PROJECT MANUAL

For

SOUTH BRUNSWICK HIGH SCHOOL FIRE ALARM SYSTEM REPLACEMENT

Prepared for:

Prepared by:

NORTH CAROLINA PROFESSIONAL SEAL 028880 ENGINEER ROBBY LOCKLEAR

March 2024

114 West 3rd Street ♦ PO Box 3119 ♦ Pembroke, NC 28372 ♦ Tel: (910) 774-9306

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South Brunswick High School Fire Alarm System Replacement

ADVERTISEMENT FOR RE-BIDS

Owner: **BRUNSWICK COUNTY SCHOOLS**

Project: **SOUTH BRUNSWICK HIGH SCHOOL FIRE ALARM SYSTEM REPLACEMENT**

Sealed bids will be received from bidders by Brunswick County Schools (BCS) in the Operations Bid Box located at 199 Sessions Drive, Bolivia, NC 28422, ATTN: Megan Grissett, South Brunswick High Fire Alarm System Replacement, **until 1:00pm, on Wednesday, November 20, 2024,** at which time they will be publicly opened and read aloud in the Conference Room.

The general project scope consists of the replacement of the existing fire alarm system at **South Brunswick High School** located in Southport, NC, with a new system equipped with voice evacuation. The project will consist of the removal of the existing fire alarm system once the new system is operational.

Requirements for bidding this project are as follows:

1. All trades must be licensed by the State of North Carolina
2. Workman's Compensation Insurance
3. General Liability Insurance
4. 5% Bid Bond & 100% Performance Bond & 100% Payment Bond

BCS reserves the right to waive all informalities in bids, to accept any bid, or any portion thereof, or to reject any or all bids should it be deemed in its best interest to do so and allowed by General Statute.

Small, minority-owned, and women-owned businesses are encouraged to submit proposals.

Copies of the drawings and specifications may be obtained from Locklear, Locklear & Jacobs (LL&J) at 114 West 3rd Street, Pembroke, NC 28372, (910)774-9306. Plans and specs are available upon request. Anyone wishing to access this information shall submit a request for information email to: mirandahorne@llandj.com. The request email shall have the following items so an accurate Bidder and Plan Holder list can be maintained:

Company Name,
Contact Person,
Phone Number and
Address

Hard Copies of the plans and specifications can also be purchased from LL&J. The cost shall be based on LL&J's 2024 Printing Rates. No refund will be given for plans or specifications.

Note

1. All RFI's shall be received on or before **5:00 pm** on **Tuesday, November 12, 2024** via email or letter.
2. Any verbal responses or comments are non-binding and only written requests are contractual.

Robby Locklear, PE
robbylocklear@llandj.com
Locklear, Locklear & Jacobs, PLLC
114 West 3rd Street
Pembroke, NC 28372
Phone: 910-774-9306

SECTION 00200

INSTRUCTIONS TO BIDDERS

TABLE OF ARTICLES

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ARTICLE 1 – DEFINED TERMS

1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

A. *Issuing Office* – The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.

ARTICLE 2 – BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents in the number and for the deposit sum, if any, stated in the advertisement or invitation to bid may be obtained from the Issuing Office.

2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

2.04 *Electronic Documents*

A. When the Bidding Requirements indicate that electronic (digital) copies of the Bidding Documents are available, such documents will be made available to the Bidders as Electronic Documents in the manner specified.

1. Bidding Documents will be provided in Adobe PDF (Portable Document Format) (.pdf) that is readable by Adobe Acrobat Reader. It is the intent of the Engineer and Owner that such Electronic Documents are to be exactly representative of the paper copies of the documents. Should a bidder find discrepancies or ambiguities in, or omissions in manual they are to notify the Engineer in writing who will issue an interpretation in the form of an addendum. This addendum will be forwarded to all bidders of record.

B. Unless otherwise stated in the Bidding Documents, the Bidder may use and rely upon complete sets of Electronic Documents of the Bidding Documents, described in Paragraph 2.04.A above. However, Bidder assumes all risks associated with differences arising from transmission/receipt of Electronic Documents versions of Bidding Documents and reproductions prepared from those versions and, further, assumes all risks, costs, and responsibility associated with use of the Electronic Documents versions to derive information that is not explicitly contained in printed paper versions of the documents, and for Bidder's reliance upon such derived information.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, within 5 days of Owner's request, Bidder shall submit written evidence such as financial data, previous experience, present commitments, and such other data as may be called for below.

A. Bidders Legal Name and Address
B. Bidder's state contractor license number.
   1. License classification must be appropriate for this type of work and bid amount. Failure to provide proof of the classification and limitation of the Contractor's license may be grounds for rejection or bid.
C. List of Sub-Contractors that may be employed or contracted with to perform work on this PROJECT.
D. Bidder's Key Personnel

ARTICLE 4 – EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE

4.01 *Subsurface and Physical Conditions*

A. The Owner has NO knowledge of any reports or drawings relating to any Subsurface and Physical Conditions at the Site.

4.02 *Underground Facilities*

A. Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site is based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

B. None noted at this time.

4.03 *Hazardous Environmental Condition*

A. The Owner has NO knowledge of any reports or drawings relating to any Hazardous Environmental Condition identified at the Site.

4.04 Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 4.02, 4.03, and 4.04 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 5.04. 5.05 and 5.06 of the General Conditions.

4.05 On request, Owner will provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies. Bidder shall comply with all applicable Laws and Regulations relative to excavation and utility locates. Bidder must confirm time and date with Owner and/or Engineer prior to site visit.

4.06 It is the responsibility of each Bidder before submitting a Bid to:

A. examine and carefully study the Bidding Documents, and the other related data identified in the Bidding Documents, and any Addenda;

B. visit the Site and become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. become familiar with and satisfy Bidder as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work;

D. carefully study all (if any): (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) that have been identified in Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings (if any) of Hazardous Environmental Conditions, if any, at the Site that have been identified in the Supplementary Conditions as containing reliable "technical data";

E. consider the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder’s safety precautions and programs;

F. agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;

G. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;

H. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder; and

I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.

4.07 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

ARTICLE 5 – PRE-BID CONFERENCE

5.01 **NA**

ARTICLE 6 – SITE AND OTHER AREAS

6.01 The Site is identified in the Bidding Documents. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Bidding Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work will be negotiated between the Owner and the Contractor.

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by Engineer as having received the Bidding Documents. Questions received less than 5 days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

7.02 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner or Engineer.

ARTICLE 8 – BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of **5 percent** of Bidder's *Maximum* Bid price and in the form of a certified check, bank money order, or a Bid Bond (on the form attached) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.

8.02 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within **15 days** after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults. The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Agreement or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned.

8.03 Bid security of other Bidders whom Owner believes do not have a reasonable chance of receiving the award will be returned within 7 days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

9.01 The number of days within which, or the dates by which, the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

10.01 Provisions for liquidated damages, if any, are set forth in the Agreement.

ARTICLE 11 – SUBSTITUTE AND "OR-EQUAL" ITEMS

11.01 The Contract for the Work, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, and those "or-equal" or substitute materials and equipment subsequently approved by Engineer prior to the submittal of Bids and identified by Addendum. No item of material or equipment will be considered by Engineer as an "or- equal" or substitute unless written request for approval has been submitted by Bidder and has been received by Engineer at least 15 days prior to the date for receipt of Bids in the case of a proposed substitute and 5 days prior in the case of a proposed "or-equal." Each such request shall comply with the requirements of Paragraphs 7.04 and 7.05 of the General Conditions. The burden of proof of the merit of the proposed item is upon Bidder. Engineer's decision of approval or disapproval of a proposed item will be final. If Engineer approves any such proposed item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner. Substitutes and "or-equal" materials and equipment may be proposed by Contractor in accordance with Paragraphs 7.04 and 7.05 of the General Conditions after the Effective Date of the Contract.

11.02 All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.

11.03 If an award is made, Contractor shall be allowed to submit proposed substitutes and "or-equals" in accordance with the General Conditions.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS AND OTHERS

12.01 If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to Owner in advance of a specified date prior to the Effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of all such Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, individual, or entity if requested by Owner. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit a substitute, without an increase in the Bid.

12.02 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, individuals, or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Paragraph 7.07 of the General Conditions.

12.03 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

ARTICLE 13 – PREPARATION OF BID

13.01 The Bid Form is included with the Bidding Documents.

13.02 All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each unit price item, or lump sum bid, listed therein, or the words "No Bid", "No Change", or "Not Applicable" entered.

13.03 A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown on the Bid Form.

13.04 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown on the Bid Form.

13.05 A Bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown on the Bid Form.

13.06 A Bid by an individual shall show the Bidder's name and official address.

13.07 A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown on the Bid Form.

13.08 All names shall be printed in ink below the signatures**.**

13.09 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

13.10 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.

13.11 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 14 – BASIS OF BID; COMPARISON OF BIDS

14.01 *Lump Sum*

A. Bidders shall submit a Bid on a lump sum basis for the base Bid and include a separate price for each alternate described in the Bidding Documents as provided for in the Bid Form. The price for each alternate will be the amount added to or deleted from the base Bid if Owner selects the alternate. In the comparison of Bids, alternates will be applied in the same order as listed in the Bid form.

ARTICLE 15 – SUBMITTAL OF BID

15.01 All Bidders have been given access to the Project Manual for this project, which includes the Bid Bond Form and other items to be submitted with the bid**.** The bid form is to be completed and submitted with the Bid security and other documents required to be submitted under the terms of Article 7 of the Bid Form.

15.02 A Bid shall be submitted no later than **1:00PM, on Wednesday November 20, 2024,** and at the place indicated in the Advertisement for Bids and shall be enclosed in a plainly marked package with the Project Title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation **"BID ENCLOSED: South Brunswick High School Fire Alarm System Replacement"**. A mailed Bid

shall be addressed to **Brunswick County Schools Operations Bid Box, ATTN: Megan Grissett located at 199 Sessions Drive, Bolivia, NC 28422.** When using the mail or other delivery system, the Bidder is totally responsible for the mail or other delivery system delivering the Bid at the place prior to the time indicated in the Advertisement for Bid.

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

16.01 A Bid may be modified or withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids.

16.02 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid or negotiated, that Bidder will be disqualified from further bidding on the Work. The provision to withdraw a Bid without forfeiting the Bid security does not apply to Bidder's errors in judgement in preparing the Bid.

ARTICLE 17 – OPENING OF BIDS

17.01 Bids will be opened at **1:00PM, on Wednesday, November 20, 2024,** at **Brunswick County Schools Operations Office, located at 199 Sessions Drive, Bolivia, NC 28422.** as indicated in the Advertisement for Bids and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder.

19.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

19.03 In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.

19.04 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.

19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work in accordance with the Contract Documents.

19.06 If the Contract is to be awarded, Owner will award the Contract to the responsible Bidder whose Bid, conforming with all material terms and conditions of the Instructions to Bidders, is lowest, price, factors considered and is in the best interests of the Project.

ARTICLE 20 – CONTRACT SECURITY AND INSURANCE

20.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it shall be accompanied by such bonds.

ARTICLE 21 – SIGNING OF AGREEMENT

21.01 Once the Owner issues a Notice of Award to the Successful Bidder, the Owner will email an electronic copy of the agreement to the Successful Bidder for review and signing via DocuSign. An electronic copy of the agreement signed by all parties will be emailed to the Contractor.

ARTICLE 22 – SALES AND USE TAX

22.01 Owner is not exempt from state sales and use taxes on materials and equipment to be incorporated in the Work. Said taxes shall be included in the Bid. Refer to Paragraph 7.10 of the General Conditions for additional information.

ARTICLE 23 – CONTRACTS TO BE ASSIGNED

23.01 No contracts will be assigned by Owner to Contractor as a part of this procurement. The Contractor shall be responsible for procurement of all required materials.

SECTION 00410

BID FORM

Project Identification**:** **SOUTH BRUNSWICK SCHOOL FIRE ALARM SYSTEM REPLACEMENT**

TABLE OF ARTICLES

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to: **Brunswick County Schools Operations Bid Box**
Attn: Megan Grissett
199 Sessions Drive
Bolivia, NC 28422

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for **60 days** after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

Bidder has examined and carefully studied the Bidding Documents, other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged:

Addendum No.	Addendum Date

Bidder has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

Bidder is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

Bidder has considered the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs.

Based on the information given at the pre-bid conference and pre-bid walk thru of site, Bidder does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.

The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

Bidder will submit written evidence of its authority to do business in the State or other jurisdiction where the Project is located not later than the date of its execution of the Agreement.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

Bidder has not solicited or induced any individual or entity to refrain from bidding; and

Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. See below for the meanings:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 **Base Bid**: Provide all labor, materials, and equipment for the **South Brunswick High School Fire Alarm System Replacement**. This work includes all fire alarm, electrical, mechanical and all other items covered by the drawings and specifications.

Line Item to include in Base Bid:

- **$25,000** Miscellaneous Allowance

  Note: This line item shall be approved and confirmed by Owner and Engineer before being used. All items covered under this allowance shall NOT include Contractor Overhead or Profit.

Base Bid Price: $_____

(Include Taxes, Setup, Freight, Bid Bond, Payment and Performance Bond)

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with the paragraph below.

A. Work will be substantially complete on or before **December 30, 2025**. This includes demo of old system, installation of new system, testing and approval by local Fire Marshall.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

A. Liquidated Damages are set at **$500/day.**

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security in the form of Bid Bond or Cashier's Check

B. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;

C. Acknowledgement of receipt of all Addenda; the numbers and dates of which shall be filled in on the Bid Form.

D. MB Participation Forms

ARTICLE 8 – BID SUBMITTAL

8.01 This Bid is submitted by:

If Bidder is:

An Individual

Name (typed or printed): _____

By: _____
(Individual's signature)

Doing business as: _____

A Partnership

Partnership Name: _____

By: _____
(Signature of general partner -- attach evidence of authority to sign)

Name (typed or printed): _____

A Corporation

Corporation Name: _____ (SEAL)

State of Incorporation: _____
Type (General Business, Professional, Service, Limited Liability):_____

By: _____
(Signature -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____
(CORPORATE SEAL)

Attest _____

Date of Qualification to do business in North Carolina is ____/____/____.

A Joint Venture

Name of Joint Venture: _____

First Joint Venturer Name: _____ (SEAL)

By: _____
(Signature of first joint venture partner -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Second Joint Venturer Name: _____(SEAL)

By: _____
(Signature of second joint venture partner -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

(Each joint venturer must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

Bidder's Business Address _____

_____

Phone No. _____ Fax No. _____

E-mail _____

SUBMITTED on _____, 20____.

State Contractor License No. _____. *[If applicable]*

MINORITY BUSINESS CONTRACT PROVISIONS (CONSTRUCTION)

APPLICATION:

The Guidelines for Recruitment and Selection of Minority Businesses for Participation in State Construction Contracts are hereby made a part of these contract documents. These guidelines shall apply to all contractors regardless of ownership.

MINORITY BUSINESS SUBCONTRACT GOALS:

The Goals for participation by minority firms as subcontractors on this project have been set at 15%.

The bidder must identify on its bid, the minority businesses that will be utilized on the project with corresponding total dollar value of the bid and affidavit (Affidavit A) listing good faith efforts **or** affidavit (Affidavit B) of self-performance of work, if the bidder will perform work under contract by its own workforce, as required by G.S. 143-128.2(c) and G.S. 143-128.2(f).

The lowest responsible, responsive bidder must provide Affidavit C, that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the applicable goal.

OR

Provide Affidavit D, that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, with documentation of Good Faith Effort, if the percentage is not equal to the applicable goal.

The above information must be provided as required. Failure to submit these documents is grounds for rejection of the bid.

MINIMUM COMPLIANCE REQUIREMENTS:

All written statements, affidavits or intentions made by the bidder shall become a part of the agreement between the Contractor and the State for performance of this contract. Failure to comply with any of these statements, affidavits, or intentions, or with the minority business Guidelines shall constitute a breach of contract. A finding by the State that any information submitted either prior to award of the contract or during the performance of the contract is inaccurate, false, or incomplete, shall also constitute a breach of the contract. Any such breach may result in termination of the contract in accordance with the termination provisions contained in the contract. It shall be solely at the option of the State whether to terminate the contract for breach.

In determining whether a contractor has made Good Faith Efforts, the State will evaluate all efforts made by the Contractor and will determine compliance in regard to quantity, intensity, and results of these efforts. Good Faith Efforts include:

(1) Contacting minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor or available on State or local government-maintained lists at least 10 days before the bid or proposal date and notifying them of the nature and scope of the work to be performed.

(2) Making the construction plans, specification, and requirements available for review by prospective minority businesses or providing these documents to them at least 10 days before the bid or proposals are due.

