PROJECT MANUAL

REBID

Replace Fire Alarm Panels - Multiple Assets

Western Reception and Diagnostic Correctional Center

St Joseph, Missouri

Designed By: FSC INC Engineers, Inc.
8675 West 96th Street
Overland Park, KS 66212

Date Issued: May 14, 2025

Project No.: C2325-01

STATE *of* MISSOURI

OFFICE *of* ADMINISTRATION

Facilities Management, Design and Construction

SECTION 000107 - PROFESSIONAL SEALS AND CERTIFICATIONS

PROJECT NUMBER: C2325-01

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:

Fire Protection Engineer

FSC Inc.

8675 W 96th St.

Overland Park, KS 66212

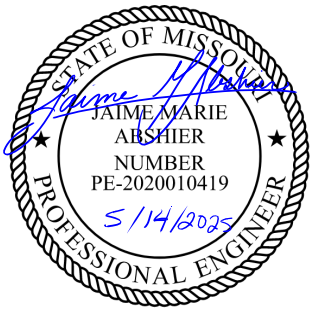

TABLE OF CONTENTS

TECHNICAL SPECIFICATIONS INDEX:

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: IN PROGRESS

1.

NO.	TITLE	SHEET #	DATE	CAD #
1	COVER SHEET	FA-000	05/14/25	FA-G-001
2	FIRE ALARM SITE PLAN	FA-001	05/14/25	FA-SIT-002
3	FIRE ALARM GENERAL NOTES	FA-002	05/14/25	FA-G-003
4	FIRE ALARM SCHEMATIC RISER DIAGRAM	FA-003	05/14/25	FA-FP-004
5	TYPICAL EQUIPMENT MOUNTING GUIDELINES	FA-004	05/14/25	FA-FP-105
6	ADMIN BUILDING - FIRST FLOOR FIRE ALARM PLAN	FA-100	05/14/25	FA-FP-106
7	ADMIN BUILDING - FIRST FLOOR FIRE ALARM PLAN PART-1	FA-100-1	05/14/25	FA-FP-107
8	ADMIN BUILDING - FIRST FLOOR FIRE ALARM PLAN PART-2	FA-100-2	05/14/25	FA-FP-108
9	ADMIN BUILDING - FIRST FLOOR FIRE ALARM PLAN PART-3	FA-100-3	05/14/25	FA-FP-109
10	ADMIN BUILDING - SECOND FLOOR FIRE ALARM PLAN	FA-101	05/14/25	FA-FP-110
11	ADMIN BUILDING - SECOND FLOOR FIRE ALARM PLAN PART-1	FA-101-1	05/14/25	FA-FP-111
12	ADMIN BUILDING - SECOND FLOOR FIRE ALARM PLAN PART-2	FA-101-2	05/14/25	FA-FP-112
13	ADMIN BUILDING - SECOND FLOOR FIRE ALARM PLAN PART-3	FA101-3	05/14/25	FA-FP-113

14	ADMIN BUILDING - SECOND FLOOR MEZZANINE FIRE ALARM PLAN	FA101-4	05/14/25	FA-FP-114
15	ADMIN BUILDING - THIRD FLOOR FIRE ALARM PLAN	FA-102	05/14/25	FA-FP-115
16	ADMIN BUILDING - THIRD FLOOR FIRE ALARM PLAN PART-1	FA-102-1	05/14/25	FA-FP-116
17	ADMIN BUILDING - THIRD FLOOR FIRE ALARM PLAN PART-2	FA-102-2	05/14/25	FA-FP-117
18	ADMIN BUILDING - THIRD FLOOR FIRE ALARM PLAN PART-3	FA-102-3	05/14/25	FA-FP-118
19	ADMIN BUILDING - FOURTH FLOOR & PENTHOUSE FIRE ALARM PLAN	FA-103-1	05/14/25	FA-FP-119
20	ADMIN BUILDING - FOURTH FLOOR MEZZANINE FIRE ALARM PLAN	FA-103-2	05/14/25	FA-FP-120
21	BUCHANAN BUILDING - FIRST FLOOR FIRE ALARM PLAN PART-1	FA-200-1	05/14/25	FA-FP-121
22	BUCHANAN BUILDING - FIRST FLOOR FIRE ALARM PLAN PART-2	FA-200-2	05/14/25	FA-FP-122
23	BUCHANAN BUILDING - SECOND FLOOR FIRE ALARM PLAN PART-1	FA-201-1	05/14/25	FA-FP-123
24	BUCHANAN BUILDING - SECOND FLOOR FIRE ALARM PLAN PART-2	FA201-2	05/14/25	FA-FP-124
25	BUCHANAN BUILDING - THIRD FLOOR FIRE ALARM PLAN PART-1	FA-202-1	05/14/25	FA-FP-125
26	BUCHANAN BUILDING - THIRD FLOOR FIRE ALARM PLAN PART-2	FA-202-2	05/14/25	FA-FP-126
27	CENTER BUILDING - BASEMENT FLOOR FIRE ALARM PLAN PART-1	FA-300-1	05/14/25	FA-FP-127
28	CENTER BUILDING - BASEMENT FLOOR FIRE ALARM PLAN PART-2	FA-300-2	05/14/25	FA-FP-128
29	CENTER BUILDING - FIRST FLOOR FIRE ALARM PLAN PART-1	FA-301-1	05/14/25	FA-FP-129
30	CENTER BUILDING - FIRST FLOOR FIRE ALARM PLAN PART-2	FA-301-2	05/14/25	FA-FP-130
31	CENTER BUILDING - SECOND FLOOR FIRE ALARM PLAN PART-1	FA-302-1	05/14/25	FA-FP-131
32	CENTER BUILDING - SECOND FLOOR FIRE ALARM PLAN PART-2	FA-302-2	05/14/25	FA-FP-132

33	CENTER BUILDING - THIRD FLOOR FIRE ALARM PLAN PART-1	FA-303-1	05/14/25	FA-FP-133
34	CENTER BUILDING - THIRD FLOOR FIRE ALARM PLAN PART-2	FA-303-2	05/14/25	FA-FP-134
35	CENTER BUILDING - FOURTH FLOOR FIRE ALARM PLAN PART-1	FA-304-1	05/14/25	FA-FP-135
36	CENTER BUILDING - FOURTH FLOOR FIRE ALARM PLAN PART-2	FA-304-2	05/14/25	FA-FP-136
37	POWER HOUSE - BASEMENT & FIRST FLOOR FIRE ALARM PLAN	FA-305-1	05/14/25	FA-FP-137
38	POWER HOUSE - SECOND FLOOR & CAT WALK FIRE ALARM PLAN	FA-305-2	05/14/25	FA-FP-138
39	ILS BUILDING - BASEMENT & FIRST FLOOR FIRE ALARM PLAN	FA-400	05/14/25	FA-FP-139
40	ILS BUILDING - SECOND FLOOR FIRE ALARM PLAN	FA-401	05/14/25	FA-FP-140
41	ILS BUILDING - THIRD FLOOR & ATTIC FIRE ALARM PLAN	FA-402	05/14/25	FA-FP-141
42	MAINTENANCE BUILDING - FIRE ALARM PLAN	FA-500	05/14/25	FA-FP-142
43	PARK BUILDING - BASEMENT & FIRST FLOOR FIRE ALARM PLAN	FA-600	05/14/25	FA-FP-143
44	PARK BUILDING - FIRST FLOOR FIRE ALARM PLAN PART-1	FA-600-1	05/14/25	FA-FP-144
45	PARK BUILDING - FIRST FLOOR FIRE ALARM PLAN PART-2	FA-600-2	05/14/25	FA-FP-145
46	PARK BUILDING - SECOND FLOOR FIRE ALARM PLAN	FA-601	05/14/25	FA-FP-146
47	PARK BUILDING - SECOND FLOOR FIRE ALARM PLAN PART-1	FA-601-1	05/14/25	FA-FP-147
48	PARK BUILDING - SECOND FLOOR FIRE ALARM PLAN PART-2	FA-601-2	05/14/25	FA-FP-148
49	PARK BUILDING - THIRD FLOOR FIRE ALARM PLAN	FA-602	05/14/25	FA-FP-149
50	PARK BUILDING - THIRD FLOOR FIRE ALARM PLAN PART-1	FA-602-1	05/14/25	FA-FP-150
51	PARK BUILDING - THIRD FLOOR FIRE ALARM PLAN PART-2	FA-602-2	05/14/25	FA-FP-151
52	PARK BUILDING - FOURTH FLOOR FIRE ALARM PLAN	FA-603	05/14/25	FA-FP-152
53	PARK BUILDING - FOURTH FLOOR FIRE ALARM PLAN PART-1	FA-603-1	05/14/25	FA-FP-153
54	PARK BUILDING - FOURTH FLOOR FIRE ALARM PLAN PART-2	FA-603-2	05/14/25	FA-FP-154
55	PARK BUILDING - FIFTH FLOOR FIRE ALARM PLAN	FA-604	05/14/25	FA-FP-155

56	PARK BUILDING - FIFTH FLOOR FIRE ALARM PLAN PART-1	FA-604-1	05/14/25	FA-FP-156
57	PARK BUILDING - FIFTH FLOOR FIRE ALARM PLAN PART-2	FA-604-2	05/14/25	FA-FP-157
58	LAUNDRY BUILDING - FIRE ALARM PLAN	FA-700	05/14/25	FA-FP-158
59	EDUCATION BUILDING - FIRST FLOOR FIRE ALARM PLAN	FA-800	05/14/25	FA-FP-159
60	EDUCATION BUILDING - SECOND FLOOR FIRE ALARM PLAN	FA-801	05/14/25	FA-FP-160
61	PROPERTY STORAGE BUILDING - FIRST FLOOR FIRE ALARM PLAN	FA-900	05/14/25	FA-FP-161

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. REBID
Replace Fire Alarm Panels - Multiple Assets
Western Reception and Diagnostic Correctional Center
St Joseph, Missouri
Project No.: C2325-01

3.0 BIDS WILL BE RECEIVED:

A. Until: 1:30 PM, July 31, 2025

B. **Only electronic bids sent to FMDCBids@oa.mo.gov shall be accepted: (See Instructions to Bidders for further detail)**

4.0 DESCRIPTION:

A. Scope: The project includes replacing the stand-alone fire alarm system throughout the buildings listed for Western Reception and Diagnostic Correctional Center, and providing new addressable fire alarm systems, which will be networked to allow for system monitoring of each facility at the main security center located in the Administration building. The buildings include the Administration Building, Education Building, Laundry Building, Park Building, Maintenance Building, Central Services Building, Buchanan Building, Property Building and ILS Building.

B. MBE/WBE/SDVE Goals: MBE 0%, WBE 0%, and SDVE 3%. **NOTE: Only MBE/WBE firms certified by the State of Missouri Office of Equal Opportunity 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**:** 9:00 AM, July, 16, 2025, at Western Reception and Diagnostic Correctional Center, 3401 Faraon, St. Joseph, MO 64506.

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

6.0 HOW TO GET PLANS & SPECIFICATIONS:

A. View Only Electronic bid sets are available at no cost or paper bid sets for a **deposit of $100.00** from American Document Solutions (ADS). MAKE CHECKS PAYABLE TO: American Document Solutions. Mail to: American Document Solutions, 1400 Forum Blvd., Suite 7A, Columbia, Missouri 65203. Phone 573-446-7768, Fax 573-355-5433, https://www.adsplanroom.net. 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. Bidder must secure at least one bid set to become a planholder.

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.**

C. Information for upcoming bids, including downloadable plans, specifications, Invitation for Bid, bid tabulation, award, addenda, and access to the ADS planholders list, is available on the Division of Facilities Management, Design and Construction's web site: https://oa.mo.gov/facilities/bid-opportunities/bid-listing-electronic-plans.

7.0 POINT OF CONTACT:

A. Designer: FSC INC Engineers, Inc., Jaime Abshier, 913-722-3473, email: jabshier@fsc-inc.com

B. Project Manager: Chris DeVore, 573-619-2042, email: chris.devore@oa.mo.gov

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.

B. Bid results will be available at https://oa.mo.gov/facilities/bid-opportunities/bid-listing-electronic-plans after it is verified that at least one bid is awardable and affordable.

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 must adhere to requirements in Section 013513 – Site Security and Health Requirements as applicable per Agency.

B. The Bidder's prices shall include all city, state, and federal sales, excise, and similar taxes that may lawfully be assessed in connection with the performance of work, and the purchased of materials to be incorporated in the work. **THIS PROJECT IS NOT TAX EXEMPT.**

2.0 - BID DOCUMENTS

A. The number of sets obtainable by one (1) party may be limited in accordance with available supply.

B. For the convenience of contractors, subcontractors and suppliers, bidding documents are available on the Owner's website at https://oa.mo.gov/facilities/bid-opportunities/bid-listing-electronic-plans.

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 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 successful Bidder (contractor) to fulfill every detail of the requirements of the contract, nor accepted as a basis for any claims for extra compensation or time extension.

B. Under no circumstances will Bidders give their plans and specifications to other Bidders. It is highly encouraged, but not required, that all Bidders be on the official planholders list to receive project updates including but not limited to any addenda that are issued during the bidding process.

4.0 - INTERPRETATIONS

A. No Bidder shall be entitled to rely on oral or written representations from any person as to the meaning of the plans and specifications or the acceptability of alternate products, materials, form or type of construction.

B. Bidders shall make all requests for interpretations in writing and submit all requests to the Project Designer and Project Manager identified in Section 007300 – Supplementary Conditions with all necessary supporting documentation no less than five (5) working days before opening of bids. Responses to requests for interpretation will be issued via a written addendum and will be sent as promptly as is practicable to all official planholders and posted on the Owner's website. All such addenda shall become part of the bid and contract documents.

C. Bidders shall make all requests for an "Acceptable Substitution" on the Section 006325 Substitution Request Form. The request shall be emailed to the Project Designer and Project Manager identified in Section 007300 – Supplementary Conditions no less than five (5) working days before opening of bids. Responses to requests for substitutions will be issued via a written addendum and will be sent as promptly as is practicable to all official planholders and posted on the Owner's website. All such addenda shall become part of the bid and contract documents.

D. An "Acceptable Substitution" requested after the award of bid will only be approved if proven to the satisfaction of the Owner and the Designer 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 and all requests of this nature must be submitted in accordance with Article 3.1 of the General Conditions.

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 on the bid documents or the bid will be rejected for being non-responsive.

B. Depending on the specific project requirements, **the following is a GENERIC list** of all possible bid forms that may be due with bid submittals. Bidders must verify each specific project's requirements in Section 004113 to ensure they have provided all the required documentation with their submission.

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
004545	Anti-Discrimination Against Israel Act Certification form

C. The Bidder shall submit its bid on the forms provided by the Owner in the same file format (PDF) with each space fully and properly completed, typewritten or legibly printed, including all amounts required for alternate bids, unit prices, cost accounting data, etc. The Owner will reject bids that are not on the Owner's forms or that do not contain all requested information. All forms can be found on the Owner's website at https://oa.mo.gov/facilities/bid-opportunities/bid-listing-electronic-plans and shall be submitted with your bid to FMDCBids@oa.mo.gov.

D. All bids shall be submitted without additional terms and conditions, modifications, or reservations. The completed forms should not include interlineations, alterations, or erasures. Bids not in compliance with the requirements of this paragraph will be rejected as non-responsive.

E. 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 in the bid documents in Section 004113. Failure of the Bidder to submit the duly authorized bid bond or 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 bid closing or if the Bidder, within ten (10) working days after notification of award, refuses or is unable to 1) execute the tendered contract, 2) provide an acceptable performance and payment bond, or 3) provide evidence of required insurance coverage.

F. The bid bond 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.

6.0 - SIGNING OF BIDS

A. A bid should contain the full and correct legal name of the Bidder. If the Bidder is an entity registered with the Missouri Secretary of State, the Bidder's name on the bid form should appear as shown in the Secretary of State's records. If the Bidder is an entity organized in a state other than Missouri, the Bidder must provide a Certificate of Authority to do business in the State of Missouri.

B. If the successful Bidder is doing business in the State of Missouri under a fictitious name, the Bidder 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.

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

D. A bid 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.

E. A bid from a limited liability company (LLC) shall be signed by a manager or a managing member of the LLC.

F. A bid from a corporation shall have the correct corporate name thereon and the signature of an authorized officer of the corporation. Title of office held by the person signing for the corporation shall appear, along with typed name of said individual and the corporate license number shall be provided. In addition, for corporate proposals, the President or Vice-President listed per the current filing with the Missouri Secretary of State should sign as the Bidder. If the signatory is other than the corporate president or vice president, the bidder must provide satisfactory evidence that the signatory has the legal authority to bind the corporation.

7.0 - RECEIVING BID SUBMITTALS

A. It is the Bidder's sole responsibility to ensure receipt of the bid submittals by Owner on or before the date and time specified in the Invitation for Bid or as modified via written addenda. Bids received after the date and time specified will not be considered by the Owner.

B. All bids shall be received via email at FMDCBids@oa.mo.gov and bids received by the Owner through any other means, including hard copies, will not be considered, and will be discarded by the Owner unopened.

8.0 - MODIFICATION AND WITHDRAWAL OF BIDS

A. Bidder may withdraw a bid at any time prior to the 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. Bidder may modify a bid until the scheduled closing time by sending a revised bid to FMDCBids@oa.mo.gov with a note in the subject line and body of the email that it is a revised bid. All revised bids must be submitted to FMDCBids@oa.mo.gov, revised bids sent any other way will not be considered.

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 limited to, contracts for the furnishing and installation of furniture, equipment, machinery, appliances and other apparatuses.

C. The Owner will award a contract to the lowest, responsive, and responsible Bidder in accordance with Section 8.250, RSMo. No contract will be awarded to any Bidder who has had a contract with the Owner terminated within the preceding twelve months for material breach of contract or who has been suspended or debarred by the Owner.

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 lowest, responsive, responsible bidder.

E. No award shall be considered binding upon the Owner until the written contract has been properly executed and the following documentation has been provided: 1) performance and payment bond consistent with Article 6.1 of the General Conditions; 2) proof of the required insurance coverage; 3) an executed Section 004541 - Affidavit of Work Authorization form; and 4) documentation evidence enrollment and participation in a federal work authorization program.

F. Failure to execute and return the contract and associated documents within the prescribed period 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.

G. 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.

H. 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. Bidders must also submit an E-Verify Memorandum before the Owner may award a contract to the Bidder. Information regarding a E-Verify is located at https://www.e-verify.gov/employers/enrolling-in-e-verify. The contractor shall be responsible for ensuring that all subcontractors and suppliers associated with this contract enroll in E-Verify.

I. The successful Bidder must be registered in MissouriBUYS powered by MOVERS at https://missouribuys.mo.gov/supplier-registration# as an approved vendor prior to being issued a contract.

10.0 - CONTRACT SECURITY

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

11.0 - 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, manufacturer, or suppliers 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. 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 or if more than one subcontractor is listed for any category without designating the portion of work to be performed by each, the bid shall be rejected.**

12.0 - 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:

1. Working days are defined as all calendar days except Saturdays, Sundays and the following State of Missouri observed holidays: New Year's Day, Martin Luther King, Jr. Day, Lincoln Day, Washington's Birthday, Truman Day, Memorial Day, Juneteenth, Independence Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day and Christmas Day.

13.0 - AMERICAN AND MISSOURI - MADE PRODUCTS AND FIRMS

A. By signing the bid form and submitting a bid on this project, the Bidder certifies that it will use American and Missouri products as set forth in Article 1.7 of the General Conditions. Bidders are advised to review those requirements carefully prior to bidding.

B. A preference shall be given to Missouri firms, corporations or individuals, or firms, corporations or individuals that 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.

C. Pursuant to Section 34.076, RSMo, a contractor or Bidder domiciled outside the boundaries of the State of Missouri shall be required, in order to be successful, to submit a bid the same percent less than the lowest bid submitted by a responsible contractor or Bidder domiciled in Missouri as would be required for such a Missouri domiciled contractor or Bidder to succeed over the bidding contractor or Bidder domiciled outside Missouri on a like contract or bid being let in the Bidder's domiciliary state and, further, the contractor or Bidder domiciled outside the boundaries of Missouri shall be required to submit an audited financial statement as would be required of a Missouri domiciled contractor or Bidder on a like contract or bid being let in the domiciliary state of that contractor or Bidder.

14.0 – ANTI-DISCRIMINATION AGAINST ISRAEL ACT CERTIFICATION:

A. If the Bidder meets the section 34.600, RSMo., definition of a "company" and the Bidder has ten or more employees, the Bidder must certify in writing that the Bidder is not currently engaged in a boycott of goods or services from the State of Israel and shall not engage in a boycott of goods or services from the State of Israel, if awarded a contract, for the duration of the contract. The Bidder is required to complete and submit the applicable portion of Section 004545 - Anti-Discrimination Against Israel Act Certification with its Bid Form. The applicable portion of the exhibit must be submitted prior to execution of a contract by the Owner and issuance of Notice to Proceed.

15.0 - MBE/WBE/SDVE INSTRUCTIONS

A. Definitions:

1. **"MBE"** means a Minority Business Enterprise.

2. **"MINORITY"** has the same meaning as set forth in 1 C.S.R. 10-17.010.

3. **"MINORITY BUSINESS ENTERPRISE"** has the same meaning as set forth in section 37.020, RSMo.

4. **"WBE"** means a Women's Business Enterprise.

5. **"WOMEN'S BUSINESS ENTERPRISE"** has the same meaning as set forth in section 37.020, RSMo.

6. **"SDVE"** means a Service-Disabled Veterans Enterprise.

7. **"SERVICE-DISABLED VETERAN"** has the same meaning as set forth in section 34.074, RSMo.

8. **"SERVICE-DISABLED VETERAN ENTERPRISE"** has the same meaning as "Service-Disabled Veteran Business" set forth in section 34.074, RSMo.

B. MBE/WBE/SDVE General Requirements:

1. For all bids greater than $100,000, the Bidder shall obtain MBE, WBE and SDVE participation in an amount equal to or greater than the percentage goals set forth in the Invitation for Bid and the Bid Form, unless the Bidder is granted a Good Faith Effort waiver by the Director of the Division, as set forth below. If the Bidder does not meet the MBE, WBE and SDVE goals, or make a good faith effort to do so, the Bidder shall be nonresponsive, and its bid shall be rejected.

2. The Bidder should submit with its bid all 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 for the contract work. The Bidder is required to submit all MBE/WBE/SDVE documentation before the stated time and date set forth in the Invitation for Bid. If the Bidder fails to provide such information by the specified date and time, the Owner shall reject the bid.

3. The Director reserves the right to request additional information from a Bidder to clarify the Bidder's proposed MBE, WBE, and/or SDVE participation. The Bidder shall submit the clarifying information requested by the Owner within two (2) working days of receiving the request for clarification.

4. Pursuant to section 34.074, RSMo, a Prime Bidder that qualifies as an SDVE shall receive a three-percentage point bonus preference in the contract award evaluation process. The bonus preference will be calculated and applied by reducing the bid amount of the eligible SDVE by three percent of the apparent low responsive Bidder's bid. Based on this calculation, if the eligible SDVE's evaluation is less than the apparent low responsive Bidder's bid, the eligible SDVE's bid will become the apparent low responsive bid. 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. In order to be eligible for the SDVE preference, the Bidder must complete and submit with its bid the Missouri Service-Disabled Veteran Business Form, and any information required by the form.

C. Computation of MBE/WBE/SDVE Goal Participation:

1. A Bidder who is a MBE, WBE, or SDVE may count 100% of the contract towards the MBE, WBE or SDVE goal, less any amounts awarded to another MBE, WBE or SDVE. (NOTE: a MBE firm that bids as general contractor must obtain WBE and SDVE participation; a WBE firm that bids as

a general contractor must obtain MBE and SDVE participation; and a SDVE firm that bids as general contractor must obtain MBE and WBE participation.) For the remaining contract amount to be counted towards the MBE, WBE or SDVE goal, the Bidder must complete the MBE/WBE/SDVE Compliance Evaluation Form (Section 004337) identifying itself as an MBE, WBE or SDVE.

2. The total dollar value of the work granted to a certified MBE, WBE or SDVE by the Bidder shall be counted towards the applicable goal.

3. Expenditures for materials and supplies obtained from a certified MBE, WBE, or SDVE supplier or manufacturer may be counted towards the MBE, WBE and SDVE goals, if the MBE, WBE, or SDVE assumes the actual and contractual responsibility for the provision of the materials and supplies.

4. The total dollar value of the work granted to a second or subsequent tier subcontractor or a supplier may be counted towards a Bidder's MBE, WBE and SDVE goals, if the MBE, WBE, or SDVE properly assumes the actual and contractual responsibility for the work.

5. The total dollar value of work 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 may be counted towards the MBE/WBE/SDVE goals.

6. Only expenditures to a MBE, WBE, or SDVE that performs a commercially useful function in the work may be counted towards the MBE, WBE and SDVE goals. A MBE, WBE, or SDVE performs a commercially useful function when it is responsible for executing a distinct element of the work and carrying out its responsibilities by performing, managing and supervising the work or providing supplies or manufactured materials.

D. Certification of MBE/WBE/SDVE Subcontractors:

1. In order to be counted towards the goals, an MBE or WBE must be certified by the State of Missouri Office of Equal Opportunity and an SDVE must be certified by the State of Missouri, Office of Equal Opportunity or by the Federal U.S. Small Business Administration directory.

2. The Bidder may determine the certification status of a proposed MBE or WBE subcontractor or supplier by referring to the Office of Equal Opportunity (OEO)'s online MBE/WBE directory https://apps1.mo.gov/MWBCertifiedFirms/. The Bidder may determine the eligibility of a SDVE subcontractor or supplier by referring to the Office of Equal Opportunity online SDVE directory at https://oeo.mo.gov/sdve-certification-program/ or the Federal U.S. Small Business Administration directory https://veterans.certify.sba.gov/#search.

3. Additional information, clarifications, or other information regarding the MBE/WBE/SDVE listings in the directories may be obtained by contacting the Contract Specialist of record as shown in the Supplementary Conditions (Section 007300).

E. Waiver of MBE/WBE/SDVE Participation:

1. If a Bidder has made a good faith effort to secure the required MBE, WBE and/or SDVE participation and has failed, the Bidder shall submit with its bid the information requested in MBE/WBE/SDVE Good Faith Effort (GFE) Determination form. The Director will determine if the Bidder made a good faith effort to meet the applicable goals. If the Director determines that the Bidder did not make 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/or SDVE participation will be granted a waiver and will be considered to be responsive to the applicable participation goals, regardless of the percent of actual participation obtained, if the bid is otherwise acceptable.

2. In determining whether a Bidder has made a good faith effort to obtain MBE, WBE and/or SDVE participation, the Director may evaluate the factors set forth in 1 CSR 30-5.010(6)(C) and the following:

   a. The amount of actual participation obtained;

b. How and when the Bidder contacted potential MBE, WBE, and SDVE subcontractors and suppliers;

c. The documentation provided by the Bidder to support its contacts, including whether the Bidder provided the names, addresses, phone numbers, and dates of contact for MBE/WBE/SDVE firms contacted for specific categories of work;

d. If project information, including plans and specifications, were provided to MBE/WBE/SDVE subcontractors;

e. Whether the Bidder made any attempts to follow-up with MBE, WBE or SDVE firms prior to bid;

f. Amount of bids received from any of the subcontractors and/or suppliers that the Bidder contacted;

g. The Bidder's stated reasons for rejecting any bids;

F. Contractor MBE/WBE/SDVE Obligations

1. If awarded a contract, the Bidder will be contractually required to subcontract with or obtain materials from the MBE, WBE, and SDVE firms listed in its bid, in amounts equal to or greater than the dollar amount in the bid, unless the amount is modified in writing by the Owner.

