended limitations for installation.

C. Have joints or spaces to be sealed clean and dry, free of oil, grease, dust and other foreign substances which would interfere with or impair sealant work. Clean surfaces immediately before installation of primer and/or sealant as applicable and necessary.

D. Prime joint surfaces where recommended by sealant manufacturer using primer material compatible with sealant used and proper for joint surfaces involved. Do not allow primer to spill or migrate onto adjoining surfaces.

E. Install bond breaker tape to isolate back of sealant from backing surface wherever required by manufacturer's recommendations to insure sealant will perform properly.
F. Install compressible sealant backer rod or strip in joints where suitable backing does not exist and as required to provide proper depth of sealant as recommended by sealant manufacturer. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

G. Depth of sealants shall be as recommended by sealant manufacturer for conditions involved, but within the following general limitations, measured at the center (thin) section of bead:

1. For normal moving joints sealed with elastomeric sealants and not subject to traffic, provide sealant depth equal to 50% of joint width, but not more than 1/2" deep nor less than 1/4" deep.
2. For joints sealed with non-elastomeric sealants, provide sealant depth in the range of 75% to 125% of joint width.

H. Install sealants by proven techniques to comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses provided for each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

I. Two-part sealants shall be mixed in strict accordance with manufacturer’s instructions using recommended mixing equipment. Accurately control proportions of the components to achieve ratio established by the manufacturer. Sealant mixing shall not be done until sealant is to be applied.

J. Use sealant colors as selected and approved by Architect. General intent is to reasonably match color of adjacent finished surfaces.

K. Sealed joints shall be smooth, free of sags or voids. Sealant surfaces shall be slightly concave, and slightly below adjoining surfaces. Tool all joints as recommended by manufacturer for sealant used.

L. Remove excess or misplaced sealant promptly as work progresses. Clean surfaces which have been soiled with approved solvent and/or cleaning agent that will not damage surfaces.

M. Remove defective or unsatisfactory work if any, and replace with new materials after cleaning and preparing joint surfaces as recommended by manufacturer.

N. Leave work in neat, clean condition.

O. Remove, clean and re-caulk all previously caulked exterior joints on the building per the Construction Drawings.

3.4 CLEANING
A. Sealant Contractor shall immediately clean all adjacent materials which have been soiled and leave work in neat, clean condition. Use only approved type stripping compounds, solvents and cleaners.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from the original work.

3.6 SCHEDULE OF SEALANTS

A. Unless otherwise noted, sealant type specified shall be used as follows:

1. For all exterior joints (except joints in pavement), for interior joints in exterior walls, and for all expansion/control joints in building.

B. Provide caulking and sealant of joints and voids where indicated on drawings and as required for completion of the work. Locations for such sealed joints and voids include but not necessarily limited to the following:

1. Exterior:
   a. All joints between and around the flashing, counter flashing and bar flashing.
   b. Any joint locations where there is a potential for leaks.

END OF SECTION 079200
SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Interior gypsum board.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

C. Low Emitting Materials: For ceiling and wall assemblies, provide materials and construction identical to those tested in assembly and complying with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 INTERIOR GYPSUM BOARD

A. Manufacturers: Subject to compliance with requirements available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   1. American Gypsum.
   2. CertainTeed Corp.
   3. Georgia-Pacific Gypsum LLC.
   4. Lafarge North America Inc.
   6. PABCO Gypsum.
   7. Temple-Inland.
   8. USG Corporation.

B. Gypsum Board, Type X: ASTM C 1396/C 1396M.
   1. Thickness: 5/8 inch (15.9 mm).
   2. Long Edges: Tapered.
2.3 **TRIM ACCESSORIES**

A. Interior Trim: ASTM C 1047.
   1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet.

B. Aluminum Trim: ASTM B 221 (ASTM B 221M), Alloy 6063-T5.

2.4 **JOINT TREATMENT MATERIALS**

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:
   1. Interior Gypsum Board: Paper.
   4. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

2.5 **AUXILIARY MATERIALS**

A. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
   1. Laminating adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
   2. Laminating adhesive shall comply with the testing and product requirements of the California Department of Health Services’ "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

C. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing).

D. Thermal Insulation: As specified in Section 072100 "Thermal Insulation."

E. Vapor Retarder: As specified in Section 072100 "Thermal Insulation."

PART 3 - EXECUTION

3.1 **APPLYING AND FINISHING PANELS**

A. Comply with ASTM C 840.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these
locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

D. Install trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

E. Prefill open joints, rounded or beveled edges, and damaged surface areas.

F. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

G. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 2: Panels that are substrate for tile.
3. Level 3:
4. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
   a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."

H. Protect adjacent surfaces from drywall compound and texture finishes and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

I. Remove and replace panels that are wet, moisture damaged, and mold damaged.

END OF SECTION 092900
PART 1 - GENERAL

1.1 SUMMARY

A. Section includes surface preparation and the application of paint systems on the following interior substrates:
   1. Concrete.
   2. Concrete masonry units (CMU).
   3. Steel.
   4. Wood.
   5. Gypsum board.

1.2 DEFINITIONS

A. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
B. Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
C. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
D. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
E. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
F. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
G. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.
B. Samples: For each type of paint system and in each color and gloss of topcoat.
C. Product List: For each product indicated. Include printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Paint: 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.
1.5 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
   a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
   b. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on mockups.
   a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to products listed in other Part 2 articles for the paint category indicated.

2.2 PAINT, GENERAL

A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."

B. Material Compatibility:
   1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
   2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

C. Low-Emitting Materials: Interior paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

D. Colors: As selected by Architect from manufacturer's full range.
   1. 10 percent of surface area will be painted with deep tones.

2.3 BLOCK FILLERS

A. Block Filler, Latex, Interior/Exterior:

2.4 PRIMERS/SEALERS

A. Primer Sealer, Latex, Interior:

B. Primer, Latex, for Interior Wood:
C. Primer, Bonding, Water Based:

2.5 METAL PRIMERS

A. Primer, Rust-Inhibitive, Water Based:

2.6 WATER-BASED PAINTS

A. Latex, Interior, Semi-Gloss, (Gloss Level 5):

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
   1. Concrete: 12 percent.
   3. Wood: 15 percent.
   4. Gypsum Board: 12 percent.
   5. Plaster: 12 percent.

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. Proceed with coating application only after unsatisfactory conditions have been corrected.
   1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
   1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
   1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
3.3 **APPLICATION**

A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."

B. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 **CLEANING AND PROTECTION**

A. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

B. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 **INTERIOR PAINTING SCHEDULE**

A. Concrete Substrates, Nontraffic Surfaces:

1. Latex System:
   b. Prime Coat: Latex, interior, matching topcoat.
   d. Topcoat: Latex, interior, semi-gloss, (Gloss Level 5).

B. CMU Substrates:

1. Latex System:
   a. Block Filler: Block filler, latex, interior/exterior.
   c. Topcoat: Latex, interior, semi-gloss, (Gloss Level 5)

C. Steel Substrates:

1. Latex over Alkyd Primer System:
   a. Prime Coat: Primer, alkyd, anti-corrosive, for metal.
   b. Prime Coat: Primer, alkyd, quick dry, for metal.
   c. Prime Coat: Primer, alkyd, anti-corrosive, for metal or primer, alkyd, quick dry, for metal.
   d. Prime Coat: Shop primer specified in Section 051200 "Structural Steel Framing" where substrate is specified.
   e. Intermediate Coat: Latex, interior, matching topcoat.
   f. Topcoat: Latex, interior, semi-gloss, (Gloss Level 5).

D. Wood Substrates: Including wood trim and doors.

1. Latex System:
   a. Prime Coat: Primer, latex, for interior wood.
c. Topcoat: Latex, interior, semi-gloss, (Gloss Level 5).
d. Topcoat: Latex, interior, gloss, (Gloss Level 6, except minimum gloss of 65 units at 60 degrees).

E. Gypsum Board Substrates:
   1. Latex System:
      b. Prime Coat: Latex, interior, matching topcoat.
      d. Topcoat: Latex, interior, semi-gloss, (Gloss Level 5).
      e. Topcoat: Latex, interior, gloss, (Gloss Level 6, except minimum gloss of 65 units at 60 degrees).

END OF SECTION 099123
SECTION 142410 – HYDRAULIC PASSENGER ELEVATORS

PART 1 - GENERAL

1.1 GENERAL NOTES

A. General Provisions of Contract, including general and supplementary conditions and Division I Specification sections, apply to work of this section.

B. Provide all labor, materials, services, and equipment necessary to complete the renovation of the passenger elevator nos. 1 & 2 as specified herein.

C. Drawings and specifications are intended to show general arrangement, design and extent of work. As such they are not intended to be scaled for roughed in measurements or to serve as shop drawings.

D. Anything shown on drawings and not mentioned in these specifications or vice versa, as well as any work which is obviously necessary to complete the Project, within the limits established by the drawings, specifications and codes, although not shown on or described therein, shall be performed by the Contractor as part of their work.

1.2 DESCRIPTION OF WORK

A. This section includes the renovation of two (2) direct plunger, holed hydraulic passenger elevator nos. 1 and 2 in MONG HQs Building, Ike Skelton Training Site, Jefferson City, Missouri, as noted in the elevator schedule below. The schedule indicates required performance, control, capacities, features, and finishes for the elevator.

B. Hydraulic elevator is defined to include a plunger & cylinder unit connected to the elevator platform which will raise and lower the elevator by using pumping units using oil as the medium complete with components, controls and devices as indicated as required for safely operating elevator at rated speed and capacity.

C. Elevators in this project shall be renovated one at a time, with a two day break in period between renovations. Once removed from service, work shall remain steady on the elevator until substantial completion.

1.3 ELEVATOR SCHEDULE

<table>
<thead>
<tr>
<th>Renovate</th>
<th>Two (2) hydraulic passenger elevator nos. 1 and 2.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Machine</td>
<td>New dry type hydraulic power units and cutoffs in machine room. Retain direct plunger/cylinder type lift.</td>
</tr>
<tr>
<td>Capacity &amp; Speed</td>
<td>Retain the existing contract speed of 125 fpm in the up and down direction and 4000 lbs. capacity.</td>
</tr>
<tr>
<td>Operation</td>
<td>Provide new microprocessor controller with simplex collective (for each elevator) operation with -</td>
</tr>
</tbody>
</table>
**Fireman’s Emergency Service**
- Operation (Main Floor G, Alternate Floor LL)
- Independent Service Operation
- Hoistway Access Operation
- Emergency Power Operation (both elevators on E-Power)
- Timed Shutdown of 110 Accessories

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approximate Travel</td>
<td>Retain 26'-6½&quot;</td>
</tr>
<tr>
<td>Number of Stops</td>
<td>Four (4) stops with Front Openings at floor G and rear openings at Floor LL, 1-2. Floor G is main accessibility (★) floor.</td>
</tr>
<tr>
<td>Opening Size</td>
<td>Retain 3'-6&quot; wide by 7'-0&quot; high.</td>
</tr>
<tr>
<td>Door Operating Equipment</td>
<td>Provide new heavy-duty, closed loop door operators with new clutch and door restrictor device. Provide new infrared, non-contact door reversal devices.</td>
</tr>
<tr>
<td>Guide Rails</td>
<td>Retain and clean existing steel tees and realign as necessary.</td>
</tr>
<tr>
<td>Car Structure</td>
<td>Retain existing car platform and sling. Provide new spring loaded roller guides.</td>
</tr>
<tr>
<td>Buffers &amp; Pit Equipment</td>
<td>Retain pit channels and spring buffers.</td>
</tr>
<tr>
<td>Car Enclosure</td>
<td>Provide completely new car enclosures changing to a brushed stainless steel base design.</td>
</tr>
<tr>
<td>Signal Fixtures</td>
<td></td>
</tr>
<tr>
<td>Car Control Station</td>
<td>Provide new single car control stations with integral car position indicator, speakerphone and emergency light in the front return panel.</td>
</tr>
</tbody>
</table>
Hall Lantern

Provide new hall lantern with illuminating arrows and adjustable electronic direction tones in all lobbies.

Hall Buttons

Provide new, flush mounted hall button fixtures. Hall button at Floor G to include Fireman’s Phase I key switch, engraved instructions, and emergency power jewel. Hall buttons at terminal landings to include hoistway access key switches.

New Installation Maintenance Service

Maintenance to be provided from one (1) month prior to the start of construction to twelve (12) months after the final elevator renovation in the project is substantially complete.

1.4 QUALITY ASSURANCE

A. Installer Qualification: The elevator manufacturer, or a licensee of the manufacturer, who has a record of successful experience with the installation of similar elevators. The contractors shall have, as a minimum, the following qualifications and documentation verifying these qualifications shall be submitted prior to award:

1. Minimum of five (5) years successful experience in installing and servicing similar elevator installations.

2. Installed at least ten (10) completed and accepted elevator systems of similar size, scope, logic control, and motion control required by this contract.

3. An existing in-house administrative and technical organization staffed with competent personnel who are experienced in the elevator related work required to install and service the elevator system as specified located within fifty (50) miles of the project location.

B. Elevator Code: Except for more stringent requirements as indicated or imposed by governing regulations (which must be complied with), comply with applicable requirements of the ASME A17.1-2004 Safety Code for Elevators and Escalators up to and including the A17.1a-2005 addenda and the A17.1S-2005 supplement hereinafter referred to as the “Elevator Code” and the 2018 International Building Code, hereinafter referred to as the “Building Code”.

C. NEC Code: Comply with the NEC Code and specifically with sections relating to electrical work for elevators.

D. Fire Resistance of Entrances: Comply with NFPA No. 80 and provide units bearing appropriate UL labels or other equivalent testing agency.


F. Performance Requirements: Provide an elevator that meets the following performance requirements:
1. Speed: +/- 5% of specified contract speed under a full load condition in either direction.
2. Stopping Accuracy: 1/4 inch under any loading condition.
3. Floor to Floor Performance Time: 17.0 seconds based on 13'-11” floor height between floors LL & 1. Time is measured from start of doors closing until doors are ¾ open and car is level and stopped at the next successive floor under any loading condition or travel direction.
4. Door Close Time: 3.0 seconds.
5. Door Open Time: 2.0 seconds.
6. Door Open Dwell Time: 3.0 seconds car call / 5.0 seconds hall call.
7. Smooth acceleration and deceleration for comfort of ride.

1.5 SUBMITTALS

A. Refer to Division 1 for additional information regarding submittals, including submittal requirements, processing procedures, and limitations of review.

B. Product Data: Submit manufacturer's technical product data and instructions for each principal component or product, including flooring and wall panels for car interior. List and describe features of control system, performances, and operating characteristics. Submit brochures of all signal and operational fixtures, control and drive equipment, hoistway door equipment, door operator, and door protective device.

C. Shop Drawings: Shop drawings shall be prepared by skilled draftsmen and presented in a clear and thorough manner in electronic PDF format, as follows:
   1. Elevator Machine Room Layout Drawings: Drawings shall include dimensional layout drawing for the elevator machine room indicating coordination with building structure and relationships with other construction including, but not limited to, electrical and HVAC equipment. Indicate job location, capacity, speed, size, performance, operations, safety features, controls, finishes, weights and locations of machine room components, and similar information on the layout drawings.
   2. Fixture drawings: Submit job-specific, straight line dimensional drawings of all signal and operational fixtures.
   3. Car Enclosure: Submit job specific plan and detail of the new car enclosure including finishes.
   4. Approval of shop drawings and cuts is for general arrangement only and does not include measurement, which is the contractor's responsibility, or approval of variations from the contract documents. The purpose of the shop drawing submittals by the contractor is to demonstrate to the owner the contractor understands the design concept and demonstrates an understanding of the equipment and materials to be furnished.