(3) Breaking down or combining elements of work into economically feasible units to facilitate minority participation.

(4) Working with minority trade, community, or contractor organizations identified by the Office for Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.

(5) Attending any prebid meetings scheduled by the public owner.

(6) Providing assistance in getting required bonding or insurance or providing alternatives to bonding or insurance for subcontractors.

(7) Negotiating in good faith with interested minority businesses and not rejecting them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.

(8) Providing assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisting minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.

(9) Negotiating joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.

(10) Provide quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

GUIDELINES FOR RECRUITMENT AND SELECTION OF MINORITY BUSINESSES FOR PARTICIPATION IN STATE CONSTRUCTION CONTRACTS

In accordance with G.S. 143-128.2 (effective January 1, 2002) these guidelines establish goals for minority participation in single-prime bidding, separate-prime bidding, construction manager at risk, and alternative contracting methods, on State construction projects in the amount of $300,000 or more. The legislation provides that the State shall have a verifiable ten percent (10%) goal for participation by minority businesses in the total value of work for each project for which a contract or contracts are awarded. These requirements are published to accomplish that end.

SECTION A: INTENT

It is the intent of these guidelines that the State of North Carolina, as awarding authority for construction projects, and the contractors and subcontractors performing the construction contracts awarded shall cooperate and in good faith do all things legal, proper and reasonable to achieve the statutory goal of ten percent (10%) for participation by minority businesses in each construction project as mandated by GS 143-128.2. Nothing in these guidelines shall be construed to require contractors or awarding authorities to award contracts or subcontracts to or to make purchases of materials or equipment from minority-business contractors or minority-business subcontractors who do not submit the lowest responsible, responsive bid or bids.

SECTION B: DEFINITIONS

1. Minority - a person who is a citizen or lawful permanent resident of the United States and who is:
   a. Black, that is, a person having origins in any of the black racial groups in Africa;
   b. Hispanic, that is, a person of Spanish or Portuguese culture with origins in Mexico, South or Central America, or the Caribbean Islands, regardless of race;
   c. Asian American, that is, a person having origins in any of the original peoples of the Far East, Southeast Asia and Asia, the Indian subcontinent, the Pacific Islands;
   d. American Indian, that is, a person having origins in any of the original peoples of North America; or
   e. Female

2. Minority Business - means a business:
   a. In which at least fifty-one percent (51%) is owned by one or more minority persons, or in the case of a corporation, in which at least fifty-one percent (51%) of the stock is owned by one or more minority persons or socially and economically disadvantaged individuals; and
   b. Of which the management and daily business operations are controlled by one or more of the minority persons or socially and economically disadvantaged individuals who own it.

3. Socially and economically disadvantaged individual - means the same as defined in 15 U.S.C. 637. "Socially disadvantaged individuals are those who have been subjected to racial or ethnic prejudice or cultural bias because of their identity as a member of a group without regard to their individual qualities". "Economically disadvantaged individuals are those socially disadvantaged individuals whose ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities as compared to others in the same business area who are not socially disadvantaged".

4. Public Entity - means State and all public subdivisions and local governmental units.

5. Owner - The State of North Carolina, through the Agency/Institution named in the contract.

6. Designer – Any person, firm, partnership, or corporation, which has contracted with the State of North Carolina to perform architectural or engineering, work.

7. Bidder - Any person, firm, partnership, corporation, association, or joint venture seeking to be awarded a public contract or subcontract.

8. Contract - A mutually binding legal relationship or any modification thereof obligating the seller to furnish equipment, materials or services, including construction, and obligating the buyer to pay for them.

9. Contractor - Any person, firm, partnership, corporation, association, or joint venture which has contracted with the State of North Carolina to perform construction work or repair.

10. Subcontractor - A firm under contract with the prime contractor or construction manager at risk for supplying materials or labor and materials and/or installation. The subcontractor may or may not provide materials in his subcontract.

SECTION C: RESPONSIBILITIES

1. Office for Historically Underutilized Businesses, Department of Administration (hereinafter referred to as HUB Office).

   The HUB Office has established a program, which allows interested persons or businesses qualifying as a minority business under G.S. 143-128.2, to obtain certification in the State of North Carolina procurement system. The information provided by the minority businesses will be used by the HUB Office to:
   a. Identify those areas of work for which there are minority businesses, as requested.
   b. Make available to interested parties a list of prospective minority business contractors and subcontractors.
   c. Assist in the determination of technical assistance needed by minority business contractors.

   In addition to being responsible for the certification/verification of minority businesses that want to participate in the State construction program, the HUB Office will:
   (1) Maintain a current list of minority businesses. The list shall include the areas of work in which each minority business is interested.
   (2) Inform minority businesses on how to identify and obtain contracting and subcontracting opportunities through the State Construction Office and other public entities.
   (3) Inform minority businesses of the contracting and subcontracting process for public construction building projects.
   (4) Work with the North Carolina trade and professional organizations to improve the ability of minority businesses to compete in the State construction projects.
   (5) The HUB Office also oversees the minority business program by:
      a. Monitoring compliance with the program requirements.
      b. Assisting in the implementation of training and technical assistance programs.
      c. Identifying and implementing outreach efforts to increase the utilization of minority businesses.
      d. Reporting the results of minority business utilization to the Secretary of the Department of Administration, the Governor, and the General Assembly.

2. State Construction Office
   The State Construction Office will be responsible for the following:

   a. Furnish to the HUB Office a minimum of twenty-one days prior to the bid opening the following:
      (1) Project description and location;
      (2) Locations where bidding documents may be reviewed;
      (3) Name of a representative of the owner who can be contacted during the advertising period to advise who the prospective bidders are;
      (4) Date, time and location of the bid opening.
      (5) Date, time and location of prebid conference, if scheduled.

   b. Attending scheduled prebid conference, if necessary, to clarify requirements of the general statutes regarding minority-business participation, including the bidders' responsibilities.

c. Reviewing the apparent low bidders' statutory compliance with the requirements listed in the proposal, that must be complied with, if the bid is to be considered as responsive, prior to award of contracts. The State reserves the right to reject any or all bids and to waive informalities.
d. Reviewing of minority business requirements at Preconstruction conference**.**
e. Monitoring of contractors' compliance with minority business requirements in the contract documents during construction.
f. Provide statistical data and required reports to the HUB Office.
g. Resolve any protest and disputes arising after implementation of the plan, in conjunction with the HUB Office.

3. Owner
Before awarding a contract, owner shall do the following:

a. Develop and implement a minority business participation outreach plan to identify minority businesses that can perform public building projects and to implement outreach efforts to encourage minority business participation in these projects to include education, recruitment, and interaction between minority businesses and non-minority businesses.
b. Attend the scheduled prebid conference.
c. At least 10 days prior to the scheduled day of bid opening, notify minority businesses that have requested notices from the public entity for public construction or repair work and minority businesses that otherwise indicated to the Office for Historically Underutilized Businesses an interest in the type of work being bid or the potential contracting opportunities listed in the proposal. The notification shall include the following:
    1. A description of the work for which the bid is being solicited.
    2. The date, time, and location where bids are to be submitted.
    3. The name of the individual within the owner's organization who will be available to answer questions about the project.
    4. Where bid documents may be reviewed.
    5. Any special requirements that may exist.
d. Utilize other media, as appropriate, likely to inform potential minority businesses of the bid being sought.
e. Maintain documentation of any contacts, correspondence, or conversation with minority business firms made in an attempt to meet the goals.
f. Review, jointly with the designer, all requirements of G.S. 143-128.2(c) and G.S. 143-128.2(f) – (i.e. bidders' proposals for identification of the minority businesses that will be utilized with corresponding total dollar value of the bid and affidavit listing good faith efforts, or affidavit of self-performance of work, if the contractor will perform work under contract by its own workforce) - prior to recommendation of award to the State Construction Office.
g. Evaluate documentation to determine good faith effort has been achieved for minority business utilization prior to recommendation of award to State Construction Office.
h. Review prime contractors' pay applications for compliance with minority business utilization commitments prior to payment**.**
i. Make documentation showing evidence of implementation of Owner's responsibilities available for review by State Construction Office and HUB Office, upon request

4. Designer
Under the single-prime bidding, separate prime bidding, construction manager at risk, or alternative contracting method, the designer will:

a. Attend the scheduled prebid conference to explain minority business requirements to the prospective bidders.
b. Assist the owner to identify and notify prospective minority business prime and subcontractors of potential contracting opportunities.
c. Maintain documentation of any contacts, correspondence, or conversation with minority business firms made in an attempt to meet the goals.
d. Review jointly with the owner, all requirements of G.S. 143-128.2(c) and G.S.143-128.2(f) – (i.e. bidders' proposals for identification of the minority businesses that will be utilized with

corresponding total dollar value of the bid and affidavit listing Good Faith Efforts, or affidavit of self-performance of work, if the contractor will perform work under contract by its own workforce) - prior to recommendation of award.

e. During construction phase of the project, review "MBE Documentation for Contract Payment" – (Appendix E) for compliance with minority business utilization commitments. Submit Appendix E form with monthly pay applications to the owner and forward copies to the State Construction Office.
f. Make documentation showing evidence of implementation of Designer's responsibilities available for review by State Construction Office and HUB Office, upon request.

5. Prime Contractor(s), CM at Risk, and Its First-Tier Subcontractors
Under the single-prime bidding, the separate-prime biding, construction manager at risk and alternative contracting methods, contractor(s) will:

a. Attend the scheduled prebid conference.
b. Identify or determine those work areas of a subcontract where minority businesses may have an interest in performing subcontract work.
c. At least ten (10) days prior to the scheduled day of bid opening, notify minority businesses of potential subcontracting opportunities listed in the proposal. The notification will include the following:
   (1) A description of the work for which the subbid is being solicited.
   (2) The date, time and location where subbids are to be submitted.
   (3) The name of the individual within the company who will be available to answer questions about the project.
   (4) Where bid documents may be reviewed.
   (5) Any special requirements that may exist, such as insurance, licenses, bonds and financial arrangements.

   If there are more than three (3) minority businesses in the general locality of the project who offer similar contracting or subcontracting services in the specific trade, the contractor(s) shall notify three (3), but may contact more, if the contractor(s) so desires.
d. During the bidding process, comply with the contractor(s) requirements listed in the proposal for minority participation.
e. Identify on the bid**,** the minority businesses that will be utilized on the project with corresponding total dollar value of the bid and affidavit listing good faith efforts as required by G.S. 143-128.2(c) and G.S. 143-128.2(f).
f. Make documentation showing evidence of implementation of PM, CM-at-Risk and First-Tier Subcontractor responsibilities available for review by State Construction Office and HUB Office, upon request.
g. Upon being named the apparent low bidder, the Bidder shall provide one of the following: (1) an affidavit (Affidavit C) that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the applicable goal; (2) if the percentage is not equal to the applicable goal, then documentation of all good faith efforts taken to meet the goal. Failure to comply with these requirements is grounds for rejection of the bid and award to the next lowest responsible and responsive bidder.
h. The contractor(s) shall identify the name(s) of minority business subcontractor(s) and corresponding dollar amount of work on the schedule of values. The schedule of values shall be provided as required in Article 31 of the General Conditions of the Contract to facilitate payments to the subcontractors.
i. The contractor(s) shall submit with each monthly pay request(s) and final payment(s), "MBE Documentation for Contract Payment" – (Appendix E), for designer's review.
j. During the construction of a project, at any time**,** if it becomes necessary to replace a minority business subcontractor, immediately advise the owner, State Construction Office, and the Director of the HUB Office in writing**,** of the circumstances involved. The prime contractor shall make a good faith effort to replace a minority business subcontractor with another minority business subcontractor.

k. If during the construction of a project additional subcontracting opportunities become available, make a good faith effort to solicit subbids from minority businesses.
l. It is the intent of these requirements apply to all contractors performing as prime contractor and first tier subcontractor under construction manager at risk on state projects.

6. Minority Business Responsibilities
While minority businesses are not required to become certified in order to participate in the State construction projects, it is recommended that they become certified and should take advantage of the appropriate technical assistance that is made available. In addition, minority businesses who are contacted by owners or bidders must respond promptly whether or not they wish to submit a bid.

SECTION 4: DISPUTE PROCEDURES
It is the policy of this state that disputes that involves a person's rights, duties or privileges, should be settled through informal procedures. To that end, minority business disputes arising under these guidelines should be resolved as governed under G.S. 143-128(g).

SECTION 5: These guidelines shall apply upon promulgation on state construction projects. Copies of these guidelines may be obtained from the Department of Administration, State Construction Office, (physical address) 301 North Wilmington Street, Suite 450, NC Education Building, Raleigh, North Carolina, 27601-2827, (mail address) 1307 Mail Service Center, Raleigh, North Carolina, 27699-1307, phone (919) 807-4100, Website: www.nc-sco.com

SECTION 6: In addition to these guidelines, there will be issued with each construction bid package provisions for contractual compliance providing minority business participation in the state construction program.

MINORITY BUSINESS CONTRACT PROVISIONS (CONSTRUCTION)

APPLICATION:

The **Guidelines for Recruitment and Selection of Minority Businesses for Participation in State Construction Contracts** are hereby made a part of these contract documents. These guidelines shall apply to all contractors regardless of ownership. Copies of these guidelines may be obtained from the Department of Administration, State Construction Office, (physical address) 301 North Wilmington Street, Suite 450, NC Education Building, Raleigh, North Carolina, 27601-2827, (mail address) 1307 Mail Service Center, Raleigh, North Carolina, 27699-1307, phone (919) 807-4100, Website: http://www.nc-sco.com

MINORITY BUSINESS SUBCONTRACT GOALS:

The goals for participation by minority firms as subcontractors on this project have been set at 10%.

The bidder must identify on its bid, the minority businesses that will be utilized on the project with corresponding total dollar value of the bid and affidavit (Affidavit A) listing good faith efforts **or** affidavit (Affidavit B) of self-performance of work, if the bidder will perform work under contract by its own workforce, as required by G.S. 143-128.2(c) and G.S. 143-128.2(f).

The lowest responsible, responsive bidder must provide Affidavit C, that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the applicable goal.

OR

Provide Affidavit D, that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, **with documentation of Good Faith Effort, if the percentage is not equal to the applicable goal.**

OR

Provide Affidavit B, which includes sufficient information for the State to determine that the bidder does not customarily subcontract work on this type project.

The above information must be provided as required. Failure to submit these documents is grounds for rejection of the bid.

MINIMUM COMPLIANCE REQUIREMENTS:

All written statements, affidavits or intentions made by the Bidder shall become a part of the agreement between the Contractor and the State for performance of this contract. Failure to comply with any of these statements, affidavits or intentions, or with the minority business Guidelines shall constitute a breach of the contract. A finding by the State that any information submitted either prior to award of the contract or during the performance of the contract is inaccurate, false or incomplete, shall also constitute a breach of the contract. Any such breach may result in termination of the contract in accordance with the termination provisions contained in the contract. It shall be solely at the option of the State whether to terminate the contract for breach.

In determining whether a contractor has made Good Faith Efforts, the State will evaluate all efforts made by the Contractor and will determine compliance in regard to quantity, intensity, and results of these efforts. Good Faith Efforts include:

(1) Contacting minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor or available on State or local government maintained lists at least 10 days before the bid or proposal date and notifying them of the nature and scope of the work to be performed.

(2) Making the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bid or proposals are due.

(3) Breaking down or combining elements of work into economically feasible units to facilitate minority participation.

(4) Working with minority trade, community, or contractor organizations identified by the Office for Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.

(5) Attending any prebid meetings scheduled by the public owner.

(6) Providing assistance in getting required bonding or insurance or providing alternatives to bonding or insurance for subcontractors.

(7) Negotiating in good faith with interested minority businesses and not rejecting them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.

(8) Providing assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisting minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.

(9) Negotiating joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.

(10) Providing quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

Identification of HUB Certified/ Minority Business Participation

I,_____,
(Name of Bidder)
do hereby certify that on this project, we will use the following HUB Certified/ minority business as construction subcontractors, vendors, suppliers or providers of professional services.

Firm Name, Address and Phone #	Work Type	*Minority Category	**HUB Certified (Y/N)

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

The total value of minority business contracting will be ($)_____.