2. If the Contractor fails to meet or maintain the participation requirements contained in the Contractor's bid, the Contractor must satisfactorily explain to the Director why it cannot comply with the requirement and why failing meeting the requirement was beyond the Contractor's control. If the Director finds the Contractor's explanation unsatisfactory, the Director may take any appropriate action including, but not limited to:

   a. Declaring the Contractor ineligible to participate in any contracts with the Division for up to twelve (12) months (suspension); and/or

   b. Declaring the Contractor be nonresponsive to the Invitation for Bid, or in breach of contract and rejecting the bid or terminating the contract.

3. If the Contractor replaces an MBE, WBE, or SDVE during the course of the contract, the Contractor shall replace it with another MBE, WBE, or SDVE or make a good faith effort to do so. All MBE, WBE and SDVE substitutions must be approved by the Director in writing.

4. The Contractor shall provide the Owner with regular reports on its progress in meeting its MBE/WBE/SDVE obligations. At a minimum, the Contractor shall report the dollar-value of work completed by each MBE, WBE, or SDVE during the preceding month and the cumulative total of work completed by each MBE, WBE or SDVE to date with each monthly application for payment. The Contractor shall also make a final report, which shall include the total dollar-value of work completed by each MBE, WBE, and SDVE during the entire contract.

State of Missouri
Construction Contract

THIS AGREEMENT is 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.

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:

Project Name: **REBID Replace Fire Alarm Panels - Multiple Assets**
Western Reception and Diagnostic Correctional Center
St Joseph, Missouri

Project Number: **C2325-01**

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 **350 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 $1,000** 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: $

Accepted Alternates, if applicable to the Project and accepted by the Owner.

TOTAL CONTRACT AMOUNT: ($CONTRACT 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.

ARTICLE 5. PREVAILING WAGE RATE

MISSOURI PREVAILING WAGE LAW (Sections 290.210 to 290.340, RSMo): The Contractor shall pay not less than the specified hourly rate of wages, as set out in the wage order attached to and made part of the specifications for work under this contract, to all workers performing work under the contract, in accordance with sections 290.210 to 290.340, RSMo. The Contractor shall forfeit a penalty to the Owner of one hundred dollars per day (or portion of a day) for each worker that is paid less than the specified rates for any work done under the contract by the Contractor or by any subcontractor, in accordance with section 290.250, RSMo.

DAVIS-BACON ACT: If this Project is financed in whole or in part from Federal funds (as indicated in the Instructions to Bidders or other bid or contract documents for this Project), then this contract shall be subject to all applicable federal labor statutes, rules and regulations, including provisions of the Davis-Bacon Act, 40 U.S.C. §3141 et seq., and the "Federal Labor Standards Provisions," as further set forth in Section 007333 – Supplementary General Conditions for Federally Funded/Assisted Construction Projects, which is incorporated into the contract by reference. Where the Missouri Prevailing Wage Law and the Davis-Bacon Act require payment of different wages for work performed under this contract, the Contractor and all Subcontractors shall pay the greater of the wages required under either law, on a classification-by-classification basis.

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

The Contractor has been granted a waiver of the 10% MBE and 10% 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

The following documents are hereby incorporated into this contract by reference (all division/section numbers and titles are as utilized in the Project Manual published by the Owner for this Project):

1. Division 0 – Procurement and Contracting Information, including, but not limited to:
    a. Invitation for Bid (Section 001116)
    b. Instructions to Bidders (Section 002113)
    c. Supplementary Instructions to Bidders (if applicable) (Section 002213)
    d. The following documents as completed and executed by the Contractor and accepted by the Owner, if applicable:
        i. Bid Form (Section 004113)
        ii. Unit Prices (Section 004322)
        iii. Proposed Contractors Form (Section 004336)
        iv. MBE, WBE, SDVE Compliance Evaluation Form(s) (Section 004337)
        v. MBE, WBE, SDVE Eligibility Determination Form for Joint Ventures (Section 004338)
        vi. MBE, WBE, SDVE Good Faith Effort (GFE) Determination Form (Section 004339)
        vii. Missouri Service Disabled Veteran Business Form (Section 004340)
        viii. Affidavit of Work Authorization (Section 004541)
        ix. Affidavit for Affirmative Action (Section 005414), if applicable
    e. Performance and Payment Bond, completed and executed by the Contractor and surety (Section 006113)
    f. General Conditions (Section 007213)
    g. Supplementary Conditions (Section 007300)
    h. Supplementary General Conditions for Federally Funded/Assisted Construction Projects (Section 007333), if applicable
    i. Wage Rate(s) (Section 007346)
2. Division 1 – General Requirements
3. All Drawings identified in the Project Manual
4. All Technical Specifications included in the Project Manual
5. Addenda, if applicable

ARTICLE 8 – CERTIFICATION

By signing this contract, the Contractor hereby re-certifies compliance with all legal requirements set forth in Section 6.0, Bidder's Certifications of the Bid Form.

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

APPROVED:

_____
Brian Yansen, Director
Division of Facilities Management,
Design and Construction

_____
Contractor's Authorized Signature

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

Bond No._____

SECTION 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

STATE OF MISSOURI
OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

PRODUCT SUBSTITUTION REQUEST

PROJECT NUMBER

PROJECT TITLE AND LOCATION

CHECK APPROPRIATE BOX

☐ SUBSTITUTION PRIOR TO BID OPENING
(Minimum of (5) working days prior to receipt of Bids as per Article 4 – Instructions to Bidders)

☐ SUBSTITUTION FOLLOWING AWARD
(Maximum of (20) working days from Notice to Proceed as per Article 3 – General Conditions)

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:

SPECIFIED PRODUCT OR SYSTEM

SPECIFICATION SECTION NO.

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

QUALITY COMPARISON

	SPECIFIED PRODUCT	SUBSTITUTION REQUEST
NAME, BRAND		
CATALOG NO.		
MANUFACTURER		
VENDOR		

PREVIOUS INSTALLATIONS

PROJECT	ARCHITECT/ENGINEER	
LOCATION		DATE INSTALLED

SIGNIFICANT VARIATIONS FROM SPECIFIED PRODUCT

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

PROJECT NUMBER

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.
1. 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

STATE OF MISSOURI
OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

PAY APP NO.	PROJECT NUMBER
CHECK IF FINAL ☐**FINAL**	DATE

MBE/WBE/SDVE PROGRESS REPORT

Remit with **ALL** Progress and Final Payments

(Please check appropriate box) ☐CONSULTANT ☐CONSTRUCTION

PROJECT TITLE	
PROJECT LOCATION	
FIRM	
ORIGINAL CONTRACT SUM (Same as Line Item 1. on Form A of Application for Payment) **$**	TOTAL CONTRACT SUM TO DATE (Same as Line Item 3. on Form A of Application for Payment) **$**

THE TOTAL MBE/WBE/SDVE PARTICIPATION DOLLAR AMOUNT OF THIS PROJECT AS INDICATED IN THE ORIGINAL CONTRACT: **$**

SELECT MBE, WBE, SDVE	ORIGINAL CONTRACT PARTICIPATION AMOUNT	PARTICIPATION AMOUNT PAID-TO-DATE (includes approved contract changes)	CONSULTANT/SUBCONSULTANT OR CONTRACTOR/SUBCONTRACTOR/SUPPLIER COMPANY NAME
☐ MBE ☐ WBE ☐ SDVE	$	$	
☐ MBE ☐ WBE ☐ SDVE	$	$	
☐ MBE ☐ WBE ☐ SDVE	$	$	
☐ MBE ☐ WBE ☐ SDVE	$	$	
☐ MBE ☐ WBE ☐ SDVE	$	$	
☐ MBE ☐ WBE ☐ SDVE	$	$	

Revised 06/2023

INSTRUCTIONS FOR MBE/WBE/SDVE PROGRESS REPORT

CONTRACTOR OR CONSULTANT TO FILL OUT AND REMIT WITH EACH PAY APPLICATION:

The MBE/WBE/SDVE Progress Report for the project is issued with the contract comprising values reported in the consultant's Proposal or on the successful contractor's Section 004337 Compliance Evaluation Forms.

At Initial Pay Application fill in the following:

1. Pay App No. Start with 1.
2. Fill in the Project Number and Date.
3. Enter Project Title, Project Location, and Firm.
4. Fill in the "Original Contract Sum" and "Total Contract Sum To Date" (Reference applicable Line Items on Form A of Application for Payment).
5. Indicate the Total Participation Dollar Amount from the Original Contract.
6. Select MBE, WBE, or SDVE for each Consultant/Subconsultant or Contractor/Subcontractor/Supplier.
7. Enter the "Total Amount of Subcontract", "$ Amount (Paid-To-Date)", and Company Name.

For all subsequent Pay Applications fill in the following:

1. Pay App No.
2. If Final Pay App, check box.
3. Fill in the Project Number and Date.
4. Enter Project Title, Project Location, and Firm
5. At each Pay App fill in the "Original Contract Sum" and "Total Contract Sum To Date" (reference applicable Line Items on Form A of Application for Payment).
6. Indicate the Total Participation Dollar Amount from the Original Contract.
7. Select MBE, WBE, or SDVE for each Consultant/Subconsultant or Contractor/Subcontractor/Supplier
8. Enter the "Total Amount of Subcontract", "$ Amount (Paid-To-Date)", and Company Name.

STATE OF MISSOURI
OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
AFFIDAVIT – COMPLIANCE WITH PREVAILING WAGE LAW

PROJECT NUMBER

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		COUNTY (OR CITY OF ST. LOUIS)
	SUBSCRIBED AND SWORN BEFORE ME, THIS DAY OF YEAR		**USE RUBBER STAMP IN CLEAR AREA BELOW**
	NOTARY PUBLIC SIGNATURE	MY COMMISSION EXPIRES	
	NOTARY PUBLIC NAME (TYPED OR PRINTED)		

FILE: Closeout Documents

GENERAL CONDITIONS

INDEX

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

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.
7. **"DIVISION":** Shall mean the Division of Facilities Management, Design and Construction, State of Missouri.
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. Acting by and through the Office of Administration, Division of Facilities Management, Design and Construction.
11. **"PROJECT"**: Wherever the term "Project" is used, it shall mean the work required to be completed by the construction contract.
12. **"PROJECT MANUAL"**: The "Project Manual" shall consist of Introductory Information, Invitation for Bid, Instructions to Bidders, Bid Documents, Additional Information, Standard Forms, General Conditions, Supplemental General Conditions, General Requirements and Technical Specifications.
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"**: All supervision, labor, materials, tools, supplies, equipment, and any incidental operations and/or activities required by or reasonably inferable from the Contract Documents necessary to construct the Project and to produce the results intended by the Contract Documents 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.
15. "**WORKING DAYS**": are all calendar days except Saturdays, Sundays and the following holidays: New Year's Day, Martin Luther King, Jr. Day, Lincoln Day, Washington's Birthday (observed), Truman Day, Memorial Day, Juneteenth, Independence Day, Labor Day, Columbus Day, Veterans Day (observed), Thanksgiving Day, Christmas Day.

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 ensure 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 under this clause to any labor union with which they have bargaining or other agreements.

B. 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

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

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

The Contractor shall register and utilize the Owner's eBuilder digital project management system for submission of documents described in the following sections. This includes but is not limited to submittals as required by designer, payment applications, Request for Information (RFI), construction change orders, Request for Proposals (RFP), Designer Supplemental Instructions (DSI), etc.

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 ensure 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 or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 4.

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. Breakdowns 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 subject to the following limits: (a) the percentage mark-up for the Contractor shall be limited to the Contractor’s fee: (b) fifteen percent (15%) maximum for Work directly performed by employees of a subcontractor, or sub-subcontractor; (c) five percent (5%) maximum for the Work performed or passed through to the Owner by the Contractor; (d) five percent (5%) maximum subcontractor’s mark-up for

Work performed by a sub-subcontractor and passed through to the Owner by the subcontractor and Contractor; and (e) in no case shall the total overhead and profit paid by the Owner on any Contract Changes exceed twenty-five percent (25%) 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 Contractor's payment and performance bonding, builder's risk insurance, and general liability insurance to their cost of work. The above listed bonding and insurance cost shall not exceed two percent (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(s) 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 the same as those for additive Contract Changes provided above.

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 <u>without</u> 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 performed by the Contractor. All such work items shall be complete within 30 working days of the date of the Certificate, unless the Certificate specifies a different time. If the Contractor shall be required to perform tests that must be delayed due to climatic conditions, it is understood that such tests and affected equipment will be identified on the Certificate and shall be accomplished by the Contractor at the earliest possible date. Performance of the tests may not be required before Substantial Completion can be issued. The date of the issuance of the Certificate of

Substantial Completion shall determine whether or not the work was completed within the contract time and whether or not Liquidated Damages are due.

3. If the work is not acceptable, and the Owner does not issue a Certificate of Substantial Completion, the Owner shall be entitled to charge the Contractor with the Designer's and Owner's costs of re-inspection, including time and travel.

B. Partial Occupancy. Contractor agrees that the Owner shall be permitted to occupy and use any completed or partially completed portions of the Project, when such occupancy and use is in the Owner's best interest. Owner shall notify Contractor of its desire and intention to take Partial Occupancy as soon as possible but at least ten (10) working days before the Owner intends to occupy. If the Contractor believes that the portion of the work the Owner intends to occupy is not ready for occupancy, the Contractor shall notify the Owner immediately. The Designer shall inspect the work in accordance with the procedures above. If the Contractor claims increased cost of the project or delay in completion as a result of the occupancy, he shall notify the Owner immediately but in all cases before occupancy occurs.

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 Day 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 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 contact 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 their officers, officials, agents, consultants or employees.

2. Automobile Insurance

The Owner, and their respective 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 or self-insurance programs maintained by the designated additional insured's shall be in excess of the Contractor's insurance and shall not contribute with it.

Additionally, the Contractor and Contractor's automobile 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

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:
Jaime Abshier
FSC INC Engineers, Inc.
8675 West 96th Street
Overland Park, KS 66212
Telephone: 913-722-3473
Email: jabshier@fsc-inc.com

Construction Representative:
Tina Brown
Division of Facilities Management, Design and Construction
301 West High Street, Room 730
Jefferson City, Missouri 65101
Telephone: 573-751-6738
Email: Tina.Brown@oa.mo.gov

Project Manager:
Chris DeVore
Division of Facilities Management, Design and Construction
301 West High Street, Room 730
Jefferson City, Missouri 65101
Telephone: 573-619-2042
Email: chris.devore@oa.mo.gov

Contract Specialist:
Mandy Roberson
Division of Facilities Management, Design and Construction
301 West High Street, Room 730
Jefferson City, Missouri 65101
Telephone: 573-522-0074
Email: mandy.roberson@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 3 complete sets of drawings and specifications at no charge.

B. The Owner will furnish the Contractor with approximately 3 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 SAFETY REQUIREMENTS

Contractor and subcontractors at any tier shall comply with RSMo 292.675 and Article 1.3, E, of Section 007213, General Conditions.

Missouri
Division of Labor Standards
WAGE AND HOUR SECTION

MICHAEL L. PARSON, Governor

Annual Wage Order No. 31

Section 011
BUCHANAN 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
Todd Smith, Director
Division of Labor Standards

Filed With Secretary of State: **March 8, 2024**

Last Date Objections May Be Filed: **April 8, 2024**

Prepared by Missouri Department of Labor and Industrial Relations

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Asbestos Worker	$70.64
Boilermaker	$33.11*
Bricklayer-Stone Mason	$60.88
Carpenter	$59.12
Lather	
Linoleum Layer	
Millwright	
Pile Driver	
Cement Mason	$33.11*
Plasterer	
Communication Technician	$33.11*
Electrician (Inside Wireman)	$56.53
Electrician Outside Lineman	$33.11*
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Elevator Constructor	$33.11*
Glazier	$51.93
Ironworker	$69.83
Laborer	$46.76
General Laborer	
First Semi-Skilled	
Second Semi-Skilled	
Mason	$33.11*
Marble Mason	
Marble Finisher	
Terrazzo Worker	
Terrazzo Finisher	
Tile Setter	
Tile Finisher	
Operating Engineer	$63.79
Group I	
Group II	
Group III	
Group III-A	
Group IV	
Group V	
Painter	$42.17
Plumber	$68.97
Pipe Fitter	
Roofer	$54.26
Sheet Metal Worker	$72.50
Sprinkler Fitter	$33.11*
Truck Driver	$45.73
Truck Control Service Driver	
Group I	
Group II	
Group III	
Group IV	

*The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. The public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.
**The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title as defined in RSMo Section 290.210.

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Carpenter	$61.69
Millwright	
Pile Driver	
Electrician (Outside Lineman)	$33.11*
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Laborer	$46.68
General Laborer	
Skilled Laborer	
Operating Engineer	$57.49
Group I	
Group II	
Group III	
Group IV	
Truck Driver	$49.85
Truck Control Service Driver	
Group I	
Group II	
Group III	
Group IV	

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 fewer than 1,000 reportable hours for this occupational title. Public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.

**The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title.

OVERTIME
and
HOLIDAYS

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 replacing the stand-alone fire alarm system throughout the - buildings listed for Western Correctional Center, and providing new addressable fire alarm systems, which will be networked to allow for system monitoring of each facility at the main security center located in the administration building. The buildings include: Administration Building, Education Building, Lundry Building, Park Building, Maintinance Building, Central Services Building, Buchanan Building, Property Building, and ILS Building.

B. The proposed fire alarm systems will be addressable and non-proprietary. A new FACU will be provided and installed in each building. The number of zones and addressable points will vary based upon the building's size and usage. Each fire alarm control unit will include a back-up battery plant to maintain functional operation during interruptions to utility power. The battery strings will be sized as required to operate the system for the duration required by the NFPA. The existing FACU will be removed and the new FACU will be installed in the same location.

C. As required by the State of Missouri, the project documents will allow for multiple equipment manufacturers, provided that they meet the specification requirements. Potter Signal will be used as the basis of design. Potter Signal manufacturers non-proprietary, addressable systems. Their corporate headquarters and manufacturing facilities is located in St. Louis, MO. It is preferred but not required that the fire alarm manufacturer be located in the State of MO.

D. All existing initiation appliances including smoke detectors, duct detectors, heat detectors and pull stations will be replaced with new devices in the same location. Additional devices will be installed where additional coverage is required by the current codes. The new system will be fully addressable, and each notification device will have a discreet address.

E. All notification appliances will also be replaced. This will include horns, strobes, and combination devices. Additional devices will be installed where additional coverage is required by the current codes. All strobes will be synchronized at required locations.

F. Tamper and flow switches that monitor the sprinkler system will be replaced with similar devices.

G. All existing raceways, boxes and gutters will be retained. Damaged components will be identified for replacement. Based upon documentation provided from the existing systems, the cabling is suitable for use for the new system. The specifications will require the installing contractor to test each conductor segment for continuity. Any conductor segment that fails the test will be replaced.

H. The FACU in each facility will be connected to the administration building via campus fiber network cabling. The existing connection from the FACU to the existing fiber network will be demolished. The conduit will be reconfigured as necessary to connect to the new network, and new cabling will be installed. The contractor shall provide connections to the network from each FACU and connections from the network to the monitoring station in the administration building. The contractor shall provide a detailed network connectivity diagram showing all network details/device requirements after coordinating with the facility and conducting due diligence on inspecting existing conditions.

1. Project Location: Western Reception and Diagnostic Correctional Center, Department od Corrections, St. Joseph, MO.

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.

I. Contract Documents, dated January 8, 2024 were prepared for the Project by FSC, Inc. 8675 W. 96th St., Overland Park, KS 66212.

J. The work will be constructed under a single prime contract.

1.3 WORK SEQUENCE

A. The Work will be phased per building, starting with the administration building. The contractor shall coordinate the best building sequence with the facility to suit the facility's operations. If more than one building is included in a phase obtain approval with the owner to accommodate required fire watch.

B. 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.

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

1.4 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. Partial Owner Occupancy: The Owner reserves the right to occupy and to place and install equipment in completed areas of the building prior to Substantial Completion,

provided such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. The Designer will prepare a Certificate of Partial Occupancy for each specific portion of the Work to be occupied prior to substantial completion.
2. Prior to partial Owner occupancy, mechanical and electrical systems shall be fully operational. Required inspections and tests shall have been successfully completed. Upon occupancy, the Owner will operate and maintain mechanical and electrical systems serving occupied portions for the building.
3. Upon occupancy, the Owner will assume responsibility for maintenance and custodial service for occupied portions for the building.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 SCHEDULE OF PRODUCTS ORDERED IN ADVANCE

END OF SECTION 011000

SECTION 012100 – ALLOWANCES

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.

1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.

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 Change Orders 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 Change Order time extension will be executed for “bad weather” days, as defined above, encountered during the remainder of the Project.

1.4 **SELECTION AND PURCHASE**

A. At the earliest practical date after award of the Contract, Designer of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

B. At Designer's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Designer from the designated supplier.

1.5 **SUBMITTALS**

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.6 **COORDINATION**

A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

PART 2 - **PRODUCTS (Not Used)**

PART 3 - **EXECUTION**

3.1 **EXAMINATION**

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 **PREPARATION**

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 **SCHEDULE OF ALLOWANCES**

A. Weather Allowance: Included within the completion period for this Project 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.

1.3 DEFINITIONS

A. Unit Price is an amount proposed by bidders, 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 – Low voltage fire alarm wiring in conduit:

1. Description: Low voltage fire alarm (NAC/SLC) wiring in ¾” conduit, including hangers, according to Division 28 Section "Addressable Fire Alarm Systems."

2. Unit of Measurement: Linear foot

3. Base Bid Quantity: 5,000 Linear feet

B. Unit Price No. 2 – Low voltage concealed fire alarm plenum rated wiring:

1. Description: Plenum-rated fire alarm (NAC/SLC) wiring routed in concealed space, including hangers, according to Division 28 Section "Addressable Fire Alarm Systems."

2. Unit of Measurement: Linear foot

3. Base Bid Quantity: 500 Linear feet

C. Unit Price No. 3 – Remove and replace low voltage fire alarm wiring in existing conduit:

1. Description: Remove and replace low voltage fire alarm (NAC/SLC) wiring in existing conduit, according to Division 28 Section "Addressable Fire Alarm Systems."

2. Unit of Measurement: Linear foot

3. Base Bid Quantity: 5,000 Linear 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 013115 “Project Management Communications” for administrative requirements for communications.
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 Change Order 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 Contactor 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 Change Order 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 Change Order Detailed Breakdown form. Subcontractors may use the appropriate Change Order 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 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Proposal Request, the Designer or Owner Representative will issue a Change Order for signatures of Owner and Contractor on the "Change Order" form.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

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. Related Sections include the following:

1. Division 1, Section 013200 "Schedules" for preparing and submitting Contractor's Construction Schedule.
2. Articles 1.8.B and 1.8.C of Section 007213 "General Conditions" for coordinating meetings onsite.
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 Change Orders

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.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REPORTS:

A. Provide weekly report to the Owner’s representative of work completed and work to be performed for the upcoming week.

END OF SECTION 013100

SECTION 013115 - PROJECT MANAGEMENT COMMUNICATIONS

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.

B. Division 1, Section 013300 - Submittals

C. Division 1, Section 012600 – Contract Modification Procedures

1.2 SUMMARY

A. Project Management Communications: The Contractor shall use the Internet web based project management communications tool, E-Builder® ASP software, and protocols included in that software during this project. The use of project management communications as herein described does not replace or change any contractual responsibilities of the participants.
   1. Project management communications is available through E-Builder® as provided by "e-Builder®" in the form and manner required by the Owner.
   2. The project communications database is on-line and fully functional. User registration, electronic and computer equipment, and Internet connections are the responsibility of each project participant. The sharing of user accounts is prohibited

B. Support: E-Builder® will provide on-going support through on-line help files.

C. Copyrights and Ownership: Nothing in this specification or the subsequent communications supersedes the parties' obligations and rights for copyright or document ownership as established by the Contract Documents. The use of CAD files, processes or design information distributed in this system is intended only for the project specified herein.

D. Purpose: The intent of using E-Builder® is to improve project work efforts by promoting timely initial communications and responses. Secondly, to reduce the number of paper documents while providing improved record keeping by creation of electronic document files

E. Authorized Users: Access to the web site will be by individuals who are authorized users.
   1. Individuals shall complete the E-Builder New Company/User Request Form located at the following web site: https://oa.mo.gov/facilities/vendor-links/contractor-forms. Completed forms shall be emailed to the following email address: OA.FMDCE-BuilderSupport@oa.mo.gov.
   2. Authorized users will be contacted directly and assigned a temporary user password.
   3. Individuals shall be responsible for the proper use of their passwords and access to data as agents of the company in which they are employed.

F. Administrative Users: Administrative users have access and control of user licenses and all posted items. DO NOT POST PRIVATE OR YOUR COMPANY CONFIDENTIAL ITEMS IN THE DATABASE! Improper or abusive language toward any party or repeated posting of items

intended to deceive or disrupt the work of the project will not be tolerated and will result in deletion of the offensive items and revocation of user license at the sole discretion of the Administrative User(s).

G. Communications: The use of fax, email and courier communication for this project is discouraged in favor of using E-Builder® to send messages. Communication functions are as follows:
   1. Document Integrity and Revisions:
      a. Documents, comments, drawings and other records posted to the system shall remain for the project record. The authorship time and date shall be recorded for each document submitted to the system. Submitting a new document or record with a unique ID, authorship, and time stamp shall be the method used to make modifications or corrections.
      b. The system shall make it easy to identify revised or superseded documents and their predecessors.
      c. Server or Client side software enhancements during the life of the project shall not alter or restrict the content of data published by the system. System upgrades shall not affect access to older documents or software.
   2. Document Security:
      a. The system shall provide a method for communication of documents. Documents shall allow security group assignment to respect the contractual parties communication except for Administrative Users. DO NOT POST PRIVATE OR YOUR COMPANY CONFIDENTIAL ITEMS IN THE DATABASE!
   3. Document Integration:
      a. Documents of various types shall be logically related to one another and discoverable. For example, requests for information, daily field reports, supplemental sketches and photographs shall be capable of reference as related records.
   4. Reporting:
      a. The system shall be capable of generating reports for work in progress, and logs for each document type. Summary reports generated by the system shall be available for team members.
   5. Notifications and Distribution:
      a. Document distribution to project members shall be accomplished both within the extranet system and via email as appropriate. Project document distribution to parties outside of the project communication system shall be accomplished by secure email of outgoing documents and attachments, readable by a standard email client.
   6. Required Document Types:
      a. RFI, Request for Information.
      b. Submittals, including record numbering by drawing and specification section.
      c. Transmittals, including record of documents and materials delivered in hard copy.
      d. Meeting Minutes.
      e. Application for Payments (Draft or Pencil).
      f. Review Comments.
      g. Field Reports.
      h. Construction Photographs.
      i. Drawings.
      j. Supplemental Sketches.
      k. Schedules.
      l. Specifications.

m. Request for Proposals
n. Designer's Supplemental Instructions
o. Punch Lists

H. Record Keeping: Except for paper documents, which require original signatures and large format documents (greater than 8½ x 11 inches), all other 8½ x 11 inches documents shall be submitted by transmission in electronic form to the E-Builder® web site by licensed users.
   a. The Owner and his representatives, the Designer and his consultants, and the Contractor and his Sub Contractors and suppliers at every tier shall respond to documents received in electronic form on the web site, and consider them as if received in paper document form.
   b. The Owner and his representatives, the Designer and his consultants, and the Contractor and his Sub Contractors and suppliers at every tier reserves the right to and shall reply or respond by transmissions in electronic form on the web site to documents actually received in paper document form.
   c. The Owner and his representatives, the Designer and his consultants, and the Contractor and his Sub Contractors and suppliers at every tier reserves the right to and shall copy any paper document into electronic form and make same available on the web site.