D. Samples: Submit samples of exposed finishes of the car enclosure, hoistway entrances, and signal equipment. Provide 6” to 8” square samples of sheet materials and 10” to 12” lengths of running trim members.

E. Diagnostic Tool: Upon completion of work provide diagnostic testing device, or maintenance terminal, suitable for all troubleshooting and testing procedures related to the specific type of microprocessor control and door controller. This diagnostic testing device, or maintenance terminal, shall conform to the operating procedures under the testing section of these specifications.

F. Operation and Maintenance Manuals: Submit bound manuals for each elevator, with operating and maintenance instructions, lubricating schedule and instructions, parts listing,
recommended parts inventory listing for motor and critical components, diagnostic device operations manual, emergency instructions and similar information.

1. Operation and Maintenance manuals shall include a diagnostic device operation manual complete with adjustment setting, sequence of operation, and other diagnostic technical data required for adjustments, tuning, maintenance, and operation of the elevator including performance of all required acceptance and periodic testing required by the Elevator Code. User’s instruction manual shall include access codes required for accessing microprocessor equipment for adjusting or programming.

2. Provide three (3) copies of manual bound in standard three-ring, hard binders. Identify each binder with Owner's name.

3. Include three (3) copies of a detailed "Maintenance Control Program", specific to the elevator, in the maintenance manual as required by Elevator Code. The MCP shall be set up to maintain the following documentation throughout the life of the elevator:
   a. A written description of all examinations and maintenance of equipment at scheduled intervals. Intervals shall be based on job specific characteristics including equipment age, condition, and accumulated wear, design and inherent quality of the equipment, usage, environmental conditions, etc.
   b. Instructions for cleaning, lubricating, and adjusting applicable components at regular intervals and repairing or replacing all worn or defective components where necessary.
   c. A description of tests of equipment at scheduled intervals.
   d. All Code required written procedures such as inspection, testing, and maintenance, and maintenance records. Maintenance records shall:
      1) document description of maintenance task performed and dates.
      2) list description and dates of examinations, tests, adjustments, repairs, and replacements.
      3) list description and dates of call backs (trouble calls) or reports that are reported to elevator personnel by any means, including corrective action taken.
      4) contain written record of the findings on the firefighter’s service operation.
   e. Up-to-date wiring diagrams detailing circuits of all electrical protective devices and critical operating circuits and shall be available in the elevator control room.

G. Wiring Diagrams: Provide two (2) sets of complete electrical circuit diagrams, and one (1) electronic copy in PDF format on CD-ROM, for control and operational features as installed, showing location and wiring for power, signal and control systems including any modifications to the existing control wiring necessary due to these renovations. The diagrams shall differentiate clearly between manufacturer-installed wiring and field installed wiring. Provide one (1) bound set of plastic laminated wiring diagrams in the elevator machine room, minimum size 11" by 17". Markings shall be of a size that is clearly legible.

H. Keys: The Contractor shall provide the Owner with six (6) sets of keys for each type of key switch fixture provided.

I. Certificate Frame: Provide a certificate frame for each elevator in the elevator machine room mounted in a conspicuous location. Frame shall be made of a quality metal with a window and sized to house the 8½" x 11" operating certificate from the State of Missouri.
J. Certificates and Permits: Provide Owner with copies of all inspection/acceptance certificates and operating permits as required by governing authorities to allow normal, unrestricted use of elevator.

K. Maintenance Certification: The Contractor shall submit a written certification, signed by the Contractor and the manufacturer of the equipment, making a commitment to provide direct support to the Owner, or the Owner’s elevator maintenance service representative, including availability of parts (for inventory, not on an “exchange only” basis), diagnostic tools, and technical & engineering support. In addition, all parts and support shall be provided at a reasonable cost in line for which the original manufacturer would charge to its own customer base and response shall be in a timely manner. This commitment shall remain in effect for a minimum of twenty-five (25) years after substantial completion of the project.

1.6 INITIAL MAINTENANCE SERVICE AND WARRANTY

A. Maintenance Service: Furnish maintenance and callback service on both elevators for a period of one (1) month prior to removal of the first car from service to twelve (12) months following date of final acceptance of the final elevator renovation work as specified within this project. The maintenance and callback service shall include at a minimum, but not be limited to, the full maintenance requirements as follows:

1. Maintenance service shall be performed by skilled elevator personnel directly employed and supervised by the same company that furnished and installed the elevator equipment specified herein.

2. This service shall include:
   a. Monthly examination of the hydraulic elevator units as a minimum. Include all required, routine maintenance as depicted in the “Maintenance Control Program”.
   b. Lubricating, adjusting, repairing and replacing of all parts as necessary to keep the equipment, including battery packs, in a first class condition and proper working order.
   c. Furnish all lubricants and parts required.
   d. Equalizing tension and adjusting of gate chains when necessary.
   e. Assure smooth and consistent operation of automatic hoistway doors and car doors.
   f. Assure smooth starting and stopping and accurate leveling at all times.
   g. Provide all periodic annual and maintenance testing in accordance with the Elevator Code.
   h. The contractor shall keep clean of all dirt and debris guide rails, top of car, bottom of platform, machine room, elevator hoistway and pit. All necessary cleaning supplies and equipment shall be furnished by the contractor.
   i. An annual inspection, as described in the Elevator Code and/or as required by governing authorities. The units shall have the annual inspection performed during the 11th month of the warranty period. Coordinate exact date with Owner and Owner supplied State Inspector.

3. The maintenance service shall not include the performance of any work required as a result of improper use, accidents or negligence, for which the contractor is not directly responsible.

4. All work shall be completed by trained employees of the elevator contractor and performed during normal working hours. Include 24 hour/day, 7-days/week emergency callback service. Owner is responsible for overtime cost of said callbacks. Exclude only
repair/replacement due to misuse, abuse, accidents, or neglect caused by persons other than installer's personnel. Response to non-emergency service calls shall be within 2 hours of the call and response to emergency service calls shall be immediate and a maximum of within 1 hour of the call. Contractor shall follow the Owners site procedures when responding to any callbacks. Emergency callbacks include, but are not limited to, the following:

a. Incidents resulting in injury.

b. Entrapments.

5. During the eleventh month of the new installation maintenance service period, a post warranty inspection shall be coordinated by the installing contractor to ensure the elevator is in a good state of maintenance repair and all maintenance manuals, diagnostic tools and Maintenance Control Program documents are in place. The inspection shall include the installing contractor, the Owner’s current building campus elevator maintenance contractor and the Owner’s representative.

6. The contractor shall maintain a log in the elevator machine room. The log shall list the date and time of routine examinations and all trouble calls. Each trouble call shall be fully described including the nature of the call, necessary corrections performed and or parts replaced.

7. Maintenance Control Program shall meet the requirements for maintenance as identified in ASME A17.1, Section 8.6. This shall include the provision of a written Maintenance Control Program and maintenance record keeping that is consistent with Elevator Code requirements.

B. General Warranty: The elevator warranty specified in this section shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

C. Warranty: Provide special project warranty, signed by contractor, installer, and Manufacturer, agreeing to replace, repair/restore defective materials and workmanship of new elevator work during warranty period. "Defective“ is hereby defined to include, but not by way of limitation, operation or control system failures, performances below required minimums, excessive wear, unusual deterioration or aging of materials or finishes, unsafe conditions, the need for excessive maintenance, abnormal noise or vibration, and similar unusual, unexpected and unsatisfactory conditions. The warranty period is twelve (12) months starting on date of final acceptance of the elevator and shall be extended until "defects“ as defined in this warranty are corrected.

PART 2 MATERIALS AND COMPONENTS

2.1 GENERAL

A. Provide manufacturer's standard pre-engineered elevator system where the manufacturer’s standard complies with, or fulfills, the requirements of the elevator specifications herein. When a manufacturer's standard cannot fully meet the set forth specifications, provide custom manufactured elevator systems, or components, which will fulfill requirements specified herein. Where components are not otherwise indicated, provide standard components, published by manufacturer as included in standard pre-engineered elevator systems, and as required for a complete system.

2.2 ELEVATOR MACHINERY AND CONTROL EQUIPMENT
A. Hydraulic Power Units: The existing hydraulic power units shall be replaced with units of
integral design and shall include an electric motor connected to a pump, a hydraulic control
system, storage tank, necessary piping connections, all compactly designed as a self-
contained unit. The hydraulic power units shall be located in the elevator machine room.
The hydraulic power unit shall be securely fastened to the machine room floor to prevent the
tank from being overturned or displaced. Elevator contractor shall verify location and
dimensions in general layout of machine room.

1. The hydraulic control system shall be a compact design suitable for operation under the
required pressures and it shall be mounted within the storage tank. The control valve will
be a manifold type with up, down and check valve sections. A control section including
solenoid valves will direct the main valve and control up and down starting, transition
from full speed to leveling speed, up and down stops, pressure relief and manual
lowering. Down speed and up and down leveling shall be controlled at the main valve
sections. All of these functions shall be fully adjustable for maximum smoothness and to
meet contract conditions. All control systems shall be pre-adjusted at the factory. A
manual lowering feature shall be provided to permit lowering the elevator at slow speed
in the event of power failure or for adjusting purposes. The entire hydraulic power unit
assembly shall be mounted to the elevator machine room floor on top of isolation pads.

2. The pump shall be a positive displacement screw type to give smooth operation and shall
be especially designed and manufactured for elevator service.

3. The motor shall be of the alternating current, poly-phase squirrel cage induction type with
solid-state, reduced starting current and shall be of a design especially adapted to electro-
hydraulic requirements.

4. The storage tank shall be constructed of steel and shall be provided with a removable
cover. The tank shall be provided with a sight glass mounted on the outside of the tank as
means to gauge the proper level of the oil. The control valve shall be mounted in the
discharge line above the oil level and easily accessible from the top of the tank. Provide
the manufacturers recommended initial supply of oil.

5. Provide a muffler in the discharge oil line near the pump unit designed to dampen and
absorb pulsation and noise in the flow of hydraulic fluid.

6. Provide a manual shut off valve in the supply line adjacent to the pump unit.

B. Cylinders & Plungers (Jack Units): The existing jack units shall be retained. The jack
packings shall be replaced with new and the units shall be adjusted for smooth operation up
and down the elevator hoistway. The plungers and cylinders shall be checked and provided
with any necessary repairs to ensure the plungers are installed plumb and operate freely with
minimum friction. The plungers shall be securely mounted to the car frames and be isolated
from the frames to eliminate any vibration from the jack units to the car frames.

C. Controllers:

1. A microprocessor computer based control system shall be provided to perform all of the
functions of safe elevator motion and elevator door control and shall be one of the
following or approved equal:

   a. MCE 2000 Hydraulic Control (with Onboard Diagnostic Display and Adjustor’s
      Manual)

   b. GAL Galaxy Hydraulic (with Onboard Diagnostic Keyboard, Display, and Adjustor’s
      Manual)

   c. Vertitron Midwest Inc. VHC-102 (with Onboard Diagnostic Keyboard, Display, and
      Adjustor’s Manual)
d. Smartrise SRH (with Onboard Diagnostic Display and Adjustor’s Manual)

2. The controller shall include all the hardware required to connect, transfer, and interrupt power and protect car operational and supervisory control. A three-phase overload device shall be provided to protect the motor against overloading.

3. Identify each device, module and fuse (with ampere rating) by name, letter, or standard symbol, in an indelible and legible manner on the device or panel. Coordinate identification markings with identical markings on wiring diagrams. Use light-emitting diodes (LED) for visual monitoring of individual modules. Components shall have interlocking circuits to assure fail-safe operation and to prevent unwarranted elevator movement should any component fail to function properly. Modules shall be of the type that plug into pre-wired mounting racks. Field wiring or alteration shall not be necessary in order to replace defective modules.

4. The elevator shall be provided with an automatic leveling device that will bring the car to a stop within ¼″ of the landing level regardless of load or direction of travel. Landing level will be maintained within the leveling zone irrespective of the hoistway doors being open or closed.

5. A stall protective circuit shall be provided which will stop the motor and the pump and return the car to its lowest landing in the event that the car while traveling up, does not reach its designated landing within a predetermined time interval. This circuit shall permit a normal exit from the car but prevent further operation of the elevator until the trouble has been corrected.

6. Solid state reduced current starting shall be furnished which shall limit both the initial starting current and peak current drawn by the motor.

7. The control equipment shall be mechanically fastened to the tank, wall, or machine room floor.

8. Design the system so that it will start properly when power is restored in the event of a power failure. Provide system memory so that data is retained in the event of power failure or disturbance.

9. Provide microprocessor system, which shall control car movements as a simplex collective operation. Provide automatic dispatching of the car in response to hall calls with automatic response of system to changes in demand.

10. A car control station shall be furnished for the elevator and shall contain a bank of buttons numbered to correspond to the landing served. At each terminal landing a single push button fixture shall be provided containing the appropriate up or down push button.

11. When a call is registered by momentary pressure on a car or landing button, that button shall become illuminated and remain illuminated until the call is answered. Illuminated buttons serve as a visual indication that a call has been registered and that the car will stop at that landing.

12. Operation shall be automatic by means of the car and landing buttons. Stops registered by the momentary actuating of the car and landing buttons shall be made in the order in which the landings are reached in each direction of travel after the buttons have been actuated. All stops shall be subject to the respective car or landing button being actuated sufficiently in advance of the arrival of the car at the landing to enable the stop to be made. The direction of travel for an idle car shall be established by the first car or landing button actuated.

   a. "UP" landing calls shall be answered while the car is traveling in the up direction and "DOWN" landing calls shall be answered while the car is traveling in the down direction. The car shall reverse after the uppermost or lowermost car or landing call
has been answered and proceed to answer car calls and landing calls registered in the opposite direction of travel.

b. When the car, without registered calls arrives at a floor where both the "UP" and "DOWN" calls are registered, it shall initially respond to the hall call in the direction that the car was traveling. When no car call or hall call is registered for further travel in that direction, the car shall close its doors and immediately reopen them in response to the hall call in the opposite direction. The hall lantern shall indicate the changed direction when the doors reopen.

13. A diagnostic testing device, or maintenance terminal, suitable for all troubleshooting and testing procedures related to the specific type of microprocessor control, shall be installed on this project and provided at the final acceptance. This diagnostic testing device, or maintenance terminal, shall conform to the operating procedures under the testing section of these specifications.

a. After successful testing of the diagnostic device, in conjunction with the microprocessor control, the testing device shall become the property of the Owner. The diagnostic testing device shall not become inoperative after a period of time requiring factory rehabilitation. The contractor shall provide written certification that repair, and support of the diagnostic tool components is readily available to the Owner in the future.

b. When repairs or replacement to the testing device become necessary prior to the final acceptance, the repairs, or replacement, shall be provided at no cost to the Owner.

14. Additional special operations shall be included with the elevator control system:

a. Independent Service: A key switch shall be provided in the car operating station of the elevators which, when actuated, shall disconnect the elevator from the hall buttons and permit operation from the car buttons only. Close doors by constant pressure on desired destination floor button. Open doors automatically upon arrival at selected floor.

b. Top of Car Inspection Operation: Provide an operating fixture on top of the car containing continuous pressure "Up" and "Down" buttons for operating the elevator, an emergency stop button, a guarded light and duplex GFCI receptacle, and a toggle switch that will make the top of car operating device operative.

c. Fireman's Emergency Service: Furnish emergency operation to return the elevators to the main fire access Floor G and return to the alternate Floor LL when emergency is at main fire access floor G. Furnish "in car" control of the elevators during emergency operation by means of a key switch in the cars.