State of North Carolina AFFIDAVIT A – Listing of Good Faith Efforts

County of _____

(Name of Bidder)

Affidavit of_____

I have made a good faith effort to comply under the following areas checked:

Bidders must earn at least 50 points from the good faith efforts listed for their bid to be considered responsive. (1 NC Administrative Code 30 I.0101)

- ❑ **1 – (10 pts)** Contacted minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor, or available on State or local government maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.
- ❑ **2 --(10 pts)** Made the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bids are due.
- ❑ **3** – **(15 pts)** Broken down or combined elements of work into economically feasible units to facilitate minority participation.
- ❑ **4 – (10 pts)** Worked with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- ❑ **5** – **(10 pts)** Attended prebid meetings scheduled by the public owner.
- ❑ **6** – **(20 pts)** Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.
- ❑ **7 – (15 pts)** Negotiated in good faith with interested minority businesses and did not reject them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.
- ❑ **8** – **(25 pts)** Provided assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisted minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- ❑ **9** – **(20 pts)** Negotiated joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
- ❑ **10** - **(20 pts)** Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon scope of contract to be executed with the Owner. Substitution of contractors must be in accordance with GS143-128.2(d) Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of the minority business commitment and is authorized to bind the bidder to the commitment herein set forth.

Date:_____ Name of Authorized Officer:_____

Signature:_____

Title:_____

SEAL

State of_____, County of_____

Subscribed and sworn to before me this _____day of _____20____

Notary Public_____

My commission expires _____

State of North Carolina --AFFIDAVIT B-- Intent to Perform Contract with Own Workforce.

County of _____

Affidavit of _____
(Name of Bidder)

I hereby certify that it is our intent to perform 100% of the work required for the _____

_____ contract.
(Name of Project)

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform all elements of the work on this project with his/her own current work forces; and

The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement. The Bidder agrees to make a Good Faith Effort to utilize minority suppliers where possible.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____

SEAL

State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20___

Notary Public _____

My commission expires _____

Do not submit with bid Do not submit with bid Do not submit with bid Do not submit with bid

State of North Carolina - AFFIDAVIT C - Portion of the Work to be Performed by HUB Certified/Minority Businesses

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the portion of the work to be executed by HUB certified/minority businesses as defined in GS143-128.2(g) and 128.4(a),(b),(e) is equal to or greater than 10% of the bidders total contract price, then the bidder must complete this affidavit.
This affidavit shall be provided by the apparent lowest responsible, responsive bidder within **72 hours** after notification of being low bidder.

Affidavit of _____ I do hereby certify that on the
(Name of Bidder)

_____
(Project Name)

Project ID#_____ Amount of Bid $_____

I will expend a minimum of _____% of the total dollar amount of the contract with minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below. Attach additional sheets if required

Name and Phone Number	*Minority Category	**HUB Certified Y/N	Work Description	Dollar Value

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date:_____ Name of Authorized Officer:_____

SEAL

Signature:_____

Title:_____

State of _____, County of _____
Subscribed and sworn to before me this _____day of _____20____
Notary Public_____
My commission expires_____

State of North Carolina AFFIDAVIT D – Good Faith Efforts

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the goal of 10% participation by HUB Certified/ minority business **is not** achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts:

Affidavit of _____ I do hereby certify that on the
(Name of Bidder)

_____
(Project Name)

Project ID#_____ Amount of Bid $_____

I will expend a minimum of _____% of the total dollar amount of the contract with HUB certified/ minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below. (Attach additional sheets if required)

Name and Phone Number	*Minority Category	**HUB Certified Y/N	Work Description	Dollar Value

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

Examples of documentation that may be required to demonstrate the Bidder's good faith efforts to meet the goals set forth in these provisions include, but are not necessarily limited to, the following:

A. Copies of solicitations for quotes to at least three (3) minority business firms from the source list provided by the State for each subcontract to be let under this contract (if 3 or more firms are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.

B. Copies of quotes or responses received from each firm responding to the solicitation.

C. A telephone log of follow-up calls to each firm sent a solicitation.

D. For subcontracts where a minority business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.

E. Documentation of any contacts or correspondence to minority business, community, or contractor organizations in an attempt to meet the goal.

F. Copy of pre-bid roster

G. Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.

H. Letter detailing reasons for rejection of minority business due to lack of qualification.

I. Letter documenting proposed assistance offered to minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the next lowest responsible and responsive bidder.

Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date:_____ Name of Authorized Officer:_____

Signature:_____

Title:_____

SEAL

State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20____

Notary Public_____

My commission expires _____

APPENDIX E

MBE DOCUMENTATION FOR CONTRACT PAYMENTS

Prime Contractor/Architect: _____

Address & Phone: _____

Project Name: _____

Pay Application #: _____ Period: _____

The following is a list of payments made to Minority Business Enterprises on this project for the above-mentioned period.

MBE FIRM NAME	* INDICATE TYPE OF MBE	AMOUNT PAID THIS MONTH	TOTAL PAYMENTS TO DATE	TOTAL AMOUNT COMMITTED

*Minority categories: Black, African American (B), Hispanic (H), Asian American (A), American Indian (I), Female (F), Social and Economically Disadvantage (D)

Date: _____ Approved/Certified By: _____
Name

_____
Title

_____
Signature

SUBMIT WITH EACH PAY REQUEST & FINAL PAYMENT

(Revised on 3/14/2003)

BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER *(Name and Address)*:

SURETY *(Name and Address of Principal Place of Business)*:

OWNER *(Name and Address)*:
Brunswick County Schools
35 Referendum Drive NE
Bolivia, NC 28422

BID
Bid Due Date: **March 28th, 2024**
Description *(Project Name and Include Location)*:
South Brunswick High School Fire Alarm System Replacement

BOND
Bond Number:
Date *(Not earlier than Bid due date)*:
Penal sum _____ $ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER	**SURETY**
_____ (Seal)	_____ (Seal)
Bidder's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature	Signature (Attach Power of Attorney)
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	Attest: _____
Signature	Signature
_____	_____
Title	Title

Note: Above addresses are to be used for giving any required notice. Provide execution by any additional parties, such as joint ventures, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

3. This obligation shall be null and void if:

3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or

3.2 All Bids are rejected by Owner, or

3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.

6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid due date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

SECTION 00510

NOTICE OF AWARD

DATED:

TO:

PROJECT: **South Brunswick High School Fire Alarm System Replacement**

You are hereby notified that your Proposal for the above Project has been considered. You have been awarded a Contract for construction at the following school for the price specified.

The Contract Price of your **Base Bid** is _____

Four (4) copies of the proposed Contact Documents (except drawings) accompany this Notice of Award.

You must comply with the following conditions precedent within 10 days of the date you receive this Notice of Award:

1. Deliver to the OWNER four (4) fully executed counterparts of the Contract Documents.
2. Deliver with the executed Contract Documents the certificates of insurance.

Failure to comply with these conditions within the time specified will entitle the OWNER to consider your Proposal in default, to annul this Notice of Award and to declare your Proposal security forfeited.

Within ten days after you comply with the above conditions, OWNER will return to you one fully executed counterpart of the Contract Documents.

You are required to return an acknowledged copy of this NOTICE of AWARD to the OWNER.

Owner: Brunswick County Schools

By: _____
(AUTHORIZED SIGNATURE)

Title:

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged

by _____.

this the _____ day of _____, 2024.

By_____

Title _____

SECTION 00550

NOTICE TO PROCEED

DATE:

TO:

ADDRESS:

PROJECT: South Brunswick High School Fire Alarm System Replacement

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You are hereby notified that the Contract Times under the above contract will commence to run on _____. By that date, you are to start performing your obligations under the Contract Documents. The date of Final Completion is to be _____.

Before you may start any Work at the Site, you must notify the Owner and Owner Agent.

Brunswick County Schools
Owner

BY_____
(AUTHORIZED SIGNATURE)

_____
(TITLE)

ACCEPTANCE OF NOTICE

CONTRACTOR:

I hereby acknowledge this Notice to Proceed on this _____ day of _____, 2024.

BY_____
(AUTHORIZED SIGNATURE)

_____
(TITLE)

SECTION 00610

PERFORMANCE BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (*Name and Address*):

SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):
Brunswick County Schools
35 Referendum Drive NE
Bolivia, NC 28422

CONTRACT
Effective Date of Agreement:
Amount:
Description (*Name and Location*): **South Brunswick High School Fire Alarm System Replacement**

BOND
Bond Number:
Date (*Not earlier than Effective Date of Agreement*):
Amount:
Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL	**SURETY**
_____ (Seal)	_____ (Seal)
Contractor's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature	Signature (Attach Power of Attorney)
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	Attest: _____
Signature	Signature
_____	_____
Title	Title

Note: Provide execution by additional parties, such as joint ventures if necessary.

Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner for the performance of the Contract, which is incorporated herein by reference.

1. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 2.1.

2. If there is no Owner Default, Surety's obligation under this Bond shall arise after:
   2.1 Owner has notified Contractor and Surety, at the addresses described in Paragraph 9 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor, and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and
   2.2 Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 2.1; and
   2.3 Owner has agreed to pay the Balance of the Contract Price to:
      1. Surety in accordance with the terms of the Contract; or
      2. Another contractor selected pursuant to Paragraph 3.3 to perform the Contract.

3. When Owner has satisfied the conditions of Paragraph 2, Surety shall promptly, and at Surety's expense, take one of the following actions:

   3.1 Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or
   3.2 Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or
   3.3 Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 5 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or
   3.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:
      1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or
      2. Deny liability in whole or in part and notify Owner citing reasons therefore.

4. If Surety does not proceed as provided in Paragraph 3 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 3.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.

5. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 3.1, 3.2, or 3.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be greater than those of Owner under the Contract. To the limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, Surety is obligated without duplication for:

5.1 The responsibilities of Contractor for correction of defective Work and completion of the Contract;
5.2 Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions of or failure to act of Surety under Paragraph 3; and
5.3 Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

6. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than Owner or its heirs, executors, administrators, or successors.

7. Surety hereby waives notice of any change, including changes of time, to Contract or to related subcontracts, purchase orders, and other obligations.

8. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located and shall be instituted within two years after Contractor Default or within two years after Contractor ceased working or within two years after Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

9. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the address shown on the signature page.

10. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted here from and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

11. Definitions.

11.1 Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.
11.2 Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.
11.3 Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.
11.4 Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or otherwise comply with the other terms thereof.

FOR INFORMATION ONLY – (*Name, Address and Telephone*) Surety Agency or Broker: Owner's Representative (*Engineer or other party*):

SECTION 00615

PAYMENT BOND

ANY SINGULAR REFERENCE TO THE CONTRACTOR, SURETY, OWNER, OR OTHER PARTY SHALL BE CONSIDERED PLURAL WHERE APPLICABLE.

CONTRACTOR (*Name and Address*):

SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):

Brunswick County Schools
35 Referendum Drive NE
Bolivia, NC 28422

CONTRACT

Effective Date of Agreement: _____

Amount: _____

Description *(Name and Location)*: **South Brunswick High School Fire Alarm System Replacement**

BOND

Bond Number: _____

Date (*Not earlier than Effective Date of Agreement*):_____

___

Amount: _____

Modifications to this Bond Form: _____

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL	**SURETY**
_____ (Seal)	_____ (Seal)
Contractor's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature	Signature (Attach Power of Attorney)
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	Attest: _____
Signature	Signature
_____	_____
Title	Title

Note: Provide execution by additional parties, such as joint ventures, if necessary.

Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner to pay for labor, materials, and equipment furnished by Claimants for use in the performance of the Contract, which is incorporated herein by reference.

1. With respect to Owner, this obligation shall be null and void if Contractor:

    1.1 Promptly makes payment, directly or indirectly, for all sums due Claimants, and

    1.2 Defends, indemnifies, and holds harmless Owner from all claims, demands, liens, or suits alleging non-payment by Contractor by any person or entity who furnished labor, materials, or equipment for use in the performance of the Contract, provided Owner has promptly notified Contractor and Surety (at the addresses described in Paragraph 12) of any claims, demands, liens, or suits and tendered defense of such claims, demands, liens, or suits to Contractor and Surety, and provided there is no Owner Default.

2. With respect to Claimants, this obligation shall be null and void if Contractor promptly makes payment, directly or indirectly, for all sums due.

3. Surety shall have no obligation to Claimants under this Bond until:

    3.1 Claimants who are employed by or have a direct contract with Contractor have given notice to Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

    3.2 Claimants who do not have a direct contract with Contractor:
        1. Have furnished written notice to Contractor and sent a copy, or notice thereof, to Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials or equipment were furnished or supplied, or for whom the labor was done or performed; and
        2. Have either received a rejection in whole or in part from Contractor, or not received within 30 days of furnishing the above notice any communication from Contractor by which Contractor had indicated the claim will be paid directly or indirectly; and
        3. Not having been paid within the above 30 days, have sent a written notice to Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to Contractor.

4. If a notice by a Claimant required by Paragraph 4 is provided by Owner to Contractor or to Surety, that is sufficient compliance.

5. When a Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at Surety's expense take the following actions:

    5.1 Send an answer to that Claimant, with a copy to Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

    5.2 Pay or arrange for payment of any undisputed amounts.

6. Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by Surety.

7. Amounts owed by Owner to Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any performance bond. By Contractor furnishing and Owner accepting this Bond, they agree that all funds earned by Contractor in the performance of the Contract are dedicated to satisfying obligations of Contractor and Surety under this Bond, subject to Owner's priority to use the funds for the completion of the Work.

8. Surety shall not be liable to Owner, Claimants, or others for obligations of Contractor that are unrelated to the Contract. Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

9. Surety hereby waives notice of any change, including changes of time, to the Contract or to related subcontracts, purchase orders, and other obligations.

10. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the Work or part of the Work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Paragraph 4.1 or Paragraph 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

11. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, Owner, or Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

12. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory Bond and not as a common law bond.

13. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

14. Definitions

14.1 Claimant: An individual or entity having a direct contract with Contractor, or with a first-tier subcontractor of Contractor, to furnish labor, materials, or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of Contractor and Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

14.2 Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

14.3 Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract, or to perform and complete or otherwise comply with the other terms thereof.

FOR INFORMATION ONLY – (*Name, Address, and Telephone*) Surety Agency or Broker: Owner's Representative (*Engineer or other*):

OWNER-CONTRACTOR AGREEMENT

THIS AGREEMENT is made this _____ day of _____ 2024 by and between the County of Brunswick, North Carolina by and through its authorized agent, Brunswick County Board of Education (herein referred to as the "Owner"), whose mailing address is 35 Referendum Dr., Bolivia, NC 28422 and _____ (herein referred to as the "Contractor"), whose mailing address is _____. Correspondence, submittals, and notices relating to or required under this Agreement shall be sent in writing to the above addresses unless either party is notified in writing by the other of a change in address.

WITNESSETH:

WHEREAS, it is the intent of the Owner to obtain the services of the Contractor in connection with the South Brunswick High School Fire Alarm Replacement; and

WHEREAS, the Contractor desires to perform such construction in accordance with the terms and conditions of this Agreement.

NOW, THEREFORE, in consideration of the promises made herein and other good and valuable consideration, the following terms and conditions are hereby mutually agreed to, by and between the Owner and Contractor:

1. Scope of Services. The Contractor shall perform the Work in accordance with the terms of this Agreement, any plans and specifications prepared for this Project, and the description of services attached to this Agreement as Exhibit A, all of which are incorporated into and made a part of this Agreement. The Contractor agrees that any general terms and conditions that are attached to Exhibit A that are inconsistent with this Agreement shall not be applicable to this Agreement, and any such provisions shall be deemed null and void.

    a. The Contractor shall provide and pay for all materials, tools, equipment, and labor, and shall perform all other acts and supply all other services and things necessary to fully and properly perform and complete the Work as required by this Agreement.

    b. The Contractor shall perform the Work in compliance with all governmental laws and regulations, including all applicable local, state and federal rules and regulations.

    c. The Contractor shall, unless otherwise specified, supply and pay for all labor, transportation, materials, tools, apparatus, lights, power, fuel, sanitary facilities, and incidentals necessary for the completion of his work, and shall install, maintain and remove all equipment of the construction, other utensils or things, and be responsible for the safe, proper and lawful construction, maintenance and use of same, and shall construct in the best and most workmanlike manner, a complete job and everything incidental thereto, as shown on the plans, stated in the specifications, or reasonably implied therefrom, all in accordance with the Agreement documents.

    d. All materials shall be new and of quality specified, except where reclaimed material is authorized herein and approved for use. Workmanship shall at all times be of a grade

accepted as the best practice of the particular trade involved, and as stipulated in written standards of recognized organizations or institutes of the respective trades except as exceeded or qualified by the specifications.

e. Products are generally specified by ASTM or other reference standard and/or by manufacturer's name and model number or trade name. When specified only by reference standard, the Contractor may select any product meeting this standard, by any manufacturer. When several products or manufacturers are specified as being equally acceptable, the Contractor has the option of using any product and manufacturer combination listed. However, the Contractor shall be aware that the cited examples are used only to denote the quality standard of product desired and that they do not restrict Contractor to a specific brand, make, manufacturer or specific name; that they are used only to set forth and convey to Contractor the general style, type, character and quality of product desired; and that equivalent products will be acceptable. Substitution of materials, items or equipment of equal or equivalent design shall be submitted to the architect or engineer for approval or disapproval; such approval or disapproval shall be made by the architect or engineer prior to the opening of bids.

f. The Contractor shall designate a foreman/superintendent who shall direct the work.

g. If at any time during the construction and completion of the work covered by this Agreement, the conduct of any workman be adjudged a nuisance to the Owner or considered detrimental to the work, the Contractor shall order such parties removed immediately from the Owner's property.

h. The Contractor shall keep the sites and surrounding area reasonably free from rubbish at all times and shall remove debris from the site from time to time or when directed to do so by the Owner. Before final inspection and acceptance of the Project, the Contractor shall thoroughly clean the sites, and completely prepare the Project and site for use by the Owner.

i. Temporary electricity and water shall be arranged by the Contractor at the Contractor's expense.