I. Minimum Equipment and Internet Connection: In addition to other requirements specified in this Section, the Owner and his representatives, the Construction Manager and his representatives, the Architect and his consultants, and the Contractor and his sub-contractors and suppliers at every tier required to have a user license(s) shall be responsible for the following:
   1. Providing suitable computer systems for each licensed user at the users normal work location[1] with high-speed Internet access, i.e. DSL, local cable company's Internet connection, or T1 connection.
   2. Each of the above referenced computer systems shall have the following minimum system[2] and software requirements:
      a. Desktop configuration (Laptop configurations are similar and should be equal to or exceed desktop system.)
         1) Operating System: Windows XP or newer
         2) Internet Browser: Internet Explorer 6.01SP2+ (Recommend IE7.0+)
         3) Minimum Recommend Connection Speed: 256K or above
         4) Processor Speed: 1 Gigahertz and above
         5) RAM: 512 mb
         6) Operating system and software shall be properly licensed.
         7) Internet Explorer version 7 (current version is a free distribution for download). This specification is not intended to restrict the host server or client computers provided that industry standard HTTP clients may access the published content.
         8) Adobe Acrobat Reader (current version is a free distribution for download).
         9) Users should have the standard Microsoft Office Suite (current version must be purchased) or the equivalent.

[1] The normal work location is the place where the user is assigned for more than one-half of his time working on this project.
[2] The minimum system herein will not be sufficient for many tasks and may not be able to process all documents and files stored in the E-Builder® Documents area.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable.)

END OF SECTION 013115

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.

1. The Schedule of Values must have the following line items included with the value of the item as indicated below:

a. O&M's (Owner's Manual)

1) $1,000,000.00 (One million) and under – 2% of the total contract amount

2) Over $1,000,000.00 (One million) – 1% of the total contract amount

b. Close Out Documents

1) $1,000,000.00 (One million) and under – 2% of the total contract amount

2) Over $1,000,000.00 (One million) – 1% of the total contract amount

c. General Conditions

1) No more than 10%

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 building within the facility. 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. Pre-purchased materials
4. Coordination with existing construction
5. Limitations of continued occupancies
6. Un-interruptible services
7. Partial Occupancy prior to Substantial Completion
8. Site restrictions
9. Seasonal variations
10. Environmental control

3.3 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. 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.

B. Division 1, Section 013115 “Project Management Communications” for administrative requirements for communications.

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. Quality Assurance Submittals
4. Construction Photographs
5. Operating and Maintenance Manuals
6. 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 Listing requirements.
   c. Compliance with recognized Testing Agency standards
   d. Application of Testing Agency labels and seals
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.

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: When photographs are required or requested 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 digital photographs. The Construction Administrator shall determine the quantity and naming convention at the preconstruction meeting.

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.

SPEC SECTION	TITLE	CATEGORY
013200	Schedules	Construction Schedule
013200	Schedules	Schedule of Values
013200	Schedules	List of Subcontractors
013200	Schedules	Major Material Suppliers
284621	Notification Devices	Product Data
284621	Initiation Devices	Product Data
284621	Fire Alarm Control Panel	Product Data
284621	Fire Alarm Shop Drawings	Shop Drawings
284621	Fire Alarm Voltage Drop Calculations	Shop Drawings
284621	Fire Alarm Battery Calculations	Shop Drawings
284621	Designer Certification	Certification
284621	Installer Certification	Certification
284621	Fire Alarm Test Report	Test Report
284621	Fire Alarm Operation/Maintenance Manual	O/M Manuals
284621	Fire Alarm System Warranty	Warranty
	Final Fire Alarm As-Builts	As-Builts

END OF SECTION 013300

SECTION 013513.16 - SITE SECURITY AND HEALTH REQUIREMENTS (DOC)

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. Revise list to include all required submittals.
4. 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.
5. Tuberculin skin test results for all employees required to be tested as set forth below.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 ACCESS TO THE SITE

A. The Contractor shall arrange with Facility Representatives to establish procedures for the controlled entry of workers and materials into the work areas at the Facility.

B. The Contractor shall establish regular working hours with Facility Representatives. The Contractor must report changes in working hours or overtime to Facility Representatives and obtain approval twenty-four (24) hours ahead of time. The Contractor shall report emergency overtime to Facility Representatives as soon as it is evident that overtime is needed. The Contractor must obtain approval from Facility Representatives for all work performed after dark.

C. The Contractor shall provide the name and phone number of the Contractor’s employee or agent who is in charge onsite; this individual must be able to be contacted in case of emergency. The Contractor must be able to furnish names and address of all employees upon request.

D. The Contractor shall provide Facility Representatives notice twenty-four (24) hours prior to any possible vehicle entry and/or required escort. The Contractor shall maintain a time log of any delays in gaining entrance to the Facility due to lack of an escort, which is to be submitted monthly with the Contractor’s pay request materials. The purpose of this log is to establish a basis for a contract change, if required. The log shall contain the date and time of delay, date and time of request of entry, workers delayed (name and occupation), and name of the Facility

Representative to whom the request was made, if possible. Any delay in entry must be validated by sallyport and pass office personnel at the Facility. Only delays greater than thirty (30) minutes will be considered for a contract change. A 30-minute delay upon arrival with a vehicle to enter the sallyport should be expected.

3.2 RULES OF THE FACILITY

A. The Contractor and its workers shall observe the following rules:

1. There shall be no fraternization with inmates.
2. No intoxicating beverages or illegal drugs shall be brought onto Facility grounds.
3. No firearms, other weapons, or explosives shall be carried onto Facility grounds.
4. No prescription drugs above one day's dosage shall be carried on Facility grounds.
5. Any vehicle or individual is subject to search at any time while on Facility grounds.
6. The vehicles of the Contractor and its workers shall be locked whenever unattended.
7. All tools and equipment shall be tightly secured during non-working hours in the Contractor's storage trailer or assigned area.
8. The Facility will not be responsible for the Contractor's tools, equipment, or materials. The Contractor shall keep and maintain a current tool inventory. The tool inventory shall be made available to Facility Representatives and the Owner upon request.
9. The Contractor shall report any missing tools to Facility Representatives immediately.
10. Smoking shall be permitted only in accordance with the regulations of the Facility.
11. Possession or use of smokeless tobacco or smokeless non-tobacco alternatives is strictly prohibited.

B. All workers shall be required to sign an acknowledgement of receipt of these rules.

3.3 SECURITY CLEARANCES AND RESTRICTIONS

A. DOC SECURITY CLEARANCE REQUIREMENTS

1. [Security restrictions may vary between different Facilities. Verify and revise paragraph below if Facility requirement for construction personnel differ.] Prior to the commencement of any onsite work, the Contractor shall submit a list containing the name, date of birth, and Missouri driver's license number or social security number of all construction personnel to the Missouri Department of Corrections for the purpose of obtaining security clearances. The required information shall be submitted at the pre-construction meeting, or as otherwise directed by Department of Corrections' personnel. Any construction personnel with pending warrants or felony convictions within the last five (5) years or other offenses deemed to create a security risk by Department of Corrections shall not be allowed onsite. The Department of Corrections reserves the right to refuse admission to any individual they feel may be detrimental to the security of the Facility.

3.4 FIRE PROTECTION, SAFETY, AND HEALTH CONTROLS

A. The Contractor shall take all necessary precautions to guard against and eliminate possible fire hazards.

1. Onsite burning is prohibited.
2. The Contractor shall store all flammable or hazardous materials in proper containers located outside the buildings or offsite, if possible.
3. The Contractor shall provide and maintain, in good order, during construction fire extinguishers as required by the National Fire Protection Association. In areas of flammable liquids, asphalt, or electrical hazards, 15-pound carbon dioxide or 20-pound dry chemical extinguishers shall be provided.

B. The Contractor shall not obstruct streets or walks without permission from the Owner's Construction Representative and Facility Representatives.

C. The Contractor's personnel shall not exceed the speed limit of 15 mph while at the Facility unless otherwise posted.

D. The Contractor shall take all necessary, reasonable measures to reduce air and water pollution by any material or equipment used during construction. The Contractor shall keep volatile wastes in covered containers, and shall not dispose of volatile wastes or oils in storm or sanitary drains.

E. The Contractor shall keep the project site neat, orderly, and in a safe condition at all times. The Contractor shall immediately remove all hazardous waste, and shall not allow rubbish to accumulate. The Contractor shall provide onsite containers for collection of rubbish and shall dispose of it at frequent intervals during the progress of the Work.

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

G. 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.

H. The Contractor's workers shall not be under the influence of any intoxicating substances while on the Facility premises.

3.5 TUBERCULOSIS TESTING REQUIREMENTS

A. All workers who will be in the confines of the Facility for more than ten (10) consecutive working days must provide proof of a negative tuberculin skin test. The test results must be no more than six (6) months old at the commencement of construction. The Contractor or the worker, not the Owner, shall pay the cost of the test.

B. The Contractor shall submit to Facility Representatives current tuberculin skin test results for all workers who are required to have such a test in accordance with paragraph A above. If the contract period extends for more than twelve (12) months, the Contractor must provide new test results for all workers prior to the anniversary of the contract commencement date.

C. Any worker required to have a tuberculin skin test under paragraph A above who fails or refuses to do so will be denied admission to the facility until such time as proof of the test results are provided.

D. If any worker has a tuberculin skin test with positive results, the worker shall be denied access to the facility until the worker produces a certification from a physician licensed to practice in the State of Missouri that the worker does not have infectious tuberculosis.

E. The Contractor shall not be entitled to any additional time or compensation if any of its workers are denied access to the facility because of failure to produce negative tuberculin skin test results.

F. Failure or refusal of the Contractor to maintain and produce the required tuberculin skin test records shall be a material breach of this contract, which shall subject the Contractor to a declaration of default.

3.6 PREA FOR CONTRACTORS AND EMPLOYEES

A. The contractor and all of the contractor's employees and agents providing services in any Department of Corrections institution must be at least 18 years of age. A Missouri Uniform Law Enforcement System (MULES) check or other background investigation may be required on the contractor, the contractor's employees and agents before they are allowed entry into the institution. The contractor, its employees and agents understand and agree that the Department may complete criminal background records checks annually for the contractor and the contractor's employees and agents that have the potential to have contact with inmates.

B. The institution shall have the right to deny access into the institution for the contractor and any of the contractor's employees and agents for any reason, at the discretion of the institution.

C. The contractor, its employees and agents under active federal or state felony or misdemeanor supervision must receive written division director approval prior to providing services pursuant to a Department contract. Similarly, contractors/employees/agents with prior felony convictions and not under active supervision must receive written division director approval in advance.

D. The contractor, its employees and agents shall at all times observe and comply with all applicable state statutes, Department rules, regulations, guidelines, internal management policies and procedures, and general orders of the Department that are applicable, regarding operations and activities in and about all Department property. Furthermore, the contractor, its employees and agents, shall not obstruct the Department or any of its designated officials from performing their duties in response to court orders or in the maintenance of a secure and safe correctional environment. The contractor shall comply with the Department's policies and procedures relating to employee conduct.

1. The Department has a zero tolerance policy for any form of sexual misconduct to include staff/contractor/volunteer on offender, or offender on offender, sexual harassment, sexual assault, sexual abuse and consensual sex.

    a. Any contractor or contractor's employee or agent who witnesses any form of sexual misconduct must immediately report it to the warden of the institution. If a contractor or contractor's employee or agent fails to report or knowingly condones sexual harassment or sexual contact with or between offenders, the Department may cancel the contract, or at the Department's sole discretion, require the contractor to remove the employee/agent from providing services under the contract.

b. Any contractor or contractor's employee or agent who engages in sexual abuse shall be prohibited from entering the institution and shall be reported to law enforcement agencies and licensing bodies, as appropriate.

E. The contractor, its employees and agents shall not interact with the offenders except as is necessary to perform the requirements of the contract. The contractor, its employees and agents shall not give anything to nor accept anything from the offenders except in the normal performance of the contract.

F. If any contractor or contractor's employee or agent is denied access into the institution for any reason or is denied approval to provide service to the Department for any reason stated herein, it shall not relieve the contractor of any requirements of the contract. If the contractor is unable to perform the requirements of the contract for any reason, the contractor shall be considered in breach.

3.7 DISRUPTION OF UTILITIES

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

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

3.8 CELL PHONES AND ELECTRONIC DEVICES

A. Cell Phones, pagers, smart watches (that can send/receive messages), fitness wrist bands (that can send/receive messages) or other electronic devices are not permitted.

1. Contractors, repairpersons, or information technology services department staff may be permitted to bring in a cell phone and portable wireless router (Wi-Fi, MiFi, etc.) if approved by the Chief Administrative Officer (CAO) when the phone is necessary to complete job duties relating to repairs on a case by case basis.
2. Tables (IPad, etc.) are not allowed with the exception of for re-entry purposes approved via the division of adult institutions (DAI) director and the re-entry manager.
3. Laptop computers may be permitted by the CAO on a case by case basis.

3.9 PROTECTION OF PERSONS AND PROPERTY

A. SAFETY PRECAUTIONS AND PROGRAMS

1. The Contractor shall at all times conduct operations under this Contract in a manner to avoid the risk of bodily harm to persons or risk of damage to any property. The Contractor shall promptly take precautions which are necessary and adequate against conditions created during the progress of the Contractor's activities hereunder which involve a risk of bodily harm to persons or a risk of damage to property. The Contractor

shall continuously inspect Work, materials, and equipment to discover and determine any such conditions and shall be solely responsible for discovery, determination, and correction of any such conditions. The Contractor shall comply with applicable safety laws, standards, codes, and regulations in the jurisdiction where the Work is being performed, specifically, but without limiting the generality of the foregoing, with rules regulations, and standards adopted pursuant to the Williams-Steiger Occupational Safety and Health Act of 1970 and applicable amendments.

2. All contractors, subcontractors and workers on this project are subject to the Construction Safety Training provisions 292.675 RSMo.
3. In the event the Contractor encounters on the site, material reasonably believed to be asbestos, polychlorinated biphenyl (PCB), lead, mercury, or other material known to be hazardous, which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner's Representative and the Architect in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the Owner's Representative and Contractor if in fact the material is asbestos or polychlorinated biphenyl (PCB) and has not been rendered harmless. The Work in the affected area shall be resumed in the absence of asbestos or polychlorinated biphenyl (PCB), or when it has been rendered harmless by written agreement of the Owner's Representative and the Contractor. “Rendered Harmless” shall mean that levels of such materials are less than any applicable exposure standards, including but limited to OSHA regulations.

B. SAFETY OF PERSONS AND PROPERTY

1. The Contractor shall take reasonable precautions for safety of, and shall provide protection to prevent damage, injury, or loss to:

    a. clients, staff, the public, construction personnel, and other persons who may be affected thereby;
    b. the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor or the Contractor's Subcontractors of any tier; and
    c. other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

2. The Contractor shall give notices and comply with applicable laws, standards, codes, ordinances, rules, regulations, and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury, or loss.
3. The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, safeguards for safety and protection, including, but not limited to, posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent sites and utilities.
4. When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise the highest degree of care and carry on such activities under supervision of properly qualified personnel.
5. The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in this Section caused in whole or in part by the Contractor, a Subcontractor of any tier, or anyone directly or indirectly employed by any of them, or by anyone for

whose acts they may be liable, and for which the Contractor is responsible under this Section, except damage or loss attributable solely to acts or omissions of Owner or the Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's other obligations stated elsewhere in the Contract.

6. The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents, and the maintaining, enforcing and supervising of safety precautions and programs. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner's Representative and Architect. The Contractor shall hold regularly scheduled safety meetings to instruct Contractor personnel on safety practices, accident avoidance and prevention, and the Project Safety Program. The Contractor shall furnish safety equipment and enforce the use of such equipment by its employees and its subcontractors of any tier.
7. The Contractor shall not load or permit any part of the construction or site to be loaded so as to endanger its safety.
8. The Contractor shall promptly report in writing to the Owner all accidents arising out of or in connection with the Work which cause death, lost time injury, personal injury, or property damage, giving full details and statements of any witnesses. In addition, if death, serious personal injuries, or serious property damages are caused, the accident shall be reported immediately.
9. The Contractor shall promptly notify in writing to the Owner of any claims for injury or damage to personal property related to the work, either by or against the Contractor.
10. The Owner assumes no responsibility or liability for the physical condition or safety of the Work site or any improvements located on the Work site. The Contractor shall be solely responsible for providing a safe place for the performance of the Work. The Owner shall not be required to make any adjustment in either the Contract Sum or Contract Time concerning any failure by the Contractor or any Subcontractor to comply with the requirements of this Paragraph.
11. In no event shall the Owner have control over, charge of, or any responsibility for construction means, methods, techniques, sequences or procedures or for safety precautions and programs in connection with the Work, notwithstanding any of the rights and authority granted the Owner in the Contract Documents.
12. The Contractor shall maintain at his own cost and expense, adequate, safe and sufficient walkways, platforms, scaffolds, ladders, hoists and all necessary, proper, and adequate equipment, apparatus, and appliances useful in carrying on the Work and which are necessary to make the place of Work safe and free from avoidable danger for clients, staff, the public and construction personnel, and as may be required by safety provisions of applicable laws, ordinances, rules regulations and building and construction codes.

END OF SECTION 013513.16

SECTION 015000 – CONSTRUCTION FACILITIES AND 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. Support facilities include, but are not limited to, the following:

1. Field offices and storage sheds.
2. Hoists and temporary elevator use.
3. Temporary project identification signs and bulletin boards.
4. Waste disposal services.
5. Construction aids and miscellaneous services and facilities.

C. Security and protection facilities include, but are not limited to, the following:

1. Fire Watch

1.3 SUBMITTALS

A. Temporary Structures: Submit plans of any temporary structures for storage or other purposes for to the Owner for Owner approval.

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

B. Standards: Comply with NFPA 241 “Standard for Safeguarding Construction, Alterations, and Demolition Operations”. ANSI A10 Series standards for “Safety Requirements for Construction and Demolition”, and NECA Electrical Design Library “Temporary Electrical Facilities”.

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.

1. For signs and directory boards, provide exterior-type, Grade B-B high-density concrete form overlay plywood of sized and thicknesses indicated.

B. 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.

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. 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.

C. 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.

D. 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.

E. Temporary Offices: Provide prefabricated or mobile units or similar job-built construction with lockable entrances, operable windows, and serviceable finishes. Provide heated and air-conditioned units on foundations adequate for normal loading.

F. Temporary Toilet Units: Provide self-contained, single-occupant toilet units of the chemical, aerated re-circulation, or combustion type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

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 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: If available the Owner may provide storage onsite as designated by the Facility Representative or the Construction Representative. Areas for use by the Contractor for storage will be identified at the Pre-Bid Meeting.

C. Storage facilities: Install storage sheds sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces within the building or elsewhere onsite.

D. Construction Parking: Parking at the site will be provided in the areas designated at the Pre-Construction Meeting.

E. Construction Parking: Contractors must be prepared to discuss their storage and parking needs at the Pre-Bid Meeting. Parking for construction personnel cannot be provided onsite. All parking will be offsite. The Contractor will have to park on the street, in city-owned lots, or in commercial lots. Under no circumstances will any vehicle be parked in a fire lane. Parking on lawns shall be prohibited.

F. 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.

G. 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.

H. 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.

I. 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.

J. Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate. Cover finished, permanent stairs with a protective covering of plywood or similar material so finishes will be undamaged at the time of acceptance.

3.3 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.

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.

E. 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.

3.4 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. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where the area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil in the area. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at the temporary entrances as required by the governing authority.

3. 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 Forms 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.

a. Do not dispose of volatile wastes such as mineral spriits, oil, or point thinner in storm or sanitary drains.

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

PART 2 – 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

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

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

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

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

B. Site

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

b. Weekly, inspect all arrangements of materials stored on site. Re-stack, tidy, or otherwise service all material arrangements.

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

C. Structures

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

b. 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 a handheld broom.

c. 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.

d. 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 paragraph, 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 portion of the Project.

a. 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.

b. Sweep paved areas broom clean. Rake grounds that are neither planted or paved to a smooth, even-textured surface.

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

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

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

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

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

h. Broom clean concrete floors in unoccupied spaces.

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

j. 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.

k. Remove labels that are not permanent labels.

l. Touch up and otherwise repair and restore marred exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored that already show evidence of repair or restoration.

i. Do not paint over “UL” and similar labels, including mechanical and electrical nameplates.

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

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

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

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

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

r. 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.

s. 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 the 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.

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

END OF SECTION 017400

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Demonstration of operation of systems, subsystems, and equipment.
2. Training in operation and maintenance of systems, subsystems, and equipment.
3. Demonstration and training video recordings.

1.3 INFORMATIONAL SUBMITTALS

A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

B. Attendance Record: For each training module, submit list of participants and length of instruction time.

C. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.4 CLOSEOUT SUBMITTALS

A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.

1. Identification: On each copy, provide an applied label with the following information:

a. Name of Project: Western Reception and Diagnostic Correctional Center Replace Fire Alarm Systems.
b. Name and address of videographer.
c. Name of Architect.
d. Name of Construction Manager.
e. Name of Contractor.
f. Date of video recording.

2. Transcript: Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.

3. At completion of training, submit complete training manual(s) for Owner's use in PDF electronic file format on compact disc.

1.5 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

B. Instructor Qualifications: A factory-authorized service representative experienced in operation and maintenance procedures and training.

C. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Coordination". Review methods and procedures related to demonstration and training including, but not limited to, the following:

1. Inspect and discuss locations and other facilities required for instruction.
2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
3. Review required content of instruction.
4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.6 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

a. System, subsystem, and equipment descriptions.
b. Performance and design criteria if Contractor is delegated design responsibility.
c. Operating standards.
d. Regulatory requirements.
e. Equipment function.
f. Operating characteristics.
g. Limiting conditions.
h. Performance curves.

2. Documentation: Review the following items in detail:

a. Emergency manuals.
b. Operations manuals.
c. Maintenance manuals.
d. Project record documents.
e. Identification systems.
f. Warranties and bonds.
g. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:

a. Instructions on meaning of warnings, trouble indications, and error messages.
b. Instructions on stopping.
c. Shutdown instructions for each type of emergency.
d. Operating instructions for conditions outside of normal operating limits.
e. Sequences for electric or electronic systems.
f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:

a. Startup procedures.
b. Equipment or system break-in procedures.
c. Routine and normal operating instructions.
d. Regulation and control procedures.
e. Control sequences.
f. Safety procedures.
g. Instructions on stopping.
h. Normal shutdown instructions.
i. Operating procedures for emergencies.
j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:

a. Alignments.
b. Checking adjustments.
c. Noise and vibration adjustments.
d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:

    a. Diagnostic instructions.
    b. Test and inspection procedures.

7. Maintenance: Include the following:

    a. Inspection procedures.
    b. Types of cleaning agents to be used and methods of cleaning.
    c. List of cleaning agents and methods of cleaning detrimental to product.
    d. Procedures for routine cleaning
    e. Procedures for preventive maintenance.
    f. Procedures for routine maintenance.
    g. Instruction on use of special tools.

8. Repairs: Include the following:

    a. Diagnosis instructions.
    b. Repair instructions.
    c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
    d. Instructions for identifying parts and components.
    e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 007213 "General Conditions".

B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Architect will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
2. Owner will furnish an instructor to describe Owner's operational philosophy.
3. Owner will furnish Contractor with names and positions of participants.

B. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner with at least seven days' advance notice.

C. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

D. Cleanup: Collect used and leftover educational materials and remove from Project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

3.3 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice. Engage the Fire Alarm manufacturer representative for training lessons.

1. At beginning of each training module, record each chart containing learning objective and lesson outline.

B. Video: Provide minimum 640 x 480 video resolution converted to format file type acceptable to Owner, on electronic media.

1. Electronic Media: Read-only format compact disc acceptable to Owner, with commercial-grade graphic label.
2. File Hierarchy: Organize folder structure and file locations according to project manual table of contents. Provide complete screen-based menu.
3. File Names: Utilize file names based upon name of equipment generally described in video segment, as identified in Project specifications.
4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the Equipment Demonstration and Training DVD that describes the following for each Contractor involved on the Project, arranged according to Project table of contents:

    a. Name of Contractor/Installer.
    b. Business address.
    c. Business phone number.
    d. Point of contact.
    e. E-mail address.

C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.

1. Film training session(s) in segments not to exceed 15 minutes.

    a. Produce segments to present a single significant piece of equipment per segment.
    b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.
    c. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.

D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.

1. Furnish additional portable lighting as required.

E. Narration: Describe scenes on video recording by audio narration by microphone while video recording is recorded. Include description of items being viewed.

F. Transcript: Provide a transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.

G. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

END OF SECTION 017900

SECTION 211313 - WET-PIPE SPRINKLER SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 00, and Division 01, Specification Sections, apply to this Section.

B. NFPA 13 Standard for the Installation of Sprinkler Systems – 2019 edition

1.2 SUMMARY

A. Modify the automatic wet sprinkler system as indicated on the drawings. All components of the sprinkler system shall be compliant with NFPA 13 and the contract documents. When NFPA 13 and the contract documents conflict, the most stringent shall be applied.

B. Section Includes:
1. Alarm devices.

C. Related Requirements:
1. Division 28 Addressable Fire Alarm Systems.

1.3 DEFINITIONS

A. Standard-Pressure Sprinkler Piping: Wet-pipe sprinkler system piping designed to operate at working pressure of 175-psig maximum.

B. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.

C. OS&Y: Outside screw and yoke.

D. SBR: Styrene-butadiene rubber.

E. Standard Weight Pipe: Schedule 40 pipe.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include rated capacities, operating characteristics,, and furnished specialties and accessories.
2. Include construction details, material descriptions, dimensions, profiles, and finishes.

3. Submit Complete, Detailed, and Original Catalogue for the manufacturer and marked up for all of the proposed equipment.

1.5 INFORMATIONAL SUBMITTALS

A. Architect/Engineer (AE) to approve product data submittals prior to installation. Owner will be notified once submittals have been approved

B. Qualification Data: For qualified installers, provide NICET III for water-based systems for the person overseeing the installation of tampers and flows.

C. Compliance list: submit a detailed point-by-point compliance statement with this specification. Where the proposed system does not comply or accomplish the stated function or specification in a manner different from that described and specified, a full description of the deviation shall be provided. Where a full description is not provided, it shall be assumed that the proposed system does not comply with the specifications.

D. Field Test Reports:

1. Indicate and interpret test results for compliance with performance requirements and as described in NFPA 13.

E. Field quality-control reports.

F. Sample Warranty: Submittal must include line item pricing for replacement parts and labor.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For wet-pipe sprinkler systems and specialties to include in emergency, operation, and maintenance manuals.

1.7 QUALITY ASSURANCE

A. Standards Compliance:

1. The system shall fully comply with the latest issue of these standards, if applicable.
   a. National Fire Protections Association (NFPA).
   b. No. 13 Sprinkler Systems.
   c. No. 70 National Electric Code (NEC).
   d. No. 72 National Fire Alarm Code.
   e. International Building Code-IBC.
   f. International Fire Code-IFC.
2. Local and State Building Codes.
3. All requirements of the local Authority Having Jurisdiction (AHJ).