1) The appropriate signals from the fire alarm control system, as required to work in conjunction with the fireman’s phase I recall operation, shall be provided in the machine room by other sections. Coordinate exact signal requirements with fire alarm contractor to ensure proper operation and code compliance.

d. Timed Shut Down of Car Lights & Fan: When an elevator is at a floor not in use, and the doors are in the closed position, and a time period of ten (10) minutes has expired, the 110 volt power to the car lights and fan shall be removed to save energy. Upon activation of any car or hall button, the 110 volt power to the car lights shall return to normal operation.

e. Emergency Power Operation: When the normal power fails an emergency power source, as supplied under other sections, is applied to each elevator disconnect switch for elevator nos. 1 and 2. A signal shall be provided by other sections from the emergency power transfer switch with wiring brought up to each elevator controller.
in the machine room to indicate to each elevator control system that emergency power is available for emergency use.

1) Elevator Auxiliary Power Pre-transfer Operation: Upon transferring power back from emergency power to normal (or vice versa during testing) each elevator control system will receive a pre-transfer signal by other sections from the automatic transfer switch (ATS) to indicate to the elevator control system that the power source is about to transfer. Upon receipt of the pre-transfer signal an elevator at a floor shall remain at that floor with the doors open and an elevator in motion shall proceed to the next available floor and open its doors. After the transfer of power is complete normal operation shall be restored.

8. Hoistway Access Key Switch Operation: Key operated switches shall be provided in the cars and at the top and bottom landings for selecting hoistway access operation. When the inspection switch in the car is turned to the "ON" position, the car is put on inspection operation and can only be run by use of the access switch at the top and bottom landings.

1) The car parks with the doors open and the closing circuit rendered inoperative. The inspector runs the car at low speed with the doors open by constant operation of the switch located in the elevator lobby.

2) The car can be run down from the top floor to gain access to the top of the car. The movement of the car initiated and maintained by the upper access switch shall be limited in the down direction to a travel not greater than the height of the car crosshead above the car platform.

3) The car can be run up from the bottom landing to gain access to the pit. Travel is limited in the up direction by hoistway limit switches so that the maximum travel is the point where the bottom of the platform guard is even with the hoistway entrance header.

2.3 CAR STRUCTURE

A. Platform & Car Frame: The existing platform and frame, including brace rods, shall be retained.

1. The complete platforms and car frames shall be thoroughly cleaned of all dirt, grime and grease accumulated from past years of service.

2. With the replacement of the cab, completely new subflooring and nickel silver car door sills shall be provided.

B. Guides: New spring loaded, high speed, adjustable roller guide assemblies, with rubber tired rollers shall be provided with minimum six inch (6") diameter rollers. Properly adjust for a smooth quality of ride.

C. Balance: After all new components are assembled on the car structures, the elevator cars shall be statically balanced in alignment with the guide rails to equalize pressure for a smooth ride upon completion of the installation.

2.4 HOISTWAY COMPONENTS

A. Guide Rails: The existing steel elevator guide rails shall be retained to guide the cars. The rails shall be checked and provided with any corrections to assure they are erected plumb and securely fastened to the building structure.
B. Hoistway Operating Devices: Normal terminal stopping devices shall be provided. When an emergency terminal speed-limiting device is furnished, the controller switches and circuitry shall be arranged in accordance with the requirements of the Elevator Code.

C. Pit Switch: A new emergency stop switch shall be located in the elevator pit within reach of the pit access door and eighteen inches (18") above the sill. The switch shall be located adjacent to the pit ladder.

D. Top of Car Operating Device: New top of car operating devices shall be provided and shall have the proper buttons, switches, and stop switch to operate the elevator on top of the car under inspection operation. The devices shall be provided with a GFCI duplex receptacle and a guarded incandescent light.
   1. Since the stop switch on the top of car operating device is not within reach of the hoistway landing, a second stop switch shall be provided on the car top that is within reach of the hoistway landing.

E. Wiring: All wiring and electrical interconnections shall comply with the governing codes. Insulated wiring shall have flame retardant and moisture-proof outer covering, and shall be run in conduit, tubing or electrical wireways.

F. Traveling Cable: Traveling cables shall be flexible, with a flame and moisture resistant outer cover, and shall be suspended to relieve strain on individual conductors. Include the required number in addition to three (3) spare sets of shielded communication wires and car lighting circuits from the machine room to the car connection points on the elevator. Provide 10% spare wires in traveling cable. Prevent the traveling cable from rubbing or chaffing against hoistway or car items.

G. Spring Buffers: The existing spring buffers and associated stands in the pit shall be retained. Wire brush clean and paint buffer channels with a quality, low VOC machinery paint. Additionally, clean the pit floor and walls of all old oil and paint floors with same paint.

H. Pit Ladders: There are currently pit ladders for access to the elevator pits, however, the pit ladder for east elevator no. 2 is on the wrong side wall of the pit. The ladder shall be relocated to the side with the hoistway door unlocking device. Also, both elevator nos. 1 & 2 pit ladders shall have their handgrips extended to 48 inches minimum to meet present day code.

### 2.5 DOOR OPERATING SYSTEM

A. Door Operator: Doors on the cars and at the hoistway entrances shall be power operated by means of a new high speed, heavy duty, closed-loop, master door operator mounted on top of the cars. The motors shall have positive control over door movement for smooth operation.
   1. Door operation shall be automatic at each landing with door opening being initiated as the car arrives at the landing and closing taking place after expiration of a time interval. A car door electric contact shall prevent starting the elevator away from the landing unless the car door is in the closed position. Door close shall be arranged to start within a time consistent with accessibility requirements.
   2. The time interval for which the elevator doors remain open when a car stops at a landing shall be independently adjustable for response to car calls and response to hall calls

B. Interlocks: A new approved positive interlock shall be provided for each hoistway entrance which shall prevent operation of the elevator unless all doors for that elevator are closed and shall maintain the doors in their closed position while the elevator is away from the landing.
1. Hoistway door unlocking devices shall be provided at all hoistway landings to permit access to the top of the car and pit areas. The unlocking devices shall be actuated by a special key and access holes in hoistway doors shall be protected by a naturally finished, barrel type escutcheon plate.

C. Car Door Safety Devices: A new proximity type, non-contact, infrared ray, door reversal device shall be furnished for the elevator entrances. Operation for devices to be as follows:

1. The doors shall be prevented from closing from their full open position if a person or object comes within the zone of detection. The detection zone shall move with the doors and if a person or object enters the zone as the doors are closing, the doors shall reverse and reopen prior to physical contact. The doors shall reclose after a minimal time interval. After a stop is made, the doors shall remain open for a time interval to permit passenger transfer, after which the doors shall close automatically. This interval shall be less for a car call stop than for a hall call stop or a coincident car/hall call stop.

2. If the doors are prevented from closing for a fixed time period an audible chime shall sound on the car. When the object is removed from the zone of detection the doors shall close at reduced power and speed to below 2½ ft.-lbs. of kinetic energy. If an object enters the zone of detection while the doors are closing at reduced power and speed the doors shall stall and not reopen. Once the object is removed from the zone of detection the doors will continue to close at reduced power and speed. This operation will continue until the doors are totally closed. Normal operation shall resume at the next landing reached by the car.

D. Car Door Restrictors: The new door operating mechanism shall be arranged so that the car and hoistway doors cannot be opened by hand more than four inches (4”) from within the elevator car when the car is outside the unlocking zone. Design of door restricting mechanism shall permit opening of car doors from outside of the elevator car without the use of special tools. Only mechanical type door restrictors are permitted.

2.6 OPERATIONAL FIXTURES

A. Car Control Station: The existing car control stations shall be removed and replaced with new single car control station panels on the rear return of the elevator car enclosures. The panels shall contain a bank of mechanical illuminated buttons marked to correspond to the landings served and contain other buttons, key switches, and controls required for specified car operation and control.

1. The car control station panel for the elevators shall incorporate the fireman's phase II key switch and associated fire operation fixtures inside a locked cabinet located at the upper portion of the panel. The fireman’s key switch shall be of a tubular, 7 pin, style 137 construction and shall have a bitting code of 6143521. The key shall be coded “FEO-K1.” The phase II key switch, instructions, call cancel button, fire jewel, door open and door close buttons, and stop switch shall all be located within this locked panel. The front of the cabinet shall be engraved with the label “Firefighters’ Operation”. The cover to the cabinet shall be openable with the same key that is used to operate the phase II key switch. The phase II instructions shall be provided inside the cabinet. This cabinet shall meet Elevator Code requirements.

2. A digital car position indicator with direction arrows shall be provided in the upper portion of the car control station panel. The position of the car in the hoistway shall be shown by the illumination of the indication corresponding to the landing at which the car is stopped or passing. Provide an electronic, adjustable, floor bypass tone to indicate to passengers that car is stopping at a particular floor served.

3. Floor G is main accessibility (★) floor.
4. The elevator number shall be engraved on the upper portion of the car control station panel and the car capacity shall be engraved on the lower portion of the car control station panel. The lettering for both shall be on half inch (½") high and shall be black filled.

5. The faceplate of the new car control station panels shall be large enough to cover any old and new access holes in the front return.

6. Two-Way Communication System – Provide a two-way communication system per the following requirements:
   a. A speakerphone shall be located in each elevator car control station and be of the automatic dialing type and have the capability to automatically identify its location upon receipt of the call to the party answering the call. The speakerphones shall be incorporated integral to the car control stations by the contractor. The activation button shall match the car operating panel button fixtures and be properly identified. The speaker shall be mounted behind the car operating panel with vandal resistant perforations drilled through the car operating panel.
   b. Provide an activation button for each car speakerphone, with integral legend, and identification plate adjacent to the button. Illuminate button to indicate call registration. Provide means to cause indicator light to flash when call is answered. Provide engraved legend below indicator light explaining phone instruction. The speakerphone shall meet the requirements of ADA/Accessibility guidelines.
   c. Necessary shielded wires shall be provided by the Contractor for this section from the speakerphone in each elevator car, through the traveling cables, and shall terminate in a junction box on the elevator controller in the elevator machine room. Connections to the existing building service system shall be provided by the Contractor for this section.

B. Hall Push Button Station: A single riser of hall push button stations for each elevator shall be provided at each lobby. At each terminal landing, single type button fixtures shall contain the appropriate "Up" or "Down" buttons, and at each intermediate landing dual button type fixtures shall be provided, containing appropriate "Up" and "Down" buttons. All fixtures shall be installed at proper height to comply with the accessibility standards. The hall button fixture faceplates shall be the flat, applied type that is flush mounted with the wall. The hall buttons shall operate such that when a call is registered by any momentary pressure on the landing button, the button shall become illuminated and remain illuminated until the call is answered.

1. Adjacent to the hall button, Braille tags with the appropriately labelled “UP” and “DN” designations shall be provided.

2. The face plate of the Floor G hall button shall additionally contain the fireman's phase I key switch. The fireman’s keyswitch shall be of a tubular, 7 pin, style 137 construction and shall have a bitting code of 6143521. The key shall be coded “FEO-K1.” The fireman's phase I instructions shall be permanently engraved on the face plate or on an inset plate mechanically fastened flush with the face of the hall button fixture.

3. The faceplate at Floor G shall additionally contain the emergency power indication jewel.

4. The call buttons in the hall button fixture shall be centered at approximately 42” above the finished floor.

5. Hoistway access key switches shall be provided in the hall stations at floors LL and 2. The key switch shall be a three position, Up-Off-Down, key switch with spring return to the Off position and removable in the Off position only.

6. The faceplates shall be sized such that old and new access holes are covered with no need for additional patching or beauty rings.
7. Provide sufficient space between the hall call buttons and other features on the faceplates to avoid confusion between buttons and additional features.

C. Hall Lanterns: New hall lanterns shall be provided at all entrances. The hall lanterns shall be the applied type with flush mounted faceplates. The lanterns shall incorporate the appropriate triangular or circular direction arrow lenses that project out from the hall lantern faceplate. The operating function of the hall lanterns shall incorporate the appropriate direction tones per accessibility standards. An adjustable, electronic, audible tone shall sound to announce the arrival of the elevator car. The tone shall sound once for the "UP" direction and twice for the "DOWN" direction four seconds prior the arrival of the car. The faceplates shall be sized such that old and new access holes are covered with no need for additional patching or beauty rings.

D. Fixtures: The hall lanterns and position indicators shall be of the standard digital type. The push button fixtures shall be of the vandal resistant type. All newly provided fixtures shall be constructed of stainless steel with a no. 4 satin grain finish. Vandal resistant screws shall be provided for mounting all signal and operational fixture face plates. Fixtures shall be as manufactured by the following or approved equal:

1. Innovation Bruiser Line
2. PTL Centurion Series
3. Adams Survivor Series

2.7 CAR ENCLOSURE

A. The existing elevator car enclosures shall be removed, and new cabs provided as follows:

1. The elevator cab shall be a steel shell cab. The car side walls shall each consist of a formed and welded steel frame, bolted in the corners. Cab shell panels shall be a maximum of twenty-four inches (24") wide. The clear inside height of the cab shell shall be eight foot (8′-0″).
   a. Cab side wall finish to included pressed wood, plastic laminate-covered panels secured to cab shell. Color of panels shall be as selected from manufacturer’s standard. All vents in the cab walls shall be concealed. Reveals between panels shall be a maximum of one inch (1”) and shall be painted black. Provide ¼” thick stainless steel base on all walls with panels.

2. The front and rear return panels shall incorporate integral entrance columns, shall be brushed stainless steel a minimum of 16 gauge, and shall extend from finished floor to underside of fascia. The right rear return panel shall be arranged for mounting the car control station panel. A full width fascia of brushed stainless steel shall be furnished over the return panels and front and rear car entrances.

3. The car top shall consist of a panel which shall be clad with sheet metal and contain a hinged top emergency exit panel 17" x 24". The car top material shall be 12 gauge steel suitably reinforced with matte white painted finish.
   a. Provide an interlock on the top of car emergency exit that will prevent operation of the elevator car if the exit cover is open more than two inches (2”). Interlock shall be designed in accordance with code requirements.

4. The ceiling shall be furnished with a concealed suspended frame supporting individual wood-core panels incorporating a brushed stainless steel finish on the exposed surfaces. Each panel shall contain a single down light fixture. Ceiling design and down lights to be chosen from manufacturer’s standards. A two (2) speed fan with smooth quiet operation shall be mounted in the car top above the ceiling.
a. A dimmer switch shall be provided on the car top for the elevator car lighting. The switch shall be protected against accidental breakage from maintenance and inspection personnel riding on the car top.

5. The car entrance shall be provided with a single-speed, center-opening car doors with a brushed stainless steel facing on the car side suitably reinforced with applied hangers with track. Hangers shall be of the sheave type, two sheaves per door, rotating on a precision ball bearing. The roller shall be on an eccentric stud to provide adjustment. Car doors shall be provided with two phenolic gibbs per car door panel.

6. The platform shall be recessed below the new nickel silver car door sill to accept the car flooring so the flooring is flush with the car door sill upon completion of the installation. Coordinate carpet thickness with Owner to ensure car sill is flush with carpet with no transition strip. The carpet tile flooring shall be furnished by the Owner and installed by the Contractor in this Section.

7. A stainless steel handrail shall be furnished on the sides of the elevator cab and shall be mounted such that the top of the handrail is 32" above the finished floor. The handrail shall be \( \frac{3}{8}'' \times 2'' \) square and the ends shall return back to the car walls.

8. The car enclosure shall comply with the ASME A17.1 Safety Code for Elevators and Escalators. All stainless steel shall be provided with #4 brushed finish.

### 2.8 HOISTWAY ENTRANCES

**Hoistway Entrance Summary**

<table>
<thead>
<tr>
<th>Total Number</th>
<th>Eight (8)</th>
</tr>
</thead>
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</tr>
<tr>
<td>Clear Opening</td>
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<tr>
<td>Door Panel Finish</td>
<td>Baked Enamel</td>
</tr>
<tr>
<td>Door Jamb Finish</td>
<td>Baked Enamel</td>
</tr>
</tbody>
</table>

**A.** The existing hoistway entrance assemblies shall be retained and modified as follows:

1. Frames: The existing frames at all floors shall be retained. The frames shall be refinished under Section 09 91 23.

2. Sills: The existing hoistway door sills shall be retained. The sills shall be wire brush cleaned upon substantial completion of the respective elevator renovation.