2. Compensation. Provided that the Contractor shall strictly and completely perform all of its obligations under this Agreement, the Owner shall pay the Contractor the amount of _____ and no/100 Dollars ($_____) (herein referred to as the "Contract Sum"). No compensation shall be paid for any additional work that is not approved in advance by the Owner. One progress payment, if any, may be made by the Owner to the Contractor only after certification that the Work is complete and will be based upon the completion of the identified interim work agreed to by the Owner. Under no circumstances will the Owner make more than one interim payment. The Owner will retain five percent (5%) of the amount of any progress payment and/or the Contract Sum until all of the Work is finally completed and accepted, whether or not the Owner has occupied any or all of the Project before such time. Final payment will be withheld until the Contractor's North Carolina sales and use tax report is received. The report shall accurately list any and all

sales and use tax paid on materials for the entire Project.

3. Non-appropriation. If the Board of County Commissioners does not appropriate the funding needed by the Owner to make payments under this Agreement for a given fiscal year, the Owner will not be obligated to pay amounts due beyond the end of the last fiscal year for which funds were appropriated. In such event, the Owner will promptly notify the Contractor of the non-appropriation and this Agreement will be terminated at the end of the last fiscal year for which funds were appropriated. No act or omission by the Owner which is attributable to non-appropriation of funds shall constitute a breach of or default under this Agreement.

4. Time. The Contractor shall commence the Work promptly upon the date established in the Notice to Proceed, the date of this Agreement, or such other date as may be established by the Owner. Time is of the essence. The Contractor shall perform work in a timelymanner.

5. Codes, Permits and Inspections.

   a. The Contractor shall obtain the required permits, give all notice and comply with all laws, ordinances, codes, rules and regulations bearing on the conduct of the work under this Agreement. If the Contractor observes that the drawings and specifications are at variance therewith, he shall promptly notify the architect or engineer in writing. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, codes, rules and regulations, and without such notice to the Owner, he shall bear all cost arising therefrom.

   b. All work under this Agreement shall conform to the North Carolina State Building Codes and other local, state and national codes as are applicable.

6. Safety Requirements.

   a. The Contractor shall be responsible for the entire site and the construction of the same and provide all the necessary protections as required by laws or ordinances governing such conditions and as required by the Owner, architect or engineer. Contractor shall be responsible for any damage to the Owner's property or that of others on the job, whether caused by Contractor, its personnel or its subcontractors, and shall make good such damages. Contractor shall be responsible for and pay for any claims against the Owner arising from such damages.

   b. The Contractor shall adhere to the rules, regulations and interpretations of the North Carolina Department of Labor relating to Occupational Safety and Health Standards for the Construction Industry (Title 29, Code of Federal Regulations, Part 1926 Construction and Part 1910 General Industry).

   c. The Contractor shall provide all necessary safety measures for the protection of all persons on the work, including the requirements of the AGC Accident Prevention Manual in Construction as amended, and shall fully comply with all state laws or regulations and North Carolina State Building Code requirements to prevent accident

or injury to persons on or about the location of the work. He shall clearly mark or post signs warning of hazards existing, and shall barricade excavations and similar hazards. He shall protect against damage or injury resulting from falling materials and he shall maintain all protective devices and signs throughout the progress of the work.

7. Warranties. The Contractor guarantees and warrants to the Owner all Work as follows: that all materials and equipment furnished under this Agreement will be new and the best of its respective kind unless otherwise specified; that all Work will be of good quality in accordance with the industry standards for reputable contractors; that the Work will be free of omissions and faulty, poor quality, imperfect and defective material or workmanship; that the Work, including but not limited to, mechanical and electrical machines, devices and equipment, shall be fit and fully usable for its intended and specified purpose and shall operate satisfactorily with ordinary care; that the products or materials incorporated in the Work will not contain asbestos; and that all agents or employees of Contractor who will provide services under this Agreement will be fully qualified, possess any requisite licenses, and otherwise be legally entitled to perform the services provided; and that the person(s) executing this Agreement on behalf of Contractor have authority to do so as an official, binding act of Contractor.

   If, within one (1) year after the Date of Substantial Completion of the Work or designated portion thereof or within one (1) year after acceptance by the Owner of designated equipment or within such longer period of time as may be prescribed by law or by the terms of any applicable special warranty required by this Agreement, any of the Work is found to be defective, not in accordance with this Agreement, or not in accordance with the guarantees and warranties specified in this Agreement, the Contractor shall correct it within five (5) working days or such other period as mutually agreed, after receipt of a written notice from the Owner to do so. For items which remain incomplete or uncorrected on the date of Substantial Completion, the one (1) year warranty shall begin on the date of Final Completion of the Work.

8. Contractor-Subcontractor Relationships. The Contractor agrees that the terms of these Agreement documents shall apply equally to any subcontractor as to the Contractor, and that any subcontractor is bound by those terms as an agent of the Contractor.

9. Hold Harmless. The Contractor shall indemnify and hold the Owner harmless from and against any and all losses, liabilities, claims, lawsuits, judgments, and demands whatsoever, including costs of investigation (including reimbursement of reasonable legal fees and all costs) caused solely by any negligent act or omission or intentional wrongdoing of the Contractor or its agents, employees or subcontractors, or caused solely by the maintenance, presence, use, location or removal of any equipment or other property owned or operated by the Contractor or its agents, employees or subcontractors. The parties agree that this indemnification clause is an "evidence of indebtedness" for purpose of N. C. Gen. Stat. § 6-21.2. The Owner shall not be responsible for any damage to the Contractor's property, business, agents or employees, unless said damage is due solely to the negligence of Owner.

10. Insurance. The Contractor shall obtain and maintain in effect during the term of this

Agreement, general liability and automobile liability insurance in which the Owner and the Contractor shall each be named as insured parties, which insurance shall protect the Owner and the Contractor from claims in an amount not less than $1,000,000 for personal injury, including death, to any one person and in an amount not less than $1,000,000 for any one occurrence, and from claims for property damages in an amount of not less than $1,000,000 for each occurrence arising from any act or omission of Contractor, its agents, employees or subcontractors. The Contractor shall obtain and maintain in effect during the term of this Agreement, a policy of workers compensation liability insurance in which the policy shall protect the Owner and the Contractor from claims in an amount not less than the statutory amount.

The Contractor shall promptly furnish to the Owner certificates of insurance evidencing such insurance coverage. Insurance required hereunder shall be maintained by insurance companies properly licensed by the Insurance Department of the State of North Carolina and rated A or better by Best Insurance Guide.

11. Termination for Convenience. The Owner may terminate this Agreement at any time in its complete discretion upon twenty (20) days written notice. In the event of a termination for convenience, all finished or unfinished work and materials pursuant to this Agreement shall be turned over to the Owner and become its property. If the Agreement is terminated by the Owner in accordance with this section, the Owner shall only be responsible for paying Contractor for all Work performed and accepted and all materials delivered to the site as of the date of termination.

12. Termination by the Owner for Cause. The Owner may terminate the Agreement upon five (5) days written notice if the Owner is dissatisfied with the quality or timeliness of the Work performed. If the Owner becomes dissatisfied with the Work, the Owner may without prejudice to any other rights or remedies of the Owner and after giving the Contractor five days' written notice, terminate employment of the Contractor and may:

    1. Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

    2. Accept assignment of any subcontracts; and

    3. Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

If the Owner terminates the whole or any part of the Work, the Owner may procure, upon such terms and in such manner as the Owner may deem appropriate, supplies or services similar to those so terminated, and the Contractor shall be liable to the Owner for any excess costs for such similar supplies or services. The Contractor shall continue the performance of the Agreement to the extent not terminated hereunder.
When the Owner terminates the Agreement, the Contractor shall not be entitled to receive

further payment until the Work is finished. If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's and legal services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Architect and this obligation for payment shall survive this Agreement.

13. Lunsford Act/Criminal Background Checks. The Contractor shall conduct or arrange to have conducted at its own expense sexual offender registry checks on each of its owners, employees, agents, or subcontractors ("contractual personnel") who will engage in any service on or delivery of goods to school system property or at a school-system sponsored event, except checks shall not be required for individuals who are solely delivering or picking up equipment, materials, or supplies at: (1) the administrative office, provided that such administrative office is not located at a school site; (2) non-school sites; (3) schools closed for renovation; or (4) school construction sites where no students are present. The checks shall include at a minimum checks of the State Sex Offender and Public Protection Registration Program, the State Sexually Violent Predator Registration Program, and the National Sex Offender Registry ("the Registries"). For the Contractor's convenience only, all of the required registry checks may be completed at no cost by accessing the United States Department of Justice Sex Offender Public Website at http:// www. nsopw.gov/. The Contractor shall provide certification that the registry checks were conducted on each of its contractual personnel providing services or delivering goods under this Agreement prior to the commencement of such services or the delivery of such goods (Registry Check Certification Form – Exhibit B). The Contractor shall conduct a current initial check of the registries (a check done more than 30 days prior to the date of this Agreement shall not satisfy this contractual obligation). In addition, Contractor agrees to conduct the registry checks and provide a supplemental certification before any additional contractual personnel are used to deliver goods or provide services pursuant to this Agreement. Contractor further agrees to conduct annual registry checks of all contractual personnel and provide annual certifications at each anniversary date of this Agreement. Contractor shall not assign any individual to deliver goods or provide services pursuant to this Agreement if said individual appears on any of the listed registries. Contractor agrees that it will maintain all records and documents necessary to demonstrate that it has conducted a thorough check of the registries as to each contractual personnel, and agrees to provide such records and documents to the school system upon request. Contractor specifically acknowledges that the school system retains the right to audit these records to ensure compliance with this section at any time in the school system's sole discretion. Failure to comply with the terms of this provision shall be grounds for immediate termination of the Agreement. In addition, the Owner may conduct additional criminal records checks at the Owner's expense. If the school system exercises this right to conduct additional criminal records checks, Contractor agrees to provide within seven (7) days of request the full name, date of birth, state of residency for the past ten years, and any additional information requested by the school system for all contractual personnel who may deliver goods or perform services under this Agreement. Contractor further agrees that it has an ongoing obligation to provide the school system with the name of any new contractual personnel who may deliver goods or provide services under the

Agreement. The Owner reserves the right to prohibit any contractual personnel of Contractor from delivering goods or providing services under this Agreement if the Owner determines, in its sole discretion, that such contractual personnel may pose a threat to the safety or well-being of students, school personnel or others.

14. Governing Law. This Agreement and the relationship of the parties shall be governed by applicable federal laws and the laws of the state of North Carolina without regard for its choice of law provisions. All actions relating in any way to this Agreement shall be brought in the General Court of Justice of the State of North Carolina in Brunswick County or in the Federal District Court for the Eastern District of North Carolina, Wilmington division.

15. Entire Agreement. All of the representations and obligations of the parties are contained herein, and no modification, waiver or amendment of this Agreement or of any of its conditions or provisions shall be binding upon a party unless in writing signed by that party. The waiver by any party of a breach of any provision of this Agreement shall not operate or be construed as a waiver of any subsequent breach of that provision by the same party, or of any other provision or condition of the Agreement.

16. Severability. If any section, subsection, term or provision of this Agreement or the application thereof to any party or circumstance shall, to any extent, be invalid or unenforceable, the remainder of said section, subsection, term or provision of the Agreement or the application of the same to parties or circumstances other than those to which it was held invalid or unenforceable, shall not be affected thereby and each remaining section, subsection, term or provision of this Agreement shall be valid or enforceable to the fullest extent permitted by law.

17. Compliance with Applicable Laws. Contractor shall comply with all applicable laws and regulations in providing services under this Agreement. In particular, Contractor shall not employ any individuals to provide services to the Owner who are not authorized by federal law to work in the United States. Contractor represents and warrants that it is aware of and in compliance with the Immigration Reform and Control Act and North Carolina law (Article 2 of Chapter 64 of the North Carolina General Statutes) requiring use of the E-Verify system for employers who employ twenty-five (25) or more employees and that it is and will remain in compliance with these laws at all times while providing services pursuant to this Agreement. Contractor shall also ensure that any of its subcontractors (of any tier) will remain in compliance with these laws at all times while providing subcontracted services in connection with this Agreement. Contractor is responsible for providing affordable health care coverage to all of its full-time employees providing services to the School System. The definitions of "affordable coverage" and "full-time employee" are governed by the Affordable Care Act and accompanying IRS and Treasury Department regulations.

18. Restricted Companies List. Contractor represents that as of the date of this Agreement, Contractor is not included on the Final Divestment List created by the North Carolina State Treasurer pursuant to N.C. Gen. Stat. § 147-86.58. Contractor also represents that as of the date of this Agreement, Contractor is not included on the list of restricted companies determined to be engaged in a boycott of Israel created by the North Carolina State

Treasurer pursuant to N.C. Gen. Stat. § 147-86.81.

19. Anti-Nepotism. Contractor warrants that, to the best of its knowledge and in the exercise of due diligence, none of its corporate officers, directors, or trustees and none of its employees who will directly provide services under this Agreement are immediate family members of any member of the Brunswick County Board of Education or of any principal or central office staff administrator employed by the Board. For purposes of this provision, "immediate family" means spouse, parent, child, brother, sister, grandparent, or grandchild, and includes step, half, and in-law relationships. Should Contractor become aware of any family relationship covered by this provision or should such a family relationship arise at any time during the term of this Agreement, Contractor shall immediately disclose the family relationship in writing to the Superintendent of the Schools. Unless formally waived by the Board, the existence of a family relationship covered by this Agreement is grounds for immediate termination by Owner without further financial liability to Contractor.

20. Non-Discrimination. Contractor agrees, as part of the consideration for the granting of funds by Owner, that for itself, its agents, officials, employees and servants, it will not discriminate in any manner on the basis of race, ethnicity, gender, gender identity, sexual orientation, age, religion, national origin, disability, color, ancestry, citizenship, genetic information, political affiliation or military/veteran status, or any other status protected by federal, state or local law or other unlawful form of discrimination. Contractor shall take affirmative action to ensure that applicants are employed and that employees are treated fairly during employment. In the event Contractor is determined by the final order of an appropriate agency or court of competent jurisdiction to be in violation of any non-discrimination provision of federal, state or local law or this provision, this Agreement may be cancelled, terminated or suspended in whole or in part by the Owner, and Contractor may be declared ineligible for further agreements with Owner.

21. Dispute Resolution. Should a dispute arise as to the terms of this Agreement, both parties agree that neither may initiate binding arbitration. The parties may agree to non-binding mediation of any dispute prior to the brining of any suit or action.

22. Governmental Immunity. Owner, to the extent applicable, does not waive its governmental immunity by entering into this Agreement and fully retains all immunities and defenses provide by law with regard to any action based on this Agreement.

23. Debarment. Contractor hereby certifies that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from participation in this Agreement by any governmental department or agency. Contractor must notify the Owner within thirty (30) days if debarred by any governmental entity during this Agreement.

24. Applicable School Board of Education Policies. Contractor acknowledges that the Brunswick County Board of Education has adopted policies governing conduct on School System property and agrees to abide by any and all relevant Board policies while on School

System property. The Contractor acknowledges that Board's policies are available on the School System's website.

25. Signatures. This Agreement, together with any amendments or modifications, may be executed in one or more counterparts, each of which shall be deemed an original and all of which shall be considered one and the same agreement. This Agreement may also be executed electronically. By signing electronically, the parties indicate their intent to comply with the Electronic Commerce in Government Act (N.C.G.S § 66-58.1 et seq.) and the Uniform Electronic Transactions Act (N.C.G.S § 66-311 et seq.). Delivery of an executed counterpart of this Agreement by either electronic means or by facsimile shall be as effective as a manually executed counterpart.