B. In case of conflict among the referenced standards and codes, the more stringent provision will govern.

C. Installer Qualifications:

1. Installer's responsibilities include designing, fabricating, and installing sprinkler systems and providing professional engineering services needed to assume engineering responsibility as outlined by delegated design. Base calculations on results of fire-hydrant flow test. The installation shall be by a qualified and certified service company registered service company in the State of Missouri**.**

a. Engineering Responsibility: Preparation of field test reports by qualified professional NICET Level III or higher**.**

1.8 FIELD CONDITIONS

A. Interruption of Existing Sprinkler Service: Do not interrupt sprinkler service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary sprinkler service according to requirements indicated:

1. Notify the Owner’s Representative no fewer than two days in advance of the proposed interruption of sprinkler service.
2. Do not interrupt sprinkler service without the Owner’s Representative’s written permission.

B. Contractor to verify the existing system requirements/specification for the installed water flow and tamper switches and provide similar.

1.9 WARRANTY

A. Special Warranty: Manufacturer agrees to replace fire-alarm system equipment for FACU and components that fail because of defects in materials or workmanship within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.
2. Submit warranty with product data.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Sprinkler system equipment, specialties, accessories, installation, and testing to comply with NFPA 13, 2022 edition or later.

C. Standard-Pressure Piping System Component: Listed for 175-psig minimum working pressure.

2.2 ALARM DEVICES

A. Alarm-device types to match piping and equipment connections.

B. Water-Flow Indicators:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
   a. Potter Electric Signal Company, LLC.
   b. System Sensor.
   c. Viking Corporation.
2. Standard: UL 346.
3. Water-Flow Detector: Electrically supervised.
4. Components: Two single-pole, double-throw circuit switches for isolated alarm and auxiliary contacts, 7 A, 125-V ac and 0.25 A, 24-V dc; complete with factory-set, field-adjustable retard element to prevent false signals and tamperproof cover that sends signal if removed.
5. Type: Paddle operated.
6. Pressure Rating: 250 psig.
7. Design Installation: Horizontal or vertical.

C. Pressure Switches:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
   a. Potter Electric Signal Company, LLC.
2. Standard: UL 346.
3. Type: Electrically supervised water-flow switch with retard feature.
4. Components: Single-pole, double-throw switch with normally closed contacts.
5. Design Operation: Rising pressure signals water flow.

D. Valve Supervisory Switches:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
   a. Potter Electric Signal Company, LLC.
   b. Fire-Lite Alarms, Inc.; a Honeywell International company.
   c. Kennedy Valve Company; a division of McWane, Inc.
2. Standard: UL 346.
3. Type: Electrically supervised.
4. Components: Single-pole, double-throw switch with normally closed contacts.
5. Design: Signals that controlled valve is in other than fully open position.
6. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

PART 3 - EXECUTION

3.1 PREPARATION

A. Report test results promptly and in writing.

B. Do not attempt to repair defective valves; replace with new valves.

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

3.2 INSTALLATION OF VALVES AND SPECIALTIES

3.3 IDENTIFICATION

A. Install labeling and pipe markers on equipment and piping according to requirements in NFPA 13.

B. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in NFPA 72, NFPA 70, and Division 26 and 28 of the contract documents.

3.4 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Leak Test: Where a new flow test is installed, charge the systems and test for leaks after installation. Repair leaks and retest until no leaks exist.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
3. Energize circuits to electrical equipment and devices.
4. Coordinate with fire-alarm tests. Operate as required.

B. Sprinkler piping system equipment will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

PART 4 - END OF SECTION 211313

SECTION 26 0501 - COMMON WORK RESULTS AND ELECTRICAL REQUIREMENTS FOR FIRE ALARM SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. This Section specifies the basic requirements for electrical installations and includes requirements common to all sections of Division 26. It expands and supplements the requirements specified in sections of Division 28 “Electronic Safety and Security”.

B. Drawings and general provisions of the Contract, including general and supplementary conditions and provided specification sections, apply to this Section.

1. Exclusions listed in the General Notes of the Fire Alarm Drawings override the allowances of this specification.

C. Codes and Standards: "All equipment, materials and installations shall adhere to applicable local regulations, fire authorities' rules, and all applicable NFPA standards. Material and equipment shall be listed by UL or FM Global Standards. Material and equipment shall follow the National Electric Code, NEMA, IEEE, and ANSI standards. Testing shall comply with NETA standards.”

1. The 2022 edition of NFPA 72 "National Electrical Code" is referenced in these specifications. If a different edition of NEC is adopted by the local Authority Having Jurisdiction, applicable references shall be related to that edition.
2. The 2023 edition of NFPA 70 "National Electrical Code" is referenced in these specifications. If a different edition of NEC is adopted by the local Authority Having Jurisdiction, applicable references shall be related to that edition.

1.2 SUMMARY OF WORK

A. Provide all new materials as indicated on the drawings and specifications and all items required to make the electrical system complete and in working order.

B. System descriptions included in the scope of work are as follows:

1. Addressable Fire alarm and Detection systems.

C. Work not included:

1. Temperature control wiring for plumbing and HVAC equipment (unless otherwise indicated) shall be by other Divisions.

D. This section includes submittal requirements for the project.

E. This Section includes the electrical requirements related to the needs of the Fire Alarm system(s), including but not limited to:

1. Conductors and Cables.

2. Grounding and Bonding.
3. Boxes, Cabinets, and Enclosures.
4. Raceways.
5. Hangers and Supports.
6. Identification for Electrical Systems.

1.3 SUBMITTALS

A. Unrequested submittals won't be reviewed. Non-requirement of submittals, when so noted, is not to be construed as an allowance for substitutions and does not provide relief from full compliance with the contract documents.

1.4 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. RMC: Rigid metal conduit.

C. RNC: Rigid non-metallic conduit

D. Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of four times the applied force.

E. Furnish: To supply for use

F. Install: To install in its proper location and connect, complete and ready for operation.

G. Provide: To furnish and install.

H. Product Data: Pre-printed manufacturer's data.

I. Shop Drawings: Drawings made specifically for the manufacture of a particular piece of equipment to be used on this project.

J. Operation and Maintenance: Information containing instructions on the proper operation, maintenance and repair of the equipment, complete with written text, diagrams, photos, exploded views, and parts lists.

K. Record Documents: Information indicating the actual installed conditions of the project on Mylar, electronic media, photographs or typed paper. Photographs are not allowed as a substitute for correcting the construction documents; the photographs are for the Owner’s future reference. Submit type, quantities, and media specified where indicated to be submitted.

1.5 WORK SEQUENCE

A. Coordinate noisy work with the Owner. May need to schedule after hours or weekends. Owner shall decide when work is executed.

1.6 QUALITY ASSURANCE

A. Responsibility Prior to Submitting Pricing or Bid Data:

1. Thoroughly review the contract documents and specifications and visit the site prior to issuing bid. Resolve all reported deficiencies with the Engineer prior to awarding any subcontracts, ordering material, or starting any work.

B. Qualifications:

1. Only products of specified manufacturers or approved equals, as determined by the Engineer, are acceptable.
2. Employ only workmen who are skilled in their trades.

C. Compliance with Codes, Laws, and Ordinances:

1. Comply with all laws and regulations having jurisdiction over structure.
2. The Engineer shall resolve any discrepancies between codes and specifications.
3. If drawings or specifications don't comply with codes or regulations during bidding, inform the Engineer in writing. Submit a separate price for compliance if there's insufficient time.
4. If there are discrepancies, request clarification from the Engineer in writing.
5. Follow the current issue of NFPA 70 “National Electrical Code” if no local codes have jurisdiction.

D. Examination of Drawings:

1. The drawings are diagrammatic and show the scope of electrical work, equipment locations, and approximate sizes. Field verification of dimensions is required as actual conditions shall serve as the basis for the work.
2. All drawings and specifications (architectural, structural, mechanical, and electrical) shall be complementary and mutually explanatory. Electrical work in one but not the other shall still be required. General and supplementary conditions shall govern all Electrical work. Report discrepancies to the Engineer promptly for clarification.
3. Identify precise equipment locations, rough-ins, and raceway routing for proper installation.
4. Do not scale drawings to determine equipment and system locations.
5. Not all required components are documented, provide all components required for proper installation.
6. Any item shown on drawings or any specifications shall be listed in contract.
7. Identify needed material and equipment. Use best quality or highest cost if there are discrepancies.

E. Electronic Media and Files:

1. Electronic media files of the contract drawings in AutoCAD or PDF format and copies of the specifications in PDF format may be requested. A form will be provided by FSC inc. for the petitioner to sign and return electronically upon request for electronic media.
2. Complete and return a signed “Electronic File Transmittal” form provided by FSC inc. upon request for electronic media.

3. The electronic contract documents may be used for the preparation of shop drawings and record drawings only. The information may not be used in whole or in part for any other project. The use of the documents does not relieve the contractor from the responsibility for coordinating work with other trades and verification of space available for installation.
4. The information provided is for project expediting only and comes with no guarantee or liability by FSC, Inc. for accuracy or correctness of information.

F. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency and marked for intended location and application.

G. UL Compliance: Provide components which are listed and labeled by Underwriters Laboratories under the following standards.

1. UL Std. 83 Thermoplastic-Insulated Wires and Cables.
2. UL Std. 486A Wire Connectors and Soldering Lugs for Use with Copper Conductors.
3. UL 467 for grounding and bonding materials and equipment.
4. UL 969 for Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

H. FM Global

I. Comply with NFPA 70 “National Electrical Code”

J. ANSI, NEMA, NECA and ICEA Compliance: Provide products that comply with the following standards as applicable:

1. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
2. ANSI C80.3 - Electrical Metallic Tubing, Zinc Coated.
3. ANSI C80.5 – Aluminum Rigid Conduit.
4. ANSI Z535.4 for safety signs and labels.
5. ANSI A13.1 and IEEE C2.
6. ANSI/NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
7. NECA "Standard of Installation.”
8. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
9. NEMA TC 2 - Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80).
10. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.
11. NEMA OS 1: Sheet-Steel Outlet Boxes, Device Boxes, Covers and Box Supports.
12. NEMA OS 2: Non-Metallic Outlet Boxes, Device Boxes, Covers and Box Supports.
13. NEMA FB 1: Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing and Cable.
14. NEMA 250: Enclosures for Electrical Equipment (1000 Volts Maximum).
15. 29 CFR 1910.144 and 29 CFR 1910.145.
16. WC-70: Power Cables Rated 2,000 V or Less for the Distribution of Electrical

Energy.

17. IEEE Std. 82: Test procedures for Impulse Voltage Tests on Insulated Conductors.

K. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code – Steel."

1.7 COORDINATION:

A. Coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual; and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout the Project.

B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied and of identifying devices with location of access panels and doors.

C. Install identifying devices before installing acoustic ceilings and similar concealment.

1.8 ROUGH-IN

A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected and that all equipment rough-in requirements are coordinated with Division 28 and 26 if applicable.

1.9 SUBMITTAL REVIEW RESPONSIBILITIES

A. General: Submittals are not required for every product in the specifications. Only submit requested data. Incomplete or unrequested submittals won't be reviewed. Check the "Submittal Register" for each specification section to ensure you're submitting all the required information in one submission. Deviating from specified items is considered a substitution.

1. Non-requirement of submittals, when so noted, is not to be construed as an allowance for substitutions and does not provide relief from full compliance with the contract documents.
2. The Contractor shall ensure that all submittals have been reviewed for completeness and accuracy as to the requirements of the contract documents. The contractor’s approval stamp is required before submitting to the Engineer to indicate the Contractor has reviewed all material and has a complete understanding of what is to be furnished. Any deviations from the contract documents will be clearly marked on all submittals. The item must meet all drawing and specification requirements if the deviation is not clearly marked.
3. The Engineer shall have the option of returning any submittal, unmarked, if all required documentation called for in the specifications has not been provided in the submittal.
4. Specify relevant product data when multiple models or part numbers are listed on a manufacturer's sheet. Entire product brochures with unrelated

items won't be reviewed.

B. Operation and Maintenance Manuals: Check the submittals section of each specification or the Submittal Log for all necessary items to be included in the Operation and Maintenance (O&M) Manual. Review the O&M submittal to ensure it meets the specifications. Submit only the required data as mentioned in the submittals section. Do not submit photocopies or faxes. The Engineer will review the O&M Manual submittal once and provide feedback.

C. Coordination Drawings: Prepare and submit Coordination Drawings. One copy to the Engineer, in addition to the Owner. Engineer verifies conformance, not accuracy. Refer to division 00 for additional information.

D. Refer to other specifications included in the contract documents for additional requirements.

1.10 PRODUCT OPTIONS AND MATERIAL SUBSTITUTIONS

A. Multiple materials in 'Part 2 - Products' of Divisions 26 or 28 do not offer options. See 'Part 3 - Execution' for when specific material(s) shall be used for each application.

B. Items of the same material or equipment shall be from the same manufacturer, but this rule doesn't apply to raw materials, bulk materials, wire, conduit, fittings, sheet metal, steel bar stock, welding rods, solder, fasteners, or motors for different equipment units, unless otherwise specified.

C. Provide compatible products for seamless integration.

D. Proposed substitutions must be approved in writing via Addendum. A sample must be submitted for evaluation at no cost to the Engineer and will be returned at the submitter's expense.

E. If there are alternative materials, articles, or equipment of equal or superior quality to those identified in the drawings and specifications, they can be used with written approval from the Engineer. All costs incurred, including those of other Divisions affected, must be assumed.

F. Rever to Division 00 for additional information.

1.11 PRODUCT DELIVERY, STORAGE, HANDLING AND MAINTENANCE

A. Ensure proper identification, packaging, and protection of products during shipment, storage, and handling. Protect stored equipment and materials.

B. Coordinate deliveries of electrical equipment to minimize site congestion. Limit each shipment to necessary items. Review site before bidding for required modifications and path locations.

C. Exercise care in transporting and handling to avoid damage to materials. Store materials on the site to prevent damage.

D. Keep all materials clean, dry and free from damaging environments.

1.12 WARRANTIES

A. Refer to individual equipment specifications for warranty requirements.

B. Compile and assemble the warranties specified in the specifications into a separated set of vinyl covered, three-ring binders, tabulated and indexed for easy reference.

C. Include warranty info for each item: product/equipment, start date/duration of warranty, and claim instructions.

D. The contractor must fix defective work at no cost to Owner under warranty. They cover nonconformance costs, not due to maintenance or wear and tear (determined by Engineer).

PART 2 – PRODUCTS

2.1 MISCELLANEOUS LUMBER

A. All lumber shall be fire-treated.

B. Framing Materials: For light-framing structures, all lumber shall be kiln-died to 19% moisture content and treated with preservatives per AWPB-LP-2. It should be Number 3 Common or Standard Grade, and comply with WCLIB, AWPA or SPIB rules.

2.2 **GROUT**

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107 nonmetallic grout is noncorrosive, non-staining, can be mixed with water, and has a 30-minute working time. Suitable for interior and exterior applications.

2.3 **GROUNDING & BONDING**

A. Products: Ensure NEC compliance with appropriate types, sizes, and ratings, of the most stringent requirements.

2.4 **CONDUCTORS AND CABLES**

A. Conductors And Cables

1. General: Select appropriate wire and cable according to installation location and temperature. Follow NEC Table 8 for conductor properties, including stranding, unless otherwise noted.
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following or an approved equal:

    a. Alcan Products Corporation; Alcan Cable Division.
    b. American Insulated Wire Corp.; a Leviton Company.
    c. General Cable Corporation.
    d. AFC Cable Systems, Inc

e. Hubbell Power Systems, Inc.
f. O-Z/Gedney; EGS Electrical Group LLC.

3. Copper Conductors: Comply with NEMA WC 70
4. Conductor Insulation: Comply with NEMA WC 70 for Types THHN-THWN.
5. Equipment Grounding Conductor: Green insulated; conductor metal shall match branch circuit conductor metal.
6. Grounding Electrode Conductor: Stranded cable.
7. Branch Circuits: Copper, 600 volt insulation. Solid for No. 12 AWG and smaller; stranded for No. 10 AWG and larger.
8. Control Circuits: Copper, stranded conductor, 600 volt insulation.
9. Specified wire shall be dictated for specialized systems. Manufacturer recommendations shall be adhered to if not designated:

a. Fire alarm.

B. Remote Control And Signal Cable

1. Control Cable for Class 1 Remote Control and Signal Circuits: Copper conductor, 600 volt insulation, rated 60 degrees C, individual conductors twisted together, shielded, and covered with a PVC jacket.
2. Control Cable for Class 2 or Class 3 Remote Control and Signal Circuits: Copper conductor, 300 volt insulation, rated 60 degrees C, individual conductors twisted together, shielded, and covered with a PVC jacket; UL listed.
3. Plenum Cable for Class 2 or Class 3 Remote Control and Signal Circuits: Copper conductor, 300 volt insulation, rated 60 degrees C, individual conductors twisted together, shielded and covered with a nonmetallic jacket; UL listed for use in air handling ducts, hollow spaces used as ducts, and plenums.

C. Connectors And Splices

1. Connectors and Splices: Factory-fabricated connectors and splices of size, ampacity rating, material, type and class for application and service required.
2. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.
3. Bus-Bar Connectors: Mechanical type, cast silicon bronze, solderless compression type wire terminals, and long-barrel, two-bolt connection to ground bus bar.
4. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type and class for application and service required.

2.5 BOXES, CABINETS AND ENCLOSURES

A. Cabinets And Enclosures

1. Comply with NEMA 250, Type 1, galvanized steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.

2. Provide metal barriers to separate wiring of different systems and voltage.
3. Hinged Cover: Hinged door in front cover with flush latch and concealed hinge
4. Where lockable cabinets are provided, key latch to match panelboards.
5. Provide accessory feet where required for freestanding equipment.

B. Outlet Boxes

1. General: Outlet boxes shall meet National Electrical Code Article 314, including size of the box. Boxes shall be at least 1-1/2 inches deep.
2. Sheet Metal Boxes: Comply with NEMA OS 1, galvanized steel.
3. Nonmetallic Outlet Boxes: Comply with NEMA OS 2.
4. Cast Metal Outlet and Device Boxes: Comply with NEMA FB 1, ferrous alloy or aluminum, type FD with gasketed cover and threaded hubs.
5. Fire alarm device outlet boxes shall measure 4-11/16" square by 2-1/8" deep and include extension rings. Furnish fixture studs as required.
6. Use 4-inch outlet boxes for exposed conduit work with device extension pan or deep device canopy.
7. Cover unused openings with corrosion-resistant steel knockouts.

C. Junction And Pull Boxes

1. Small Sheet Metal Pull and Junction Boxes: Use galvanized steel and follow NEMA OS 1 for compliance. Overlapping covers shall be used for flush-mounted boxes.
2. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1, galvanized, with gasketed cover.
3. Covers: Covers shall be same material as box and placed on largest side, unless specified otherwise.
4. Hinged-Cover Enclosures: For boxes greater than 12", comply with NEMA 250, Type 1 using continuous-hinge cover with flush latch, unless noted.

    a. Metal Enclosures: Steel, coated throughout with manufacturer’s standard enamel.

2.6 RACEWAYS GENERAL REQUIREMENTS

A. Use NFPA 70 compliant conduit, tubing, and fittings for each service.

B. Bushings: Use ribbed and flared bushings for conduits under 1-1/4". Install insulated bushings with a phenolic insulating ring for larger conduits. All bushings should have a screw type grounding terminal.

C. Raintight Sealing Hubs: Conduit fitting with threaded hub, locking ring, bonding screw, insulated throat, and V or O-ring.

D. Manufacturers: Provide products from one of the following options, if requirements are met:

1. Allied Tube & Conduit.
2. LTV Steel Tubular Products Company.

3. Wheatland Tube Company.
4. AFC Cable Systems.
5. Alflex Inc.
6. Electri-Flex Co.
7. Cantex
8. JM Manufacturing.
9. Lamson & Sessions; Carlson Electrical Products
10. Hoffman
11. Cobber B-Line, Inc.
12. Square D; Schneider Electric.
13. Thomas & Betts Corporation.
14. Wiremold Company (The) & Subsidiaries

E. Metal Conduit And Tubing

1. Rigid Steel (Metallic) Conduit: Conduit should be seamless, hot-dipped galvanized rigid steel with chamfered ends and zinc coating on both sides. Apply enamel lubricating coating inside. Conform to ANSI C80.1 and UL 6 standards.

    a. Fittings and Conduit Bodies: NEMA FB 1, single piece threaded, cadmium plated malleable iron.
    b. Joint Compound: Cable connector lubricant for threaded joints. Protects from corrosion and enhances conductivity.

2. Aluminum Rigid Conduit: Conduit must conform to ANSI C80.5 and UL 6a, be seamless, and made of 6063 alloy in T-1 temper.

    a. Fittings and Conduit Bodies: Use the same alloy for the joint and apply the manufacturer's recommended antioxidant compound as directed.

3. Electrical Metallic Tubing: The conduit must be galvanized steel tubing, with zinc coating fused to the outside walls and an enamel lubricating coating on the inside. It must comply with ANSI C80.3 - 1983 and be UL 797 listed and labeled.

    a. Fittings and Conduit Bodies: Compression.
    b. EMT expansion fittings shall allow 4 inches of movement and include bonding jumpers and hardware, and shall be similar to the O-Z Gedney TX series.

4. Flexible Metal Conduit: This conduit is made of zinc-coated steel and has interlocked construction consisting of spirally-wrapped, convoluted hot dip galvanized steel strip. It's fully coated with zinc and prevents separation when bent. It's UL1 listed and labeled.

    a. Fittings: ANSI/NEMA FB 1 -1988. Threadless hinged clamp type, galvanized zinc coated cadmium plated malleable cast iron.

F. Nonmetallic Conduit And Tubing

1. Rigid Non-Metallic Conduit: Use PVC conduit (Schedule 40/80) rated for 90°C conductors, suitable for direct burial/above ground use in sunlight (even encased in concrete). Conforms to ASTM F512, NEMA TC-2, listed & labeled under UL 651.

    a. Fittings and Conduit Bodies: The conduits shall meet NEMA TC-3 and UL 651 standards and come with expansion fittings, shall be similar to the Carlon E945 series, that allow up to six inches of movement. Patch and seal all joints, nicks, and scrapes in the PVC coating using the recommended sealant after installation.

G. Metal Wireways

1. Metal Wireways: Specify sheet metal size and shape per NEMA 250, Type 1, 12, or 3R, as required.

    a. Material: Use painted sheet steel indoors and galvanized sheet steel outdoors, as needed.

        1. Wireway up to 6 inch by 6 inch cross section shall be minimum 16 gage.
        2. Wireway larger than 6 inch by 6 inch cross section shall be minimum 14 gage.

    b. Fittings and Accessories: Include necessary fittings to match and mate with wireways for a complete system.
    c. Wireway Covers: Use hinged flanged-and-gasketed type for outdoor locations.
    d. Finish: Where not noted on the contract drawings or specifications, use the manufacturer's standard gray enamel finish per system.

H. Surface raceways:

1. Surface Metal Raceways: Galvanized steel with snap-on covers and standard enamel finish in noted color.
2. Match and mate raceway types, sizes, channels, and fittings for each application.

2.7 HANGERS AND SUPPORTS

A. Manufacturers Subject to compliance with requirements, provide products by the following:

1. Slotted Metal Angle and U-Channel Systems:

    a. Allied Tube & Conduit.
    b. American Electric.
    c. B-Line Systems, Inc.
    d. GS Metals Corp.
    e. Unistrut Diversified Products.

2. Conduit Sealing Bushings:

    a. Bridgeport Fittings, Inc.
    b. Killark Electric Mfg. Co.
    c. O-Z/Gdney.
    d. Raco, Inc.
    e. Red Seal Electric Corp.

B. Coatings

1. Coating: Hardware supports and fasteners shall have zinc coating or equivalent corrosion protection.

C. Manufactured Supporting Devices

1. Raceway Supports: Clevis hangers, riser clamps, conduit straps, threaded C-clamps with retainers, ceiling trapeze hangers, wall brackets and spring steel clamps.
2. Fasteners: Types, materials and construction features as follows:

    a. Expansion Anchors: Carbon steel wedge or sleeve type
    b. Toggle Bolts: All steel springhead type
    c. Through Bolts: Structural type, hex head, high strength. Comply with ASTM A 325

3. Conduit Sealing Bushings: Pre-made watertight bushing assemblies for pipes passing through concrete. Made of steel sleeve, malleable iron body, neoprene grommets, metal pressure rings, clamps, and screws.
4. U-Channel Systems: Top surface has steel U-channels with 9/16" holes spaced 1.5-2.5" apart. Provide matching accessories from same manufacturer.

D. Utilize tamper-proof hangers and supports in detainee areas.

2.8 FABRICATED SUPPORTING DEVICES

A. Supports can be shop-fabricated or made with U-channel components.

B. Steel Brackets: Structural shapes welded and bolted for sturdy supports.

2.9 SLEEVES FOR RACEWAYS AND CABLES

A. Interior Dry Locations Pipe Sleves:

1. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
2. Fabricate from Schedule 40 galvanized steel pipe or Schedule 40 PVC plastic pipe.

B. Exterior or Interior Wet or Damp Locations: Fabricate from Schedule PVC plastic pipe.

C. Sleeves for Rectangular Openings: Galvanized sheet steel.

1. Minimum Metal Thickness:

    a. For sleeve cross-sections with a perimeter less than 50 inches and no side longer than 16 inches, thickness shall be 0.052 inch.
    b. For rectangular sleeve cross-sections with a perimeter of 50+ inches and a side of 16+ inches, thickness shall be 0.138 inch.

D. **SLEEVE SEALS**

1. Description: Modular sealing device for field assembly to fill the annular space between sleeve and raceway or cable.

    a. Manufacturers: Provide products from one of the following options, if requirements are met:

        1. Advance Products & Systems, Inc.
        2. Calpico, Inc.
        3. GPT Link-Seal
        4. Metraflex Co.
        5. Pipeline Seal and Insulator, Inc.

    b. Sealing Elements: EPDM links for cable/conduit surface. Specify type and quantity for raceway/cable size.
    c. Pressure Plates: Plastic. Include two for each sealing element.
    d. Connecting Bolts and Nuts: Coated carbon steel of adequate length to secure pressure plates to sealing elements. One required per sealing element.
    e. Place bolt head on accessible side for future adjustments.

2.10 IDENTIFICATION FOR ELECTRICAL SYSTEMS

A. Manufacturers:

1. Electromark – Wolcott, Newy York.
2. Ideal Industries, Inc.
3. 3M
4. Panduit Corp.
5. Seton Name Plate Co.
6. Thomas & Betts
7. W. H. Brady, Co. – Signmark Division – Milwaukee, Wisconsin.

B. **ELECTRICAL IDENTIFICATION PRODUCTS**

1. Self-Adhesive Vinyl Labels (Raceways and Boxes): Label with clear, chemical-resistant coating and adhesive tape for secure wrapping.
2. Self-Adhesive Vinyl Tape for Banding (Raceway, Wire and Cable): Colored, heavy duty, waterproof, fade resistant; 2 inches wide.
3. Self-Adhesive Tape Markers (Wire and Cable): Vinyl or vinyl-cloth, self-adhesive, wraparound, cable and conductor markers with preprinted numbers and letters.
4. Snap-Around Color-Coding Bands (Raceways and Cables): Flexible acrylic

sleeve, 2 inches long, grips onto the cable/raceway, colored to identify the same.

5. Colored Adhesive Marking Tape (Raceways, Wires, and Cables): Self-adhesive plastic-coated cloth tape similar to Brady 441XX or 442XX series
6. Conductor Identification Products:

    a. Color-Coding Conductor Tape: 3 mils colored, self-adhesive vinyl tape, 1-2 inches wide.
    b. Marker Tapes: Vinyl self-adhesive wraparound with circuit ID legend, machine printed.