3. Fascia Plates, Toe Guard & Dust Covers: The existing fascia plates and dust covers may be retained. The contractor is responsible for checking the components and providing any additional required fastenings to assure they are totally secured to the hoistway structure. Any missing fascia or hanger covers shall be replaced with new. Upon reconditioning and cleaning, the fascia shall be painted with a quality, low VOC, machine paint per Specification Section 09 91 23, color to be black.

4. Headers & Struts: Headers and struts may be retained. The contractor shall be responsible for checking the plates and providing any new required fastenings to assure they are totally secured to the hoistway structure.

5. Hangers and Track: Retain hoistway door hangers and tracks. Provide all new hanger rollers. Replace all relating cables and idler sheaves with new. Repair or replace any worn components to assure smooth operation of hoistway doors with completion of renovation.

6. Closers: Provide new closers on all hoistway entrances and adjust to automatically close the hoistway doors when the car is away from the landing per Elevator Code.
7. Door Panels: The door panels shall be retained. The bottom of doors shall be provided with two (2) removable phenolic guides per door panel, which run in the sill slots with minimum clearance. New unlocking devices shall be provided for each door and new unlocking holes drilled in each door as necessary for the new door operating equipment. The door panels shall be furnished with barrel type, naturally finished, escutcheon plates for the door unlocking devices at each landing. Old unlocking holes shall be filled with proper door plugs that are semi-flush on the lobby side. All door panels shall be refinished under Section 09 91 23.

8. Jamb Marking Plates: The existing hoistway door jamb braille plates shall be removed. At each floor, provide new jamb marking plates with stainless steel raised floor markings and Braille with a black background to identify each landing on both jambs of each hoistway entrance. Jamb marking plates shall be mechanically fastened to the entrance jambs with stainless steel drive pins in the four corners of the plate.

9. Elevator Identification Number: Provide a three inch (3”) high elevator identification number on the entrance frame at Floor G for each elevator as required by Elevator Code. The number shall be on an applied plate, aesthetically matching the hoistway door jamb braille plate and located such that the top of the plate is one inch (1”) below the head jamb. The plate shall be on the jamb side that is within view when standing in front of the fireman’s phase I key switch.

10. Fire Evacuation Signs: A new, applied, plastic laminate fire evacuation sign shall be provided above the new hall button fixtures. The signs shall meet the pictograph requirements as depicted in Figure 2.27.9 of the Elevator Code.

PART 3 EXECUTION

3.1 PREPARATIONS

A. Site Inspection: Prior to commencing elevator renovation inspect hoistway, hoistway openings, pit, and machine room as constructed. Contractor is responsible for all dimensions as field measured by the Contractor for proper installation and performance of elevator work.

1. Contractor shall be responsible for inspecting and determining extent of work to be performed at the site to complete the work. Contractor must consider all requirements for installation of new work, access, code requirements, and removal or demolition, which additional work shall be performed without cost to the Owner.

B. Demolition: The removal of all elevator equipment, which is not to be retained in the renovation, shall be completed by the contractor. The old elevator equipment removed becomes the property of the Contractor and it is their responsibility to remove this equipment from the project site. Include all work necessary to protect the public, residents, building employees, and building property during removal of demolished materials.

1. When barricades are required for protection of the hoistway they shall be provided by the Contractor. Do not start demolition of an area until all temporary protection and temporary partitions are in place as furnished by the contractor.

3.2 INSTALLATION OF ELEVATOR SYSTEM

A. General: Comply with manufacturer's instructions and recommendations for work required during installation, referenced codes, and specifications.

B. Welded Construction: Provide welded connections for installation of elevator work where bolted connections are not required for subsequent removal or for normal operation,
adjustment, inspection, maintenance, and replacement of worn parts. Comply with AWS standards for workmanship and for qualifications of welding operators.

C. Coordination: Coordinate elevator work with other sections for proper time and sequence to avoid construction delays. The contractor shall provide fully operational elevator system as stipulated in the construction schedule.

D. Sound Isolation: Mount rotating and vibrating elevator equipment and components on vibration absorption mounts, designed to effectively prevent transmission of vibrations to structure, and thereby eliminate sources of structure borne noise from elevator system.

E. Guide Rails: The existing guide rails are being reused and it is the Contractor's responsibility to see they are adaptable to Contractor's equipment, erected plumb, properly aligned, and anchored securely to the existing structure.

F. Hoisting: All required hoisting and movement of the elevator equipment shall be the responsibility of the contractor in this section.

G. Jack Unit Packing: Upon completion of the construction, and prior to final acceptance, the jack packing on the cylinder heads shall be replaced with new.

H. Final Cleaning & Painting: Upon completion of all elevator work, provide total clean down of elevator machine room, hoistway, and pit areas to remove all dirt and construction debris. Fill any old holes in the elevator machine room floor and paint machine room floor, color to be gray.

3.3 ELECTRIC WIRING

A. Conductors: Copper throughout with individual wires coded and all connections on identified studs or terminal blocks. Use no splices or similar connections on any wiring except at terminal blocks, control cabinets, junction boxes or conduits. Provide 10% spare conductors throughout.

B. Conduit: Painted or galvanized steel or aluminum conduit and duct shall be used. Conduit size shall be ½" minimum, except that ⅜" can be used for runs containing only 2 wires. Flexible conduit exceeding 18" in length shall not be used. Flexible heavy-duty service cord, type SO, may be used between fixed car wiring and car door switches for safety edges.

3.4 FIELD QUALITY CONTROL

A. Acceptance Testing: Upon nominal completion of the elevator installation, and before permitting use of elevator (either temporary or permanent), perform acceptance tests as depicted in Rule 8.10.3, "Acceptance Inspection and Tests of Passenger & Freight Hydraulic Elevators", of the Elevator Code. Also perform other tests, if any, as required by governing regulations.

1. Advise Owner and Elevator Consultant of dates and time the acceptance tests and specification conformance review are to be completed as Elevator Consultant is to act as State of Missouri licensed elevator inspector and is required to make final check of the elevator operation to determine when the control systems and operating devices are functioning as specified and in compliance with code.

2. Testing of elevator in conjunction with the fire alarm system and emergency power shall be completed outside of normal working hours and the contractor shall include this requirement in their scope of work.
3.5 INSTRUCTION AND MAINTENANCE

A. A maximum period of four (4) hours shall be dedicated to instructing Owner's personnel in proper use, operation and daily maintenance of the elevator. Review emergency provisions, including emergency access and procedures to be followed at time of failure in operation and other building emergencies. Train Owner's personnel in normal procedures to be followed in checking for sources of operational failures or malfunctions.

B. Diagnostic Testing: The diagnostic testing device, or maintenance terminal, provided shall be demonstrated and tested during the final testing of the elevator installation. This diagnostic tool shall have the capability of troubleshooting and field programmability of all control variables providing interaction between the service man and the microprocessor controller including performance of all ongoing safety testing as required by ASME A17.1 Elevator Code.

3.6 PROTECTION

A. At the time of substantial completion of elevator work (or portion thereof) provide suitable protective covering, barriers, devices, signs, or such other methods or procedures to protect elevator work from damage or deterioration. Maintain protective measures throughout remainder of construction period.

END OF SECTION 142410
SECTION 211300 – WATER BASED FIRE SUPPRESSION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This project involves providing an extension to the existing automatic wet-pipe sprinkler system that currently operates throughout the building. This extension serves only the two existing elevator pit areas. These pits are currently not protected.

B. The Fire Protection subContractor (FC) will be responsible for designing this extension, and installing and testing all new components. Reworking existing piping, or tying into existing piping at an appropriate location, also falls within the responsibility of the FC. Ensuring that the existing fire protection system continues to provide adequate coverage to the rest of the building, even after this tie-in, also falls within the responsibility of the FC.

C. The location of sprinkler heads and the depiction of piping on the Drawings are present to represent the anticipated placement of these items to other disciplines, and as a general visual indication that fire protection work will be included on the project. The final details of the protection system will be presented on the approved shop drawings as a result of the FC and Engineer working through the submittal process.

1.3 DEFINITIONS

A. Standard-Pressure Sprinkler Piping: Wet-pipe sprinkler system piping designed to operate at working pressure of 175 psig maximum.

1.4 SYSTEM DESCRIPTIONS

A. Wet-Pipe Sprinkler System: Automatic sprinklers are attached to piping containing water that is connected to the water supply through an alarm valve. Water discharges immediately from sprinklers when they are opened. Sprinklers open when heat melts the fusible link or destroys the frangible device. Hose connections are included if indicated. The system shall normally provide coverage for all areas in the building except those noted on the contract documents. The system shall normally interface with the building fire alarm system.

B. Light Hazard Design Criteria: 0.10 gpm/ft² over 1500 ft² design area with an outside hose stream demand of 100 gpm for a duration of 30 minutes.

C. Ordinary Hazard Group 1 Design Criteria: 0.15 gpm/ft² over 1500 ft² design area with an outside hose stream demand of 250 gpm for a duration of 60-90 minutes.

D. Ordinary Hazard Group 2 Design Criteria: 0.20 gpm/ft² over 1500 ft² design area with an outside hose stream demand of 250 gpm for a duration of 60-90 minutes.

E. Spacing: Sprinkler spacing shall not exceed 196 ft² for Light Hazard and 130 ft² for Ordinary Hazard.
F. Safety Factor: A 10 psi safety factor shall be incorporated into all hydraulic calculations.

1.5 INITIAL SUBMITTALS

A. Shop Drawings for the piping system shall be provided according to NFPA 13 requirements. Hydraulic calculations shall be performed by a qualified and licensed professional engineer for each design area with cross reference to applicable drawings, water supply data, and equipment schedule. The shop drawings shall indicate the layout of finished ceiling areas with sprinkler locations included. Indicate detailed pipe layout, hangers and supports, sprinklers, components and accessories. Indicate system controls.

1. Shop drawings shall be approved by the Engineer prior to any purchasing of components or commencement of work.

B. Provide coordination drawings indicating the work of other trades.

C. Product Data: Submit data on sprinklers, valves, and specialties, including manufacturers catalog information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections.

D. Fire Hydrant Flow Test Report: Prior to system layout, submit detailed fire flow test data per NFPA 291. Include scaled/dimensioned drawing showing flow/pressure locations/elevations; number/size/coefficient for orifices; pitot/static/residual pressures; test time/date; main sizes.

1.6 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of sprinklers and piping deviations from approved shop drawings. Indicate drain and test locations.

B. Field Test Reports and Certificates: Indicate and interpret test results for compliance with performance requirements and as described in NFPA 13. Include “Contractor’s Material and Test Certificate for Above Ground Piping”.

1.7 QUALITY ASSURANCE AND COORDINATION

A. Comply with applicable codes, standards, and requirements of authorities having jurisdiction.

B. Installer Qualifications: An experienced installer who has designed and installed fire-suppression piping similar to that indicated for this Project and obtained design approval and inspection approval from authorities having jurisdiction.

C. Coordinate layout and installation of sprinklers with other construction items that penetrates ceilings, including light fixtures, HVAC equipment, and partition assemblies.

1.8 EXTRA MATERIALS

A. Provide extra sprinklers as required by NFPA 13.

B. Provide suitable wrenches for each sprinkler type.
1.9 WARRANTY

A. System warranty shall be for a period of 1 year after substantial completion of the system. Warranty includes parts and labor for all equipment/services provided against defects in material and workmanship.

B. During the warranty period, the Fire Protection subContractor (FC) shall dispatch personnel to the job site to complete repairs at no cost to the Owner. The FC, at his discretion, may dispatch replacement parts to the Owner by next-day delivery service for field replacement by the Owner, if agreed to by the Owner. Any damage to the system caused by the actions of the Owner in attempting these field replacements shall be the sole responsibility of the FC.

PART 2 - PRODUCTS

2.1 STEEL PIPE AND FITTINGS

A. Standard Weight, Galvanized and/or Black Steel Pipe: ASTM A 53/A 53M, or ASTM A 135,

B. ASTM A 795, Schedule 40 for NPS 2 and smaller. Pipe ends may be factory or field formed to match joining method.

C. Standard Weight, Galvanized and/or Black Steel Pipe: ASTM A 53/A 53M, or ASTM A 135, ASTM A 795, Schedule 10 for NPS 2.5 and larger. Pipe ends may be factory or field formed to match joining method


E. Uncoated, Steel Couplings: ASTM A 865, threaded.

F. Uncoated, Gray-Iron Threaded Fittings: ASME B16.4, Class 125, standard pattern.

G. Malleable- or Ductile-Iron Unions: UL 860.


I. Steel Flanges and Flanged Fittings: ASME B16.5, Class 150.


K. Grooved-Joint, Steel-Pipe Appurtenances:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Anvil International, Inc.
   b. Tyco Fire & Building Products LP.
   c. Victaulic Company.

2. Pressure Rating: 250 psig minimum.

3. Uncoated, Grooved-End Fittings for Steel Piping: ASTM A 47/A 47M, malleable-iron casting or ASTM A 536, ductile-iron casting; with dimensions matching steel pipe.
2.2 SPRINKLERS

2.3 Automatic Sprinklers with Heat-Responsive Element:

2.4 Nonresidential Applications: UL 199.

2.5 Characteristics: Nominal 1/2-inch orifice with Discharge Coefficient K of 5.6, and for "Ordinary" temperature classification rating unless otherwise indicated or required by application.

2.6 Sprinkler types, features, and options include the following:

2.7 Flush ceiling sprinklers, including escutcheon.

2.8 Pendent sprinklers.

2.9 Recessed sprinklers, including escutcheon.

2.10 Sidewall extended coverage sprinklers.

2.11 Upright sprinklers.

2.12 Sprinkler Finishes: Chrome-plated, bronze, and painted.

PART 3 - EXECUTION

3.1 PIPING SYSTEMS - COMMON REQUIREMENTS

A. Provide hydraulically designed system to NFPA 13 occupancy requirements. Provide all sprinkler risers with hydraulic data plate with system design information. Mount to respective riser. This data plate shall include the location of the design area or areas, discharge densities over the design area or areas, required flow and residual pressure demand at the base of the riser, occupancy classification or commodity classification and maximum permitted storage height/configuration, and hose stream demand included in addition to the sprinkler demand.

B. Original drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Install piping as indicated, on the approved shop drawings, as far as practical. Deviations from approved shop drawings require written approval from the Engineer, or authorities having jurisdiction. File written approval with the Architect before deviating from approved shop drawings.

C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.

D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

F. Install piping to permit valve servicing.

G. Install piping at indicated slopes.
H. Install piping free of sags and bends.
I. Install fittings for changes in direction and branch connections.
J. Select system components with pressure rating equal to or greater than system operating pressure in accordance with applicable NFPA document.
K. Install escutcheons for penetrations of walls, ceilings, and floors.
L. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs.
M. Aboveground, Exterior-Wall Pipe Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
   1. Install steel pipe for sleeves smaller than 6 inches in diameter.
   2. Install cast-iron "wall pipes" for sleeves 6 inches and larger in diameter.
N. Underground, Exterior-Wall Pipe Penetrations: Install cast-iron "wall pipes" for sleeves. Seal pipe penetrations using mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
O. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Refer to Section 078400 for materials.
P. Verify final equipment locations for roughing-in.
Q. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.
R. For water based suppression systems, for multi-story buildings, each branch off a riser per floor, is to have a properly rated check valve.

3.2 PREPARATION
   A. Perform fire-hydrant flow test according to NFPA 13 and NFPA 291. Use results for system design calculations.
   B. Report test results promptly and in writing.