26. Exhibits.

Exhibit A: Scope of Work

Exhibit B: Sexual Registry Check Certification Form

[REMAINDER OF PAGE LEFT INTENTIONALLY BLANK]

IN WITNESS WHEREOF, the Owner has caused these presents to be signed and the Contractor has caused these presents to be signed by a person with the authority to enter this Agreement, as hereinafter attested.

COUNTY OF BRUNSWICK, NORTH CAROLINA

By: _____(Seal)
Chairman, Board of Commissioners

Attest:_____(Seal)
Clerk to the Board of Commissioners

_____.

By: _____(Seal)
_____, President/VP

Attest:_____(Seal)

"This instrument has been preaudited in the manner required by the School Budget and Fiscal Control Act."

_____
Freyja Cahill, Chief Finance Officer
Brunswick County Board of Education

Date: _____

BUDGET CODE: _4.9002.695.529.000.541.00_____

"This instrument has been preaudited in the manner required by the Local Budget and Fiscal Control Act."

_____
Aaron C. Smith, Director of Fiscal Operations
Brunswick County, NC

Date: _____

APPROVED AS TO FORM

_____
Robert V. Shaver, Jr., County Attorney /
Bryan W. Batton, Asst. County Attorney
Brunswick County, NC

EXHIBIT A

SCOPE OF WORK: The general project scope consists of the replacement of the school's existing fire alarm system with a new system equipped with voice evacuation. The project will consist of the removal of the existing system once the new system is operational. This will include all required electrical upgrades and accessories necessary to complete the project.

EXHIBIT B

Sexual Offender Registry Check Certification Form

Check the appropriate box to indicate the type of check:

□ Initial
□ Supplemental
□ Annual

I,_____(insert name),_____(insert title) of_____(insert company name) hereby certify that I have performed all of the required sexual offender registry checks required under this Agreement for all contractual personnel (employees, agents, ownership personnel, or contractors) who may be used to deliver goods or provide services under this Agreement, including the North Carolina Sex Offender and Public Protection Registration Program, the North Carolina Sexually Violent Predator Registration Program, and the National Sex Offender Registry. I further certify that none of the individuals listed below appears on any of the above-named registries and that I will not assign any individual to deliver goods or perform services under this Agreement if said individual appears on any of the sex offender registries. I agree to maintain all records and documents associated with these registry checks, and that I will provide such records and documents to the school system upon request. I specifically acknowledge that the school system retains the right to audit these records to ensure compliance with this section at any time in the school system's sole discretion. I acknowledge that I am required to perform these checks and provide this certification form before any work is performed under the Agreement (initial check), any time additional contractual personnel may perform work under the Agreement (supplemental check), and at each anniversary date of the Agreement (annual check).

Contractual Personnel Names	**Job Title**
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____

(attach additional page(s) if needed)

I attest that the forgoing information is true and accurate to the best of my knowledge.

_____(print name) _____(signature)
_____(title) _____(date)

DIVISION 1

GENERAL

SECTION 01 31 19

PROJECT MEETINGS

PART 1

GENERAL 1.01 SECTION INCLUDES

A. This section covers the requirements for attendance at meetings needed for coordination of the PROJECT.

1.02 PRECONSTRUCTION CONFERENCE

A. A Preconstruction Conference will be held after NOTICE OF AWARD and before the NOTICE TO PROCEED; the date, time, and location will be determined after NOTICE OF AWARD.
B. The conference shall be attended by:
   1. CONTRACTOR and CONTRACTOR's Superintendent.
   2. CONTRACTOR's SUBCONTRACTORS.
   3. ENGINEER.
   4. OWNER.
   5. Affected Utility Companies.
   6. Others as requested by CONTRACTOR, OWNER, or ENGINEER.
   7. Local Government Representative.

C. Unless previously submitted to OWNER, CONTRACTOR shall bring the construction schedule, SHOP DRAWINGS, and other submittals required by the CONTRACT DOCUMENTS.

D. The purpose of the Preconstruction Conference is to designate responsible personnel and establish working relationships. Matters requiring coordination will be discussed and procedures for handling such matters established. The agenda will include, but not be limited to, discussion on:

   1. CONTRACTOR's schedule.
   2. Permit applications, including but not limited to, 401 Permit, Erosion and Sediment Control Plan, Erosion and Sediment Control Permit, Traffic Control Plan, Traffic Control Permit, and Groundwater Discharge Permit.
   3. Status of Bonds, insurance, and CONTRACT DOCUMENTS.
   4. Transmittal, review, and distribution of CONTRACTOR's submittals.
   5. Processing applications for payment.
   6. Maintaining record documents.
   7. Critical work sequencing.
   8. Public Notice Process.
   9. Utility Coordination and Schedule Impacts.
   10. Suppliers and Subcontractors.
   11. Surveying.
   12. Material Testing.
   13. Personnel Responsibilities and Communications.
   14. Initial Traffic Control Plans.
   15. Storm Water Management Plan (SWMP).
   16. FIELD ORDERS and AMENDMENTS.
   17. Use of premises, office and storage areas, staging area, security, housekeeping, and OWNER's needs.

18. Major product delivery and priorities.
19. CONTRACTOR’s safety and first aid plan and representative.

1.03 CONSTRUCTION PROGRESS MEETINGS

A. Progress meetings will be conducted weekly or at some other frequency, as determined by ENGINEER. These meetings shall be attended by OWNER, ENGINEER, Local Government Representatives, CONTRACTOR’s representative and any others invited by these people.
B. ENGINEER will conduct the meeting and arrange for keeping the minutes and distributing the minutes to all persons in attendance.
C. The agenda will include discussion on construction progress, schedule updates, the status of submittal reviews, the status of requests for information, critical work sequencing, review of strategies for connections into existing facilities, status of FIELD ORDERS and AMENDMENTS, and any general business.

1.04 OTHER MEETINGS

A. In accordance with CONTRACT DOCUMENTS and as may be required by OWNER or ENGINEER.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Submittal schedule requirements.
2. Administrative and procedural requirements for submittals.

B. Related Requirements:

1. Section 01 45 00 – Project Quality Control

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require the Construction Manager's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require the Construction Manager's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.3 SUBMITTAL SCHEDULE

A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by the Construction Manager and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Final Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.

a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.

3. Format: Arrange the following information in a tabular format:

a. Scheduled date for first submittal.

b. Specification Section number and title.
c. Submittal Category: Action; informational.
d. Name of subcontractor.
e. Description of the Work covered.
f. Scheduled date for the Construction Manager's final release or approval.

1.4 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal:

1. Project name.
2. Date.
3. Name of Architect.
4. Name of Construction Manager.
5. Name of Contractor.
6. Name of firm or entity that prepared submittal.
7. Names of subcontractor, manufacturer, and supplier.
8. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
9. Category and type of submittal.
10. Submittal purpose and description.
11. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
12. Drawing number and detail references, as appropriate.
13. Indication of full or partial submittal.
14. Location(s) where product is to be installed, as appropriate.
15. Other necessary identification.
16. Remarks.
17. Signature of transmitter.

B. Options: Identify options requiring selection by Architect.

C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by the Construction Manager on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

D. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

E. Submittals Utilizing Web-Based Project Software: Prepare submittals as PDF files or other format indicated by Project management software.

1.5 SUBMITTAL PROCEDURES

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Email: Prepare submittals as PDF package and transmit to Project Manager by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Architect.

    a. Construction Manager will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.

2. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project management software website. Enter required data in web-based software site to fully identify submittal.

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

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.

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

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Construction Manager will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 15 days for review of each resubmittal.

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

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block, and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from the Construction Manager's action stamp.

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

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

1.6 SUBMITTAL REQUIREMENTS

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

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

a. Manufacturer's catalog cuts.
b. Manufacturer's product specifications.
c. Standard color charts.
d. Statement of compliance with specified referenced standards.
e. Testing by recognized testing agency.
f. Application of testing agency labels and seals.
g. Notation of coordination requirements.
h. Availability and delivery time information.

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

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

5. Submit Product Data before Shop Drawings, and before or concurrently with Samples.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data unless submittal based on Architect's digital data drawing files is otherwise permitted.

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

a. Identification of products.
b. Schedules.
c. Compliance with specified standards.
d. Notation of coordination requirements.
e. Notation of dimensions established by field measurement.
f. Relationship and attachment to adjoining construction clearly indicated.
g. Seal and signature of professional engineer if specified.

C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.

1. Transmit Samples that contain multiple, related components, such as accessories together in one submittal package.
2. Identification: Permanently attach label on unexposed side of Samples that includes the following:

a. Project name and submittal number.
b. Generic description of Sample.
c. Product name and name of manufacturer.
d. Sample source.
e. Number and title of applicable Specification Section.
f. Specification paragraph number and generic name of each item.

3. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics and identification information for record.
4. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project software website. Enter required data in web-based software site to fully identify submittal.
5. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

    a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

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

    a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Construction Manager will return submittal with options selected.

7. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

    a. Number of Samples: Submit three sets of Samples. The Construction Manager will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record Sample.

        1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
        2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three of paired units that show approximate limits of variations.

D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
2. Manufacturer and product name, and model number if applicable.
3. Number and name of room or space.
4. Location within room or space.

E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

G. Certificates:

1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
2. Installer Certificates: Submit written statements on manufacturer's letterhead, certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
4. Material Certificates: Submit written statements on manufacturer's letterhead, certifying that material complies with requirements in the Contract Documents.
5. Product Certificates: Submit written statements on manufacturer's letterhead, certifying that product complies with requirements in the Contract Documents.
6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1/B2.1M on AWS forms. Include names of firms and personnel certified.

H. Test and Research Reports:

1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for substrate preparation and primers required.
2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

    a. Name of evaluation organization.
    b. Date of evaluation.
    c. Time period when report is in effect.
    d. Product and manufacturers' names.
    e. Description of product.
    f. Test procedures and results.
    g. Limitations of use.

1.7 DELEGATED DESIGN SERVICES

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

1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Architect.

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

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

1.8 CONTRACTOR'S REVIEW

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

B. Contractor's Approval: Indicate Contractor's approval for each submittal with the contractor’s signature. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

1. Construction Manager will not review submittals received from Contractor that do not have Contractor's review and approval.

1.9 CONSTRUCTION MANAGER'S

A. Action Submittals: Construction Manager will review each submittal, indicate corrections or revisions required, and return.

1. PDF Submittals: Construction Manager will indicate, via markup on each submittal, the appropriate action.

2. Submittals by Web-Based Project Management Software: Construction Manager will indicate, on Project management software website, the appropriate action.

B. Informational Submittals: Construction Manager will review each submittal and will not return it, or will return it if it does not comply with requirements. Construction Manager will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from the Construction Manager.

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

E. Construction Manager will return without review or discard submittals received from sources other than Contractor.

F. Submittals not required by the Contract Documents will be returned by Architect without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01 41 00

REGULATORY REQUIREMENTS

PART ONE: GENERAL

1.1 Summary

A. This Section includes regulatory requirements applicable to the Contract Documents and the Project and Work. This Section shall cover the general requirements for regulatory requirements pertaining to the Work and is supplementary to all other regulatory requirements mentioned or referenced elsewhere in the Contract Documents.
B. The applicable edition of all codes shall be that currently adopted at the time of issuance of permits by the authority having jurisdiction and shall include all modifications and additions adopted by that authority.
C. The applicable date of laws and ordinances shall be that of the date of performance of the Work affected by such laws and ordinances.
D. Specific reference in the Specifications to codes and regulations or to requirements of regulatory agencies shall mean the latest edition of each adopted by the regulatory agency in effect at the time of issuance of permits.
E. All materials, installation, and construction shall comply with the applicable provisions of current laws, codes, safety rules, and regulations of local, federal and any other applicable authorities ("Codes").
F. Codes referenced in the Contract Documents shall have full force and effect as though set out in full in these Specifications. Nothing in the Contract shall be construed to permit Work not conforming to applicable Code requirements.
G. The Codes and other authorities referenced in the Contract Documents are not a comprehensive list of all Codes applicable to the Work; the Codes listed in the Contract Documents are referenced for the information and convenience of the Contractor only. The Consultant does not represent that all Codes applicable to the Work have been cited or adequately described in the Contract Documents. Contractor is solely responsible for compliance with all Codes applicable to the Work and relevant to the Contractor's means and methods of performing said Work.

1.2 References to Regulatory Requirements

A. General: References to codes, standards or regulatory requirements made on Drawings or in Specifications are considered an integral part of Contract Documents as minimum requirements.
B. All statutes, ordinances, laws, rules, codes, regulations, standards, and lawful orders of all public authorities have jurisdiction of the Work, are hereby incorporated into these Contract Documents as if repeated in full herein and are intended to be included in any reference to Code or Building Code, unless otherwise specified, including, without limitation, the references below.
C. Referenced Codes, laws, ordinances, rules and regulations shall have full force and effect as though printed in full in these Specifications. Contractor is assumed to be and shall be familiar with these requirements, including having readily available access to these requirements.
D. References on the Drawings or in the Specifications to "code", "Code" or "building code" similar terms, not otherwise identified, shall mean the codes specified above, together with all additions,

amendments, changes, and interpretations adopted by code authorities of the jurisdiction having authority over the Project.

E. Contractor shall conform to all applicable federal, state, and local codes, laws, ordinances, rules and regulations, whether or not referenced in the Contract Documents. Compliance with applicable regulatory requirements is the responsibility of the Contractor.

1.3 Precedence

A. Where specified requirements differ from the requirements of applicable codes, ordinances and standards, the more stringent requirements shall take precedence with no change in Contract Sum or Contract Time.
B. Where Contract Documents require or describe products or execution of better quality, higher standard or greater size than required by applicable codes, ordinances and standards, Contract Documents shall take precedence so long as such increase is legal.
C. Where no requirements are identified on Contract Documents, comply with all requirements of applicable codes, ordinances and standards of governing authorities have jurisdiction.

1.4 Codes

A. Applicable Codes: The codes that apply to this Project include, but are not limited to, the currently adopted editions of the following. Comply with Codes in effect at the time of issuance of permits.
    1. IBC - International Building Code.
    2. IPC - International Plumbing Code.
    3. IMC - International Mechanical Code.
    4. IFC - International Fire Code.
    5. National Electrical Code (NFPA 70).
    6. NFPA - National Fire Protection Association, No. 101 – Life Safety Code
    7. IECC - International Energy Conservation Code 1.4.1.8 All local codes including amendments to the preceding listed codes.
B. Application of the Codes:
    1. Whenever there is a conflict between general and specific requirements in the code, the specific requirements shall be followed.
    2. Where differences exist between codes affecting this Work, the code affording the greatest protection shall govern.
    3. Where codes other than those listed in this Section are referred to in the different sections of the Specifications, it is understood that they apply fully as if cited herein.
    4. All Work performed shall be in accordance with applicable codes; a copy of each shall be kept at the jobsite.
    5. If Contractor observes that the drawings and Specifications are at variance with the codes, he or she shall notify the consultant, in writing, at once.

1.5 Industry Standards

A. Application: The industry standards applicable to the Work are indicated in appropriate individual sections of these Specifications, either by their names and the names of the trade associations, government agencies or other producers of standards, or by well recognized abbreviations thereof.
    1. Refer questions on the meaning of abbreviated designations to the Designer/Engineer for clarification before proceeding with Work affected thereby.
    2. Comply with standards in effect at the date of these Contract Documents, except where a standard or specific date or edition is indicated.
B. Any material specified by reference to the number, symbol, or title of a specific standard, such as Commercial Standard, Federal Specifications, American Society for Testing Materials, a trade association standard, or other similar standard, shall comply with the requirements in the latest revision thereof and any amendments or supplements thereto in effect on the date of Contract Documents.
C. The standard referred to, except as modified in the Contract Documents, shall have full force and effect as though printed in these Specifications.
D. These standards are not furnished to Contractor since manufacturers and trades involved are assumed to be familiar with their requirements. Where copies of standards are needed for proper performance of the Work, the Contractor shall obtain such copies which shall be maintained at the jobsite by the Contractor and made available for review on request by the Consultant.
E. Where referenced Standard specifications require weather protection, it shall be provided by the Contractor at no additional cost to the Owner and shall be deemed necessary in order to construct the Project within the specified time period.