C. Cable Ties

1. Cable Ties: Fungus-inert, self-extinguishing, one-piece nylon cable ties with 0.18-inch width, 50-lb tensile strength, and suitable for -50°F to 350°F. Use specified colors for color-coding.
2. Identification Cable Ties: Same as "Cable Ties" above, except with appropriately sized tab for marking requirements.

PART 3 - EXECUTION

3.1 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION

A. Follow manufacturer's instructions, NECA 1 and NEC requirements when installing devices, supporting devices, and system accessories.

B. Measure to bottom for suspended items and center for wall-mounted items.

C. Headroom Maintenance: Install for maximum headroom if no mounting heights or location criteria are specified.

D. Equipment: Install electrical equipment for easy future maintenance and disconnecting with minimal interference.

E. Right-of-Way: Give to piping systems installed at a required slope.

F. Jobsite Safety: Contractor is solely responsible for jobsite safety.

G. Review equipment location with Owner’s representative for max accessibility during maintenance.

H. Remove and reinstall equipment and devices if installed without coordinating access requirements and confirming with the Owner's representative.

I. Remove non-reusable fire alarm wiring, conduit, and equipment.

A. Install equipment and materials per manufacturer instructions and Section 20 0800.

J. Coordinate:

1. Electrical installation with other building components.
2. Equipment installation with other trades to maintain clear access for

servicing.
3. Electrical installation with other building components.
4. Installation of supporting devices and sleeves in structural components as they are constructed, including poured-in-place concrete.
5. Connection of electrical systems to outside utilities, comply with regulations, and provide required connections for each service.
6. Install electrical equipment above ceilings with suspension system, mechanical equipment, and structural components.

K. Sequence and coordinate equipment installations efficiently, with emphasis on positioning large equipment before building enclosure.

L. Verify all dimensions by field measurements.

M. Arrange for chases, slots, and openings in other building components to allow for electrical installations.

N. Install systems and equipment as per project requirements, approved submittals, and coordination drawings. Notify the Engineer of any conflicts.

O. Install electrical services and overhead equipment for maximum headroom, unless specified otherwise.

P. Install electrical equipment for easy facilitation to maintain, repair or replace equipment components. Ensure code clearances around all equipment and connect it for easy disconnection without interfering with other installations.

Q. Provide all necessary components to complete the Work, in addition to the Contract Documents.

R. Follow NEC and NFPA 72 seismic requirements when installing equipment and materials as per manufacturer instructions.

S. Separate raceways shall be used for control and interlock wiring, and they shall not share raceways with power conductors.

T. Only the latest equipment and materials shall be used for Work to assure a high-quality electrical system.

A. The specifications and drawings detail utility service requirements. The Owner shall pay for construction or connection charges by utility companies, except for temporary power.

3.2 EXAMINATION

A. Inspect areas and conditions with installer present and correct unsatisfactory issues before installation.

3.3 ROUGH-IN

A. Ensure rough-in locations comply with equipment requirements.

B. Coordinate equipment rough-in requirements with the contract documents.

3.4 CUTTING AND PATCHING

A. General: Cut and patch according to Division 01 Section "Execution." Additional requirements apply:

1. Preform cutting, fitting and patching of electrical equipment and materials required to:

   a. Uncover Work to provide for installation of ill-timed Work.
   b. Remove and replace defective Work.
   c. Remove and replace Work not conforming to requirements of the Contract Documents
   d. Remove samples of installed Work as specified for testing.
   e. Install equipment and materials in existing structures.
   f. Dispose of indicated obsolete electrical equipment and materials.

2. Coordinate

   a. Protect all materials not scheduled for removal from damage.
   b. Provide dust barriers to prevent spread of dust and dirt.

3.5 PAINTING

A. Paint damaged electrical equipment to match original color before acceptance. Use supplier's paint if possible. Apply finished coat unless only prime coat is allowed.

B. Equipment in occupied spaces or standard to the unit shall have a scratch-free baked primer with base enamel finish. Confirm color option with the Engineer before ordering.

3.6 ADJUST AND CLEAN

A. Before final acceptance, thoroughly clean all equipment and systems.

B. Remove foreign substances from equipment and repair any damaged finish.

C. Remove all construction waste and debris from the premises.

3.7 PROTECTION

1. Protect and maintain coatings, finishes, equipment, and cabinets from damage or deterioration by time of Substantial Completion.

3.8 CONDUCTORS AND CABLES

A. Conductor Insulation, Applications and Wiring Methods

1. Concealed in Ceilings, Walls, Partitions, Raised Flooring and Crawlspaces: Type THHN-THWN, single conductors in raceway.
2. Underground: Type THWN, single conductors in raceway

3. Exposed, including in crawlspaces: Type THHN-THWN, single conductors in raceway
4. Class 1 and Class 2 Control Circuits: Install per NEC Article 725
5. Conceal cables in finished walls, ceilings and floors unless otherwise indicated.
6. Completely and thoroughly swab raceway before installing wire.
7. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
8. Use pulling means including fish tape, cable, rope, and basket weave wire and cable grips which will not damage cables or raceways. Do not use rope hitches for pulling attachment to wire or cable. Do not exceed maximum tensile strength of conductor or grip. Do not exceed maximum sidewall pressure limitations of cables.
9. Pull conductors simultaneously where more than one is being installed in the same raceway.
10. Install exposed cables parallel and perpendicular to surfaces of exposed structural members and follow surface contours where possible.
11. Feeder conductors shall be continuous and shall not contain splices.
12. Provide adequate length of conductors within electrical enclosures and train the conductors to terminal points with no excess. Bundle multiple conductors, with conductors larger than Number 10 AWG cabled in individual circuits. Make terminations so there is no more than 1/8 inch of exposed bare conductor at the terminal. Observe NEC 310.15 (B)(2)(a) adjustment factors.
13. Verify that interior of building has been protected from weather and mechanical work likely to damage wire and cable has been completed prior to installing wire and cable.
14. Use conductor not smaller than Number 12 AWG for power and lighting circuits.
15. Single conductors used for control circuits shall not be smaller than Number 14 AWG.
16. Use Number 10 AWG conductors (phase, neutral and ground) for 20 ampere, 120 volt branch circuits longer than 75 feet, unless drawings requirements are more stringent.
17. Place an equal number of conductors for each phase, neutral and ground of a circuit within the same raceway or cable when routing parallel conductors. Conductor lengths must be equal.
18. Support cables according to Division 26 Section "Hangers and Supports."
19. Identify and color-code conductors and cables according to Division 26 Section "Identification for Electrical Systems."
20. Open cabling shall be routed in a symmetrical manner, tight and parallel to walls.
21. Support open cable by appropriate size bridle rings or j-hooks at five foot intervals. Open cable may not rest on suspended ceilings. Wire and cable from different systems shall not be installed within the same bridle rings or j-hooks. Neatly bundle grouped cables every two-and-a-half feet with a nylon tie wrap.
22. Open cable may only be installed where specifically dictated on drawings or permitted elsewhere within these specifications.

B. Metal Clad Cable Installation

1. Metal-clad cable is permitted for branch circuits with a capacity of 20A and 15A and flexible connections to luminaires of up to 6'-0". They should comply with NFPA 70, Article 330 and Article 517 and be concealed. Wiring between the junction box and the panelboard should consist of individual conductors in conduit. Metal-clad cable runs should be from a junction box to the final device or luminaire and should not be used for circuits serving the Essential Electrical System. Daisy-chaining is not permitted.
2. Metal-clad cable is allowed for branch circuits of 30 amperes and less when run from a junction box located above an accessible ceiling, within 8 feet of the partition containing the served wiring device box (or within 6 feet of a lighting fixture). Wiring between the above junction box and the panelboard shall consist of individual conductors in conduit.
3. Provide insulated conductors in conduit from panelboard to ceiling junction box(es) in same room as devices. Use metal clad cable to connect to devices. Cable length from junction box to in-wall device should not exceed 25 feet. If ceiling is inaccessible, place junction box in nearest accessible ceiling, corridor preferred.

C. Connections And Terminations

1. Tighten connectors and terminals to manufacturer's torque specs. If not available, use UL 486A
2. Clean conductor surfaces before installing lugs and connectors.
3. Use solderless compression terminals with circumferential compression for 8 AWG+ conductors and crimp following manufacturer instructions. Indenter compression can be used for 10 AWG- conductors.
4. Connections to phase conductors at electrical equipment shall be oriented top to bottom or left to right in the A-B-C sequence Wiring at Outlets: Provide at least 6 inches of slack when installing conductors at outlets.

D. Splices and Taps

1. Conductor splices shall be kept to a minimum.
2. Only splice within accessible junction boxes or enclosures.
3. Splices and taps must match conductor material and have equal or greater strength and insulation. They shall carry full ampacity without temperature increase.

    a. Use an oxide inhibitor on all aluminum conductor splices and taps.

4. Above Grade:

    a. Use circumferential compression to apply copper connectors for conductor sizes 6 AWG and above.
    b. Use re-molded insulated connectors for copper splices and taps rated for Number 8 AWG or smaller. Insulate with UL-listed cover from same manufacturer.
    c. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, Number 10 AWG and smaller.
    d. Tape conductors and connectors with electrical tape at 150% insulation

rating or three layers, whichever is greater.

5. Below Grade:

    a. Use approved insulated connectors for below ground wiring splices to prevent tension.

3.9 IDENTIFICATION FOR ELECTRICAL SYSTEMS

A. Installation

1. Verify each item before installing identification products.
2. Location: Install clear identification materials and devices in unobtrusive locations. Use larger labels and letters for elevated components.
3. Clean and degrease surfaces before applying identification. Use primer for metal, heavy-duty filler for concrete masonry, and clear sealer for concrete.
4. Attach signs and plastic labels with appropriate mechanical fasteners.
5. System Identification Color-Coding Bands for Raceways and Cables: Color-coding bands shall encircle cables completely and place adjacent two-color bands side by side. Install bands at changes in direction, penetrations of walls and floors, every 50 feet in straight runs, and every 25 feet in congested areas.
6. Aluminum Wraparound Marker Labels and Metal Tags: Secure tightly to conductor's surface or cable at a highly visible and accessible location.
7. Cable Ties: For attaching tags. Use general-purpose type, except as listed below.

    a. Outdoors: UV-stabilized nylon.
    b. In Spaces Handling Environmental Air: Plenum rated.

B. Label Color Code Legend

C. Provide the following color coding scheme for each label based on the power system it is identifying:

1. Nominal Power: Black letters on white background.
2. Fire Alarm: Red letters on white background.

D. Raceway Identification

1. Identify Raceways of Certain Systems with Color Banding: Exposed and accessible raceways shall use colored plastic sleeves or adhesive tape for identification. Make each band 2 inches wide, encircle the conduit completely, and place adjacent bands side by side. Install bands at changes in direction, penetrations of walls and floors, and at 20-foot intervals in straight runs. Apply the following colors:

    a. Fire Alarm Systems: Red.
    b. Contractor Option: EMT conduit, if allowed or required, may replace banding for the mentioned systems. Manufacturer-painted conduit can be used and fittings need not be painted. All painting shall comply with Division 09 requirements.

2. Each conduit leaving a switchboard, panelboard, or motor control center shall indicate the served load.

3. The Contractor shall provide laminated, colored, and typewritten legends to the Owner indicating the identification color scheme. These legends are to be installed in the main electrical room and branch electrical closets. Two extra legends must be provided to the Owner for their use.

4. Identification of Raceways with Labeling.

    a. Raceway Labeling: Label conduits to indicate contained electrical distribution system (e.g. Normal, Life Safety) and voltage level. Label size shall be as follows:

Nominal EMT conduit size	Nominal RGS conduit size	Length of color background on label	Height of letters
up to 1 inch	up to 3/4 inch	8 inches	1/2 inch
1.25 to 1.5 inches	1 to 1.5 inches	8 inches	3/4 inch
2 to 5 inches	2 to 5 inches	12 inches	1.25 inches
6 inches	6 inches	24 inches	2.5 inches

E. Box Identification

1. Label junction and pull box covers with self-adhesive vinyl labels indicating system voltage and wiring legend:

   a. Normal Power.

2. Use vinyl labels to identify junction and connection boxes. Labels shall be placed inside cover for boxes in finished spaces:

   a. Power and lighting circuits: Indicate system voltage and identify contained circuits and panelboard (e.g., “120V, PP1-1, 3, 5”).
   b. Other wiring: Indicate system type and wiring description (e.g., “FIRE ALARM NAC #2”).

3. Paint box covers to correspond with system types as follows:

   a. Fire Alarm: Red.

F. Circuit Identification

1. Label conductors as follows:

   a. Multiple Power or Lighting Circuits in the Same Enclosure: Label conductors with source and circuit numbers when multiple branch circuits terminate or splice in a box.
   b. Multiple Control Wiring and Communication/Signal Circuits in Same Enclosure: Consistently label wires/cables with conductor designations on marking tape for control and communications signal/wiring.

G. Conductor Color Coding

1. Power-Circuit Conductor Identification, 600 V or Less:
   Color-code conductor tape to identify phases in vaults, boxes, panels, and switches.

   a. Color-Coding for Conductors rated 600 V or Less: Use colors listed below for all conductors.

      1. Color shall be factory-applied, or field-applied for sizes larger than No. 6 AWG, if Authorities Having Jurisdiction permit.

a) Field-applied, Color-Coding Conductor Tape: Apply electrical tape in half-lapped turns for a minimum of 6 inches from terminal points and boxes with splices. The last two turns should have no tension. Avoid covering factory markings.

2. Colors for 208/120V Circuits:

a) Phase A: Black.
b) Phase B: Red.
c) Phase C: Blue.
d) Neutral: White.
e) Ground Bond: Green.

3.10 BOXES, CABINETS, AND ENCLOSURES

A. Box And Cabinet

1. General Installation Requirements:

a. Locate boxes for headroom, neatness, and access. Use access doors for boxes above inaccessible ceilings.
b. Use knockout closures with knockout features to cap unused knockout holes after removing blanks.
c. Support boxes and enclosures independently of conduit, unless the National Electrical Code permits. Use proper supports.
d. Outdoor boxes above ground shall be raintight, gasketed cast aluminum.
e. Provide covers for all boxes.

2. Outlet Box Installation

a. All fire alarm devices shall be mounted on an outlet box unless otherwise specified.
b. Use flush-mount outlet boxes in finished areas and surface-mounted outlets in mechanical rooms, electrical rooms, and above removable ceilings.
c. Use multiple gang boxes and barriers to separate different voltage systems when mounting multiple devices together.
d. Align wall-mounted outlet boxes for switches, thermostats and similar devices.
e. Center ceiling mounted devices within corridors.
f. Follow ceiling drawings for device placement. Secure recessed boxes to wall/partition studs, accounting for finish thickness.
g. Flush boxes shall be installed squarely in line with building finish. Wall outlets shall be rigidly secured to stud system using supports to prevent box movement.
h. Outlet Box Application: Unless otherwise noted, outlet boxes shall be installed as follows

1. Galvanized Steel Box Installation Locations:

a) Concealed interior locations
b) Exposed interior locations above 7 feet-0 inches of finished floor.
c) Kitchen and laundry rooms, when recessed.

2. Cast Box Installation Locations

a) Exterior locations.
b) Hazardous locations.
c) Exposed interior locations within 7 feet-0 inches of finished floor.
d) Wet or damp locations.
e) Direct contact with earth or concrete slabs on grade.
f) Kitchen and laundry rooms, when exposed.

3. Pull and Junction Boxes:

a. Locate above accessible ceilings or in unfinished areas

1. Limit conduit runs to 150 linear feet by locating pull or junction boxes.

b. (4) 90 degree bends between pulling points. For telephone/ data limit bends to no more than three (3) 90 degree bends to pulling points.

4. Cabinets and Enclosures:

a. Install hinged cover enclosures and cabinets plumb, with supports at each corner.
b. Cover unused knockout holes with knockout closures when removing blanks.

3.11 HANGERS AND SUPPORTS

A. INSTALLATION

1. Raceway Supports: Comply with the NEC and the following requirements:

a. Ensure support selection and installation adhere to manufacturer's recommendations. Each support must be strong enough to handle present and future loads, multiplied by a safety factor of at least four. Use necessary individual and multiple raceway hangers and riser clamps for support. Employ U-bolts, clamps, attachments, and other hardware for hanger assembly and securing rods and conduits. Space supports according to Table I of this section or the NEC. Support exposed and concealed raceway within 3 feet of boxes, access fittings, device boxes, or cabinets. Use metal channel racks for mounting electrical devices.

2. Fastening: Securely fasten all electrical items and supporting hardware to the building structure, following the guidelines below:

a. When fastening, use appropriate materials for the surface: wood screws/nails for wood, toggle bolts for hollow masonry, concrete

inserts/expansion bolts for concrete/solid masonry, and screws/studs/clamps for steel (avoid welding to steel). Use sheet metal screws for light steel partitions.

b. Be mindful when cutting holes in concrete to avoid damaging reinforcing bars. Fill unused holes. Do not fasten to ceiling systems, pipes, ducts, equipment or conduit unless specified. Only use powder-actuated anchors with permission. Do not drill structural steel members.

c. Use at least four anchors for surface-mounted cabinets/panelboards. To support flush-mounted ones in stud walls, bridge studs with channels.

3. When installing equipment with anchorage devices, follow these guidelines to ensure safety:

a. Do not exceed 25% of the proof test load on any fastener.
b. Use vibration and shock-resistant fasteners for concrete attachments.
c. Secure anchorage devices with provided manufacturer instructions.
d. Install anchor bolts at required elevations, following written instructions from the manufacturer.

Table I: Spacing for Raceway Supports

			Maximum Spacing of Supports (Feet)		
Raceway Size (Inches)	No. of Conduits in Run	Location	RMC	EMT	RNC
HORIZONTAL RUNS					
1/2, 3/4	1 or 2	Flat ceiling or wall.	5	5	3
1/2, 3/4	1 or 2	Where it is difficult to provide supports except at intervals fixed by the building construction.	7	7	--
1/2, 3/4, 1	3 or more	Any location.	7	7	--
1 & larger	1 or 2	Flat ceiling or wall.	6	6	--
1 & larger	1 or 2	Where it is difficult to provide supports except at intervals fixed by the building construction.	10	10	--
1 & larger	3 or more	Any location.	10	10	--
Any	--	Concealed.	10	10	--
VERTICAL RUNS					
1/2, 3/4	--	Exposed.	7	7	--
1, 1-1/4	--	Exposed.	8	8	--
1-1/2 and larger	--	Exposed.	10	10	--
Up to 2	--	Shaftway.	14	10	--

3.12 ERECTION OF METAL SUPPORTS AND ANCHORAGE

A. Cut and accurately place wood for electrical equipment support and anchorage.

B. Field Field Welding: Comply with AWS "Structural Welding Code."

3.13 ERECTION OF WOOD SUPPORTS AND ANCHORAGE

A. Accurately cut, fit, and install blocks, anchors, and supports to ensure the secure placement of electrical equipment.

B. Use fasteners that won't penetrate visible or finished surfaces. Ensure tight connections to prevent wood splitting during installation.

C. Attach to substrates as required to support applied loads.

3.14 APPLICATION OF SEALERS

A. General: Follow the sealer manufacturer's application instructions for indicated products, unless stricter requirements apply.

B. Comply with recommendations of ASTM C 962 for use of elastomeric sealants.

C. Tooling: Smooth the sealant with an approved tool to create even beads, without air pockets, and ensure it sticks to the joint. Remove excess from nearby surfaces.

3.15 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Electrical penetrations occur when wiring passes through concrete, masonry, or fire-rated assemblies.

B. Concrete Slabs and Walls: Sleeves shall be installed for penetrations unless using core-drilled holes or formed openings during slab and wall erection.

C. Before core drilling, concrete slabs and walls shall be X-rayed to prevent damage to utilities and reinforced steel.

D. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

E. Fire-Rated Assemblies: Fabricate firestop-compatible openings during construction of fire-rated floors and walls. Install sleeves for penetrations otherwise.

F. Cut sleeves to length for mounting flush with both surfaces of walls.

G. Extend sleeves installed in floors 2 inches (50 mm) above finished floor level.

H. Size pipe sleeves to provide 1/4-inch (6.4-mm) annular clear space between sleeve and raceway or cable, unless indicated otherwise.

I. Seal space outside of sleeves with grout for penetration of concrete and masonry.

1. Pack grout firmly between sleeve and wall to eliminate voids. Smooth exposed surfaces and protect grout during curing.

J. Interior Penetrations of Non-Fire-Rated Walls and Floors: Apply appropriate joint sealant to seal annular space between sleeve and raceway/cable.

K. Fire-Rated-Assembly Penetrations: Seal raceway and cable penetrations with firestop to maintain fire rating.

L. Aboveground, Exterior-Wall Penetrations: Seal using steel pipe sleeves and mechanical seals with 1-inch annular clear space.

3.16 SLEEVE-SEAL INSTALLATION

A. Use manufacturer-recommended sealing elements for raceway/cable material and size. Position in sleeve center. Install mechanical sleeve seals in annular space.

B. Install to seal exterior wall penetrations.

C. Install sleeves in fire-rated floors and walls for cable and raceway installations. Use insulated bushings on end of each sleeve. Seal gaps between sleeves and enclosed conduits with UL-listed firestopping sealant.

1. Conduit Seals: Install seals for conduit penetration as indicated. Tighten screws until watertight seal form.

3.17 FIRESTOPPING

A. Apply fire-stopping sealant to fire and smoke walls, floors, and other designated locations as shown on drawings or required by Code. Consider common walls between buildings, additions, and fire/smoke separations. For existing buildings, apply logic or consult an Engineer/Architect when in doubt about fire-rated separations.

B. Install firestopping materials to restore fire-resistance rating of electrical penetrations in fire-rated floors and walls, as per UL listed materials/methods.

3.18 DEVIATION FROM CONTRACT DRAWINGS

A. Use copper conductors in raceway based on 30°C ambient temperature, per NEC Table 310.15(B)(16). Size conductors and conduits to meet or exceed ampacity if different materials or methods are used.

B. To prevent issues, limit the number of conductors in a single conduit to four or less when serving loads like panelboards, motor control centers, and motors over 1/4 horsepower. Derate conductor ampacity per National Electrical Code Article 310 when routing multiple conductors in a single conduit.

C. Underground duct conductor ampacity is determined by Table B.310.15(B)(2)(7) or Annex B. Changes to conductor and conduit shall require supporting calculations and Engineer approval.

D. Equipment grounding conductors shall be increased proportionally with ungrounded conductors.

3.19 SYSTEM COMMISSIONING

A. The electrical systems must be fully operational, including start-up, testing, balancing, calibration and adjustment of electrical controls, load balancing, software troubleshooting and verification, and final adjustments as necessary

B. All operational conditions, control sequences, interlocks, safety shut-downs, controls, and alarms will be tested during start-up

1. Skilled technicians should be used for proper system functioning. The Owner will be reimbursed for troubleshooting and other services rendered at the Engineer's hourly rates. Payment for project, installation, or workmanship-related services is due within 30 days

3.20 FIELD QUALITY CONTROL

A. General:

1. Inspect wire for physical damage and proper connection.
2. Measure tightness of bolted connections with properly scaled and calibrated torque tool and compare torque measurements with manufacturer's recommended values.
3. Before energizing, test wires and cables for electrical continuity and for short circuits.
4. Remove and replace malfunctioning conductors and retest as specified above
5. All required equipment and systems tests shall be made during and post-Construction as required.
6. All required testing instruments, meters, etc., shall be provided.
7. Technicians operating testing equipment shall be trained in testing procedures.
8. Testing shall confirm that equipment and systems provided by the Contractor have been installed properly.
9. Unsatisfactory test results shall result in revisions or replacement of equipment or settings as required to provide a system capable of meeting test requirements. Tests shall be repeated or additional tests made as necessary to confirm system capability as required by the Owner, Engineer or Authority Having Jurisdiction.

3.21 OPERATIONAL AN DMAINTENANCE DATA

A. Include the following information:

1. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of all replaceable parts.
2. Manufacturer’s printed operating procedures to include start-up, break-in, routine and normal operating instructions, regulation, control, stopping, shut-down, and emergency instructions; and summer and winter operating instructions.
3. Maintenance procedures for routine preventive maintenance and troubleshooting; disassembly, repair, and reassembly; aligning and adjusting instructions.
4. Servicing instructions and lubrication charts and schedules.

B. Submit three (3) properly indexed and bound copies in “D” ring style notebooks, of the Operations and Maintenance Instructions to the Architect or Engineer. Make all corrections or additions required.

C. Operation and Maintenance Instructions shall include:

1. Notebook shall be heavy duty locking three-ring binders, black in color, and incorporate clear vinyl sheet sleeves on the front cover and spine for slip-in labeling. “Peel and stick” labels are not acceptable. Sheet lifters shall be supplied at the front of each notebook. Size notebooks a minimum of 1/2 inch thicker than the material for future inserts. Label the spine and front cover of each notebook. If more than one notebook is required, label in

consecutive order. For example; 1 of 2, 2 of 2. No other forms of binding will be acceptable unless indicated otherwise by Division 0 and Division 1.

2. Prepare binder covers (front and spine) with printed title “Operation and Maintenance Instructions,” title of project, and subject matter of binder when multiple binders are required.
3. Title page with project title, Architect, Engineer, Contractor, and Subcontractor with addresses, telephone numbers, contacts, and any additional information required by the State of Missouri.
4. Table of Contents describing all index tabs
5. Listing of all Subcontractors and major equipment suppliers with addresses, telephone numbers and contacts
6. Index tabs dividing information by specification section, major equipment, or systems. All tab titles shall be clearly printed under reinforced plastic tabs. Label all equipment to match the identification in the construction documents
7. Copies tabs dividing information by specification section, major equipment, or systems. All tab titles shall be clearly printed under reinforced plastic tabs. Label all equipment to match the identification in the construction documents
8. Copies of warranties
9. Copies of all factory inspections and or equipment start-up reports
10. Schematic wiring diagrams of the equipment that have been updated for field conditions. Field wiring shall have label numbers to match drawings
11. Dimensional drawings of equipment
12. Detailed parts lists, each with a list of suppliers.
13. Operating procedures for each system
14. Maintenance schedule and procedures. Include a chart listing maintenance requirements and frequency
15. Repair procedures for major components
16. Replace parts and service material requirements for each system and the frequency of service required
17. Instruction books, cards, and manuals furnished with the equipment.

3.22 RECORD DOCUMENTS

A. Prepare record documents and indicate installed conditions for:

1. Raceways of 2-inches and larger, indicating size and location, for both exterior and interior; locations of control devices; distribution and branch electrical circuitry; and fuse and circuit breaker size and arrangements
2. Equipment locations (exposed and concealed), dimensioned from prominent building lines
3. Location of every home run point, such as receptacle, lighting fixture, or switch.
4. Approved substitutions, Contract modifications, and actual equipment and materials installed.
5. Mark Drawings to indicate revisions to conduit size and location both exterior and interior; actual equipment locations, dimensioned from column lines; concealed equipment, dimensioned to column lines; distribution and branch electrical circuitry; fuse and circuit breaker size and arrangements; support and hanger details; change orders; concealed control system devices.
6. Mark Specifications to indicate approved substitutions, change orders, actual equipment and materials used.

B. Maintain at the job site a separate and complete set of electrical drawings and specifications with all changes made to the systems clearly and permanently marked in complete detail.

C. Mark Drawings to indicate revisions to conduit size and location both exterior and interior; actual equipment locations, dimensioned from column lines; concealed equipment, dimensioned to column lines; distribution and branch electrical circuitry; fuse and circuit breaker size and arrangements; support and hanger details; Change Orders; concealed control system devices

D. Mark Drawings and specifications to indicate approved substitutions; Change Orders, and actual equipment and materials used. Mark all Change Orders, RFI responses, clarifications, and other supplemental instructions on the documents. Record documents that merely reference the existence of the above items are not acceptable. Reimburse the Engineer for all costs for the Engineer to develop record documents which comply with this requirement if unable to comply with said above requirements. Reimbursement shall be made at the Architect or Engineer's hourly rates in effect at the time of the work.