3.3 PIPING INSTALLATION
   A. Install piping to minimize obstructions to other trades.
   B. Install piping concealed above finished ceilings unless noted otherwise.
   C. Pipe size called for in the approved shop drawings shall be maintained. Pipe size changes made only as reviewed by owner’s representative. Where discrepancy in size occurs, the larger size shall be provided.
   D. Use listed fittings to make changes in direction, branch takeoffs from mains, and reductions in pipe sizes.
E. Install unions adjacent to each valve in pipes NPS 2 and smaller.

F. Install flanges, flange adapters, or couplings for grooved-end piping on valves, apparatus, and equipment having NPS 2-1/2 and larger end connections.

G. Install "Inspector's Test Connections" in sprinkler system piping, complete with shutoff valve, and sized and located according to NFPA 13.

H. Install sprinkler piping with drains for complete system drainage.

I. Install sprinkler control valves, test assemblies, and drain risers adjacent to standpipes when sprinkler piping is connected to standpipes.

J. Install automatic (ball drip) drain valve at each check valve for fire-department connection, to drain piping between fire-department connection and check valve. Install drain piping to and spill over floor drain or to outside building.

K. Install alarm devices in piping systems.

L. Install hangers and supports for sprinkler system piping according to NFPA 13. Comply with requirements for hanger materials in NFPA 13.

M. Install pressure gages on riser or feed main, at each sprinkler test connection, and at top of each standpipe. Include pressure gages with connection not less than NPS 1/4 and with soft metal seated globe valve, arranged for draining pipe between gage and valve. Install gages to permit removal, and install where they will not be subject to freezing.

N. Install sleeves for piping penetrations of walls, ceilings, and floors.

O. Install sleeve seals for piping penetrations of concrete walls and slabs.

P. Install escutcheons for piping penetrations of walls, ceilings, and floors.

Q. Fill sprinkler system piping with water.

3.4 PIPING JOINT CONSTRUCTION

A. Join pipe and fittings according to the following requirements and Division 21 Sections specifying specific systems.

B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

D. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube ends. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.

F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
   1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
   2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

G. Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators.

H. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

3.5 SPRINKLER INSTALLATION

A. Install sprinklers in suspended ceilings in center of narrow dimension of acoustical ceiling panels.

B. Install dry-type sprinklers with water supply from heated space. Do not install pendent or sidewall, wet-type sprinklers in areas subject to freezing.

C. Install sprinklers into flexible, sprinkler hose fittings and install hose into bracket on ceiling grid.

D. The sprinkler bulb protector must remain in place until the sprinkler is completely installed and before the system is placed in service. Failure to follow this instruction could cause damage to the glass bulb, resulting in improper sprinkler operation, serious personal injury and property damage. Remove bulb protectors carefully by hand after installation. Do not use any tools to remove bulb protectors.

E. Do not install sprinklers that have been dropped, damaged, or show a visible loss of fluid. Never install sprinklers with cracked bulbs.

F. Provide protection in electric, telephone, elevator equipment, and electronic equipment spaces. Piping shall not pass directly over electric panel boards, switchboards, motor control centers, elevator rooms/hoist ways, controllers, and similar electric/telephone equipment.

G. Provide guards for sprinklers in mechanical, storage, closet, and similar spaces than 8'-0” above finished floor.

H. Provide protection under ductwork, groups of ductwork, and other obstructions to water spray distribution. Use intermediate level sprinklers if subject to water spray from above.

3.6 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Final Acceptance/Commissioning Test: The system will be accepted only after satisfactory test of the entire system has been accomplished by the Contractor at the
direction of the Engineer, in the presence of the Authority Having Jurisdiction and the Owner. The Contractor shall notify the above witnesses, in writing, 72 hours prior to the commencement of testing. Failure to contact the above parties will require the Contractor to conduct tests a second time at the Contractor’s expense in the presence of the above parties.

C. Water flow detecting devices including the associated alarm circuits shall be flow tested through the inspector’s test connection and shall result in an audible alarm on the premises within 5 minutes after such flow begins and until such flow stops.

D. The main drain valve shall be opened and remain open until the system pressure stabilizes. Static and residual pressures shall be recorded.

E. Tests and Inspections:
   1. Leak Test: After installation, charge systems and test for leaks. Repair leaks and retest until no leaks exist.
   2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
   3. Flush, test, and inspect sprinkler systems according to NFPA 13, "Systems Acceptance" Chapter.
   4. Energize circuits to electrical equipment and devices.
   5. Coordinate with fire-alarm tests. Operate as required.
   6. Verify that equipment hose threads are same as local fire-department equipment.

F. Sprinkler piping system will be considered defective if it does not pass tests and inspections.

G. Prepare test and inspection reports.

H. Test backflow preventer in accordance with NFPA 13, “Systems Acceptance” chapter.

END OF SECTION 211300
SECTION 220500 – GENERAL MECHANICAL

PART 1 - GENERAL

1.1 DESCRIPTION

A. Items of equipment, materials and supplementary details are shown on the drawings. Contractor shall refer to details for complete information required. Specifications shall take precedence over drawings in the event of conflicting data or for items not indicated on plans and sections.

B. Data given herein and on drawings is as exact as could be secured. Their absolute accuracy is not guaranteed and Contractor shall obtain exact locations, measurements, levels, etc., at site and satisfactorily adapt his work to actual conditions at building.

C. Wherever mechanical connections, such as plumbing, water, circulated air, etc., are required for equipment furnished and installed on this project, such connections shall be furnished and installed by craftsmen skilled in the respective trades. Likewise, electrical connections or job wiring of equipment furnished and installed on this project by contractors or other trades shall be furnished and installed by the Electrical Contractor as part of his work, unless specifically noted otherwise on accompanying drawings or specifications. All such equipment furnished and installed requiring electrical connections or field wiring shall be as indicated on the electrical sheets of the accompanying drawings. The Contractor shall be responsible for the complete installation and operation of all equipment furnished and installed by him, regardless of whether or not work of other trades may be required in making mechanical connections.

D. Contractor shall obtain and pay for all permits and licenses, pay all fees, and comply with all rules, laws and ordinances pertaining to this portion of the work.

E. Facilities and all equipment shall be subject to inspection, examination and test by Owner, Engineer or their representatives at any time during manufacture, installation and construction. Engineer, Owner or their representatives shall have power and right to reject defective materials and workmanship or to require corrections.

F. Contractor shall expedite installation of all work and rearrange pipe runs, etc., to bring all elements into proper relationship. All conflicts shall be called to the attention of the Engineer immediately for decision and settlement, said decision to be final. Should any work require modification due to interference not brought to the attention of the Engineer, modification shall be made at the Contractor’s expense.

G. Contractor shall promptly remove, at the Contractor’s expense, rejected materials from the site of work.

PART 2 - PRODUCTS

A. All items of operating equipment used on this project are to be provided with a nameplate mounted in a conspicuous place on the unit. The plate shall be embossed metal or stamped metal securely fastened to the unit. Plate shall contain the following information.

1. Manufacturer’s name and address.
2. All approval stamps, AGA, UL, etc. as hereinafter specified.
3. Complete capacity and operating data as approved by Engineer.
4. Motor characteristics.
5. Serial number and code numbers.
6. Date of manufacture.

PART 3 - EXECUTION

3.1 WORKMANSHIP

A. Of best quality, good appearance of finished work is of equal importance with its mechanical efficiency. No make-shifts permitted anywhere in work, and all portions of work so laid out and installed that work as a whole is of uniform quality and appearance. Unless otherwise specifically mentioned, all materials shall be new and previously unused.

3.2 INSTALLATION

A. If any old water, gas, or other pipes are encountered which interfere with proper installation of new work and which will not be used in connection with new work, the Contractor shall close such pipe in a proper manner, and if necessary, move or remove pipes as directed by Engineer. Pipes, where known, have been indicated on the drawings.

B. All openings in pipes shall be kept closed during progress of work.

C. All motors, valves, control devices, specialties, etc., shall be so located as to provide for easy access for operation, repair and maintenance. If concealed, access doors shall be provided. The Contractor is responsible for determining the number and location of access panels required.

D. All cutting, fitting, repairing and finishing of carpentry work, metal work, or concrete work, etc., which may be required for the work installed under this Contract shall be done by craftsmen skilled in their respective trades. When cutting is required, and is permitted by Engineer, it shall be done in such a manner as not to weaken walls, partitions or floors, and holes required to be cut in floors must be drilled without breaking out around the holes.

E. Piping and Conduit Hangers:

1. All piping shall be neatly and substantially supported without undue stresses and strains and provisions shall be made for expansion, contraction and structural settlement.

2. All hangers shall be constructed and located so as to allow for proper pitch of piping.

3. Horizontal piping shall be supported at sufficiently close intervals to keep it in alignment and prevent sagging.

4. Horizontal piping shall be supported at the following intervals.

   a. Copper pipe 1-1/2” and smaller shall be supported at not less than 6’ intervals.

   b. Plastic pipe of all sizes shall be supported at not less than 4’ intervals.
c. Piping in the ground shall be laid on a firm bed for its entire length unless otherwise specified or shown.

d. All piping shall be supported at each change of direction, with hangers not more than 2’ in both directions for fittings.

5. Vertical piping shall be supported at the following intervals:

   a. Plastic DWV pipe shall be supported at not less than at every story height or 12’, and at its base.

   b. Copper piping shall be supported at not less than every story height or 12’.

6. Where piping is suspended from steel beams or bar joints, malleable iron I-beam clamps shall be used.

7. All hangers for insulated piping shall be large enough to encircle the insulation. Provide 12” long, 16-gauge galvanized steel collars at all hangers and supports to protect insulation.

8. All hangers in contact with copper piping shall be copper plated malleable iron, clevis type, and galvanized malleable iron clevis type for plastic piping.

9. All hangers shall be complete with locknuts and hanger rods as follows:

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Rod Size</th>
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<tbody>
<tr>
<td>2” and smaller</td>
<td>3/8”</td>
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<tr>
<td>2-1/2” to 3-1/2”</td>
<td>1/2”</td>
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<tr>
<td>4” to 5”</td>
<td>5/8”</td>
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<tr>
<td>6”</td>
<td>3/4”</td>
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<tr>
<td>8”</td>
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<td>10”</td>
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<td>12”</td>
<td>7/8”</td>
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<td>14”</td>
<td>1”</td>
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<tr>
<td>16”</td>
<td>1”</td>
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</tbody>
</table>

10. Piping at walls shall be supported by cast or welded iron brackets.

11. At the Contractor’s option, water piping may be supported by trapeze hangers constructed of 1-1/4” pipe and 3/8” hanger roads or unistrut brackets. The bearing surface shall be protected with 8” long, 16-gauge galvanized steel collars.

12. Vertical pipes may be supported from walls only with express consent of the Engineer. Where approved by the Engineer, vertical supports shall consist of heavy iron clamps stitch welded to the pipe and securely anchored to the wall construction.

13. Chain, wire or flat strap hangers are prohibited.

14. All stacks and plumbing risers shall be properly supported from floor construction with pipe riser clamps at points as approved by the Engineer.

15. Concrete pads shall be provided where piping is installed at floor.

### 3.3 EXCAVATION AND BACKFILL

A. Excavation and backfill for all underground piping, ductwork, piping, trenches, manholes, conduit, etc., interior and exterior, shall be accomplished under these contracts except as otherwise specified or shown on the plans.
3.4 TESTING

A. When all work, testing, balancing, initial startup and operational instructions have been completed, the Contractor shall notify the Engineer and arrange for final acceptance. All necessary test data shall be complete in accordance with specifications and at hand during inspection.

B. Items found not in accordance with contract documents or functioning correctly will be itemized and submitted in writing to Contractor for correction.

C. After all corrections have been made, Engineer will recheck for compliance on all items included on the list. Items which the Contractor does not understand will not be sufficient reason to waive this requirement. Questionable items must be clarified before the final inspection is arranged for.

D. For Projects accepted during the heating season without cooling system being checked and the reverse situation, acceptance does not constitute approval of the system not checked. Each system shall be inspected at such a time when sufficient load exists to determine if the system is operating satisfactorily.

E. All exposed pipes, fittings, valves and joints will be carefully examined during the installation period. All joints showing visible leaks shall be redone until tight. Any cracked or defective pipes, fittings or valves discovered in consequence of this testing shall be removed and replaced by the Contractor with sound material and the test shall be repeated until satisfactory to the Engineer.

3.5 GENERAL

A. Furnish complete instruction manuals of All Operating Equipment to Engineer for review, approval and delivery to the Owner. Manuals shall be complete with repair instructions, replacement parts lists, and complete operating instructions.

B. Contractor shall record all job changes of underground work on two (2) sets of prints of the site plan with accurate tie dimensions to permanent structures, buildings, fire hydrants, etc., and turn over to the Owner and Engineer upon completion of the project. Submit all manufacturer’s guarantees, fully executed (date of installation, serial number, etc.) to Engineer for review and delivery to Owner.

END OF SECTION 220500
PART 1 - GENERAL

1.1 SUMMARY

A. The entire set of bid documents including plans & specifications applies to this section.

1.2 DRAWINGS AND SPECIFICATIONS

A. All drawings and specifications on the project are complementary, each to all other sets, and they shall be used in combination for the execution of this work. Electrical work shown on any of the contract drawings or any section of the contract specifications, shall be considered as included in this work unless specifically excluded by inclusion in some other branch of the work. This shall include roughing-in for connections and equipment as called for or inferred. The Contractor shall check all drawings and specifications for the project and shall be responsible for the installation of all electrical work.

B. The contract drawings for electrical work are in part schematic, intended to convey the scope of work and indicate the general layout, design and arrangement. The Contractor shall follow these drawings in the layout of his work and shall consult general construction drawings, mechanical drawings and all other drawings for this project to determine all conditions affecting the electrical work. The contract drawings are not to be scaled and the Contractor shall verify spaces in which the electrical work is to be installed.

C. Where specific details and dimensions for electrical work are not shown on the drawings, the Contractor shall take measurements and make layouts as required for the proper installation of the work and coordination with all other work on the project. In case of any discrepancies between the drawings and the specifications that have not been clarified by addendum prior to bidding, it shall be assumed by the signing of the contract that the higher cost (if any difference in costs) is included in the contract price, and the Contractor shall perform the work in accordance with the drawings or with the specifications, as determined and approved by the Engineer, and no additional costs shall be allowed by the contract price.

1.3 WORK INCLUDED

A. This work shall include all plant, labor, material and equipment as required to furnish and install electrical work including demolition as shown on drawings and as hereinafter specified. Work shall also include all labor, material and equipment not shown on drawings and not specified but necessary and reasonably incidental to comply with the intent of contract to provide first class and complete installations of electrical work. Furnish and install all materials, equipment, devices, and accessories not specifically called for by item but that are necessary to provide the requirements in operation and function that is established by the design and by the equipment specified.

B. Work shall also include: (1) All hoists, scaffolds, staging, runways, and equipment required for the performance of the work; (2) All job measurements and shop layouts required for the proper installation of material and equipment included in the work; (3) All lights, guards, and signs as required by safety regulations applicable to the work; (4) The removal from the premises, as it accumulates, of all dirt and refuse.
resulting from the performance of the work; and (5) Modifications to existing structure, equipment and installations required in order to install new work; (6) Demolition Work.

C. Work shall include providing labor and equipment for current and voltage readings, and adjustments required on electrical equipment for testing and balancing of mechanical systems as specified elsewhere in this specification.

1.4 MATERIAL AND MANUFACTURER

A. All material and equipment shall be new except as stated otherwise; shall be of the best quality and design; shall be free from defects and imperfections and shall have markings or a nameplate identifying the manufacturer and providing sufficient reference to establish quality, size and capacity. As possible, all material and equipment of the same type shall be of the same manufacturer. Equipment shall function and perform efficiently and quietly at the required capacity without producing objectionable noise within the occupied areas of the building; if not, the Contractor shall remedy the condition or replace the equipment at no additional cost to the contract.