PART TWO: PRODUCTS (NOT USED)

PART THREE: EXECUTION

3.1 Applicable Laws, Ordinances and Regulations

A. Work shall be accomplished in conformance with all applicable laws, ordinances, rules and regulations of federal, state, and local governmental agencies and jurisdictions having authority over the Project.
B. Work shall be accomplished in conformance with all rules and regulations of public utilities and utility districts.
C. Where such laws, ordinances, rules and regulations require more care or greater time to accomplish Work, or require better quality, higher standards or greater size of products, Work shall be accomplished in conformance to such requirements with no change to the Contract Time and Contract Sum, except where changes in laws, ordinances, rules and regulations occur subsequent to time of issuance of permits.
D. No Change Order shall be considered for any change in any applicable federal, state or local code or regulation if similar language existed in an alternate applicable regulation in force at the time of issuance of permits.

E. Contractor shall not allow design or construction of any conditions wherein the finished Work will not comply with current applicable codes. No Change Order shall be considered for the Work correction of any Work not complying with code.

END OF SECTION

SECTION 01 42 00

REFERENCE STANDARDS AND ABBREVIATIONS

PART 1 - GENERAL

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

1.2 SECTION INCLUDES

A. Use of references in Drawings and Specifications, including requirements for copies of reference standards at Project site.
B. Definitions of terms used in Specifications and Drawings, including abbreviations, acronyms, names and terms which may be used in Specifications.

1.3 RELATED SECTIONS

A. Section 01 41 00 - Regulatory Requirements: Identification of applicable building Code and other codes, ordinances and regulations applicable to performance of the Work.

1.4 USE OF REFERENCES

A. References: The Drawings and Specifications contain references to various standards, standard specifications, codes, practices and requirements for products, execution, tests and inspections. These reference standards are published and issued by the agencies, associations, organizations and societies listed in this Section or identified in individual product specification Sections.
    1. Wherever term "Agency" occurs in Standard Specifications, it shall be understood to mean the term used for Client for purposes of the Contract.
    2. Wherever term "Engineer" occurs in Standard Specifications, it shall be understood to mean Designer or other responsible design professional for purposes of the Contract.
    3. Where reference is made to Standard Details, such reference shall be to the Standard Details accompanying the Standard Specifications.
B. Relationship to Drawings and Specifications: Such references are incorporated into and made a part of the Drawings and Specifications to the extent applicable.
C. Referenced Grades Classes and Types: Where an alternative or optional grade, class or type of product or execution is included in a reference but is not identified on the Drawings or in the Specifications, provide the highest, best and greatest of the alternatives or options for the intended use and prevailing conditions.
D. Copies of Reference Standards:
    1. Reference standards are not furnished with the Drawings and Specifications because it is presumed that the Contractor, subcontractors, manufacturers, suppliers, trades and crafts are familiar with these generally-recognized standards of the construction industry.
    2. Copies of reference standards may be obtained from publishing sources.

E. Jobsite Copies:
    1. Contractor shall obtain and maintain at the Project site copies of reference standards identified on the Drawings and in the Specifications in order to properly execute the Work.
    2. At a minimum, the following shall be readily available at the site, as applicable to the Work:
        a. State Building Codes: As referenced in Section 01 41 00 - Regulatory Requirements.
        b. Safety Codes: Occupational Safety and Health Act (OSHA) regulations
        c. General Standards:
            1. Underwriters Laboratories, Inc. (UL) Building Products Listing.
            2. Factory Mutual Research Organization (FM) Approval Guide.
            3. American Society for Testing and Materials (ASTM) Standards in Building Codes.
            4. American National Standards Institute (ANSI) standards.
        d. Fire and Life Safety Standards: All referenced standards pertaining to fire rated construction and exiting.
        e. Common Materials Standards: American Concrete Institute (ACI), American Institute of Steel Construction (AISC), American Welding Society (AWS), Gypsum Association (GA), and Tile Council of America (TCA)
        f. Product Listings: Approval documentation, indicating approval of authorities having jurisdiction for use of product within the applicable jurisdiction.
F. Edition Date of References:
    1. When an edition or effective date of a reference is not given, it shall be understood to be the current edition or latest revision published as of the date of the Agreement, Contract Drawings and Contract Specifications.
    2. All amendments, changes, errata and supplements as of the effective date shall be included.
G. ASTM and ANSI References: Specifications and Standards of the American Society for Testing and Materials (ASTM) and the American National Standards Institute (ANSI) are identified in the Drawings and Specifications by abbreviation and number only and may not be further identified by title, date, revision or amendment. It is presumed that the Contractor is familiar with and has access to these nationally- and industry-recognized specifications and standards.

1.5 DEFINITIONS OF TERMS

A. Basic Contract Definitions: Words and terms governing the Work are defined in the Contract General and Supplementary Conditions, as referenced in the Agreement.
B. Words and Terms Used on Drawings and in Specifications: Additional words and terms may be used in the Drawings and Specifications and are defined as follows:
    1. "Applicable:" As appropriate for the particular condition, circumstance or situation.
    2. "Approve(d):" Approval action shall be limited to the duties and responsibilities of the party giving approval, as stated in the Conditions of the Contract. Approvals shall be valid only if obtained in writing and shall not apply to matters regarding the means, methods, techniques, sequences and procedures of construction. Approval shall not relieve the Contractor from responsibility to fulfill Contract requirements.
    3. "And/or:" If used, shall mean that either or both of the items so joined are required.

4. "Directed:" Limited to duties and responsibilities of the University's Representative or Designer as stated in the Contract General Conditions, meaning "as instructed by the University's Representative or Designer, in writing, regarding matters other than the means, methods, techniques, sequences and procedures of construction. Terms such as "directed", "requested", "authorized", "selected", "approved", "required", and "permitted" mean "directed by the University's Representative or Designer ", "requested by the University's Representative or Designer ", and similar phrases. No implied meaning shall be interpreted to extend the responsibility of the University's Representative, Designer or other responsible design professional into the Contractor's supervision of construction.
5. "Equal" or "Equivalent:" As determined by Designer or other responsible design professional as being equivalent, considering such attributes as durability, finish, function, suitability, quality utility, performance and aesthetic features.
6. "Furnish:" Means "supply and deliver, to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations."
7. "Indicated:" The term indicated refers to graphic representations, notes, or schedules on the Drawings, or other Paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as "shown", "noted", "scheduled", and "specified" are used to help the reader locate the reference. There is no limitation on location.
8. "Install:" Describes operations at the Project site including the actual unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations.
9. "Installer:"
    a. "Installer" refers to the Contractor or an entity engaged by the Contractor, such as an employee, subcontractor, or sub-subcontractor for performance of a particular construction activity, including installation, erection, application and similar operations. Installers are required to be experienced in the operations they are engaged to perform.
    b. "Experienced Installer:" The term "experienced," when used with "installer" means having a minimum of 5 previous Projects similar in size to this Project, knowing the precautions necessary to perform the Work, and being familiar with requirements of authorities having jurisdiction over the Work.
10. "Jobsite:" Same as site, Area of Work, or other similar term referencing the physical property where the work is to be carried out upon.
11. "Necessary:" With due considerations of the conditions of the Project and as determined in the professional judgment of the Designer or other responsible design professional as being necessary for performance of the Work in conformance with the requirements of the Contract Documents, but excluding matters regarding the means, methods, techniques, sequences and procedures of construction.
12. "Noted:" Same as "Indicated."
13. "Per:" Same as "in accordance with," "according to" or "in compliance with."
14. "Products:" Material, system or equipment.
15. "Project Site:" Same as "Site." See definition of “Jobsite” above.
16. "Proper:" As determined by the Designer or other responsible design professional as being proper for the Work, excluding matters regarding the means, methods, techniques, sequences and procedures of construction, which are solely the Contractor's responsibility to determine.

17. "Provide:" Means "furnish and install, complete and ready for the intended use."
18. "Regulation:" Includes laws, ordinances, statutes and lawful orders issued by authorities having jurisdiction, as well as and rules, conventions and agreements within the construction industry that control performance of the Work.
19. "Required:" Necessary for performance of the Work in conformance with the requirements of the Contract Documents, excluding matters regarding the means, methods, techniques, sequences and procedures of construction, such as:
    a. Regulatory requirements of authorities having jurisdiction.
    b. Requirements of referenced standards.
    c. Requirements generally recognized as accepted construction practices of the locale.
    d. Notes, schedules and graphic representations on the Drawings.
    e. Requirements specified or referenced in the Specifications.
    f. Duties and responsibilities stated in the Bidding and Contract Requirements.
20. Scheduled:" Same as "Indicated."
21. "Selected:" As selected by the University's Representative, Designer or other responsible design professional from the full selection of the manufacturer's products, unless specifically limited in the Contract Documents to a particular quality, color, texture or price range.
22. "Shown:" Same as "Indicated."
23. "Site:" Same as "Site of the Work" or "Project Site;" the area or areas or spaces occupied by the Project and including adjacent areas and other related areas occupied or used by the Contractor for construction activities, either exclusively or with others performing other construction on the Project. The extent of the Project Site is shown on the Drawings, and may or may not be identical with the description of the land upon which the Project is to be built.
24. "Supply:" See "Furnish."
25. "Testing Laboratory" or "Testing Laboratories:" An independent entity engaged to perform specific inspections or tests, at the Project Site or elsewhere, and to report on, and, if required, to interpret, results of those inspections or tests. Refer to Section 01458 - Testing Laboratory Services.
26. "Testing and Inspection Agency:" Same as "Testing Laboratory."

1.6 ABBREVIATIONS, ACRONYMS, NAMES AND TERMS, GENERAL

A. Abbreviations, Acronyms, Names and Terms: Where acronyms, abbreviations, names and terms are used in the Drawings, Specifications or other Contract Documents, they shall mean the recognized name of the trade association, standards generating organization, authority having jurisdiction or other entity applicable.

B. Abbreviations, General: The following are commonly-used abbreviations which may be found on the Drawings or in the Specifications. Refer to the Drawings for additional abbreviations or acronyms. This is a partial list. If there is any discrepancy or confusion, notify the University in writing by RFI:

AC or ac Alternating current or air conditioning (depending upon context)
AMP or amp Ampere
C Celsius
CFM or cfm Cubic feet per minute

CM or cm Centimeter
CY or cy Cubic yard
DC or dc Direct current
DEG or deg Degrees F Fahrenheit
FPM or fpm Feet per minute
FPS or fps Feet per second
FT or ft Foot or feet
Gal or gal Gallons
GPM or gpm Gallons per minute
IN or in Inch or inches Kip or kip Thousand pounds
KSI or ksi Thousand pounds per square inch
KSF or ksf Thousand pounds per square foot
KV or kv Kilovolt
KVA or kva Kilovolt amperes
KW or kw Kilowatt
KWH or kwh Kilowatt hour
LBF or lbf Pounds force
LF or lf Lineal foot
M or m Meter
MPH or mph Miles per hour
MM or mm Millimeter
PCF or pcf Pounds per cubic foot
PSF or psf Pounds per square foot
PSI or psi Pounds per square inch
PSY or psy Per square yard
SF or sf Square foot
SY or sy Square yard
V or v Volts

C. Abbreviations and Acronyms for Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale Research's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."
D. Undefined Abbreviations, Acronyms, Names and Terms: Words and terms not otherwise specifically defined in this Section, in the Instructions to Bidders, in the Contract General Conditions, on the Drawings or elsewhere in the Specifications, shall be as customarily defined by trade or industry practice, by reference standard and by specialty dictionaries such as the following:
    1. Dictionary of Architecture and Construction, Third Edition (Cyril M. Harris, McGraw-Hill Book Company, 2000).
    2. The American Institute of Architects (AIA) Document M101, "Glossary of Construction Industry Terms."
    3. Encyclopedia of Associations, published by Gale Research Co., commonly available in public libraries.

PART 2 - PRODUCTS Not Applicable to this Section.

PART 3 - EXECUTION Not Applicable to this Section.

END OF SECTION

SECTION 01 45 00

PROJECT QUALITY CONTROL

PART 1 - GENERAL

1.1. RELATED DOCUMENTS

A. Drawings and general provisions of the Contract apply to this Section. In the event of conflict between specific requirements of the various documents, the more restrictive, more extensive (i.e., more expensive) requirement shall govern.

1.2. DEFINITIONS

A. QUALITY CONTROL
    1. Quality Control shall be the sole responsibility of the Contractor, unless specifically noted otherwise. The Contractor shall be responsible for all testing, coordination, start-up, operational checkout and commissioning of all items of work included in the project, unless specifically noted otherwise. All costs for these services shall be included in the Contractor's cost of work and general conditions.
    2. The Contractor shall assign one employee, not the project superintendent, to be responsible for Quality Control. This individual can have other responsibilities, but shall not be the project superintendent or the project manager.
B. QUALITY ASSURANCE
    1. Quality Assurance is performed by the Owner or their delegated representatives. These procedures may include observations, inspections, testing, verification, monitoring and any other procedures deemed necessary to ensure compliance with the contract documents.
    2. The Contractor shall cooperate with and provide assistance to the Owner for all aspects of this endeavor. This shall include providing ladders, lifts, scaffolds, lighting, protection, safety equipment and any other devices and/or equipment (including operators if required) deemed necessary by the Owner to access the work for observation/inspection.

1.3. SUMMARY

A. This section provides administrative and procedural requirements for Contractor quality control on the project.
B. Specific quality-control requirements for individual construction activities are specified in the Sections that govern those activities. Requirements in those Sections may also cover production of manufactured products.
C. Specified tests, inspections, and related actions do not limit Contractor's quality control obligations to comply fully with the Contract Document requirements in all regards.
D. Provisions of this Section do not limit the requirements for the Contractor to provide quality control services required by the contract documents or the Authority Having Jurisdiction.
E. The following quality issues are addressed in detail in this Section:
    1. Quality Control

2. Quality Assurance
3. Testing Agency
4. Testing
5. Inspections
6. Pre-installation Meetings

1.4. TESTING AGENCY

A. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.
B. Owner will employ services of independent testing agencies to perform certain specified testing, as it deems necessary.
C. The Contractor shall employ and pay for services of an independent testing agency to perform all specified testing requiring an independent agency, unless noted otherwise.
D. Employment of agency in no way relieves the Contractor of the obligation to perform Work in accordance with requirements of Contract Documents.
E. The Contractor Employed Agency:
    1. Testing agency shall comply with requirements of ASTM E 329, ASTM E 548, ASTM E 543, ASTM C 1021, ASTM C 1077, and ASTM C 1093.
    2. Laboratory shall maintain a full time Engineer on staff to review services. Engineer shall be licensed in the state of Texas.
    3. Testing Equipment: Calibrate devices at reasonable intervals (minimum yearly) with accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.
F. The Contractor shall not employ the same testing entity engaged by the Owner for the project, unless agreed to in writing by the Owner.

1.5. TESTING

A. Where specific testing is specified in a technical section of the Specifications or indicated in the Contract Documents, the Contractor shall bear all costs of such tests unless they are specifically stated to be paid by the Owner.
B. Testing specifically identified to be conducted by Owner will be performed by an independent entity and will be arranged and paid for by the Owner unless otherwise indicated in the Contract Documents. Should the test return unacceptable results, the Contractor shall bear all costs of retesting and reinspection as well as the cost of all material consumed by testing, and replacement of unsatisfactory material and/or workmanship.
C. The Owner’s Construction Inspector (CI) will schedule the Owner’s testing services unless otherwise directed in writing by the Owner. The Contractor is required to coordinate with the CI to facilitate timeliness of such testing services.
D. The Owner may engage additional consultants for testing, air balancing, or other special services. The activities of any such Owner consultants are in addition to Contractor testing of materials or systems necessary to prove that performance is in compliance with requirements. The Contractor must cooperate with persons and firms engaged in these activities in accordance with the Contract.

1. The Contractor is required to self-perform various tests to verify performance and/or operation of various systems. These test reports shall be consecutively numbered and defined by scope and extent of test. Copies of the test report forms can be obtained from the RCM. The following OFPC test report forms shall be used for this purpose and shall not be altered in any manner:
    a. Pipe Test Report
    b. Duct Test Report
    c. Equipment Start-up Request Form
    d. Contractor's Request for Utility Shutdown
    e. Domestic Water Sterilization and Flushing Report

1.6. INSPECTIONS

A. It is the intent of the Contract Documents that all work be subjected to inspection and verification of correct operation prior to 100% payment of the line item(s) pertaining to that aspect of the Work.
B. The Contractor shall incorporate adequate time for performance of all inspections and correction of noted deficiencies into the Work Progress Schedule for the project.
C. During the course of construction, the Owner, Designer and/or other Owner representatives may visit the site for observation of the work in place. The Contractor shall provide all necessary equipment for safe access to the work to be inspected or observed. This requirement shall extend to all Owner personnel and their representatives. Some of these inspections will be informal and some will require formal notification by the Contractor. The following are typical project inspections:
    1. Informal Daily Reviews of project conditions by the Construction Inspector and/or members of the Owner's and/or Design Consultant's team(s). When considered appropriate, results of these reviews will be documented via Observation Report or Memorandum. In addition to cooperating with, and providing safe access for the Owner's agents, the Contractor shall provide a system of tracking all field reports, describing items noted and resolution of each item. This printed report shall be reviewed as necessary, at least on a monthly basis.
    2. Concealed Space Inspections are to be formally scheduled in advance through the Construction Inspector by submitting written notification at least five (5) workdays in advance. Subject areas include partitions, structural walls, chases, crawl spaces, ceiling spaces, and any other work which will be difficult or impossible to examine once concealed in the final construction.
    3. Progress Inspections for piping, ductwork, and other systems are to be scheduled with the Construction Inspector as appropriate portions, or sections, of the work are completed. This is in addition to "system-wide" performance verification and tests. These tests are to be scheduled and documented using the standard OFPC Pipe Test and Duct Test report forms. The forms shall be filled out and signed as meeting contract requirements prior to submission for verification by the OFPC CI. The Contractor shall conduct the tests and the OFPC CI will witness and approve the results.
        a. The Contractor shall coordinate their intended "apportioning" of systems tests with the Construction Inspector immediately following formal submission of

their Work Project Schedule so that all parties are aware of the intended work and inspection sequence.