E. Record changes daily and keep the marked drawings available for the Architect or Engineer's examination at any normal work time

F. Upon completing the job, and before final payment is made, give the marked-up drawings to the Engineer.

3.23 PROJECT CLOSEOUT

A. Refer to Division 00 including General Conditions for additional information. The state prepared specifications for Division 00 will supersede any conflicts between Division 26 and Division 00.

B. Final Jobsite Observation:

1. Certify that the project jobsite is ready for the final jobsite observation.

C. Submit the following documents to the Owner's Representative prior to requesting final payment.

1. Operation and maintenance manuals with copies of approved shop drawings.
2. Record documents.
3. Documentation of completion of all required training of Owner's personnel.
4. Provide spare parts, maintenance and extra materials in quantities specified in individual specification sections.
5. Inspection and testing reports.
6. Start-up reports on all equipment requiring a factory installation or start-up.

END OF SECTION 26 0501

SECTION 284621 - ADDRESSABLE FIRE-ALARM SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 00, and Division 01 Specification Sections, apply to this Section.

B. The requirements of this section apply to the Fire and Life Safety System specified elsewhere in the specification; the contractor is to coordinate with Division 26 for interface with other systems.

C. NFPA 72 National Fire Alarm and Signaling Code 2022 Edition.

D. NFPA 70 National Electrical Code 2023 Edition.

1.2 SUMMARY

A. Section Includes:

1. Fire Alarm and Detection Systems:

    a. As required by the state of Missouri, the project documents will allow for multiple equipment manufacturers, provided that they meet the specification requirements. Potter Electric Signal has been used as the basis of design to produce the provided contract documents. Manufactures shall be non-proprietary, addressable systems. It is preferred that the chosen Manufacturer's corporate headquarters and manufacturing facilities are located in the state of MO.
    b. Work includes providing new complete Addressable fire alarm system in the Western Correctional Center buildings with networking capability and providing all materials, equipment, hardware, software, accessories, services and tests necessary to furnish and install intelligent Addressable Fire Alarm Systems and Network as indicated on the drawings required for replacement of the existing system.
    c. The fire alarm systems in each building will be new meeting all current NFPA 70 and NFPA 72 latest edition requirements.
    d. The system consists of but not be limited to the following:
        1. Fire Alarm Control Unit (FACU) per each building.
        2. Fire Alarm Annunciator panels.
        3. Color graphic station with touch screen.
        4. Addressable intelligent manual fire-alarm pull station.
        5. Addressable intelligent Photoelectric detectors.
        6. Addressable intelligent heat detectors.
        7. Carbon monoxide detectors.
        8. Liner heat detectors.
        9. Fault isolator module.
        10. VESDA System
        11. Notification Appliance Circuit (NAC) Expander.
        12. Strobe light ceiling / Wall mounted.
        13. Horn-Strobe ceiling / Wall Mounted.
        14. Sprinkler water flow switch alarm.

15. Sprinkler valve tamper switch monitoring.
16. Zone addressable monitor modules (for water flow and tamper switches and other non-addressable initiating devices).
17. Elevator recall and alternate recall control and relays.
18. Visual Display Unit (VDU).
19. Interface with HVAC system (Supply fans, Exhaust fans, pressurization fans, smoke fans and smoke dampers).
20. Addressable monitor modules (for water flow and tamper switches and other non-addressable initiating devices).
21. Control zone addressable modules.
22. Interface with all Fire Fighting Control Panels (FM200, CO2,…etc).
23. Interface with Automation systems.
24. Battery and battery Charger.
25. Conduits and Wires.

B. All system components of the Fire Alarm Life Safety system shall be U.L. listed by one U.S manufacturer.

C. After the completion of the installation of the Fire Alarm System, this Contractor shall perform a complete demonstration test of all systems and devices to the satisfaction of the Owner and their consulting engineer.

1.3 DEFINITIONS

A. DACT: Digital Alarm Communicator Transmitter.

B. EMT: Electrical Metallic Tubing.

C. FACU: Fire-Alarm Control Unit.

D. FAAP: Fire-Alarm Annunciator Panel

E. Mode: The terms "Active Mode," "Off Mode," and "Standby Mode" are used as defined in the 2007 Energy Independence and Security Act (EISA).

F. NICET: National Institute for Certification in Engineering Technologies.

G. PC: Personal computer.

H. Proprietary: equipment and software owned by a specific person or company. Proprietary fire alarm systems are owned by the manufacturer and local authorized service provider. They exclusively service the manufacturer's equipment and software.

I. Non-proprietary: "Open source" equipment and software are typically distributed by authorized dealers who have received factory training and represent the manufacturer of the equipment. These systems can generally be serviced by multiple companies authorized by the fire alarm equipment manufacturer.

J. Voltage Class: For specified circuits and equipment, voltage classes are defined as follows:

1. Control Voltage: Listed and labeled for use in remote-control, signaling, and power-limited circuits supplied by a Class 2 or Class 3 power supply having rated output not greater than 150 V and 5 A, allowing use of alternate wiring methods complying with NFPA 70, Article 725.
2. Low Voltage: Listed and labeled for use in circuits supplied by a Class 1 or other power supply having rated output not greater than 1000 V, requiring use of wiring methods complying with NFPA 70, Article 300, Part I.

1.4 PERFORMANCE REQUIREMENTS

A. The fire alarm design documents and this specification section describe the minimum required features, material quality and operational requirements of the fire alarm system. **These documents do not depict every connection to be made and wire to be installed. The Vendor and Contractor are solely responsible for determining all wiring, programming, interconnections, and additional equipment required to create a complete and fully functional fire alarm system, based on the equipment and performance characteristics described within these documents.**

B. Device layouts and limited equipment have been shown on the construction documents. It is the contactor's responsibility to verify existing conditions, and complete shop drawing submittals that indicate all requirements to create said fire alarm system.

C. Devices, equipment, and software to be non-proprietary.

1.5 ACTION SUBMITTALS

A. Approved AHJ Submittal: Submittals must be approved by authorities having jurisdiction in conjunction to submitting them to Owner. Submittals shall include product data, drawings, and calculations combined in a single submittal for the entirety of the facility.

1. Submittals at a minimum shall meet the requirements outlined in NFPA 72 section 7.2 and the contract documents.
2. All shop drawings shall be stamped and approved by professional engineers licensed in the state of Missouri.

B. Product Data: For each type of product, including furnished options and accessories.

1. Include construction details, material descriptions, dimensions, profiles, and finishes.
2. Include rated capacities, operating characteristics, and electrical characteristics.
3. Submit Complete, Detailed, and Original Catalogue for the manufacturer and marked up for all of the proposed equipment.
4. Detailed Bill of material indicating the model number, quantity, mounting accessories and country of origin list for all of the proposed equipment.
5. Description of operation of the system as described herein, to include all exceptions, variances or substitutions listed.
6. Cables, wiring, raceways, and labeling…etc. Refer to Division 26 for additional information.

C. Shop Drawings: For fire-alarm system.

1. Comply with recommendations and requirements in "Documentation" chapter of NFPA 72 including but not limited to the information outlined in the “Minimum Required Documentation”, “Design (layout) Documentation”, and “Shop Drawings” sections.
2. The contractor shall provide a detailed network connectivity diagram showing all network details/device requirements after coordinating with the facility and conducting due diligence on inspecting existing conditions.
3. The contract drawings provided are NOT installation drawings. The contract fire alarm drawings are schematic in nature, showing a minimal quantity of devices to establish the basis of design for bidding. The successful contractor shall be knowledgeable about the applicable codes and standards to determine the final quantity and location of all required devices, including necessary modules, to provide a fully functioning fire alarm system in compliance with NFPA 72 and these specifications. The shop drawings shall build upon the contract drawings to meet the requirements of NFPA 72 for shop drawings for installation.
4. After the project has been awarded, the contractor shall walk the facility to verify existing conditions before submitting shop drawings. Then, to ensure minimal changes during installation, the existing conditions shall be incorporated into the shop drawings.
    a. Any modifications made to the device layout, wiring layout, or configuration of wiring notification or initiation devices shall be reviewed and approved by an FSC, Inc. representative.
    b. Any necessary requests for information related to classification or site conditions not depicted in the drawings should be submitted prior to submitting the shop drawings to ensure that accurate shop drawings are provided for review and installation.
    c. The shop drawings must be submitted as a complete package, including all buildings, for review and must comply with NFPA 72 requirements. This includes floor layout, riser diagrams with addresses for each building and device, wire routing, and voltage drop and battery calculations. The complete package of shop drawings shall be prepared and stamped by a licensed professional engineer.
    d. The sequence of operations shall include all functions for the entirety of the facility and be approved by the DOC before configuration.
    e. The fiber connectivity is not included in FSC’s Scope of work. A continuity diagram of the OM3 site fiber network shall be provided by the contractor following coordination with the facility and must include verified connection locations at each building. Fiber patch panel’s locations and connectivity details to fire alarm control units shall be provided and indicated on the floor plan drawings.

5. Include plans, elevations, sections, and details, including details of attachments to other Work.
6. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and locations. Indicate conductor sizes, indicate termination locations and requirements, and distinguish between factory and field wiring.
7. Annunciator panel details as required by authorities having jurisdiction. Including computer and screen location coordinated by the Owner’s Representative.
8. Detail assembly and support requirements.
9. Shop drawings shall include anticipated wire routing based on site investigation and verification against the provided contract drawings.

10. Include voltage drop calculations for notification-appliance circuits. Maintain voltage drop per circuit of no more than 12% for existing circuits to be reutilized and no more than 10% for new circuits.
11. Include battery-size calculations.
12. Include input/output matrix. For each building, include actions for the central monitoring station located in the Administration building.
    a. The owner's representative/security operator shall approve input/output matrix prior to system programing.
13. Include a written statement from the manufacturer that the equipment and components have been tested as a system and comply with the requirements in this section and in NFPA 72.
14. Include performance parameters and installation details for each detector.
15. Verify that each duct detector is listed for complete range of air velocity, temperature, and humidity possible when air-handling system is operating.
16. Provide control wiring diagrams for fire-alarm interface to HVAC; coordinate location of duct smoke detectors and access to them.
    a. Show critical dimensions that relate to the placement and support of sampling tubes, detector housing, and remote status and alarm indicators.
    b. Show field wiring and equipment required for HVAC unit shutdown on alarm.
    c. Locate detectors in accordance with the manufacturer's written instructions.
17. Include floor plans to indicate final outlet locations, showing the address of each addressable device. Show the size and route of cable and conduits and point-to-point wiring diagrams.
18. Coordinate address nomenclature with the Owner's representative to ensure address labeling is intuitive to facility personnel. Each device should be predominately labeled with the address corresponding to the provided shop drawings and as-builts.

1.6 INFORMATIONAL SUBMITTALS

A. Architect/Engineer (AE) to approve shop drawing submittals prior to installation. Owner will be notified once submittals have been approved. Installation shall not begin until shop drawings / product data and calculations have been approved.

B. Certificates:
1. Submit UL certificates for all Fire alarm equipment.
2. Submit certificates of training for the fire alarm system provided by the manufacturer for all installation personnel.
3. Installing Contractors U.L. Listing Certification for Fire Alarm Systems.

C. Compliance list: submit a detailed point-by-point compliance statement with this specification. Where the proposed system does not comply with or accomplish the stated function or specification in a manner different from that described and specified, a full description of the deviation shall be provided. Where a full description is not provided, it shall be assumed that the proposed system does not comply with the requirements in the specification.

D. Project Manager overseeing installation shall have a NICET Level III Certification

E. Field quality-control reports: contractor shall provide reports related to NFPA 72, contractor should document the installation, testing (for cabling Meg test and Fire alarm equipment), and maintenance of fire alarm systems, ensuring compliance with NFPA 72 standards for both fire alarm system and fire alarm cables.

F. Wire Testing documentation: The existing wiring has been observed to be in poor condition. The contractor is responsible for providing a visual inspection and MAG testing of existing wiring to be reused. The contractor shall provide documentation that all re-used wiring was inspected as such for grounds and faults. To track wire replacement the contractor shall maintain a photo record of wiring to be replaced in conjunction with maintaining daily redlines to indicate what wiring is being replaced.

G. Sample Warranty: Submittal must include line-item pricing for replacement parts and labor.

1.7 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fire-alarm systems and installed components to include in emergency, operation, and maintenance manuals and to include system troubleshooting procedures, device addresses list and location…etc.

1. In addition to items specified in Division 00, include the following and deliver copies to authorities having jurisdiction:

   a. Comply with "Records" section of "Inspection, Testing and Maintenance" chapter in NFPA 72.
   b. Provide "Fire-Alarm and Emergency Communications System Record of Completion Documents" in accordance with "Completion Documents" Article in "Documentation" section of "Fundamentals" chapter in NFPA 72.
   c. Complete wiring diagrams showing connections between devices and equipment. Each conductor must be numbered at every junction point with indication of origination and termination points.
   d. Riser Diagram: Submit a detailed riser diagram to indicate the device address, building, and building floor level, the connection between all of the system components, size, type, and number of all conductors and conduits, and the interface with all other systems, and approved by the manufacturer.
      1) Contractor shall provide written documentation of approval from DOC for address naming convention.
   e. Peripheral device connection details showing all module and device wiring details..
   f. Updated device addresses, Submit labeling Schema for all Fire alarm equipment, devices, sounders,….etc for approval and labeling schema shall be matched with device configuration on the FACU. Addresses will be noted on the fire alarm shop drawings.
   g. Record copy of site-specific software.
   h. Provide "Inspection and Testing Form" in accordance with "Inspection, Testing and Maintenance" chapter in NFPA 72, and include the following:

      1) Equipment tested.
      2) Frequency of testing of installed components.
      3) Frequency of inspection of installed components.
      4) Requirements and recommendations related to results of maintenance.
      5) Manufacturer's user training manuals.

i. Manufacturer's required maintenance related to system warranty requirements.
j. Abbreviated operating instructions for mounting at FACU and each annunciator unit.
k. Submit detailed report of the test results including any deficiencies found prior to the engineer inspection and testing.
l. Submit Proof of factory training and certification of the supervising technician assigned to the project.

B. Software and Firmware Operational Documentation:

1. Software operating step-by-step instructions and upgrade manuals.
2. Program Software Backup: On USB media or as approved alternative solution.
3. Device address list. Address nomenclature to be coordinated with Owner's representative.
4. Printout of software application and graphic screens.
5. Contractor to submit any licensing details required for system operation.

1.8 MAINTENANCE MATERIAL SUBMITTALS

A. Extra Stock Material: Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. FACU motherboard: Quantity equal to 10 percent of the amount installed for the same motherboard with the highest number of slots but no fewer than one unit.
2. Loop Cards: Quantity equal to 10 percent of amount installed, but no fewer than two unit.
3. Lamps for Remote Indicating Lamp Units: Quantity equal to 10 percent of amount installed, but no fewer than one unit.
4. Lamps for Strobe Units: Quantity equal to 10 percent of amount installed, but no fewer than one unit.
5. Smoke Detectors, Fire Detectors: Quantity equal to 10 percent of amount of each type installed, but no fewer than one unit of each type.
6. Detector Bases: Quantity equal to 10 percent of amount of each type installed, but no fewer than one unit of each type.
7. Keys and Tools: One extra set for access to locked or tamper-proofed components.
8. Audible and Visual Notification Appliances: Quantity equal to 10 percent of amount of each type installed, but no fewer than one unit of each type
9. Fuses: Quantity equal to 10 percent of amount of each type installed, but no fewer than two of each type installed in system. Provide in box or cabinet with compartments marked with fuse types and sizes.

1.9 QUALITY ASSURANCE

A. Standards Compliance:

1. The system shall fully comply with the latest issue of these standards, if applicable.
   a. National Fire Protections Association (NFPA).
   b. No. 13 Sprinkler Systems.
   c. No. 70 National Electric Code (NEC).
   d. No. 72 National Fire Alarm Code.
   e. International Building Code-IBC.
2. Local and State Building Codes.

3. All requirements of the local Authority Having Jurisdiction (AHJ).

B. In case of conflict among the referenced standards and codes, the more stringent provision will govern.

C. Qualification Statements: For Designer

1. The shop drawings shall be sealed by a fire protection engineer overseeing their development.

D. Installer Qualifications:

1. The installation contractor shall have UL certificate for fire alarm installation
2. The installation contractor shall have a certified NICET Level III person to oversee the fire alarm installation. This person shall serve as the project manager or site foreman.
3. Personnel must be trained and certified by the manufacturer for the installation of units required for this Project.
4. Obtain certification by NRTL in accordance with NFPA 72.
5. The installation contractor shall hire a cabling contractor if required for checking the existing conditions of cabling.

1.10 FIELD CONDITIONS

1. The term "withstand" means "unit must remain in place without separation of parts from unit when subjected to specified seismic design loads."
2. Upon completion of installation of Fire and Life Safety System and after system has been energized, test equipment to demonstrate compliance with requirements. Field corrects or replaces defective equipment, and retest.
3. Inspect existing conduits and wires to ensure they are in good working order for reuse. Replace any wire not meeting the standards noted herein. Ensuring cabling filling ratios do not exceed 40% or that outlined by NFPA 70.
4. Provide certificates for existing cable conditions confirming status of re-use as outline herein.

1.11 WARRANTY

A. Special Warranty: Manufacturer agrees to replace fire-alarm system equipment for FACU and components that fail because of defects in materials or workmanship within specified warranty period.

1. Warranty Period: One year from date of Substantial Completion.
2. Warranty of work: One year for new installations and one year for reused items/cables from the time of acceptance testing and substantial completion.

1.12 ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES:

A. Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70 "National Electrical Code" for components and installation.

C. Comply with NECA "Standard of Installation."

D. Comply with Div.26.

E. Listing and Labeling: Provide products specified in this Section that are listed and labeled by Underwriters Laboratories (UL) for the specific purpose and comply with the following standards:

1. ANSI C80.1, ANSI C80.3, ANSI/NEMA FB 1, ANSI C80.5, ANSI/NFPA 70.
2. NECA "Standard of Installation."
3. NEMA RN 1, NEMA TC 2, NEMA TC 3

PART 2 - PRODUCTS

2.1 General:

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include and are limited to the following:

1. Potter Electric Signal.
2. Edwards.
3. Farenhyt – by Honeywell.

2.2 EXISTING FIRE-ALARM

A. Existing Fire-Alarm System to be replaced with new addressable fire alarm system.

B. Existing conduit and wiring is permitted to be reused where possible. Existing wiring should be Meg tested for compliance prior to reuse and be replaced where required.

C. The state has provided a facility-wide fiber backbone throughout. Patch panels are located at each building. The fiber network is not within FSC. Scope of work.

2.3 ADDRESSABLE FIRE-ALARM SYSTEM

A. Fire alarm contractor to provide all equipment and connections required for interfacing to accomplish fully functional fire alarm network.

B. Description:

1. Noncoded, UL-certified addressable system, with multiplexed signal transmission and Horn-and-strobe notification for evacuation.

C. The fire alarm control unit installed in the **Administration building** should be capable of monitoring fire alarm panels in the entire facility. A fire alarm monitor video display unit (VDU) must be provided in the main guard station of the **Administration Building** dedicated to allowing security to monitor each building effortlessly. The screen will notify the security personnel with an audible notification (sonalert or similar) and highlight the location of the trouble, supervisory, or alarm in any building or FACU. Performance Criteria:

1. Regulatory Requirements:

a. Fire-Alarm Components, Devices, and Accessories: Listed and labeled by a NRTL in accordance with NFPA 70 for use with selected fire-alarm system and marked for intended location and application.

2. General Characteristics:

a. Automatic sensitivity control of certain smoke detectors.
b. Fire-alarm signal initiation must be by one or more of the following devices and systems:

1) Manual Pull stations.
2) Heat detectors.
3) Smoke detectors.
4) Duct smoke detectors.
5) Carbon monoxide detectors.
6) Automatic sprinkler system water flow.
7) Kitchen hood suppression activation.

c. Supervisory signal initiation must be by one or more of the following devices and actions:

1) Valve supervisory switch.
2) Elevator shunt-trip supervision.
3) Zones or individual devices have been disabled.
4) FACU has lost communication with network.
5) VDU connection to FACU.
6) Cell unit duct detector.

d. System trouble signal initiation must be by one or more of the following devices and actions:

1) Open circuits, shorts, and grounds in designated circuits.
2) Opening, tampering with, or removing alarm-initiating and supervisory signal-initiating devices.
3) Loss of communication with addressable sensor, input module, relay, control module, remote annunciator, printer interface, or Ethernet module.
4) Loss of primary power at FACU.
5) Ground or single break in internal circuits of FACU.
6) Abnormal ac voltage at FACU.
7) Break in standby battery circuitry.
8) Failure of battery charging.
9) Abnormal position of switch at FACU or annunciator.
10) Hose cabinet door open.

e. Fire-alarm signal actions:

1) Continuously operate alarm notification.
2) Identify alarm and specific initiating device at FACU, connected network control units, and remote annunciators.
3) Transmit alarm signal to remote alarm receiving station located in the administrative building.
4) Unlock electric door locks in designated egress paths in public areas and if approved by the owner in writing.
5) Release fire and smoke doors held open by magnetic door holders.
6) Activate audible/visual notification.
7) Switch HVAC equipment controls fire-alarm mode.

8) Activate smoke-control system (smoke management) at firefighters' smoke-control system panel. (if applicable)
9) Activate stairwell and elevator-shaft pressurization systems. (if applicable)
10) Close smoke dampers in air ducts of designated air-conditioning duct systems. (if applicable)
11) Activate pre-action system. (if applicable)
12) Recall elevators to primary or alternate recall floors.
13) Activate elevator power shunt trip.
14) Activate emergency lighting control. (if applicable)
15) Activate emergency shutoffs for gas and fuel supplies, except for shutoffs serving legally required life-safety systems such as emergency generators and fire pumps. (if applicable)
16) Record events in system memory.
17) Exception: kitchen hood suppression, see input/output matrix on FA-002.

f. Indicate device in alarm on graphic annunciator or Video Display Unit at the Administrative building main guard monitoring station

g. System Supervisory Signal Actions:

1) Initiate notification appliances.
2) Identify specific device initiating event at FACU, connected network Fire alarm control units, and remote annunciators.
3) After time delay of 200 seconds, transmit trouble or supervisory signal to remote alarm receiving station.
4) Transmit system status to building management system.
5) Display system status on graphic annunciator.

h. Network Communications:
1) Fire alarm control unit located as indicated on the drawings shall be connected to the facility fiber backbone.
a) Contractor shall be responsible for providing all conduits, boxes, etc. and fiber from the FACU to each building’s fiber patch panel.
b) Contractor shall be responsible for all terminations, including fiber modules (single mode or multimode) and programming.
c) Contractor shall interface with the state facility network to establish any IP addresses, etc. to complete the system connectivity and operation.
d) Contractor shall coordinate with state IT system for identifying fiber cable type, speed, connectors / SFPs, required switches and copper cables required and to ensure that separate Virtual LAN Network (VLAN) is dedicated for fire alarm systems / graphic software stations.
e) Contractor to provide any network hardware required for full network operation.
f) Contractor to coordinate with facility for acceptable network hardware(s) manufactures. **Cisco products are not permitted.**

2) Provide network communications for fire-alarm systems in accordance with fire alarm manufacturer's written instructions.

3) Provide network communications pathway per manufacturer's written instructions and requirements in NFPA 72 and NFPA 70.
4) Provide integration / interfaced gateway for connection to building automation system (If applicable).

i. Device Wire Guards:

1) Description: UL listed welded wire mesh of size and shape for manual station, smoke detector, gong, or other device requiring protection.

a) Factory fabricated and furnished by device manufacturers.
b) Finish: Paint of color to match protected device.

2.4 FAULT ISOLATOR MODULES:

A. One or more modules shall be provided and integrated into the fire alarm loop as required.

B. Shall not require an SLC loop address but draws power from the loop.

C. Provides short-circuit protection by limiting the number of affected devices on the SLC loop.

D. Automatically disconnects the outgoing side of the loop when a short circuit is detected, isolating the faulty segment.

E. Includes a red LED status indicator:

1. LED illuminates steadily during a short circuit condition.
2. LED turns off automatically once the fault is cleared and the module resets.
3. Compatible with addressable fire alarm control panels utilizing SLC loop architecture.
4. Enhances system reliability by isolating faulted loop sections, allowing unaffected areas to remain operational.

2.5 FIRE-ALARM NETWORKING SOFTWARE:

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include and are limited to the following:

1. Potter Electric Signal.
2. Edwards.
3. Farenhyt – by Honeywell.

B. General Characteristics:

1. Graphic software shall be UL-listed for networking.
2. Graphical interface to up to 15 graphic networking stations. Network to maintain connectivity to the fire system and annunciate all events. Ensure a standard ethernet port is all that shall be required to configure the network.
3. Connect up to 1,000 fire alarm control units in a single facility or multiple sites.
4. Native ethernet working connectivity with fire panels and other network stations.
5. End-to-end supervision of all panels and Network stations.
6. Single or multiple monitor support with floatable and dockable windows.

7. Flexible licensing and software service agreement. Does not require yearly updates to the system for continued functionality. Can be updated as the Owner chooses.
8. The network shall be fully functional when isolated from other systems and without an internet connection.
9. Contractor shall provide all required network cables, switches and equipment required for software connectivity.

2.6 VIDEO DISPLAY UNIT (VDU)

A. The VDU must be the secondary operator-to-system interface for data retrieval, alarm annunciation, commands, an programming functions. The desk-mounted VDU must consist of a PC, LCD monitor and keyboard. The VDU must have a 19-inch minimum Touch screen, capable of displaying a graphical representation of the facility, and each building, 25 lines of 80 characters each. Communications with the FACU and remote FAAP's located in other buildings on facility must be supervised. Faults must be recorded in the history log. The power required must be 120 VAC, 60 Hz from the same source as the FACU. The VDU shall not be proprietary.

B. Provide all cables and hardware required for connectivity with facility network and graphic software / PC.

C. To eliminate confusion during an alarm situation, the screen must have dedicated areas for the following functions:

1. Alarm and return to normal.
2. Commands, reports, and programming.
3. Time, day, and date.

D. Use full English language throughout to describe system activity and instructions. Full English language descriptors defining system points must be 100 percent field programmable by factory trained personnel, alterable and user-definable to accurately describe building areas.

E. Alarms and other status changes must be displayed in the screen area reserved for this information. Upon receipt of alarm, an audible alarm must sound, and the condition and point type must flash until acknowledged by the operator. Return to normal must also be annunciated and must require operator acknowledgment. The following information must be provided in full English. Coordinate with Owner's representative acceptable address coding for all devices.

1. Condition of the device (alarm, trouble, or supervisory)
2. Type of device (for example, manual pull, waterflow).
3. Location of the device plus numerical system address.
4. The system must have multiple levels of priority for displaying alarms to conform with. Priority levels must be as follows:
5. Level 1 - Fire Alarms Signals.
6. Level 2 - Supervisory Signals.
7. Level 3 - Carbon Monoxide Alarm Signals.
8. Level 4 - Trouble Signals.

F. Provide the system with memory so that no alarm is lost. A highlighted message must advise the operator when unacknowledged alarms are in the system.