1.5 SUBSTITUTIONS

A. Reference in the specifications to any article, device, product, material, fixture, equipment, form or type of construction by name, make or catalog number shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition. Any article, device, product, material, fixtures, equipment, form or type of construction other than those specified may be substituted for consideration, in accordance with the preliminary matters, general conditions, and supplemental conditions as applicable unless otherwise specified.

1.6 LABOR, WORKMANSHIP AND SUPERVISION

A. All labor for the installation of material and equipment furnished under the electrical work shall be done by experienced mechanics of the proper trade and all workmanship shall be first class and in compliance with the specific requirements of drawings and specifications.

B. All material and equipment for the electrical work shall be installed under competent supervisory service furnished by the Contractor. Where necessary, this shall include the services of special technicians and operation personnel.

1.7 SAFETY REGULATIONS

A. All electrical work shall be performed in compliance with all applicable and governing safety regulations including the regulations of the Occupational and Safety Health Act. All safety lights, signs and guards required for performance of electrical work shall be the responsibility of the Contractor.

1.8 CODES, ORDINANCES, REGULATIONS AND U.L. APPROVAL

A. See General Conditions

B. Laws, codes, ordinances and regulations shall take precedent excepting only where the work called for by the drawings and specifications exceeds by quality and quantity.
C. Fixtures, appliances, equipment and materials which are subject to Underwriter's Laboratory tests shall bear such approval.

D. All work of this Division shall be installed in strict accordance with the latest addition of NFPA 70, The National Electric Code. (NEC)

1.9 CONTRACTOR'S EQUIPMENT

A. All hoists, scaffolds, staging, runways, tools, machinery and equipment required for the performance of the electrical work shall be furnished by the Contractor.

1.10 STORAGE AND PROTECTION

A. Material and equipment for the electrical work shall be protected from dirt and damage and maintained in a clean condition during the performance of the work. This shall include adequate protection from the weather if storage is outside. All parts of material and equipment that have become rusted or damaged shall be replaced or restored to an acceptable condition as approved by the Owner's Representative. This shall include factory finishes damaged during construction.

1.11 CLEANING

A. Dirt and refuse resulting from the performance of the work shall be removed from the premises as required to prevent accumulation and the Contractor shall cooperate in the maintenance of reasonably clean premises at all times.

B. Immediately prior to the final inspection, Contractor shall clean all material and equipment. Dirt, refuse and stains shall be removed from all surfaces and damaged finishes restored to original condition.

1.12 OPERATION AND MAINTENANCE INSTRUCTION

A. This Contractor shall furnish all services as required for adequate verbal and printed instructions the Owner's operating and maintenance personnel for operation and maintenance of all equipment and systems installed under this Division. Three complete copies of service manuals in hardback binders shall be furnished at the end of the project in accordance with the General Conditions of the specifications. The manuals shall include warranties, printed operating and maintenance instructions for systems and equipment specified under this Division, all approved shop drawings, all manufacturer's printed data, parts lists control diagrams, valve schedules, parts lists, list of equipment suppliers, list of Contractors & Subcontractors, balancing reports, test reports.

B. When the work is complete and at a time designated by the Owner's Representative, the Contractor shall furnish the services of a qualified instructor to instruct Owner's operating and maintenance personnel in the operation and maintenance of the systems and equipment furnished and installed under this Division.

C. The bound copies of the operating and maintenance manuals shall be used during the verbal instructions.

1.13 MOTORS, CONTROLS, AND OTHER EQUIPMENT

A. Except as otherwise specified electrical contractor shall make one power connection to each piece of equipment, (i.e., exhaust fan, rooftop unit, chiller, pump, etc. Any
parts furnished loose by mechanical contractor that require wiring to the main unit shall be wired by electrical contractor at mechanical contractors expense, and shall not be an extra cost to the owner.

B. Except as otherwise specified, the electrical work shall include receiving, installing and mounting all detached motors, switches, motor control equipment and other control devices furnished under other divisions or work. Contractor shall check all headings of specifications for equipment to be installed. Work shall include overload heater for motor starters, mountings and supports as required for all equipment, including angle frames, steel plates, bars, bolts, etc., and all conduit, wire, etc., as required to connect all equipment including motors, disconnect switches, starters, controls, pushbuttons, etc. Detached motors shall be set and aligned with coupling or drive. Motor connections shall be terminated with unexposed leads in suitable conduit and cover. Conduit shall terminate close to motor with a minimum of 12" of flexible liquid tight conduit between rigid conduit or EMT and motor.

C. Unless specified otherwise, perform all work required to rough-in and connect to all equipment requiring electrical connections. This work shall be as indicated on drawings, by approved equipment shop drawings and by direction on the job.

D. All equipment, materials or devices furnished by others including that furnished by the Owner or under any other division which require electrical connections shall be roughed-in and connected under this division, unless specified otherwise. It shall be the Contractor's responsibility to verify exact requirements for rough-in and connection of equipment furnished by others prior to installation. Extras will not be allowed for failure to verify same.

E. The Contractor shall run feeders to starters, disconnects, control panels and motors as shown on drawings, make connections, furnish overload heaters for motor starters, and install and wire all mechanical components in accordance with wiring diagrams furnished under mechanical work. The Contractor shall coordinate with any other trades involved for the proper coil voltages for control of magnetic starters and contactors.

1.14 ADJUSTING, ALIGNING AND TESTING

A. All electrical equipment furnished under this Division shall be adjusted and tested by this Contractor. Motors and other equipment furnished by others, to which electrical connections are made under this Division, shall be checked for short circuit and open circuits before energizing. Motors shall be checked for proper phasing and rotation. The thermal overload protection shall be checked in all motor starters, and any protector heaters found to be of improper size as required by the motor name plate full load amperage and voltage rating for protection of the motor shall be listed (include equipment designation, rating of heater, motor nameplate horsepower, full load amps and voltage) and 4 copies of list shall be submitted to the Owner's Representative.

B. Mechanism of all electrical equipment shall be checked, adjusted and tested for proper operation. Protective devices and parts shall be checked and tested for specified and required application and adjusted as required. Adjustable parts of all lighting fixtures and electrical equipment shall be checked, tested and adjusted as required to produce the intended performance.

C. Completed wiring systems shall be free from short circuits and after completion,
perform tests for insulation resistance in accordance with the requirements of the National Electrical Code.

D. The Contractor shall be held responsible for the operation, service and maintenance of electrical equipment during construction and prior to acceptance by the Owner. All electrical equipment shall be maintained in the best operating condition. Operational failure caused by defective material and/or labor furnished under this Division shall be immediately corrected. Owner's Representative shall be immediately notified of any operational failures caused by defective material and/or labor covered under other Divisions or furnished by others.

1.15 ELECTRICAL CIRCUITRY FOR EQUIPMENT

A. The electrical circuits, components, and controls for all equipment are selected and sized, based on the equipment as furnished. It shall be the responsibility of all parties concerned, involved in, and furnishing the substitute and/or equivalent equipment to verify and compare the electrical characteristics and requirements of that furnished to that specified and/or shown. If greater capacity or more materials or labor is required for the rough-in, circuitry or connections than for the item specified and provided for, then it shall be the responsibility of the parties involved in providing the substitute and/or equivalent items of equipment to provide all compensation for additional charges made for the proper rough-in, circuitry and connections for the equipment furnished. No additional charges shall be made to the Base Bid price or to the Owner.

B. Before rough-in of circuitry or connecting to equipment, the Contractor shall verify the electrical characteristics and requirements of the equipment being furnished, and for that specified and shown on drawings.

1.16 CLEARANCES

A. All electrical equipment shall be so installed to maintain proper clearance and headroom as required by the National Electrical Code. (NEC)

1.17 CUTTING AND PATCHING

A. The Contractor shall coordinate with the Owner's Representative before any cutting and obtain approval from the Owner's Representative prior to any cutting. All patching and finishing shall be by the Contractor.

B. Cutting shall be done with extreme care and in such a manner that the strength of the structure will not be endangered. Wherever possible, openings in concrete or masonry construction shall be by concrete saw or rotary core drill. Openings in any construction shall be cut the minimum size required for the installation of the work. Adequate protection shall be provided to prevent damage to adjacent areas and to prevent dust from spreading to adjacent areas.

C. Where openings or holes are cut in existing construction and the cutting breaks existing electrical circuitry or control circuitry conduit and wiring, then it shall be the responsibility of the Contractor to reroute the circuitry conduit and requiring and to complete the circuitry as required and as approved by the Engineers. Temporary completion shall be provided where necessary before the permanent rerouting and completion work is finished.
D. Before any cutting, patching, or finishing work is started, dust and moisture protection shall first be installed as required in these specifications.

E. Openings cut in floor shall be cut by core drilling where possible. After work is installed through any opening in floor, the opening around the work shall be patched and sealed watertight with epoxy or silicone based, non-cracking elastomeric sealant.

F. Where existing work is removed from sleeves or openings through floor and the sleeve or opening is not to be reused, patch the hole or opening by filling with shrink epoxy cement grout, in strict accordance with the grout manufacturer's instructions and recommendations and as required to make completely watertight and fireproof. Finish the floor surface as directed by the Owner's Representative.

1.18 SHOP DRAWINGS AND SAMPLES

A. Acceptance of the work shall be subject to the Engineer’s approval of shop drawings, product data and samples, as specified in the "General Conditions" of these specifications.

B. Submittals shall include the manufacturer's model number, capacity, performance data, electrical characteristics, etc., all clearly shown and marked for the specific item of equipment to be furnished on this project. General catalog data that does not indicate the specifics for the item to be furnished for this project will not be accepted. Performance data shown or marked on the submittals shall be at the actual specified operating conditions for this project.

1.19 NOISE AND VIBRATION

A. Contractor shall be responsible for the installation of all equipment in such a manner as to control the transmission of noise and vibration for many installed equipment or system, so the sound level shall not exceed NC35, in any occupied space. Contractor shall be responsible for the correction of any objectionable noise in any occupied area due to improperly installed equipment.

1.20 EQUIPMENT IDENTIFICATION AND LABELS

A. All electrical equipment, such as switchgear, panelboards, disconnects switches, motor starters, and other similar items, shall be adequately identified with labels consisting of machine engraved laminated plastic plates. These plates should generally be 3/4 inch in height with 1/4 inch letters, have a black surface and white core. The labels should identify the equipment's 'Tag', or understood function.

B. Switchgear and panelboards shall also be labeled as to their location in the system, such as, where the equipment is being fed from and the corresponding circuit number and OCP rating. If located on the interior side of a readily accessible door, these labels can be of a lesser quality material, including adhesive paper with printed lettering.

1.21 WARRANTIES

A. Warranties shall be provided for all equipment in accordance with the requirements of the General Conditions, except that all warranties shall be non-prorated for one year.
B. Acceptance of the work under this Division shall be subject to the conditions that all installed systems, equipment, apparatus, and appliances included in the work shall operate and perform as designed, including code clearances, and as selected with respect to efficiency, capacity and quietness and shall operate and perform without producing objectionable noise within occupied areas of the building.

C. Acceptance of the work shall also be subject to the conditions that any time within one year after date of acceptance final payment, any defective part of the work resulting from the supply of faulty workmanship or material shall be immediately amended, required or replaced as a part of the contract work without cost to the contract.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 260500
SECTION 260519 - WIRE, CABLE AND CONDUCTORS

PART 1 - GENERAL

1.1 WORK INCLUDES

A. Provide all necessary wire and cable of the sizes and types shown on the plans or specified herein for:
   1. General power distribution and branch circuit system
   2. Lighting systems
   3. Control systems

1.2 QUALITY ASSURANCE

A. Installation shall comply with NFPA 70 - National Electric Code (NEC).
B. Insulation types, ratings and usage shall be in accordance with National Electrical Code requirements.
C. Wire and cable shall be constructed in accordance with ICEA, NFPA, NEMA and IEEE published standards and shall be UL listed.

1.3 SUBMITTALS

A. No submittals required when using specified materials.

PART 2 - PRODUCTS

2.1 LOW VOLTAGE WIRE AND CABLE (600V OR LESS)

A. General
   1. All conductors shall be 98% conductivity copper.
   2. Unless otherwise noted, minimum wire size for lighting and power branch circuits shall be No. 12 AWG. For control and auxiliary systems the minimum size shall be No. 14 AWG.
   3. Conductors for emergency power and exit wiring shall be minimum #12 AWG.
   4. Insulation on power and control systems wiring 480 volts and below shall be 600 volt rated, type XHHW, THWN or THHN. Insulation of conductors for other systems shall be 600 volt unless otherwise noted.
   5. Type XHHW or THWN insulation must be used for all conductors installed in wet locations. This includes all outdoor feeders and branch circuits, underground conduit runs and conduits run in slab on grade.
   6. Conductors size 8 AWG and larger shall be Class B stranded. Conductors size 10 AWG and smaller may be solid or stranded. Conductors size 14 AWG for control and auxiliary systems shall be stranded.

B. Acceptable Manufacturers: Cable and wire shall be a standard type as manufactured by:
   1. General Cable Company
2. Carol
3. Anaconda
4. Roma
5. ITT Royal
6. Beldon Wire and Cable
7. Approved equal

2.2 MEDIUM VOLTAGE WIRE AND CABLE (601V to 5KV)

A. The 5KV shielded cable shall be UL Type MV-90 rated 5KV at 90C in wet or dry locations with a single stranded, bare annealed copper Class B conductor. The construction shall include an extruded conductor shield, Ethylene propylene rubber (EPR) insulation, a semi-conducting tape, a copper tape shield and a PVC jacket. Cables shall be furnished in sizes as shown on the Drawings.

B. The 5KV non-shielded cable shall be UL Type MV-90 rated 5KV at 90C in wet or dry locations with a single stranded, bare annealed copper Class B conductor. The construction shall include an extruded conductor shield, Ethylene propylene rubber (EPR) insulation and a PVC jacket. Cables shall be furnished in sizes as shown on the Drawings.

C. Approved Manufacturers
   1. HWC Distribution Corp.
   2. Rome
   3. Perilli
   4. Okonite
   5. Approved equal

2.3 INSTRUMENTATION AND COMMUNICATION CABLE

A. The type of instrumentation and communication cable required shall be as recommended by the instrumentation and communications system manufacturer. The 4-20 ma cables shall be Belden 9342, or approved equal.

2.4 CONNECTIONS AND SPLICE

A. 600V and Less
   1. All components used at wiring terminations, connections and splices shall be UL listed.
   2. Connectors for joints #10 AWG and smaller sizes to be made with spring connectors insulated with vinyl skirt and live spring. Prior to installation, wires shall be properly twisted together.
   3. Connectors for #8 AWG (copper) and up to #2/0 sizes to be high-pressure type mechanical crimp connectors applied to a cleaned wire surface. Insulate splices with electrical insulating putty and tape to cover with four layers, half lapped.
   4. Connections for #3/0 (copper) and larger shall be Cadwelded. Insulate splices using electrical insulating putty and tape to cover with four layers, half lapped.
5. Connections made in 'Wet' locations, as indicated on the Drawings, shall be performed with components, or assemblies, listed for that environment.

B. 601V to 5KV
1. Splices shall be made with cold shrink rubber splices suitable for use with 5KV cable.
2. Connectors for splices and lugs for terminations shall be compatible with the cable and terminal, compression type rated for 5000 volts and installed per manufacturer’s requirements.

C. Acceptable Manufacturers
   1. Thomas and Betts
   2. 3M
   3. Buchanan
   4. Ideal

2.5 WIRE PULLING LUBRICANT

A. Pulling lubricant shall be UL listed, water based, polymer solution. Lubricants containing waxes or soaps are not acceptable.

B. The lubricant shall be compatible with the cable insulation and shall not cause any premature deterioration of the insulation material.