D. Overhead and Above Ceiling Inspections are similar in nature and requirements to the Concealed Space Inspections. Where ceilings are to be fixed in place, such as gypsum board or plaster, it would constitute a Concealed Space. Where ceilings are of "lay-in" type, or where no finish ceiling is scheduled, it would be considered an "overhead" inspection. Such inspections are to be included in the Contractor's Detailed Construction Schedule. Contractor shall provide written inspection request notice to the CI and Designer at least five (5) workdays in advance.
    1. No finish ceiling material shall be installed until all overhead punchlist items have been resolved to the satisfaction of the Owner.
    2. Work in place necessary for an overhead inspection shall include:
        a. Ceiling grid or framework installed
        b. All above ceiling electrical work, including light fixtures, installed and operational
        c. All HVAC and plumbing work above ceiling complete with diffusers installed and connected
        d. Fire sprinkler heads installed
        e. All required tests for above ceiling work completed and approved
        f. Contractor generated punchlist of all areas being requested for inspection
    3. Inspections of Building Systems and Equipment are required to confirm acceptable operation and are to be formally scheduled through the Construction Inspector with the Designer. Refer to Section 01 91 00 for additional requirements pertaining to system start-up, operation, demonstration and acceptance.
E. On systems/equipment requiring a manufacturers representative to verify installation/operation, the Contractor is required to perform a thorough check-out of operations with the manufacturer's representatives prior to requesting formal inspection by the Owner be scheduled. Notify the CI, in advance, as to when the manufacturer's representative is scheduled to arrive.
F. Inspection of individual equipment and/or system(s) must be accomplished prior to requesting Substantial Completion Inspection for any area affected by that equipment and/or system.
G. For "building-wide" and/or life safety systems, such as fire alarm, fire sprinkler systems, smoke evacuation systems, toxic gas monitoring, captured exhaust systems, etc., completion and acceptance of Functional Testing is required prior to requesting Substantial Completion Inspection for any area of the Project.
    1. The manufacturer's representatives and the installing contractor will be expected to demonstrate both operation and compliance to the Owner's agents and consultants. If coordinated and scheduled appropriately by the Contractor, these equipment and/or systems inspections may also serve to provide the required Owner Training, if approved in advance by the Owner.
    2. The Contractor is responsible for requesting that the Construction Inspector and Designer arrange for the inspection of materials, equipment and work prior to assembly or enclosure that would make the materials, equipment or work inaccessible for inspection, and at such other times as may be required.
H. For any requested inspection, the Contractor shall make prior inspection to ensure that items are ready for inspection and acceptance by the Owner and/or Designer. The Contractor will be responsible for any and all costs incurred by Owner and/or Owner representatives, including consultants, resulting from a review or inspection that was scheduled prematurely.

1. The Contractor shall coordinate the work and schedule the inspections in advance so as not to delay the work. All major inspections should be indicated on the Work Progress Schedule for advance planning and the Contractor should allow a minimum of five (5) working days to confirm schedule of requested inspections with Owner and its consultants.
2. The contractor shall list and track all punchlist items on the OFPC Project Inspection Matrix (refer to Attachment A). The matrix shall be kept up-to-date reflecting status of work in place and inspections on the project. Copies of this populated and updated matrix shall be supplied to the A/E and the OFPC CI for use during the course of the project.

1.7. PRE-INSTALLATION MEETINGS

A. The Contractor shall coordinate and conduct meetings to review the installation of major systems/equipment on the project.
B. The Contractor shall ensure attendance of the installing subcontractor, manufacturer and/or supplier (if appropriate), supporting subcontractors involved in the installation and any other parties involved in the phase of work to be reviewed. The Owner and Designer shall be notified in writing at least five (5) days in advance of the meeting.
C. Each party shall be prepared to discuss in detail the staging, installation procedure, quality control, testing/inspection, safety and any other pertinent items relating to the work being reviewed. Submittal approval shall be a prerequisite of the meeting.
D. The Contractor shall chair and take minutes of this meeting and distribute to all attending parties.
E. Whether required in the technical section or not, a pre-installation meeting shall be conducted for the following work, if included in the project:
    1. Concrete
    2. Masonry
    3. Large Steel Fabrications/Erection
    4. Waterproofing
    5. Roofing
    6. Exterior Glazing (including storefront and curtain wall)
    7. Door Hardware
    8. Security
    9. Audio/Visual Equipment
    10. Air Handling Units
    11. Medical Gas Systems

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 61 00

BASIC PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

A. General requirements for products used for the Work, including:

1. General characteristics of products
2. Product options
3. System completeness
4. Transportation and handling requirements
5. Storage and protection of products 6. Installation of products.

1.3 RELATED SECTIONS

A. Section 01 41 00 - Regulatory Requirements: Codes and standards applicable to product specifications; minimum requirements.
B. Section 01 66 00 - Product Storage and Handling Requirements: General requirements for storage and handling of products.

1.4 GENERAL PRODUCT REQUIREMENTS

A. Products, General: "Products" include items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock, and include materials, equipment, assemblies, fabrications and systems.
   1. Named Products: Items identified by manufacturer's product name, including make or model designations indicated in the manufacturer's published product data.
   2. Materials: Products that are shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed or installed to form a part of the Work.
   3. Equipment: A product with operating parts that are motorized or manually operated and require connections such as wiring or piping.

B. Specific Product Requirements: Refer to requirements of Section 01 45 00 - Quality Control and individual product Specifications Sections in Divisions 2 through 49 for specific requirements for products.

C. Minimum Requirements: Specified requirements for products are minimum requirements. Refer to general requirements for quality of the Work specified in Section 01 45 00 - Quality Control and elsewhere herein.

D. Product Selection: Provide products that fully comply with the Contract Documents, are undamaged and unused at installation. Comply with additional requirements specified herein in Article titled "PRODUCT OPTIONS".

E. Standard Products: Where specific products are not specified, provide standard products of types and kinds that are suitable for the intended purposes and that are usually and customarily used on similar projects under similar conditions. Products shall be as selected by Contractor and subject to review and acceptance by the Designer.

F. Product Completeness: Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect. Comply with additional requirements specified herein in Article titled "SYSTEM COMPLETENESS".

G. Code Compliance: All products, other than commodity products prescribed by Code, shall have a current ICBO Evaluation Service (ICBO ES) Research Report or National Evaluation, Inc. Report (NER). Refer to additional requirements specified in Section 01 41 00 - Regulatory Requirements.

H. Interchangeability: To the fullest extent possible, provide products of the same kind from a single source. Products required to be supplied in quantity shall be the same product and interchangeable throughout the Work. When options are specified for the selection of any of two or more products, the product selected shall be compatible with products previously selected.

I. Except for required Code-compliance labels and operating and safety instructions, locate nameplates on inconspicuous, accessible surfaces. Do not attach manufacturer's identifying nameplates or trademarks on surfaces exposed to view in occupied spaces or to the exterior.

    1. Provide a permanent nameplate on each item of service-connected or power-operated equipment. Nameplates shall contain identifying information and essential operating data such as the following example:
        a. Designation of product as identified on the Plans and Specifications
        b. Name of manufacturer
        c. Name of product
        d. Model and serial number
        e. Capacity
        f. Operating and Power Characteristics
        g. Labels of Tested Compliance with Codes and Standards
    2. For each item of service-connected or power-operated equipment, provide operating and safety instructions, permanently affixed and of durable construction, with legible machine lettering. Comply with all applicable requirements of authorities having jurisdiction and listing agencies.
    3. Permanent nameplate shall be constructed from metal with lettering punched or indented into the material. “Permanent” marker or other inks shall not be used.

J. Plumbing Product Requirements: Comply with requirements specified in Division 22 - Plumbing

K. Mechanical Product Requirements: Comply with requirements specified in Division 23 - Mechanical.

L. Electrical Product Requirements: Comply with requirements specified in Division 26 - Electrical.

1.5 PRODUCT OPTIONS

A. Product Options: Refer to Contract General Conditions, Article 5.04. Provisions of Public Contract Code Section 03400 shall apply, as supplemented by the following general requirements.
B. Products Specified by Description: Where Specifications describe a product, listing characteristics required, with or without use of a brand name, provide a product that has the specified attributes and otherwise complies with specified requirements.
C. Products Specified by Performance Requirements: Where Specifications require compliance with performance requirements, provide product(s) that comply and are recommended by the manufacturer for the intended application. Verification of manufacturer's recommendations may be by product literature or by certification of performance from manufacturer.
D. Products Specified by Reference to Standards: Where Specifications require compliance with a standard, provided product shall fully comply with the standard specified. Refer to general requirements specified in Section 01 42 00 - Reference Standards and Abbreviations regarding compliance with referenced standards, standard specifications, codes, practices and requirements for products.
E. Products Specified by Identification of Manufacturer and Product Name or Number:
    1. Sole, source, no other product shall be accepted: Provide the specified product(s) of the specified manufacturer. No substitutions shall be allowed.
    2. "Acceptable Manufacturers": Product(s) of the named manufacturers, if equivalent to the specified product(s) of the specified manufacturer, will be acceptable in accordance with the requirements specified herein in the Article titled "'OR EQUAL' PRODUCTS."
    3. Unnamed manufacturers: Products of unnamed manufacturers will be acceptable only as follows:
        a. Unless specifically stated that equals will not be accepted or considered, the phrase "or equal" shall be assumed to be included in the description of specified product(s). Equivalent products of unnamed manufacturers will be accepted in accordance with the "or equal" provision specified herein, below.
        b. If provided, products of unnamed manufacturers shall be subject to the requirements specified herein in the Article titled "'OR EQUAL' PRODUCTS."
    4. Quality basis: Specified product(s) of the specified manufacturer shall serve as the basis by which products by named acceptable manufacturers and products of unnamed manufacturers will be evaluated. Where characteristics of the specified product are described, where performance characteristics are identified or where reference is made to industry standards, such characteristics are specified to facilitate evaluation of products by identifying the most significant attributes of the specified product(s).
F. Products Specified by Combination of Methods: Where products are specified by a combination of attributes, including manufacturer's name, product brand name, product catalog or identification number, industry reference standard, or description of product characteristics, provide products conforming to all specified attributes.
G. "Or Equal" Provision: Where the phrase "or equal" or the phrase "or approved equal" is included, product(s) of unnamed manufacturer(s) may be provided as specified above in subparagraph titled "Unnamed manufacturers."
    1. The requirements specified herein in the Article titled "'OR EQUAL' PRODUCTS" shall apply to products provided under the "or equal" provision.

2. Use of product(s) under the "or equal" provision shall not result in any delay in completion of the Work, including completion of portions of the Work for use by Client or for work under separate contract by Client.
3. Use of product(s) under the "or equal" provision shall not result in any costs to Client, including design fees and permit and plan check fees.
4. Use of product(s) under the "or equal" provision shall not require substantial change in the intent of the design, in the opinion of the Designer. The intent of the design shall include functional performance and aesthetic qualities.
5. The determination of equivalence will be made by the Designer, and such determination shall be final.

H. Visual Matching: Where Specifications require matching a sample, the decision by the Designer on whether a proposed product matches shall be final. Where no product visually matches, but the product complies with other requirements, comply with provisions for substitutions for selection of a matching product in another category.

I. Selection of Products: Where requirements include the phrase "as selected from manufacturer's standard colors, patterns and textures", or a similar phrase, selections of products will be made by indicated party or, if not indicated, by the Designer. The Designer will select color, pattern and texture from the product line of submitted manufacturer, if all other specified provisions are met.

1.6 "OR EQUAL" PRODUCTS

A. "Or Equal" Products: Products are specified typically by indicating a specified manufacturer and specific products of that manufacturer, with acceptable manufacturers identified with reference to this "or equal" provision. If Contractor proposes to provide products other than the specified products of the specified manufacturer, provisions of any relevant Supplementary General Conditions, Contract General Conditions Article 5.04, and Public Contract Code section 3400 shall apply. Contractor shall submit if and when directed by Designer, complete product data, including drawings and descriptions of products, fabrication details and installation procedures. Include samples where applicable or requested.
1. Submit a minimum of four copies. Form and other administrative requirements shall be as directed by the Designer.
2. Include appropriate product data for the specified product(s) of the specified manufacturer, suitable for use in comparison of characteristics of products. a. Include a written, point-by-point comparison of characteristics of the proposed equal product with those of the specified product. b. If the proposed equal is accepted, Contractor shall include a detailed description in written or graphic form as appropriate, indicating all necessary changes or modifications to other elements of the Work and to construction to be performed by Client and others under separate contract with Client.
3. "Or Equal" product submissions shall include a statement indicating the equal's effect on the Construction Schedule. Contractor shall indicate the effect of the proposed products on overall Contract Time and, as applicable, on completion of portions of the Work for use by Client or for work under separate contract by Client.
4. "Or Equal" product submissions shall include signed certification that the Contractor has reviewed the proposed products and has determined that the products are equivalent or superior in every respect to product requirements indicated or specified in the Contract Documents, and that the proposed products are suited for and can perform the purpose or application of the specified product indicated or specified in the Contract Documents.

5. "Or Equal" product submissions shall include a signed waiver by the Contractor for change in the Contract Time or Contract Sum because of the following:
    a. "Or equal" product failed to perform adequately.
    b. "Or equal" product required changes in on other elements of the Work.
    c. "Or equal" product caused problems in interfacing with other elements of the Work.
6. If, in the opinion of the Designer, the "or equal" product request is incomplete or has insufficient data to enable a full and thorough review of the proposed products, the proposed products may be summarily refused and determined to be unacceptable.

B. Product Substitutions: For products not governed by the "or equal" provision, comply with substitution provisions of the Contract General Conditions (Article 5.04-d, Substitutions) and requirements specified in Section 01 63 00 - Product Substitution Procedures.

1.7 SYSTEM COMPLETENESS

A. System Completeness
    1. The Contract Drawings and Specifications are not intended to be comprehensive directions on how to produce the Work. Rather, the Drawings and Specifications are instruments of service prepared to describe the design intent for the completed Work.
    2. It is intended that all equipment, systems and assemblies be complete and fully functional even though not fully described. Provide all products and operations necessary to achieve the design intent described in the Contract Documents.
    3. Refer to related general requirements specified in Section 01 41 00 - Regulatory Requirements regarding compliance with minimum requirements of applicable codes, ordinances and standards.

B. Omissions and Misdescriptions: Contractor shall report to Designer immediately when elements essential to proper execution of the Work are discovered to be missing or misdescribed in the Drawings and Specifications or if the design intent is unclear.
    1. Should an essential element be discovered as missing or misdescribed prior to receipt of Bids, an Addendum will be issued so that all costs may be accounted for in the Contract Sum.
    2. Should an obvious omission or misdescription of a necessary element be discovered and reported after execution of the Agreement, Contractor shall provide the element as though fully and correctly described, and a no-cost Change Order shall be executed.

1.8 TRANSPORTATION, DELIVERY AND HANDLING

A. Transportation, Delivery and Handling, General: Contractor shall comply with manufacturer's instructions and recommendations for transportation, delivery and handling, in addition to the following.
B. Transportation: Contractor shall transport products by methods to avoid product damage.
C. Delivery:
    1. Contractor shall schedule delivery to minimize long-term storage and prevent overcrowding construction spaces. Contractor shall coordinate with installation to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.

2. Contractor shall deliver products in undamaged condition in manufacturer's original sealed container or packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.
3. The Contractor shall not have products of any type that are intended to be received by the Contractor delivered to Client.