G. Multiple levels of access must be provided for operators and supervisors via user-defined passwords. Provide the following functions for each level:

1. Operator-level access functions
   a. Display system directory, definable by device.
   b. Display status of an individual device.
   c. Manual command (alarm device with an associated command must use the same system address for both functions).
   d. Report generation, definable by device, output on the VDU or printer, as desired by the operator.
   e. Activate building notification appliances.
2. Supervisor level access functions:
   a. Reset time and date.
   b. Enable or disable event initiated programs, printouts, and initiators.
   c. Enable or disable individual devices and system components.
3. The above supervisor-level functions must not require computer programming skills. Changes to system programs must be recorded on the printer and maintained in the control unit as a trouble condition.

H. PROGRAMMING:

1. Where programming for the operation of the VDU is accomplished by a separate software program other than the software for the FACU, the software program must not require reprogramming after loss of power. The software must be reprogrammable in the field.
2. Changes to the software applied at a single PC must automatically provide a system-wide change to all PC's connected within the network.
3. the contractor is responsible for programming and testing the facility fiber network to ensure all buildings successfully report to the Administration's central FACU for monitoring the entire facility. The contractor shall coordinate with the state to obtain IP addresses and other required information to accomplish this task.
4. Software installed on the PC shall be standalone and not require internet access. Software shall not require yearly upgrades to maintain functionality.
5. Back-up of the software will be provided to the state in a manner that will allow the state to replace a VDU if it stops functioning to minimize lapse in system monitoring.
6. The PC will have the most recent Microsoft software pre-uploaded to the PC and the monitoring software for the FACU network, including building drawings, and FACU building system and information.
7. The PC will have Bluetooth capability for remote connection and access via 2 factor authentication to accommodate a cellular modem.

2.7 FIRE-ALARM CONTROL UNIT (FACU)- TYPE A

A. The FACU shall not be proprietary.

B. This section outlines the FACU required to be utilized in the central security command center of the administration building. This panel may be used elsewhere as necessary to accommodate larger facility buildings. Shall be installed for Administration Building, Buchanan Building, Center Building, Park Building and Educational Building.

C. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, and are limited to the following:

1. Potter Electric Signal.

2. Edwards.
3. Farenhyt – by Honeywell.

D. Description: Field-programmable, microprocessor-based, modular, power-limited design with electronic modules.

E. Performance Criteria:

1. Regulatory Requirements: Comply with NFPA 72 and UL 864.
2. General Characteristics:

a. The FACU shall support a minimum of Six (6) SLC loops.

b. The FACU shall include Signaling Line Circuits (SLC) that will power, supervise, monitor, and control a maximum of 127 analog addressable devices which may be made up of any combination of sensors and modules.

c. The FACU shall be capable of expanding up to 1270 addressable devices using expansion board.

d. The SLC loop shall not require twisted or shielded cabling. Systems that require twisted and/or shielded cabling for the SLC loop are not acceptable

e. The FACU shall have 3 form C relays dedicated to Alarm, Trouble, and Supervisory conditions. These relays shall have a contact rating of 3 Amps at 24VDC.

f. All circuits shall be power limited per UL 864 requirements.

g. The FACU shall have minimum four (4) programmable Notification Appliance Circuits rated at no less than 3 amps per circuit and capable of being wired in a Class A or Class B configuration.

h. The FACU shall include an operator interface keypad and annunciation panel that includes a 160-character backlit (4-line 40-character) LCD display and color-coded system status LED’s.

i. The FACU shall include a feature that can quickly and automatically detect, enroll all system devices, and make them operational. The function shall allow an authorized user to subsequently run a function after initial installation in order to make changes to the system, without deleting any existing programming. Systems that include auto-program functions that delete existing programming when ran are not acceptable.

j. The FACU shall be housed in a UL listed key locked cabinet with sufficient space to house 8AH or 18AH batteries.

k. FACU shall have the capability to be networked via Fiber cabling.

l. The FACU shall be capable of being programmed with an IP address so that it can reside on a standard TCP/IP network. The IP address shall be able to be assigned dynamically through DHCP or programmed statically.

m. The FACU shall include a built-in TCP/IP Ethernet port for programming and communications purposes.

n. All fiber interface cards and modules shall be included and installed as per fiber optic cabling distances required for FACUs connectivity, interface modules shall be either multimode or single mode.

o. System software and programs must be held in nonvolatile flash, electrically erasable, programmable, read-only memory, retaining information through failure of primary and secondary power supplies.

p. Include real-time clock for time annotation of events on event recorder and printer.

q. Provide communication between FACU and remote circuit interface panels, annunciators, and displays.

r. FACU must be listed for connection to central-station signaling system service.

s. Provide nonvolatile memory for system database, logic, and operating system and event history. System must require no manual input to initialize in the event of complete power down condition. FACU must provide minimum 500-event history log.

t. Addressable Initiation Device Circuits: FACU must indicate which communication zones have been silenced and must provide selective silencing of alarm notification appliance by building communication zone.

u. Fire-Alarm Annunciator: Arranged for interface between human operator at FACU and addressable system components including annunciation and supervision. Display alarm, supervisory, and component status messages and programming and control menu.

    1) Annunciator and Display: LCD include a 4-line 160-character backlit LCD display.

v. Initiating-Device, Notification-Appliance, and Signaling-Line Circuits:

    1) Pathway Class Designations: NFPA 72, Class B.
    2) Pathway Survivability: Level 0.
    3) Install fault circuit isolators to comply with circuit performance requirements of NFPA 72 or with manufacturer's written instructions, whichever is more conservative.

w. Serial Interfaces:

    1) One dedicated RS 485 port for central-station operation using point ID DACT.
    2) One RS 485 port for remote annunciators, Ethernet modules, or multi-interface modules (printer port).
    3) One USB port for PC configuration.
    4) One RS 232 port for air-aspirating smoke detector connection.

5) One RS 232 port for voice evacuation interface.
6) The Interfaces shall not be proprietary.

x. Smoke-Alarm Verification:

1) Initiate audible and visible indication of "alarm-verification" signal at FACU.
2) Activate approved "alarm-verification" sequence at FACU and detector.
3) Record events by system printer.
4) Sound general alarm if alarm is verified.
5) Cancel FACU indication and system reset if alarm is not verified.

y. Notification-Appliance Circuit:

1) Audible appliances must sound in three-pulse temporal pattern, as defined in NFPA 72.
2) Where notification appliances provide signals to sleeping areas, alarm signal must be 520 Hz square wave with intensity 15 dB above average ambient sound level or 5 dB above maximum sound level, or at least 75 dB(A-weighted), whichever is greater, measured at pillow.
3) Visual alarm appliances must flash in synchronization where multiple appliances are in same field of view, as defined in NFPA 72.

z. Elevator Recall: Initiate by one of the following alarm-initiating devices:

1) Elevator lobby detectors except lobby detector on designated floor.
2) Smoke detectors in elevator machine room.
3) Smoke detectors in elevator hoistway.

aa. Elevator controller must be programmed to move cars to alternate recall floor if lobby detectors located on designated recall floors are activated.

bb. Water-flow alarm connected to sprinkler in elevator shaft and elevator machine room must shut down elevators associated with location without time delay.

1) Water-flow switches associated with sprinkler in elevator pit may have delay to allow elevators to move to designated floor.

cc. Door Controls: Door hold-open devices that are controlled by smoke detectors at doors in smoke-barrier walls must be connected to fire-alarm system.

dd. Remote Smoke-Detector Sensitivity Adjustment: Controls must select specific addressable smoke detectors for adjustment, display their current status and sensitivity settings, and change those settings. Allow controls to be used to program repetitive, time-scheduled, and automated changes in sensitivity of specific detector groups. Record sensitivity adjustments and sensitivity-adjustment schedule changes in system memory and print out final adjusted values on system printer.

ee. Transmission to Remote Alarm Receiving Station: Automatically transmit alarm, supervisory, and trouble signals to remote alarm station.

ff. Indicate number of alarm channels for automatic, simultaneous transmission of different announcements to different zones or for manual transmission of announcements by use of central-control microphone. Amplifiers must comply with UL 1711.

1) Allow application of, and evacuation signal to, indicated number of zones and simultaneously allow voice paging to other zones selectively or in combination.
2) Programmable tone and message sequence selection.
3) Standard digitally recorded messages for "Evacuation" and "All Clear."
4) Generate tones to be sequenced with audio messages of type recommended by NFPA 72 and that are compatible with tone patterns of notification-appliance circuits of FACU.

gg. Printout of Events: On receipt of signal, print alarm, supervisory, and trouble events. Identify zone, device, and function. Include type of signal (alarm, supervisory, or trouble) and date and time of occurrence. Differentiate alarm signals from other printed indications. Also, print system reset event, including same information for device, location, date, and time. Commands initiate printing of list of existing alarm, supervisory, and trouble conditions in system and historical log of events.

hh. Primary Power: 24 V(dc) obtained from 120 V(ac) service and power-supply module. Initiating devices, notification appliances, signaling lines, trouble signals, and supervisory signals must be powered by 24 V(dc) source.

ii. Alarm current draw of entire fire-alarm system must not exceed 80 percent of power-supply module rating.

jj. Secondary Power: 24 V(dc) supply system with batteries, automatic battery charger, and automatic transfer switch.

kk. Batteries: Sealed, valve-regulated, recombinant lead acid

F. Accessories:

1. Instructions: Computer printout or typewritten instruction card mounted behind plastic or glass cover in stainless steel or aluminum frame. Include interpretation and describe appropriate response for displays and signals. Briefly describe functional operation of system under normal, alarm, and trouble conditions.

2.8 FIRE ALARM CONTROL UNIT (FACU) TYPE-B

A. General:

1. The FACU shall not be proprietary and networkable with the FACU outlined in section 2.6 and is intended for use in smaller facility buildings such as the Powerhouse Building, ILS building, Maintenance Building, and Laundry Building.

2. The manufacturer shall match the chosen FACU to be provided in the Central Security Command Center of the Administration Building. All provided panels shall be networkable. The criteria outlined for the alternative FACU shall not be permitted to

be installed in the Central Security Command Center, nor in other buildings indicated on section 2.5.

B. The FACU-TYPE-B shall be with reduced features as allowed. The same features shall include at a minimum one (1) Signaling Line Circuit (SLC) that will power, supervise, monitor, and control a maximum of 100 analog addressable devices which may be made up of any combination of sensors and modules. Sub-points allow for more than 100 analog addressable software points. The SLC shall have the capability to be wired in an NFPA Style 4, 6, or 7 (Class A, B or X) configuration

C. The FACU shall be expandable via loop expansion module.

D. The FACU shall have 3 form C relays dedicated to Alarm, Trouble, and Supervisory conditions. These relays shall have a contact rating of 3 Amps at 24VDC.

E. The FACU shall have a power supply capable of providing a minimum of 5 amps of 24 VDC power to devices requiring auxiliary power and/or notification appliances.

F. The FACU shall have two (2) programmable Notification Appliance Circuits rated at no less than 3 amps per circuit and capable of being wired in a Class A or Class B configuration. These circuits shall be programmable for, but not limited to, the following output types:

1. Notification Appliance Circuit – Continuous Output
2. Notification Appliance Circuit – ANSI Temporal Output
3. Notification Appliance Circuit – Sounder Base Power
4. Notification Appliance Circuit – Synchronized Output
5. Auxiliary Power – Constant
6. Auxiliary Power – Resettable
7. Door Holder Power – Constant
8. Door Holder Power – Low AC Dropout
9. City Tie - Reverse Polarity Output for applications in compliance with applicable NFPA standards.
10. Releasing Circuit – For use with pre-action sprinkler systems.
11. Elevator - Recall
12. Elevator - Shunt trip
13. HVAC – Unit shutdown

G. The FACU NAC circuits shall include the capability to automatically synchronize notification appliances from multiple manufacturers simultaneously on the same FACU without the need for a synchronization module. Systems that do not allow for multiple brands of strobes to be synchronized together on the same panel are not acceptable. The following manufacturers synchronization protocol shall be supported as a minimum:

1. Amseco
2. Gentex
3. Gentex Sync with T4
4. Wheelock
5. System Sensor

H. The FACU shall include a 4-wire serial bus for communication with system annunciators, power supplies, expansion modules, and other accessories. The bus shall support a wiring distance of no less than 6500 feet from the panel to the furthest device.

I. The FACU shall have two (2) programmable I/O Circuits rated at 1 amp per circuit and capable of being wired in a Class B configuration.

J. The FACU shall include an operator interface keypad and annunciation panel that includes a 32-character backlit LCD display and color-coded system status LED's.

K. The FACU shall include a LEARN feature that can quickly and automatically detect, enroll all system devices, and make them operational. The LEARN function shall allow an authorized user to subsequently run a LEARN function after initial installation in order to make changes to the system, without deleting any existing programming. Systems that include auto-program functions that delete existing programming when ran are not acceptable.

L. The FACU shall be housed in a UL listed key locked cabinet with sufficient space to house 8AH or 18AH batteries.

M. The FACU shall be capable of being programmed with an IP address so that it can reside on a standard TCP/IP network. The IP address shall be able to be assigned dynamically through DHCP or programmed statically.

N. The FACU shall include a built-in TCP/IP Ethernet port for programming and communications purposes.

O. The FACU shall include the ability to add a Digital Alarm Communicating Transmitter (DACT). The DACT shall be capable of being used in lieu of or in addition to the IP central station communication capability.

2.9 MANUAL FIRE-ALARM PULL STATION

A. Potter Electric Signal, System Sensor, Edwards, and Farenhyt.

B. Double Action Type:

1. General Requirements for Manual Fire-Alarm Boxes: Comply with UL 38. Boxes must be metal, finished in red with molded, raised-letter operating instructions in contrasting color; must show visible indication of operation; and must be mounted on recessed outlet box. If indicated as surface mounted, provide manufacturer's surface back box.
2. Double-action mechanism requires two actions to initiate alarm, pull-lever type; with integral addressable module arranged to communicate manual-station status (normal, alarm, or trouble) to FACU.
3. Station Reset: Key- or wrench-operated switch.
4. Metal box enclosure for pull station housing.
5. Able to perform at up to 90 percent relative humidity at 90 deg F (32 deg C).

C. Key operated Type:

1. UL listed.
2. Boxes must be metal, finished in red with molded, raised-letter operating instructions in contrasting color; must show visible indication of operation; and must be mounted on recessed outlet box.
3. Tamper-resistant key-operated switch reduces unauthorized activations.
4. Key is difficult to duplicate, enhancing security.
5. Key removable in both "ON" and "OFF" positions for flexible use.

6. Equipped with a Single Pole Normally Open (N.O.) contact.
7. Contact rating: 10 amps at 125 VDC.
8. Features terminal connectors for straightforward field wiring.
9. Tamperproof actuation.

2.10 SYSTEM SMOKE DETECTORS

A. Photoelectric Smoke Detectors:

1. Potter Electric Signal, System Sensor, Edwards, and Farenhyt.
2. Performance Criteria:

a. Regulatory Requirements:

1) NFPA 72.
2) UL 268 7th Edition.

b. General Characteristics:

1) Detectors must be two-wire type.
2) 4” Standard base.
3) Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to FACU.
4) Base Mounting: Detector and associated electronic components must be mounted in twist-lock module that connects to fixed base. Provide terminals in fixed base for connection to building wiring.
5) Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
6) Integral Visual-Indicating Light: LED type, indicating detector has operated and power-on status.
7) Detector address must be accessible from FACU and must be able to identify detector's location within system and its sensitivity setting.
8) Operator at FACU, having designated access level, must be able to manually access the following for each detector:

a) Primary status.
b) Device type.
c) Present average value.
d) Present sensitivity selected.
e) Sensor range (normal, dirty, etc.).

9) Detector must have functional humidity range within 10 to 90 percent relative humidity.
10) Multiple levels of detection sensitivity for each sensor.
11) Sensitivity levels based on time of day.
12) Temperature Range: 32 to 120° F
13) Shall not be proprietary.

2.11 DUCT SMOKE DETECTORS

1. Potter Electric Signal, System Sensor, Edwards, and Farenhyt.

B. Description: Photoelectric-type, duct-mounted smoke detector- for air handling units and cells.

C. Performance Criteria:

1. Regulatory Requirements:

   a. NFPA 72.
   b. UL 268A.

2. General Characteristics:

   a. Detectors must be two-wire type.
   b. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to FACU.
   c. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
   d. The detector shall be listed for releasing service if used for direct interface with a smoke damper.
   e. Integral Visual-Indicating Light: LED type, indicating detector has operated and power-on status.
   f. Detector address must be accessible from FACU and must be able to identify detector's location within system and its sensitivity setting.
   g. Operator at FACU, having designated access level, must be able to manually access the following for each detector:

      1) Primary status.
      2) Device type.
      3) Present average value.
      4) Present sensitivity selected.
      5) Sensor range (normal, dirty, etc.).

   h. Weatherproof Duct Housing Enclosure: NEMA 250, Type 4X; NRTL listed for use with supplied detector for smoke detection in HVAC system ducts. Chases between cells require weatherproof enclosure due to potential flooding from offender vandalism.
   i. Sampling Tubes: Design and dimensions as recommended by manufacturer for specific duct size, air velocity, and installation conditions where applied.
   j. Relay Fan Shutdown: Fully programmable relay rated to interrupt fan motor-control circuit.
   k. Shall not be proprietary.
   l. Where duct smoke detectors are not easily accessible from the floor provide UL listed keyed remote test station as outlined by NFPA 72.

2.12 AIR-SAMPLING SMOKE DETECTORS

A. Performance Criteria:

1. Accepted manufacturers include but are not limited to:
   a. VESDA
   b. Xtralis
   c. Fike

2. Regulatory Requirements:

a. NFPA 72.
b. UL 1887.

3. General Characteristics:

a. Air-sampling smoke detector must be laser based using piping system and fan to transport particles of combustion to detector.
b. Provide two levels of alarm from each zone covered by detector and two supervisory levels of alarm from each detector.
c. Air being sampled must pass through filters to remove dust particulates greater than 20 microns before entering detection chamber.
d. Detectors must have capability via RS 485 to connect up to 100 detectors in network.
e. Detectors must communicate with FACU via addressable, monitored dry contact closures, RS 485, and interface modules. Provide minimum of six relays, individually programmable remotely for any function.
f. Pipe airflow balancing calculations must be performed using approved calculation software.
g. Detector, Filter, Aspirator, and Relays: Housed in mounting box and arranged such that air is drawn from detection area and sample passes through dual-stage filter and detector by aspirator.
h. Obscuration Sensitivity Range: [**0.005 to 6 percent obs/ft.**]
i. Four independent, field-programmable, smoke-alarm thresholds per sensor pipe and programmable scan time delay. Threshold set points must be programmable.

1) Four alarm thresholds may be used as follows:

a) Alarm Level 1 (Alert): Activate visual and audible supervisory alarm.
b) Alarm Level 2 (Action): Activate shutdown of electrical/HVAC equipment and activate visual and audible supervisory alarm.
c) Alarm Level 3 (Fire 1): Activate building alarm systems and initiate call to fire response unit.
d) Alarm Level 4 (Fire 2): Activate suppression system or other countermeasures.

2) Final Detection System Settings: Approved by Owner with manufacturer guidance based on the existing conditions of the space the system is installed.
3) Initial Detection Alarm Settings to be modified as necessary to meet building conditions:

a) Alarm Level 1 (Alert): 0.08 percent obs/ft.
b) Alarm Level 2 (Action): 1.0 percent obs/ft.
c) Alarm Level 3 (Fire 1): 2.0 percent obs/ft.
d) Alarm Level 4 (Fire 2): 4.0 percent obs/ft.

j. Power Supply:

1) Regulated 24 V(dc), monitored by FACU, with battery backup.
2) Battery backup must provide 24 hours' standby, followed by 30 minutes at maximum connected load.

k. Detector must also transmit the following faults:

1) Detector.
2) Airflow.
3) Filter.
4) System.
5) Zone.
6) Network.
7) Power.

l. Provide four in-line sample pipe inlets that must contain flow sensor for each pipe inlet. Detector must be capable of identifying pipe from which smoke was detected.
m. Aspirator: Air pump capable of allowing for multiple sampling pipe runs up to 650 ft. (200 m) in total, (four pipe runs per detector) with transport time of less than 120 seconds from farthest sample port.
n. Air-Sampling Flow Rates Outside Manufacturer's Specified Range: Result in trouble alarm.
o. Provide software-programmable relays rated at 2 A at 30 V(dc) for alarm and fault conditions.
p. Provide built-in event and smoke logging; store smoke levels, alarm conditions, operator actions, and faults with date and time of each event. Each detector (zone) must be capable of storing up to 18,000 events.
q. Urgent and Minor Faults. Minor faults must be designated as trouble alarms. Urgent faults, which indicate unit may not be able to detect smoke, must be designated as supervisory alarms.

4. Displays:

a. Include display module within each detector.
b. Each display must include the following features:

1) Bar-graph display.
2) Four independent, high-intensity alarm indicators (Alert, Action, Fire 1, and Fire 2), corresponding to four alarm thresholds of indicated sector.
3) Alarm threshold indicators for Alert, Action, and Fire 1.
4) LED indication that first alarm sector is established.
5) Detector fault and airflow fault indicators.
6) LED indicators must be provided for faults originating in particular zone (Zone Fault), faults produced by overall smoke-detection system, and faults resulting from network wiring errors (Network Fault).
7) Minor and urgent LED fault indicators.

5. Sampling Tubes:

a. Smooth bore with nominal 1 inch (25 mm) OD and 7/8 inch (21 mm) ID. Sampling pipe with between 5/8 and 1 inch (15 and 25 mm) ID can be used in specifically approved locations when recommended by manufacturer.
b. Pipe Material: CPVC and complying with UL 1887.
c. Joints in sampling pipe must be airtight. Use solvent cement approved by pipe manufacturer on joints except at entry to detector.
d. Identify piping with labels reading: "Aspirating Smoke Detector Pipe - Do Not Paint or Disturb" along its entire length at regular intervals in accordance with NFPA 72.
e. Support pipes at not more than 60 inch (1.5 m) centers.

f. Fit end of each trunk or branch pipe with end cap and drilled with hole appropriately sized to achieve performance as specified and as calculated by system design.

6. Sampling Holes:

a. Sampling holes of 5/64 inch (2 mm), or other sized holes per manufacturer's written instructions, must be separated by not more than maximum distance allowable for conventional smoke detectors. Intervals may vary in accordance with calculations.
b. Follow manufacturer's written instructions to determine number and spacing of sampling points and distance from sampling points to ceiling or roof structure and to forced ventilation systems.
c. Each sampling point must be identified by applied decal.

2.13 CARBON MONOXIDE DETECTORS

A. Potter Electric Signal, System Sensor, Edwards, and Farenhyt.

B. Description: Carbon monoxide detector listed for connection to fire alarm system.

C. Performance Criteria:

1. Regulatory Requirements:

a. NFPA 72
b. NFPA 720.
c. UL 2075.

2. General Characteristics:

a. Mounting: Adapter plate for outlet box mounting.
b. Testable by introducing test carbon monoxide into sensing cells.
c. Detector must provide alarm contacts and trouble contacts.
d. Detectors must send a trouble alarm when nearing end-of-life, power supply problems, or internal faults.
e. Locate, mount, and wire in accordance with manufacturer's written instructions.
f. Provide means for addressable connection to fire-alarm system.
g. Test button simulates alarm condition.
h. Shall not be proprietary.

2.14 HEAT DETECTOR

A. Combination-Type Heat Detectors:

1. Potter Electric Signal, System Sensor, Edwards, and Farenhyt.
2. Performance Criteria:

a. Regulatory Requirements:

1) NFPA 72.
2) UL 521.

b. General Characteristics:

1) Temperature sensors must test for and communicate sensitivity range of device.

c. Actuated by fixed temperature of 135 deg F (57 deg C) or rate of rise that exceeds 15 deg F (8 deg C) per minute unless otherwise indicated.
d. Mounting: Adapter plate for outlet box mounting, or Twist-lock base interchangeable with smoke-detector bases.
e. Provide Neama 7 type enclosure where subject to flammable vapors such as spray booths or flammable storage areas.
f. 4" Standard base.
g. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to FACU.
h. Detector must have functional humidity range of 10 to 90 percent relative humidity.
i. Shall not be proprietary.

B. Fixed-Temperature-Type Heat Detectors:

1. Potter Electric Signal, System Sensor, and Edwards.
2. Performance Criteria:

a. Regulatory Requirements:

1) NFPA 72.
2) UL 521.

b. General Characteristics:

1) Actuated by temperature that exceeds fixed temperature of 190 deg F (88 deg C).
2) Mounting: Adapter plate for outlet box mounting or Twist-lock base interchangeable with smoke-detector bases.
3) Provide Neama 7 type enclosure where subject to flammable vapors such as spray booths or flammable storage areas.
4) 4" standard base.
5) Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to FACU.
6) Detector must have functional humidity range of 10 to 90 percent.
7) Shall not be proprietary.

2.15 NOTIFICATION APPLIANCE CIRCUIT (NAC) EXPANDER

A. The power supply shall have six (6) Class B or three (3) Class A power outputs.

B. Each output is regulated and power limited with a 3 Amp maximum rating.

C. Shall include two (2) programmable dry contact inputs.

D. The dry contact inputs are Class B, supervised inputs. The outputs can be also configured for constant power, resettable power, sounder base power, door holder power (with or without a low AC drop out), ANSI temporal Code 3, City Tie or be a releasing circuit for 24vdc solenoids.

2.16 FIRE-ALARM NOTIFICATION APPLIANCES

A. Fire-Alarm Audible Notification Appliances:

1. Potter Electric Signal, System Sensor, Edwards and Farenhyt.
2. Description: Horns and horn strobes.
3. Performance Criteria:

a. Regulatory Requirements:

1) NFPA 72.

b. General Characteristics:

1) Individually addressed, connected to signaling-line circuit, equipped for mounting as indicated, and with screw terminals for system connections.
2) Horns: Electric-vibrating-polarized type, 24 V(dc); with provision for housing operating mechanism behind grille. Comply with UL 464. Horns must produce sound-pressure level of 90 dB(A-weighted), measured 10 ft. (3 m) from horn, using coded signal prescribed in UL 464 test protocol.
3) Combination Devices: Factory-integrated audible and visible devices in single-mounting assembly, equipped for mounting as indicated, and with screw terminals for system connections.
4) Shall not be proprietary.
5) Provide Neama 7 type enclosure where subject to flammable vapors such as spray booths or flammable storage areas.

B. Fire-Alarm Visible Notification Appliances:

1. Potter Electric Signal, Edwards and System Sensor.
2. Performance Criteria:

a. Regulatory Requirements:

1) NFPA 72.
2) UL 1971.

b. General Characteristics:

1) Rated Light Output:
   a) 15/30/75/110/115/175 cd, selectable in field.

2) Clear or nominal white polycarbonate lens mounted on aluminum faceplate.
3) Mounting: Wall mounted unless otherwise indicated.
4) For units with guards to prevent physical damage, light output ratings must be determined with guards in place.
5) Flashing must be in temporal pattern, synchronized with other units.
6) Strobe Leads: Factory connected to screw terminals.

2.17 FIRE-ALARM REMOTE ANNUNCIATORS PANEL

A. Potter Electric Signal, System Sensor, Edwards, and Farenhyt.

B. Performance Criteria:

1. Regulatory Requirements:

a. NFPA 72.

2. General Characteristics:

a. Annunciator functions must match those of FACU for display, alarm, supervisory, and trouble indications. Manual switching functions must match those of FACU, including acknowledging, silencing, resetting, and testing.

1) Mounting: Match Existing for each panel and location.

b. Display Type and Functional Performance: Alphanumeric display and LED indicating lights must match those of FACU. Provide controls to acknowledge, silence, reset, and test functions for alarm, supervisory, and trouble signals.

c. Shall not be proprietary.