C. The lubricant shall be approved by the cable manufacturer for use with their cables.

D. Acceptable Manufacturers
   1. American Colloid/Poly-X
   2. American Polywater/Polywater J
   3. ARNCO/Hydar-Lube
   4. Buchanan/Quick Slip
   5. Ideal/Aqua-Gel
   6. Approved equal

2.6 WIRING SYSTEM IDENTIFICATION

A. Install vinyl markers to identify branch circuits where they enter panel boards, pull boxes, junction boxes and device boxes.

B. Color coding shall occur at all conductor termination points and in all junction boxes and pullboxes. Identification may be by colored insulation or colored electrical tape at the Contractor's option. Colors shall be according to the following:
   1. 277Y/480V, 3 phase
      a. Phase A - Brown
      b. Phase B - Orange
      c. Phase C - Yellow
d. Neutral - White

e. Ground - Green

f. Isolated Ground - Green with yellow stripe

2. 120Y/208V, 3 phase

a. Phase A - Black

b. Phase B - Red

c. Phase C - Blue

d. Neutral - White

e. Ground - Green

f. Isolated Ground - Green with yellow stripe

C. For all wire and cable large enough that colored insulation is not available from manufacturer, apply electrical plastic tape in colors specified herein. Apply tape in uniform manner circling wire or cable. Half-lap tape for length of cable as required by NEC. Tape shall be 3M, Plymouth or Permacel.

D. Maintain consistent coding throughout installation to ensure proper phase identification.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General

1. A separate neutral, sized in accordance with the National Electrical Code shall be installed for each feeder or branch circuit.

2. Install vinyl markers to identify branch circuits where they enter panel boards, pull boxes, junction boxes and device boxes.

3. Color coding shall occur at all conductor termination points and in all junction boxes and pullboxes. Identification may be by colored insulation or colored electrical tape at the Contractor's option (See Section 16.075 - Electrical Identification).

B. Power And Branch Circuits

1. Conductor sizes as shown on the Drawings and specified herein are minimum and shall be increased as required to maintain a minimum voltage drop of 3% for any branch circuit and 5% at any point in the system. Conductor size shall be increased as required by NEC where more conductors are installed in a common raceway than indicated on the Drawings.

2. Conductors shall be color coded for their entire length in accordance with NEC; all wiring shall be color coded using the same color for each conductor within a system.

3. Wire size shall be #12 AWG minimum for branch circuit wiring.

4. Minimum size conductors for 120/208V or 277/480V shall be #12 AWG. Increase conductors at least one (1) size for home run feeders over 75 feet long or if furthest outlet is greater than 125 feet from feeder panel.

C. Control Systems
1. Control and systems wiring shall be terminated using forked tongue terminals.

2. Terminal strip connectors shall be ratchet-tooled in accordance with manufacturer’s recommendations. Plier type crip is not acceptable.

D. Provide self adhesive tape minimum 3-inch wide band on larger size conductors for color codes. Tape color shall be per conductor color codes. Tape shall be provided at all terminations in switchgear, panelboards, pull boxes, motor controllers, disconnect and starters.

E. No conductors shall be installed in rooms or areas prior to completion of medical gas piping installation.

F. All fasteners and lugs used for electrical connections shall be torqued to values indicated by manufacturer’s instructions. Use particular care to equalize lug torques where parallel conductor feeders are used. Use approved lugs when copper conductor is to be connected to aluminum bus.

3.2 TESTING

A. Upon completion of cable and wire installation, but before termination to equipment, test each wire for grounds and short circuits. Replace or correct defective wiring.

END OF SECTION 260519
SECTION 260533 - CONDUIT, BOXES AND RACEWAYS

PART 1 - GENERAL

1.1 WORK INCLUDES

A. Furnish and install complete conduit and raceway systems as required for power, lighting, control and communication systems as shown in the Drawings and specified herein.

B. Furnish and install all outlet, junction and pull boxes as indicated on the Drawings and as necessary to install the required conduit and wiring in a neat and workmanlike manner, as specified herein.

1.2 QUALITY ASSURANCE

C. Pull boxes and junction boxes shall be in accordance with NEC requirements and shall be UL labeled.

D. Raceways shall meet NEMA standards and shall be UL listed and labeled.

PART 2 - PRODUCTS

2.1 CONDUIT

A. EMT conduit shall be installed for all work concealed in partitions or in concrete block walls and for all conduits run in ceiling plenums and exposed runs, except where noted otherwise.

B. Rigid galvanized steel conduits shall be used outdoors and in all mechanical rooms where not supported directly to walls or ceilings, and for all medium voltage cable runs.

C. PVC conduits shall be installed underground or in concrete slabs and shall be a minimum size of ¾-inch, unless noted otherwise on the Drawings. Rigid galvanized elbows shall be used for all stub-ups through or out of concrete slabs.

D. Jacketed flexible steel conduit (Sealtite) shall be used in wet areas where flexible conduit connections are required and on all motorized equipment and motors.

E. Minimum conduit size shall be ¾-inch, unless noted otherwise on the Drawings.

F. All conduit to be listed by Underwriter's Laboratories, Inc. All conduit shall have UL label.

G. Rigid & IMC conduit shall be heavy/intermediate wall, threaded, hot dipped galvanized steel. Each section of conduit furnished shall be free from blisters and other surface defects. Galvanizing shall not crack or flake when conduit is bent.

H. Thin wall conduit (EMT), couplings and fittings shall have a circular cross section of sufficient diameter to meet all State Codes. The wall thickness shall be uniform.
throughout with the interior surface free of defects. Welding of seams shall be continuous.

I. Flexible steel conduit shall be made from a continuous length of galvanized cold rolled steel strip, spirally wound. Adjacent strips shall have locked typed construction with all the edges turned in.

J. Liquid-tight flexible steel conduit shall consist of a steel core of the same construction as specified for flexible steel conduits, with an extruded PVC jacket.

K. PVC conduit shall be heavy wall, Schedule 40, UL listed under Standard 651 or extra heavy wall, Schedule 80, UL listed under Standard 651. Conduit shall be suitable for use with 90 degree C insulated wire. Conduit, fittings, and cement shall be of the same manufacturer. Schedule 80 shall be installed in aboveground installations where the conduit is exposed to impact by cars and trucks or to other physical damage (or where specifically noted on the plans).

L. Acceptable Manufacturer’s
   1. Pittsburgh Steel
   2. Allied
   3. Republic Steel
   4. National Electric
   5. Keystone
   6. Jones and Laughlin
   7. Carlon
   8. Approved equal

2.2 FITTINGS

A. All fittings shall be UL Listed, for the use and environment they are to be used in.

B. Couplings and connectors for thin wall conduit shall be all steel type. No die cast connectors will be allowed.

C. Expansion and deflection fittings shall be of a type suitable for the particular condition and shall be complete with bonding jumper.

D. Acceptable Manufacturer’s
   1. Thomas and Betts (T&B)
   2. O-Z Gedney
   3. Appleton
   4. Raco
   5. Approved equal

2.3 BOXES
A. Flush outlet, junction and pull boxes to be pressed steel galvanized, minimum 4" square and 1 1/2" depth, unless otherwise specified, shown on the Drawings, or in special use areas. Box sizes shall be selected as required to comply with the NEC.

B. Boxes for exposed work in finished areas to be Type FS with threaded hubs and rigid conduit risers.

C. Pull boxes shall be made of code gauge galvanized steel with removable cover plates fastened with screws or hinged doors as indicated or required. Sizes shall comply with the NEC.

D. Steel boxes cast in concrete shall be designed for concrete installation.

E. Acceptable Manufacturer’s
   1. Appleton
   2. Raco
   3. Killark
   4. Hoffman
   5. Steel City
   6. Square D
   7. Thomas and Betts
   8. O.Z./Gedney
   9. Approved equal

### ELECTRIC MANHOLES

2.4 All electric manholes shall be provided with a sump pump. The sump pump unit shall be Little Giant Model 6E-CIA-SFS (120 volt), or approved equal.

B. The manholes shall be provided with a hinged aluminum access hatches and flat tops.

C. Unless otherwise indicated, electric manholes shall comply with SECTION 02536 - SANITARY SEWER MANHOLES, FRAMES AND COVERS. Exfiltration and/or vacuum testing is not required.

### PART 3 - EXECUTION

3.1 INSTALLATION

A. Conduit
   1. In finished areas, conduit must be concealed above accessible ceilings, within the building structure, or within chases. Exposed conduits to be run tight to wall or ceiling and installed in a neat workmanlike manner, ready for painting.

   2. All conduit shall be supported by suitable clamps or hangers attached to the elements of the building structure at the required spacing to provide rigid installation. In no case shall conduit be attached to or supported from
adjoining ductwork or pipe, ceiling systems, or installed in such manner as to
prevent the ready removal of other pipe for repairs.

3. Install conduit parallel or perpendicular to building lines (except where run in
or below floor slabs). Keep conduit runs as close to underside of structure as
possible.

4. No more than the equivalent of four (4) 90 degree bends will be allowed in
any one conduit run. Where more bends are necessary in any single run, a
pull box shall be installed. Pull boxes shall also be installed in long runs at a
maximum separation of 100'-0", unless noted otherwise on the Drawings.

5. Exercise necessary precautions to prevent accumulation of water, dirt, or
concrete in conduits during execution of electrical work. Conduit in which
water or foreign material has been permitted to accumulate shall be
thoroughly cleaned or replaced where such accumulations cannot be
removed.

6. Do not run conduit in slabs under boilers, hot water heaters or other heat-
producing equipment and maintain minimum 6" clearance from hot water
piping.

7. Install a 240 lb. tensile strength poly pull line or a #12 THHN or THWN pull
wire in all empty conduits.

8. Install expansion fittings at all locations where conduits cross building
expansion joints.

9. Secure rigid conduit at cabinets and boxes using insulated throat type
grounding and bonding bushings. Locknuts shall be tightened to cut through
painted surfaces.

10. Where a number of conduits are to be run exposed and parallel, one with
another, they shall be grouped and supported by trapeze hangers or unistrut
racks tight to the building structure. Hanger rods shall be fastened to concrete
ceiling slab with threaded rod in steel expansion bolt type inserts. Trapeze
hangers shall be Unistrut, angle iron or channel iron. Each conduit shall be
clamped to the trapeze hanger with conduit clamps.

11. Metallic conduit systems shall be grounded in accordance with the NEC, and
as shown on the Drawings. Metallic conduit systems shall be metallically
joined together into a continuous electrical conductor and shall be so
connected to all boxes, fittings, and cabinets to provide effective electrical
continuity.

12. Threaded couplings shall be used for joints on rigid metallic conduit. Field
joints shall be cut square, reamed smooth to remove burrs and sharp and
rough edges, and properly threaded to receive couplings. The use of running
threads is not permitted.

13. Conduit systems shall be supported at each elbow and the end of every
straight run terminating in a box or cabinet. Fastening shall be provided at
maximum spacing of 7 ft. for horizontal runs and 8 ft. for vertical runs,
unless codes require more stringent supporting. Conduit shall not be fastened
to other pipe or installed to prevent ready removal of other pipe for repairs.
The use of perforated strap hangers is not permitted.

14. Conduit to be buried shall be installed a minimum of 24 in. below finished
grade.

15. Where telephone/data outlet locations are indicated on the Drawings, install
1” EMT from telephone outlet box and 1” conduit from data outlet box (4" x
4" x 1-1/2" or 4" x 2" x 1-1/2") to top of finished wall or a point above accessible ceiling.

B. Boxes

1. Support all boxes independently of conduit except for cast boxes connected to two (2) rigid conduits both supported within 12-inches of box.

2. Provide knockout closures of the correct size to cap unused knockout holes where blanks have been removed.

3. Outlet Boxes
   a. Flush mount outlet boxes in areas other than mechanical rooms, electrical rooms and above removable ceilings.
   b. Provide at least 6-inch separation between outlet boxes. Do not install boxes back to back in same wall unless specifically noted on the plans. If specifically noted on the plans install 2 pieces of 5/8” drywall between the boxes to maintain both fire rating and soundproofing of wall.
   c. Use multiple gang boxes where more than one device is mounted together. Do not use sectional boxes. Provide barriers to separate different voltage systems.
   d. Provide cast boxes for exterior and wet locations.

4. Junction and Pull Boxes
   a. Mount junction and pull boxes securely to building structure in a location that meets the requirements of the National Electrical Code for accessibility and work space clearance. Coordinate exact locations of work with other trades.
   b. Support independent of conduit
   c. Locate pull or junction boxes to limit conduit runs to no more than 100 linear feet (unless noted otherwise on the Drawings) or four (4) 90 degree bends between pulling points.

5. Provide covers for all boxes.

C. Motor Connections

1. The final 18 in. of connections to motors shall be made in liquid-tight flexible steel conduit.

END OF SECTION 260533
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes lighting fixtures, lamps, ballasts, emergency lighting units, pole standards and accessories.

1.3 DEFINITIONS

A. CCT: Correlated color temperature.
B. CRI: Color Rendering Index.
C. Fixture: See "Luminaire."
D. IP: International Protection or Ingress Protection Rating.
E. LED: Light-emitting diode.
F. Lumen: Measured output of lamp and luminaire, or both.
G. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

1.4 QUALITY ASSURANCE

A. Provide luminaires from a single manufacturer for each luminaire type.
B. NFPA 101 Compliance: Comply with visibility and luminance requirements for exit signs.
C. Luminaire Photometric Data Testing Laboratory Qualifications: Luminaire manufacturer's laboratory that is accredited under the NVLAP for Energy Efficient Lighting Products.

1.5 SUBMITTALS

A. Product Data: For each type of product.
   1. Arrange in order of luminaire designation.
   2. Include data on features, accessories, and finishes.
   3. Include physical description and dimensions of luminaires.
   4. Include emergency lighting units, including batteries and chargers.
   5. Include life, output (lumens, CCT, and CRI), and energy efficiency data.
   6. Photometric data and adjustment factors based on laboratory tests.
7. Testing Agency Certified Data: For indicated luminaires, photometric data certified by a qualified independent testing agency. Photometric data for remaining luminaires shall be certified by manufacturer.

B. Shop Drawings:
   1. Wiring Diagrams: Detail wiring for fixtures and differentiate between manufacturer-installed and field-installed wiring.
   2. Show details of nonstandard or custom fixtures. Indicate dimensions, weights, method of field assembly, components, features, and accessories.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Include all information originally submitted, with any modifications, or alterations, arrived at during construction.

B. Provide a list of all lamp types used on Project; use ANSI and manufacturers' codes.

C. Results of all tests performed.

1.7 WARRANTY

A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.

PART 2 - PRODUCTS

2.1 LUMINAIRE REQUIREMENTS

A. Lamp type: LED

B. Minimum of 1,200 lumen output.

C. CRI of minimum 65.

D. NEMA 4 rating.

E. Rated lamp life of 30,000 hours.

F. Internal driver.

G. Nominal Operating Voltage: 120 V.

2.2 LIGHT FIXURES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
   1. Cooper Lighting.
   2. GE Lighting Solutions.
   3. H.E. Williams
   4. Hubbell
   5. Approved equal.
2.3 MATERIALS

A. Metal Parts:
   1. Free of burrs and sharp corners and edges.
   2. Sheet metal components shall be steel unless otherwise indicated.
   3. Form and support to prevent warping and sagging.

B. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.

C. Diffusers and Globes:
   1. Acrylic Diffusers: One hundred percent virgin acrylic plastic, with high resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
   2. Glass: Annealed crystal glass unless otherwise indicated.
   3. Lens Thickness: At least 0.125 inch minimum unless otherwise indicated.

D. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps. Locate labels where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.

2.4 METAL FINISHES

A. Variations in finishes are unacceptable in the same piece. Variations in finishes of adjoining components are acceptable if they are within the range of approved Samples and if they can be and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

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

B. Examine roughing-in for luminaire to verify actual locations of luminaire and electrical connections before fixture installation. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with NECA 1.

B. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.

C. Install lamps in each luminaire.

D. Supports:
   1. Sized and rated for luminaire weight.
2. Able to maintain luminaire position after cleaning and relamping.
3. Provide support for luminaire without causing deflection of ceiling or wall.
4. Luminaire mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire weight and vertical force of 400 percent of luminaire weight.

E. Flush-Mounted Luminaire Support:
   1. Secured to outlet box.
   2. Attached to ceiling structural members at four points equally spaced around circumference of luminaire.
   3. Trim ring flush with finished surface.

F. Wall-Mounted Luminaire Support:
   1. Attached to structural members or backing plates in wall.
   2. Do not attach luminaires directly to gypsum board.

G. Fixture Attachment: Fasten to indicated structural supports. Attach fixtures and supports to allow aiming for indicated light distribution.

3.3 CONNECTIONS

A. Ground lighting units. Tighten electrical connectors and terminals, including grounding connections, according to manufacturer's published torque-tightening values. Where manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

B. Ground exterior fixtures and metal poles according to Division 26 Section "Grounding."
   1. Poles: Install 10-foot (3-m) driven ground rod at each pole.

3.4 FIELD QUALITY CONTROL

A. Adjust aim-able fixtures to provide required light intensities.

B. Perform the following tests and inspections:
   1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.

C. Luminaire will be considered defective if it does not pass operation tests and inspections.

D. Prepare test and inspection reports, upon request from the Engineer.

E. Clean fixtures internally and externally after installation. Use methods and materials recommended by manufacturer.
SECTION 283100 – ADDRESSABLE FIRE ALARM

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section of the specification includes the furnishing, installation, connection, and testing of new addressable fire alarm devices, as well as integrating these devices into, an existing Simplex Grinnell fire alarm system. The location, number, and types of the new devices are shown on the drawings. The intent is to provide devices that contain the latest in technology that are still compatible with the existing control panel.

B. The existing fire alarm provider/vendor for this building is:

   Johnson Controls Fire Protection  
   11360 Lackland Rd.  
   St. Louis, Mo 63146  
   Customer Care Representative: Hannah Smith  
   Office phone: 314-739-4014  
   Email: hannah.smith@jci.com

   This entity will ultimately be responsible for the continued integrity of the existing system. Therefore, they are required to perform the work, or grant approval for the installation performed by others.

C. The fire alarm system shall continue to comply with requirements of NFPA Standard 72 for Protected Premises Signaling Systems except as modified and supplemented by this specification. The system shall be electrically supervised and monitor the integrity of all conductors.

D. The system and its components shall be Underwriters Laboratories, Inc. listed under the appropriate UL testing standard as listed herein for fire alarm applications and the installation shall be in compliance with the UL listing.

1.2 SCOPE:

A. The existing microprocessor-controlled fire detection system shall be expanded in accordance to the project specifications and drawings.

B. Basic Performance:

1. Alarm, trouble and supervisory signals from all intelligent reporting devices shall be encoded on NFPA Style 4 (Class B) Signaling Line Circuits (SLC), NFPA Style 6 (Class A), or NFPA 7 (Class A) Signaling Line Circuits (SLC).

2. Device Circuits (IDC) shall be wired Class A (NFPA Style D) as part of an addressable device connected by the SLC Circuit.

3. Notification Appliance Circuits (NAC) shall be wired Class B (NFPA Style Y) or Class A (NFPA Style Z) as part of an addressable device connected by the SLC Circuit.

4. All circuits shall be power-limited, UL864 9th edition requirements.
5. A single ground fault or open circuit on the system Signaling Line Circuit shall not cause system malfunction, loss of operating power or the ability to report an alarm when wired NFPA Style 6/7.

6. Alarm signals arriving at the main FACP shall not be lost following a primary power failure or outage of any kind until the alarm signal is processed and recorded.

C. Basic system functional operation

1. When a fire alarm condition is detected and reported by one of the system initiating devices, the following functions shall immediately occur:
   a. The system alarm LED on the system display shall flash.
   b. A local signal in the control panel shall sound.
   c. The display on the FACP shall indicate all information associated with the fire alarm condition, including the type of alarm point and its location within the protected premises.
   d. In response to a fire alarm condition, the system will process all control programming and activate all system outputs (alarm notification appliances and/or relays) associated with the point(s) in alarm.

2. Elevator Recall:
   a. Smoke detectors installed in the elevator hoist shaft will signal the elevator to initiate emergency procedures. Lifts will immediately be sent to the main floor of egress (ground level) where they will be decommissioned until the alarm condition has been cleared or manually taken over by Fire Department personnel.
   b. Smoke detectors installed in the lobby will signal the elevator to recall to the secondary floor of egress (lower level).

1.3 SUBMITTALS

A. General:

1. All references to manufacturer's model numbers and other pertinent information herein is intended to establish minimum standards of performance, function and quality. Equivalent compatible UL-listed equipment from other manufacturers may be substituted for the specified equipment as long as the minimum standards are met.

2. For equipment other than that specified, the contractor shall supply proof that such substitute equipment equals or exceeds the features, functions, performance, and quality of the specified equipment.

B. Shop Drawings:

1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.

2. Include manufacturer's name(s), model numbers, ratings, power requirements, equipment layout, device arrangement, complete wiring point-to-point diagrams, and conduit layouts.

3. Show annunciator layout, configurations, and terminations.
C. Manuals:
   1. Submit simultaneously with the shop drawings, complete operating and maintenance manuals listing the manufacturer's name(s), including technical data sheets.
   2. Wiring diagrams shall indicate internal wiring for each device and the interconnections between the items of equipment.
   3. Provide a clear and concise description of operation that gives, in detail, the information required to properly operate the equipment and system.

D. Software Modifications:
   1. Provide the services of a factory trained and authorized technician to perform all system software modifications, upgrades or changes.
   2. Provide all hardware, software, programming tools and documentation necessary to modify the fire alarm system on site. Modification includes addition and deletion of devices, circuits, zones and changes to system operation and custom label changes for devices or zones.

1.4 WARRANTY

A. All work performed and all material and equipment furnished under this contract shall be free from defects and shall remain so for a period of at least one (1) year from the date of acceptance. The full cost of maintenance, labor and materials required to correct any defect during this one-year period shall be included in the submittal bid.

1.5 APPLICABLE STANDARDS AND SPECIFICATIONS:

A. The specifications and standards listed below form a part of this specification. The system shall fully comply with the latest issue of these standards, if applicable.

B. Underwriters Laboratories Inc. (UL) - USA:
   1. No. 38 Manually Actuated Signaling Boxes
   2. No. 50 Cabinets and Boxes
   3. No. 864 Control Units for Fire Protective Signaling Systems
   4. No. 268 Smoke Detectors for Fire Protective Signaling Systems
   5. No. 268A Smoke Detectors for Duct Applications
   6. No. 346 Waterflow Indicators for Fire Protective Signaling Systems
   7. No. 464 Audible Signaling Appliances
   8. No. 521 Heat Detectors for Fire Protective Signaling Systems

C. Local and State Building Codes.

D. All requirements of the Authority Having Jurisdiction (AHJ).

E. The system shall be certified for seismic applications in accordance with the International Building Code (IBC). The basis for qualification of seismic approval shall be via shake table testing.
PART 2 - PRODUCTS

2.1 EQUIPMENT AND MATERIAL, GENERAL:

A. All equipment and components shall be new, and the manufacturer's current model. The materials, appliances, equipment and devices shall be tested and listed by a nationally recognized approvals agency for use as part of a protective signaling system, meeting the National Fire Alarm Code.

B. The authorized representative of the manufacturer of the major equipment, such as control panels, shall be responsible for the satisfactory installation of the complete system.

C. All equipment and components shall be installed in strict compliance with manufacturers' recommendations. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation. Refer to the riser/connection diagram for all specific system installation/termination/wiring data.

D. All equipment shall be attached to walls and ceiling/floor assemblies and shall be held firmly in place (e.g., detectors shall not be supported solely by suspended ceilings). Fasteners and supports shall be adequate to support the required load.

2.2 CONDUIT AND WIRE:

A. Conduit:

1. Conduit shall be in accordance with The National Electrical Code (NEC), local and state requirements.

2. Where required, all wiring shall be installed in conduit or raceway. Conduit fill shall not exceed 40 percent of interior cross sectional area where three or more cables are contained within a single conduit.

3. Cable must be separated from any open conductors of power, or Class 1 circuits, and shall not be placed in any conduit, junction box or raceway containing these conductors, per NEC Article 760.

4. Wiring for 24-volt DC control, alarm notification, emergency communication and similar power-limited auxiliary functions may be run in the same conduit as initiating and signaling line circuits. All circuits shall be provided with transient suppression devices and the system shall be designed to permit simultaneous operation of all circuits without interference or loss of signals.

5. Conduit shall not enter the fire alarm control panel or any other remotely mounted control panel equipment or back boxes, except where conduit entry is specified by the FACP manufacturer.

6. Conduit shall be 3/4-inch (19.1 mm) minimum

B. Wire:

1. All fire alarm system wiring shall be new.

2. Wiring shall be in accordance with local, state and national codes (e.g., NEC Article 760) and as recommended by the manufacturer of the fire detection system. Number and size of conductors shall be as recommended by the fire detection system manufacturer, but not less than 18 AWG (1.02 mm) for
Initiating Device Circuits, Signaling Line Circuits and Notification Appliance Circuits.

3. All wire and cable shall be listed and/or approved by a recognized testing agency for use with a protective signaling system.

4. Wire and cable not installed in conduit shall have a fire resistance rating suitable for the installation as indicated in NFPA 70 (e.g., FPLR).

5. Wiring used for the multiplex communication circuit (SLC) shall be twisted and support a minimum wiring distance of 10,000 feet when sized at 12 AWG. The design of the system shall permit use of IDC and NAC wiring in the same conduit with the SLC communication circuit. Shielded wire shall not be required.

6. All field wiring shall be electrically supervised for open circuit and ground fault.

C. Terminal Boxes, Junction Boxes and Cabinets:
   1. All boxes and cabinets shall be UL listed for their use and purpose.

2.3 SYSTEM COMPONENTS

A. Addressable Devices - General
   1. Addressable devices shall employ the simple-to-set decade addressing scheme. Detectors shall provide address-setting means using decimal switches.

   2. Detectors shall be addressable and intelligent, and shall connect with two wires to the fire alarm control panel signaling line circuits.

   3. Addressable smoke and thermal (heat) detectors shall provide dual alarm and power/polling LEDs. Both LEDs shall flash under normal conditions, indicating that the detector is operational and in regular communication with the control panel, and both LEDs shall be placed into steady illumination by the control panel, indicating that an alarm condition has been detected. An output connection shall also be provided in the base to connect an external remote alarm LED.

   4. Using software in the FACP, detectors shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. The detectors shall be listed by UL as meeting the calibrated sensitivity test requirements of NFPA Standard 72, Chapter 7.

   5. Detectors shall be ceiling-mount and shall include a separate twist-lock base with tamper proof feature. Base options shall include a base with a built-in (local) sounder rated for a minimum of 85 DBA, a relay base and an isolator base designed for Style 7 applications.

   6. Detectors shall provide a test means whereby they will simulate an alarm condition and report that condition to the control panel.

   7. Detectors shall also store an internal identifying type code that the control panel shall use to identify the type of device (ION, PHOTO, THERMAL).

B. Automatic Heat Detectors
   1. Automatic heat detectors shall have a combination rate of rise and fixed temperature rated at 135 degrees Fahrenheit (57.2 Celsius) for areas where
ambient temperatures do not exceed 100 degrees (37.7 Celsius), and 200 degrees (93.33 Celsius) for areas where the temperature does not exceed 150 degrees (65.5 Celsius).

2. Automatic heat detectors shall be a low profile, ceiling mount type with positive indication of activation.

3. The rate of rise element shall consist of an air chamber, a flexible metal diaphragm, and a factory calibrated, moisture-proof, trouble free vent, and shall operate when the rate of temperature rise exceeds 15 degrees F (9.4 degrees C) per minute.

4. The fixed temperature element shall consist of a fusible alloy retainer and actuator shaft.

5. Automatic heat detectors shall have a smooth ceiling rating of 2500 square feet (762 square meters).

C. Intelligent Photoelectric Smoke Detector

1. The detectors shall use the photoelectric (light-scattering) principal to measure smoke density and shall, on command from the control panel, send data to the panel representing the analog level of smoke density.

2. The detectors shall be ceiling-mounted and available in an alternate model with an integral fixed 135-degree heat-sensing element.

3. Each detector shall contain a remote LED output and a built-in test switch.

4. Detector shall be provided on a twist-lock base.

5. It shall be possible to perform a calibrated sensitivity and performance test on the detector without the need for the generation of smoke. The test method shall test all detector circuits.

6. A visual indication of an alarm shall be provided by dual latching Light Emitting Diodes (LEDs), on the detector, which may be seen from ground level over 360 degrees. These LEDs shall periodically flash to indicate that the detector is in communication with the control panel.

7. The detector shall not go into alarm when exposed to air velocities of up to 1500 feet per minute (fpm).

8. The detector screen and cover assembly shall be easily removable for field cleaning of the detector chamber.

9. All field wire connections shall be made to the base through the use of a clamping plate and screw.

D. Addressable Dry Contact Monitor Module

1. Addressable monitor modules shall be provided to connect one supervised IDC zone of conventional alarm initiating devices (any normally open dry contact device) to one of the fire alarm control panel SLCs.

2. The monitor module shall mount in a 4-inch square (101.6 mm square), 2-1/8 inch (54 mm) deep electrical box.

3. The IDC zone shall be suitable for Style D or Style B operation. An LED shall be provided that shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control panel.
4. For difficult to reach areas, the monitor module shall be available in a miniature package and shall be no larger than 2-3/4 inch (70 mm) x 1-1/4 inch (31.7 mm) x 1/2 inch (12.7 mm). This version need not include Style D or an LED.

5. For multiple dry contact monitoring a module shall be available that provides 10 Style B or 5 Style D input circuits.

E. Addressable Relay Module

1. Addressable Relay Modules shall be available for HVAC control and other network building functions.

2. The module shall provide two form C relays rated at up to 3 Amps resistive and up to 2.0 Amps inductive. The relay coil shall be magnetically latched to reduce wiring connection requirements, and to insure that 100% of all auxiliary devices energize at the same time on the same pair of wires.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. Installation shall be in accordance with the NEC, NFPA 72, local and state codes, as shown on the drawings, and as recommended by the major equipment manufacturer.

B. All conduit, junction boxes, conduit supports and hangers shall be concealed in finished areas and may be exposed in unfinished areas. Smoke detectors shall not be installed prior to the system programming and test period. If construction is ongoing during this period, measures shall be taken to protect smoke detectors from contamination and physical damage.

3.2 TEST:

A. Provide the service of a competent, factory-trained engineer or technician authorized by the manufacturer of the fire alarm equipment to technically supervise and participate during all of the adjustments and tests for the system.

B. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation.

C. Open initiating device circuits and verify that the trouble signal actuates.

D. Open signaling line circuits and verify that the trouble signal actuates.

E. Open and short notification appliance circuits and verify that trouble signal actuates.

F. Ground initiating device circuits and verify response of trouble signals.

G. Ground signaling line circuits and verify response of trouble signals.

H. Ground notification appliance circuits and verify response of trouble signals.

I. Check presence and audibility of tone at all alarm notification devices.

J. Check installation, supervision, and operation of all intelligent smoke detectors during a walk test.
K. Each of the alarm conditions that the system is required to detect should be introduced on the system. Verify the proper receipt and the proper processing of the signal at the FACP and the correct activation of the control points.

END OF SECTION 283100