2.18 FIRE-ALARM ADDRESSABLE INTERFACE DEVICES

A. Potter Electric Signal, System Sensor, Edwards and Farenhyt.

B. Performance Criteria:

1. Regulatory Requirements:

a. NFPA 72.

2. General Characteristics:

a. Include address-setting means on module.

b. Store internal identifying code for Fire alarm control unit use to identify module type.

c. Listed for controlling HVAC fan motor controllers.

d. Monitor Module: Microelectronic module providing system address for alarm-initiating devices for wired applications with normally open contacts.

e. Integral Relay: Capable of providing direct signal to elevator controller to initiate elevator recall to circuit-breaker shunt trip for power shutdown.

1) Allow Fire alarm control unit to switch relay contacts on command.

2) Have minimum of two normally open and two normally closed contacts available for field wiring.

f. Control Module:

1) Operate notification devices.

2) Operate solenoids for use in sprinkler service.

2.19 CONDUIT AND TUBING

A. General Requirements:

1. Refer to DIV.26 for additional information.
2. Provide conduit, tubing and fittings of types, grades, sizes and weights (wall thicknesses) for each service indicated. Where types and grades are not indicated, provide proper selection determined by installer to fulfill wiring requirements, and comply with applicable portions of NFPA 70 for raceways.
3. Signaling Line Circuits (SLCs) circuit wire size shall be minimum 18 AWG, 2 conductors solid FPLR and FPLP.
4. NAC line circuits wire size shall be minimum 16 AWG, 2 conductors solid FPLR, FPLN (Plenum rated).
5. In all areas accessible to offenders, all new conduit located at a height of 10 feet or less above finished floor must be rigid conduit. Any new conduit located at a height of 10 feet or more above finished floor shall be EMT. Two-hole straps must also be used to fasten the conduit to the structure with drive anchors. Regardless of conduit type, three straps per ten feet of run is required as a minimum. If not obvious, the Owner will make a determination if an area is accessible to offenders.
6. Bushings for terminating conduits smaller than 1-1/4 inches are to have flared bottom and ribbed sides, with smooth upper edges to prevent injury to cable insulation. Install insulated type bushings for terminating conduits 1-1/4 inches and larger. Upper edge to have phenolic insulating ring molded into bushing. Bushings to have screw type grounding terminal.
7. Raintight Sealking Hubs: Two-piece type with outer internally threaded hub to receive conduit, inner locking ring with bonding screw, insulated throat, and V-shaped ring or O-ring.

B. Electrical Metallic Tubing:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Allied Tube & Conduit.
   b. Republic Conduit.
   c. Wheatland Tube Company.
2. Description: Conduit to be seamless, hot dipped or electro-galvanized steel tubing. Galvanizing to provide zinc coating fused to outside walls of conduit. Provide an enamel lubricating coating on the inside of the conduit. Conduit to conform to ANSI C80.3 - 1983 and listed and labeled under UL 797.
3. Fittings and Conduit Bodies: Compression.
4. Expansion fittings for use with EMT shall allow for a minimum of four inches of movement and shall be similar to O-Z Gedney TX series, complete with bonding jumpers and hardware.

C. Flexible Metal Conduit: Zinc-Coated Steel

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. AFC Cable Systems.
   b. Alflex Inc.
   c. Electri-Flex Co.

2. Description: Interlocked steel or aluminum construction, consisting of spirally wrapped, convoluted hot dip galvanized steel strip. Zinc coating to cover both sides and all edges of

steel strip. Convolutions to be interlocked to prevent separation when conduit is bent at radius equal to 4-1/2 times conduit O.D. Conduit to be listed and labeled under UL 1.

3. Fittings: ANSI/NEMA FB 1 -1988. Threadless hinged clamp type, galvanized zinc coated cadmium plated malleable cast iron.

D. Metal Wireways:

1. Manufactured by one of the following:
   a. Copper B-Line, Inc.
   b. Hoffman.
   c. Square D; Schneider Electric.
2. Description: Sheet metal sized and shaped as indicated, NEMA 250, Type 1, 12, or 3R as environmental conditions dictate, unless otherwise indicated.
3. Material: Primed and painted sheet steel for indoor locations, galvanized sheet steel for outdoor locations sized as indicated or required, whichever is greater.
   a. Wireway up to 6 inch by 6 inch cross section shall be minimum 16 gage.
   b. Wireway larger than 6 inch by 6 inch cross section shall be minimum 14 gage.
4. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold- down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
5. Wireway Covers: Hinged Utilize flanged-and-gasketed type for outdoor locations.
6. Finish: Manufacturer's standard gray enamel finish.

E. Surface Raceways

1. Surface Metal Raceways: Galvanized steel with snap-on covers. Manufacturer's standard enamel finish in color noted on drawings.
2. Available Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Thomas & Bretts Corp.
   b. Walker Systems, Inc.; The Wiremold Company
   c. The Wiremold Company; Electrical Sales Division.
3. Provide types, sizes, and channels as indicated and required for each application, with fittings that match and mate with raceway

2.20 IDENTIFICAION FOR FIRE ALARM SYSTEM

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Electromark – Wolcott, New York.
   2. Ideal Industries, Inc.
   3. 3M

B. Electrical Identification Products

1. Self-Adhesive Vinyl Labels (Notification Devices, SLC devices, Raceways and Boxes): Preprinted, flexible labled laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.
2. Self-Adhesive Vinyl Tape for Banding (Raceway, Wire and Cable): Colored, heavy duty, waterproof, fade resistant; 2 inches wide.
3. Self-Adhesive Tape Markers (Wire and Cable): Vinyl or vinyl-cloth, self-adhesive, wraparound cable and conductor markers with preprinted numbers and letters.
4. Snap-Around, Color-Coding Brands (Raceways and Cables): Slit, pre-tensioned, flexible, solid- colored acrylic sleeve, 2 inches (50 mm) long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions for compliance with requirements for ventilation, temperature, humidity, and other conditions affecting performance of the Work.

1. Verify that manufacturer's written instructions for environmental conditions have been permanently established in spaces where equipment and wiring are installed, before installation begins.

B. Examine roughing-in for electrical connections to verify actual locations of connections before installation.

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

3.2 PREPARATION

A. Preinstallation Testing: Perform verification of functionality of installed components of existing system prior to starting work. Document equipment or components do not function as designed.

B. Provide Mag testing reports for existing wires.

C. Interruption of Existing Fire-Alarm Service: Do not interrupt fire-alarm service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary guard service in accordance with requirements indicated:
1. Notify Owner no fewer than seven days in advance of proposed interruption of fire-alarm service.
2. Do not proceed with interruption of fire-alarm service without Owner's written permission.

D. Protection of In-Place Conditions: Protect devices during construction unless devices are placed in service to protect facility during construction.

E. Existing wiring within the buildings may be utilized to accomplish the scope of work, provided Meg testing is conducted to ensure that existing wire pathways are in good working condition, free of faults and grounds, prior to any new device installation.

3.3 INSTALLATION OF EQUIPMENT

A. Comply with NECA 305, NFPA 72, NFPA 101, and requirements of authorities having jurisdiction for installation and testing of fire-alarm equipment. Install electrical wiring to comply with requirements in NFPA 70 including, but not limited to, Article 760, "Fire Alarm Systems."
   1. Devices placed in service before other trades have completed cleanup must be replaced.
   2. Devices installed, but not yet placed, in service must be protected from construction dust, debris, dirt, moisture, and damage in accordance with manufacturer's written storage instructions.

B. Equipment Floor and Wall Mounting: Install FACU on finished floor.

C. Install wall-mounted equipment, with tops of cabinets not more than 78 inch (1980 mm) above finished floor.

D. Manual Fire-Alarm Boxes:
   1. Install manual fire-alarm box in normal path of egress within 60 inch (1520 mm) of exit doorway.
   2. Mount manual fire-alarm box on background of contrasting color.
   3. Operable part of manual fire-alarm box must be between 42 and 48 inch (1060 and 1220 mm) above floor level. Devices must be mounted at same height unless otherwise indicated.

E. Smoke- and Heat-Detector Spacing:
   1. Comply with "Smoke-Sensing Fire Detectors" section in "Initiating Devices" chapter in NFPA 72, for smoke-detector spacing.
   2. Comply with "Heat-Sensing Fire Detectors" section in "Initiating Devices" chapter in NFPA 72, for heat-detector spacing.
   3. Smooth ceiling spacing must comply with NFPA 72 and manufacturer’s instructions.
   4. Spacing of detectors for irregular areas, for irregular ceiling construction, and for high ceiling areas must be determined in accordance with Annex A [or Annex B]in NFPA 72.
   5. HVAC: Locate detectors not closer than 36 inches or manufacturers recommended instructions from air-supply diffuser or return-air opening.
   6. Lighting Fixtures: Locate detectors not closer than 12 inch (300 mm) from lighting fixture and not directly above pendant mounted or indirect lighting.

F. Install cover on each smoke detector that is not placed in service during construction. Cover must remain in place except during system testing. Remove cover prior to system turnover.

G. Duct Smoke Detectors: Comply with NFPA 72 and NFPA 90A. Install sampling tubes so they extend full width of duct. Tubes more than 36 inch (9100 mm) long must be supported at both ends.
   1. The detector or tubes within the duct shall be within 5 feet of the damper.
   2. Do not install smoke detector in duct smoke-detector housing during construction. Install detector only during system testing and prior to system turnover.

H. Elevator Shafts: Coordinate temperature rating and location with sprinkler rating and location. Do not install smoke detectors in sprinklered elevator shafts.

3.4 ELECTRICAL CONNECTIONS

A. Connect wiring in accordance with Division 26.

B. Ground equipment in accordance with Division 26.

C. Install electrical devices furnished by manufacturer, but not factory mounted, in accordance with NFPA 70 and NECA 1.

D. Install nameplate for each electrical connection, indicating electrical equipment designation and circuit number feeding connection.
   1. Nameplate must be laminated acrylic or melamine plastic signs.
   2. Nameplate must be laminated acrylic or melamine plastic signs with black background and engraved white letters at least 1/2 inch (13 mm) high.

3.5 CONTROL CONNECTIONS

A. Install control and electrical power wiring to field-mounted control devices.

B. Install nameplate for each control connection, indicating field control panel designation and I/O control designation feeding connection.

3.6 PATHWAYS

A. Accessible Pathways must be installed in EMT.

B. Pathways not installed in EMT shall be plenum-rated.

C. Exposed EMT must be indicated with red per identification as outlined by Division 26.

D. Metal Conduit And Tubing

   1. Rigid Steel (Metallic) Conduit: Conduit should be seamless, hot-dipped galvanized rigid steel with chamfered ends and zinc coating on both sides. Apply enamel lubricating coating inside. Conform to ANSI C80.1 and UL 6 standards.

      a. Fittings and Conduit Bodies: NEMA FB 1, single piece threaded, cadmium plated malleable iron.
      b. Joint Compound: Cable connector lubricant for threaded joints. Protects from corrosion and enhances conductivity.

   2. Aluminum Rigid Conduit: Conduit must conform to ANSI C80.5 and UL 6a, be seamless, and made of 6063 alloy in T-1 temper.

      a. Fittings and Conduit Bodies: Use the same alloy for the joint and apply the manufacturer's recommended antioxidant compound as directed.

   3. Electrical Metallic Tubing: The conduit must be galvanized steel tubing, with zinc coating fused to the outside walls and an enamel lubricating coating on the inside. It must comply with ANSI C80.3 - 1983 and be UL 797 listed and labeled.

a. Fittings and Conduit Bodies: Compression.
b. EMT expansion fittings shall allow 4 inches of movement and include bonding jumpers and hardware, and shall be similar to the O-Z Gedney TX series.

4. In all areas accessible to offenders, all new conduit located at a height of 10 feet or less above finished floor must be rigid conduit. Any new conduit located at a height of 10 feet or more above finished floor shall be EMT. Two-hole straps must also be used to fasten the conduit to the structure with drive anchors. Regardless of conduit type, three straps per ten feet of run is required as a minimum. If not obvious, the Owner will make a determination if an area is accessible to offenders.

E. Conduit Size:
1. Conduits be sized as shown on drawings. Where conduit sizes are not indicated, conduits shall be sized in accordance with the latest version of the National Electrical Code (NFPA 70) and shall be limited to a 40 percent conductor fill percentage. Conductor ampacities must be maintained; therefore adjustment factors for temperature and quantity derating values must be observed.
2. Minimum Conduit Size: Unless otherwise noted, 3/4-inch (21-mm) trade size with the following exceptions:
a. Below Grade: 1-inch.
3. Conduit sizes may change only at the entrance or exit of a junction box.

F. General Installation Requirements:
1. Conduits shall be mechanically and electrically continuous from source of current to all outlets unless a properly sized grounding conductor is routed within the conduit. All metallic conduits shall be bonded per NFPA 70.
2. Do not reduce the indicated sizes of raceways. Conduit sizes may only change junction and pull boxes.
3. Complete raceway installation before starting conductor installation.
4. Use temporary closures to prevent foreign matter from entering raceway.
5. Avoid moisture traps; provide junction box with drain fitting at low points in raceway system.
6. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire. Empty raceways shall be labeled at each end indicating origin of the raceway. Labels shall be self-adhesive vinyl labels.

G. Conduit Routing:
1. Conduit shall be concealed in walls and above ceilings within finished spaces and may be exposed within unfinished spaces (such as mechanical and utility areas) where conditions dictate and as practical. Where routed exposed, headroom shall be maintained for pedestrian and vehicular traffic.
2. Conduit installation shall be coordinated with all other systems on the project. The Construction Team shall exchange details of their work in order to ensure adequate and coordinated fit of all systems within ceiling spaces and exposed unfinished areas.
3. Run concealed raceways with a minimum of bends in the shortest practical distance considering the type of building construction and obstructions, except as otherwise indicated.
4. Route exposed conduit and conduits above ceilings parallel and perpendicular to building structural lines, and as close to building structure as possible.
5. Raceways are not to cross pipe shafts or ventilating duct openings, nor are they to pass

through HVAC ducts. Support riser raceway at each floor level with clamp hangers. Maintain adequate clearance between raceway and piping.

6. Coordinate layout and installation of conduit with other construction elements to ensure adequate headroom, working clearance and access.
7. Route conduit through roof openings provided for piping and ductwork or rooftop unit curbs where possible. Where unavoidable, route conduit through suitable roof jack with pitch pocket. Coordinate roof penetrations with other trades.
8. Keep raceways at least 6 inches (150 mm) away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
9. Do not install aluminum conduits in contact with concrete.
10. Raceways routed under-slab on grade must be a minimum of 12 inches below the concrete slab.

H. Conduit Supports:

1. Install raceways level and square and at proper elevations. Provide adequate headroom. Group related conduits; support using conduit rack. Construct rack using steel channel. All conduit supports shall be secured to walls, structural members, and bar joists. Do not support conduits from non-structural members, such as ductwork, water or fire suppression piping, or ceiling grid support system.
2. Run parallel or banked raceways together, on common support racks where practical and make bends from same center line to make bends parallel. Use factory elbows only where they can be installed parallel; otherwise, provide field bends for parallel raceways. Provide space within each rack for 20 percent additional conduits.
3. Support raceways as specified in Division 26 Section "Hangers and Supports."
4. In-secure areas where offenders are present utilize tamper-proof fasteners.

I. Conduit Fittings and Terminations:

1. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
2. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.
3. Install raceway sealing fittings according to the manufacturer's written instructions. Locate fittings at suitable, approved, accessible locations and fill them with UL-listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings where conduits enter or leave hazardous locations, where conduits pass from warm locations to cold locations, such as the boundaries of refrigerated spaces, such as kitchen cold boxes, air-conditioned spaces and other places indicated on the drawings or required by NFPA 70.
4. Expansion/Deflection Joints: Provide suitable fittings to accommodate expansion and contraction where raceway crosses seismic and expansion joints. Install expansion fittings in the full open position if installed during a period of lowest expected temperature, and in the fully closed position if installed during a period of highest expected temperature. Install at proportionate intermediate position for intermediate temperatures.
5. In addition to the foregoing, provide expansion fittings according to the following table, for exposed linear runs or runs in hung ceilings where such runs do not contain junction boxes, pull boxes, nor bends totaling more than 30 degrees.
6. EMT and RMC expansion couplers shall be UL listed with an internal copper braided bonding jumper that meets the requirements of NEC 250.98. Fitting shall be listed as suitable for wet locations and rainwater tight when installed in wet or outdoor locations.
7. Flexible Connections: Use maximum of 6 feet of flexible metal conduit for recessed and semi-

recessed lighting fixtures; for equipment subject to vibration, noise transmission, or movement and for all motors. Use Liquid tight flexible metal conduit in wet or damp locations. Install ground conductor across flexible connections.

8. Avoid use of dissimilar metals throughout system to eliminate possibility of electrolysis. Where dissimilar metals are in contact, coat surfaces with corrosion inhibiting compound before assembling.

3.7 CONNECTIONS

A. For fire-protection systems related to doors in fire-rated walls and partitions and to doors in smoke partitions, comply with requirements in Section 087100 "Door Hardware." Connect hardware and devices to fire-alarm system.

1. Verify that hardware and devices are listed for use with installed fire-alarm system before making connections.

B. Make addressable connections with supervised interface device to the following devices and systems. Install interface device less than 36 inch (910 mm) from device controlled. Make addressable confirmation connection when such feedback is available at device or system being controlled.

1. Smoke dampers in air ducts of designated HVAC duct systems.
2. Magnetically held-open doors.
3. Electronically locked doors and access gates.
4. Alarm-initiating connection to elevator recall system and components.
5. Alarm-initiating connection to activate emergency lighting control (if applicable).
6. Supervisory connections at valve supervisory switches.
7. Supervisory connections at low-air-pressure switch of each dry-pipe sprinkler system.
8. Supervisory connections at elevator shunt-trip breaker.
9. Data communication circuits for connection to building management system (if applicable).

3.8 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals as required by NFPA 72 and NFPA 70.

B. Identify fire alarm system components with permanent address label matching that provided on the fire alarm as-built drawings. Refer to section 2.17 for acceptable labeling manufacturers. Address naming convention to be coordinated and accepted by the Owner’s representative.

C. Install framed instructions in a location visible from FACU.

3.9 BOXES, CABINETS AND ENCLOSURES

A. General Installation Requirements:

Locate boxes to maintain headroom and present a neat appearance. Locate to allow proper access. Provide access doors for boxes located above inaccessible ceilings

1. Provide knockout closures to cap unused knockout holes where blanks have been removed.
   a. Support all boxes, cabinets and enclosures rigidly and independently of conduit except where specifically allowed by the National Electrical Code. Use supports suitable for the purpose.
2. Boxes located outdoors above ground shall be raintight and gasketed cast aluminum.

3. Provide covers for all boxes.

2. Outlet Box Installation:

    1. All fire alarm devices furnished under this project shall be mounted on or in an outlet box regardless of whether or not the associated system wiring is in conduit, unless otherwise noted.
    2. Flush-mount outlet boxes in finished areas. Outlets in mechanical rooms, electrical rooms, and the above removable ceilings may be surface-mounted.
    3. Use multiple gang boxes where more than one device is mounted together. Provide barriers to separate different voltage systems.
    4. Align wall-mounted outlet boxes for switches, thermostats and similar devices.
    5. Center ceiling mounted devices within corridors.
    6. Position outlets to locate devices as shown on reflected ceiling drawings. For recessed boxes in finished areas, secure to interior wall and partition studs; allow for surface finish thickness.
    7. Special care shall be taken to set all flush boxes square and true with the building finish. All wall outlets shall be rigidly secured to the stud system, using adjustable supports where necessary, to prevent all box movement.
    8. Outlet Box Application: Unless otherwise noted, outlet boxes shall be installed as follows:

        a. Galvanized Steel Box Installation Locations:

            1) Concealed interior locations.
            2) Exposed interior locations above 7 feet-0 inches of finished floor.
            3) Kitchen and laundry rooms, when recessed.

        b. Cast Box Installation Locations:

            1) Exterior locations.
            2) Hazardous locations.
            3) Exposed interior locations within 7 feet-0 inches of finished floor.
            4) Wet or damp locations.
            5) Direct contact with earth or concrete slabs on grade.
            6) Kitchen and laundry rooms, when exposed.

3. Pull and Junction Boxes:

    1. Locate above accessible ceilings or in unfinished areas.
    2. Locate pull or junction boxes to limit conduit runs to no more than 150 linear feet of four (4) 90 degree bends between pulling points. For telephone/ data limit bends to no more than three (3) 90 degree bends to pulling points.

4. Cabinets and Enclosures:

    1. Install hinged cover enclosures and cabinets plumb. At a minimum, support at each corner.
    2. Provide knockout closures to cap unused knockout holes where blanks have been removed.

3.2 IDENTIFICATION

1. Raceway Identification:
    1. Identify Raceways of Certain Systems with Color Banding: Band exposed and accessible raceways of the following systems for identification. Bands shall be pre-tensioned, snap-around colored plastic sleeves, colored adhesive marking tape, or a combination of the two. Make each color band 2 inches wide, completely encircling conduit and place adjacent bands of two-color markings in contact, side by side. Install bands at changes in direction, at penetrations of walls and floors and at 20-foot maximum intervals in straight runs. Apply teh follwoing colors:
        a. Fire Alarm System: Red
        b. At contractor option, manufacturer painted EMT conduit (when EMT conduit is allowed or required to be used for the above systems), may be utilized in lieu of the banding noted above. Fittings would not have to be painted. All painting shall comply with Division 09 requirements.
    2. Where conduits leave a switchboard, panelboard, motor control center, etc., identification shall be provided on each conduit indicating the load being served.
    3. Contractor shall be responsible for providing the Owner with laminated, colored, typewritten legends indicating the identification color scheme. At a minimum, these legends should be installed in the main electrical room and branch electrical closets. Provide two additional legends to the Owner to use at their discretion.
    4. Identification of Raceways with Labeling:
        a. Raceway Labeling: Provide labeling on conduits indicating electrical distribution system contained within (e.g. Normal, Life Safety, etc.) and operating voltage level. Label size shall be as follows:

Nominal EMT conduit size	Nominal RGS conduit size	Length of color background on label	Height of letters
up to 1 inch	up to 3/4 inch	8 inches	1/2 inch
1.25 to 1.5 inches	1 to 1.5 inches	8 inches	3/4 inch
2 to 5 inches	2 to 5 inches	12 inches	1.25 inches
6 inches	6 inches	24 inches	2.5 inches

2. Box Identification
    1. Identify the covers of each junction and pull box of the following systems with self-adhesive vinyl labels with the wiring system legend and system voltage.
    2. At each junction, pull and connection box, identify the following: with self-adhesive vinyl labels. Identification of these boxes shall be located on the inside of cover if located in finished spaces.
        a. Indicate system type and wiring description (e.g. “FIRE ALARM NAC #2”).
    3. Paint box covers for fire alarm system Red.
3. Circuit Identification:
    1. Label
4. Conductor Color Coding
    1. Power-Circuit

a. Color shall be factory-applied, or field-applied for sizes larger than No. 6 AWG, if Authorities Having Jurisdiction permit
   1) Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches (150 mm) from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.

b. Colors for 208/120V Circuits:
   1) Phase A: Black
   2) Phase B: Red
   3) Phase C: Blue
   4) Neutral: White
   5) Ground Bond: Green

3.3 FIRESTOPPING

1. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly. Provide firestopping materials and installation requirements using UL listed materials and methods.

3.4 PROTECTION

1. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.

3.5 CLEANING

1. Upon completion of installation of system, including outlet fittings and devices, inspect exposed finish. Remove burrs, dirt, and construction debris and repair damaged finish, including chips, scratches, and abrasions.

3.10 GROUNDING

A. Ground FACU and associated circuits in accordance with Division 26.

B. Ground shielded cables at control unit location only. Insulate shield at device location.

3.11 FIELD QUALITY CONTROL

A. Field tests must be witnessed by authorities having jurisdiction.

B. Tests shall be conducted in accordance with NFPA 72

C. The fire alarm test shall be thorough and test 100% of all circuit, devices, and signals.

D. Documentation of 100% test shall be provided to the owner and consultant engineer.

E. The Contractor shall coordinate a 20% system test, including 24 hours and 5 minutes of alarm battery testing, with the engineer and owner as witnesses.

F. Administration for Tests and Inspections:

1. Engage qualified testing agency to administer and perform tests and inspections.

G. Tests and Inspections:
   2. Visual Inspection: Conduct visual inspection prior to testing.
   3. Inspection must be based on completed record Drawings and system documentation that is required by "Completion Documents, Preparation" table in "Documentation" section of "Fundamentals" chapter in NFPA 72.
   4. Comply with "Visual Inspection Frequencies" table in "Inspection" section of "Inspection, Testing and Maintenance" chapter in NFPA 72; retain "Initial/Reacceptance" column and list only installed components.
   5. System Testing: Comply with "Test Methods" table in "Testing" section of "Inspection, Testing and Maintenance" chapter in NFPA 72.
   6. Factory-authorized service representative must prepare "Fire Alarm System Record of Completion" in "Documentation" section of "Fundamentals" chapter in NFPA 72 and "Inspection and Testing Form" in "Records" section of "Inspection, Testing and Maintenance" chapter in NFPA 72.

H. Reacceptance Testing: Perform reacceptance testing to verify proper operation of added or replaced devices and appliances.

I. Fire-alarm system will be considered defective if it does not pass tests and inspections.

J. Prepare test and inspection reports and submit final documentation to e-builder prior to 20% on site witness testing by owner’s representative.

K. Maintenance Test and Inspection: Perform tests and inspections listed for weekly, monthly, quarterly, and semiannual periods. Use forms developed for initial tests and inspections.

L. Annual Test and Inspection: One year after date of Substantial Completion, fire-alarm system test complying with visual and testing inspection requirements in NFPA 72. Use forms developed for initial tests and inspections.

3.12 DEMONSTRATION

A. Engage a factory-authorized service representative to train the Owner's maintenance personnel to adjust, operate, and maintain fire alarm system. A minimum of 8 hours of technical training shall be provided. Provide video recording of training to Owner. Refer to Division 01.

B. To accompany video-recorded training and provide step-by-step instructions for standard operating procedures for maintaining and modifying the Fire Alarm Systems and Network.

3.13 MAINTENANCE

A. Maintenance Service: Beginning at Substantial Completion, maintenance service must include 12 months' full maintenance by skilled employees of manufacturer's designated service organization. Include preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper operation. Parts and supplies must be manufacturer's authorized replacement parts and supplies.

1. Include visual inspections in accordance with "Visual Inspection Frequencies" table in "Testing" paragraph of "Inspection, Testing and Maintenance" chapter in NFPA

2. Perform tests in “Test Methods” table in “Testing” paragraph of “Inspection, Testing and Maintenance” chapter in NFPA 72.

3. Perform tests per "Testing Frequencies" table in "Testing" paragraph of "Inspection, Testing and Maintenance" chapter in NFPA 72.

3.14 VDU, FIRE ALARM NETWORK PC, AND SOFTWARE SERVICE AGREEMENT

A. Open protocol software. Upgrades shall be available to owner directly from any vendor.

B. Technical Support: Beginning at Substantial Completion, service agreement must include software support for two years.

C. Upgrade Service: At Substantial Completion, update software to latest version. Including lasts version of the networking software and standard Microsoft Office. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software must include operating system and new or revised licenses for using software.

1. Upgrade Notice: At least 30 days to allow Owner to schedule access to system and to upgrade computer equipment if necessary.
2. Software must be capable of standing alone separate from other systems.

D. PC shall be delivered to the site with all software downloaded and programming of the fire alarm system complete, ready for system testing once installed to the network.

END OF SECTION 284621