D. Handling:
    1. Contractor shall provide equipment and personnel to handle products by methods to prevent soiling, marring or other damage.
    2. Contractor shall promptly inspect products on delivery to ensure that products comply with Contract Documents, quantities are correct, and to ensure that products are undamaged and properly protected.

1.9 STORAGE AND PROTECTION

A. Storage and Protection, General: Contractor shall store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible.
    1. Contractor shall periodically inspect to ensure products are undamaged, and are maintained under required conditions.
    2. Contractor shall remove and replace products damaged by improper storage or protection with new products at no change in Contract Sum or Contract Time.
    3. Contractor shall store sensitive products in weather tight enclosures or by other means recommended by the manufacturer.

B. Inspection Provisions: Contractor shall arrange storage to provide access for inspection and measurement of quantity or counting of units.

C. Structural Considerations: Contractor shall store heavy materials away from the structure in a manner that will not endanger supporting construction.

D. Weather-Resistant Storage:
    1. Contractor shall store moisture-sensitive products above ground, under cover in a weather tight enclosure or covered with an impervious sheet covering. Contractor shall provide adequate ventilation to avoid condensation.
    2. Contractor shall maintain storage within temperature and humidity ranges required by manufacturer's instructions.
    3. For exterior storage of fabricated products, Contractor shall place products on raised blocks, pallets or other supports, above ground and in a manner to not create ponding or misdirection of runoff. Contractor shall place on sloped supports above ground.
    4. Contractor shall store loose granular materials on solid surfaces in a well-drained area. Contractor shall prevent mixing with foreign matter.

E. Protection of Completed Work:
    1. Contractor shall provide barriers, substantial coverings and notices to protect installed Work from traffic and subsequent construction operations.
    2. Contractor shall remove protective measures when no longer required and prior to Contract Completion review of the Work.

PART 2 - PRODUCTS Not Applicable to this Section.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

A. Installation of Products:
   1. Contractor shall comply with manufacturer's instructions and recommendations for installation of products, except where more stringent requirements are specified and necessary due to Project conditions or are required by authorities having jurisdiction.
   2. Contractor shall anchor each product securely in place, accurately located and aligned with other Work.
   3. Contractor shall clean exposed surfaces and provide protection to ensure freedom from damage and deterioration at time of Contract Completion review.

END OF SECTION

SECTION 01 63 00

PRODUCT SUBSTITUTION PROCEEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

A. General requirements applicable to substitutions of materials, products, equipment and systems.

1.3 SUBSTITUTION OF MATERIALS AND EQUIPMENT

A. Substitutions, General: Catalog numbers and specific brands or trade names are used in materials, products, equipment and systems required by the Specifications to establish the standards of quality, utility and appearance required. Alternative products which are of equal quality and of required characteristics for the purpose intended may be proposed for use provided the Contractor complies with provisions of Contract General Conditions, Article 5.04., subject to the following provisions.
    1. See Section 01 61 00 - Basic Product Requirements for requirements regarding product options.
    2. Substitutions during the course of Work will only be authorized by properly executed Change Order or Field Instruction. Substitutions during the bidding and/or negotiation phases shall be added to the identified specification by Addendum.
    3. **Note: the Trustees have no obligation to entertain substitutions.**
B. Substitution Provisions:
    1. Documentation: Substitutions will not be considered if they are indicated or implied on shop drawing, product data or sample submittals. All requests for substitution shall be by separate written request from Contractor. See paragraph below for documentation required in the submission of request for substitution.
    2. Cost and Time Considerations: Substitutions will not be considered unless a net reduction in Contract Sum or Contract Time results to Client's benefit, including redesign costs, life cycle costs, plan check and permit fees, changes in related Work and overall performance of building systems.
    3. Design Revision: Substitutions will not be considered if acceptance will require substantial revision of the Contract Documents or will substantially change the intent of the design, in the opinion of the Designer. The intent of the design shall include functional performance and aesthetic qualities.

4. Data: It shall be the responsibility of the Contractor to provide adequate data demonstrating the merits of the proposed substitution, including cost data and information regarding changes in related Work.
5. Determination by Designer: Designer and Owner's Representative will determine the acceptability of proposed substitutions, and Owner's Representative will notify Contractor in writing of acceptance or rejection. The determination by the Designer regarding functional performance and aesthetic quality shall be final.
6. Non-Acceptance: If a proposed substitution is not accepted, Contractor shall immediately provide the specified product.
7. Substitution Limitation: Only one request for substitution will be considered for each product.

C. Request for Substitution Procedures: Comply with provisions of Contract General Conditions, Article 5.04 and the following.
    1. Contractor shall prepare a request for substitution and submit the request to Designer through Owner's Representative for review and recommendation for acceptance. Acceptance and approval of substitutions shall be by Owner's Representative.
        a. Submit a minimum of five hard copies or submit electronically to the Owner's Representative.
        b. Present the request for substitution using form provided below.
        c. Comply with other administrative requirements shall be as directed by Owner's Representative.
    2. Substitution requests shall include complete product data, including drawings and descriptions of products, fabrication details and installation procedures. Include samples where applicable or requested.
    3. Substitution requests shall include appropriate product data for the specified product(s) of the specified manufacturer, suitable for use in comparison of characteristics of products.
        a. Include a written, point-by-point comparison of characteristics of the proposed substitute product with those of the specified product.
        b. Include a detailed description, in written or graphic form as appropriate, indicating all changes or modifications needed to other elements of the Work and to construction to be performed by Client and by others under separate contracts with Client that will be necessary if the proposed substitution is accepted.
    4. Substitution requests shall include a statement indicating the substitution's effect on the Construction Schedule. Indicate the effect of the proposed substitution on overall Contract Time and, as applicable, on completion of portions of the Work for use by Client or for work under separate contracts by Client.
    5. Except as otherwise specified, substitution requests shall include detailed cost data, including a proposal for the net change, if any, in the Contract Sum.
    6. Substitution requests shall include signed certification that the Contractor has reviewed the proposed substitution and has determined that the substitution, in combination with the cost or time savings, represents an equivalent or superior condition in every respect to product requirements and value indicated or specified in the Contract

Documents, and that the substitution is suited for and can perform the purpose or application of the specified product indicated or specified in the Contract Documents.

7. Substitution requests shall include a signed waiver by the Contractor for change in the Contract Time or Contract Sum because of the following:
    a. Substitution failed to perform adequately.
    b. Substitution required changes in on other elements of the Work.
    c. Substitution caused problems in interfacing with other elements of the Work.
    d. Substitution was determined to be unacceptable by authorities having jurisdiction.
8. If, in the opinion of the Designer, the substitution request is incomplete or has insufficient data to enable a full and thorough review of the intended substitution, the substitution may be summarily refused and determined to be unacceptable.

D. Contract Document Revisions:
    1. Should a Contractor-proposed substitution or alternative sequence or method of construction require revision of the Contract Drawings or Specifications, including revisions for the purposes of determining feasibility, scope or cost, or revisions for the purpose of obtaining review and approval by authorities having jurisdiction, Designer or other consultant of Client who is the responsible design professional will make revisions as approved in writing in advance by Owner's Representative.
    2. Contractor shall pay for services of Designer, other responsible design professionals and Client for researching and reporting on proposed substitutions or alternative sequence and method of construction when such activities are considered additional services to the design services contracts of Designer or other responsible design professional with Client.
    3. Contractor shall pay for costs of services by Designer, other responsible design professionals and Client. These costs may include travel, reproduction, long distance telephone and shipping costs reimbursable at cost plus usual and customary mark-up for handling and billing.
    4. Contractor shall pay such fees whether or not the proposed substitution or alternative sequence or method of construction is ultimately accepted by Client and a Change Order is executed.

PART 2 - PRODUCTS Not Applicable to this Section.

PART 3 - EXECUTION Not Applicable to this Section.

SUBSTITUTION REQUEST FORM

SUBSTITUTION REQUEST NUMBER: _____

TO: _____

PROJECT: _____

SPECIFIED ITEM: _____

_____ _____ _____ _____

Section Page Paragraph Description

_____

The undersigned requests consideration of the following:

Proposed Substitution (Manufacturer, Model # or Name, Color, Etc.): _____

_____

History: ___New Product, ___Available 2-5 Years, ___Available 6-10 Years, ___Available 10+ Years

Provide UL, ITS, WHI, (or other) listing / rating of proposed substitution: _____

Attached data shall include, but not be limited to, product, specification, drawings, performance and test data adequate for evaluation of the request for the proposed substitution product and the specified product, with applicable portions of the proposed substitution and the specified product data clearly identified in a point-by-point direct comparison chart. Incomplete form and attachments will result in rejection of substitution request.

_____

Requestor shall address the following items on this Substitution Request Form. Use a separate attached sheet attached as needed:

1. Reason for not providing specified item:

_____

_____

2. Will proposed substitution affect dimensions indicated on Drawings? ____(Yes) ____(No)

If yes, how? _____ 3.

Will proposed substitution affect Electrical, Mechanical, Structural, Architectural, etc.? ____(Yes)

____(No) If yes, explain:

_____

_____

4. Is proposed substitution larger or smaller than specified product? ____(Yes) ____(No) If yes, state size

of substitute product: _____

5. Does proposed substitution weight less/more than specified product? ____(Yes) ____(No)

If yes, state weight of substitute product:

_____

6. Will proposed substitution affect other trades and/or parts of the work? ____(Yes) ____(No)

If yes, explain all effects:

_____

_____

7. Comparison between proposed substitution and specified product (Similarities / Differences)?

_____

_____

8. If Substitution Request is accepted, Owner will receive a credit of $_____. The Contract Sum will be adjusted accordingly.

9. Will proposed substitution affect the Contract Time? ____(Yes) ____(No)

If yes, ____(Add) ____(Deduct) _____ calendar days.

_____

INITIAL **UNDERSIGNED CERTIFIES:**

_____ Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.

_____ Proposed substitution has same or better warranty as specified product.

_____ Proposed substitution has same or better maintenance service and availability of replacement parts as specified product.

_____ Proposed substitution will not affect or delay the Construction Schedule.

_____ Claims for additional costs related to accepted substitution, which may subsequently become apparent, are hereby waived.

_____ Proposed substitution will not affect dimensions and functional clearances.

_____ Coordination, installation, and changes in the Work as necessary for installation of accepted substitution will be complete in all respects, at no additional cost to Owner.

_____ Contractor will pay for all costs associated with changes to the project's design, including, but not limited to, architectural or engineering design fees, detailing, Agency approvals and construction costs caused by the requested substitution.

_____ The function, appearance and quality of the proposed substitution is equivalent or superior to the specified item.

The undersigned certifies that the above is accurate and correct.

Signature: _____

Company: _____

Address: _____

_____

Date: _____

Telephone: _____ _____

Attachments: _____Product Data ___Samples ___Tests ___Reports ___Other (Describe)

_____

Designer's Review and Action:

_____ Substitution Accepted – Make submittals in accordance with Specification Division 01 33 00.

_____ Substitution Accepted as Noted - Make submittals in accordance with

Specification Division 01 33 00.

_____ Substitution Rejected – Provide specified product.

_____ Substitution Request Received Too Late – Provide specified product.

By: _____ Date:_____

Remarks: _____

_____ __

END OF SECTION

SECTION 01 65 00

PRODUCT DELIVERY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

A. Protect products scheduled for use in the work by means including, but not necessarily limited to, those described in this Section.

1.3 RELATED SECTIONS

A. Section 01 61 00 - Basic Product Requirements: Qualitative requirements for products.
B. Section 01 66 00 - Product Storage and Handling Requirements: Requirements for protection of products after delivery.

1.4 QUALITY ASSURANCE

A. Contractor's Quality Assurance: Contractor shall include within the Contractor's quality assurance program procedures as necessary to ensure protection of products upon delivery. Contractor shall be solely responsible for all products upon delivery to Work site and in off-site storage.
    1. Contractor shall schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
    2. Contractor shall coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
    3. Contractor shall inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
B. Manufacturer's Requirements: Contractor shall determine and comply with manufacturer's instructions and recommendations for product handling.
C. Packaging: Contractor shall deliver products to Work site in manufacturer's original containers, with labels intact and legible.
    1. Products delivered to Work site shall be in undamaged condition, in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
    2. Contractor shall maintain packaged materials with seals unbroken and labels intact until time of use.
    3. Products will be subject to rejection if they do not bear required identification or are unsuitably packaged.
D. Delivery:

1. Contractor shall address and deliver products to Project site. Do not deliver products to Client directly. Address deliveries to Contractor and Project name. Do not address products "care of" Client.
2. Client will not be responsible for mis-addressed and mis-delivered products, including claims for damage and delay.

E. Damaged Products: In event of damage, Contractor shall promptly make replacements and repairs to packaging and contents, as acceptable to Client’s Representative, at no change in Contract Sum and Contract Time.

PART 2 - PRODUCTS Not Applicable to this Section.

PART 3 - EXECUTION Not Applicable to this Section.

END OF SECTION

SECTION 01 66 00

PRODUCT STORAGE AND HANDLING REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

A. Storage and protection requirements to ensure that products intended for use in the Work will not be damaged and will not deteriorate from time of delivery to time of incorporation into the Work.

1.3 RELATED SECTIONS

A. Section 01 61 00 - Basic Product Requirements: Qualitative requirements for products.
B. Section 01 65 00 - Product Delivery Requirements: Requirements for packaging and delivery of products.

1.4 QUALITY ASSURANCE

A. Contractor's Quality Assurance: Contractor shall include within the Contractor's quality assurance program procedures as necessary to ensure protection of products after delivery to Work site. Contractor shall be solely responsible for all products stored on site and in off-site storage.
    1. Contractor shall protect stored products from damage.
    2. Contractor shall store products to allow for inspection and measurement of quantity or counting of units.
    3. Contractor shall store materials in a manner that will not endanger Project structure.
    4. Contractor shall store products that are subject to damage by the elements, under cover in a weather tight enclosure above ground, with ventilation adequate to prevent condensation.
B. Manufacturer's Handling Requirements: Contractor shall determine and comply with product manufacturer's written instructions for handling products.
C. Manufacturer's Storage Requirements: Contractor shall determine and comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
D. Storage: Contractor shall provide secure locations and enclosures at Project site for storage of materials and equipment. Contractor shall coordinate location with Contractor storage and staging areas.
    1. Contractor shall maintain packaged materials with seals unbroken and labels intact until time of use.
    2. Products will be subject to rejection if they do bear required identification or are unsuitably packaged.

E. Damaged Products: In event of damage, Contractor shall promptly make replacements and repairs to packaging and contents, as acceptable to Client's Representative, at no change in Contract Sum and Contract Time.
F. Contractor shall not have products or materials that are intended for the Contractor delivered to Client directly. Contractor shall make arrangements to have products and/or materials delivered directly to the work site. Products and/or materials delivered to the Client directly will not be accepted.

PART 2 - PRODUCTS Not Applicable to this Section.

PART 3 - EXECUTION Not Applicable to this Section.

END OF SECTION

Section 01 74 10

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

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. This Section includes requirements for waste management goals, waste management plan and waste management plan implementation.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 01 Section 01 31 19 "Project Meetings".
2. Division 01 Section 01 45 00 "Quality Control".
3. Division 01 Section 01 61 00 "Product Requirements".

1.3 DEFINITIONS

A. Construction Waste: Solid wastes such as building materials, packaging and rubble resulting from construction, paving and infrastructure.

B. Demolition Waste: Solid wastes such as concrete, wood, brick, plaster, roofing materials, wallboard, metals, carpeting, insulation, and clean fill resulting from demolition or selective demolition of structures.

C. Recyclable Materials: Products and materials that can be recovered and remanufactured into a new product. Recyclable materials include, but are not limited to, the following:

1. Metals (ferrous and non-ferrous), including banding, metal studs, ductwork, and piping.
2. Asphaltic concrete paving.
3. Portland cement concrete.
4. Gypsum products.
5. Paper and cardboard.
6. Wood products, including structural, finish, crates, and pallets.
7. Brick and masonry.
8. Carpet and padding.
9. Plastics.
10. Copper wiring.

D. Recycling Facility: A business that specializes in collecting, handling, processing, distributing, or remanufacturing waste materials generated by new construction projects, into products or materials that can be used for this project or by others.

E. Salvage and Reuse: Existing usable product or material that can be saved and reused in some manner on the project site. Materials for reuse must be approved by the Designer. Materials that can be salvaged and reused must comply with applicable technical specifications and include, but are not limited to, the following:

1. Dimensional lumber and other wood products.
2. Structural steel.
3. Soil.
4. Masonry products.
5. Plants.

1.4 WASTE MANAGEMENT GOALS

A. The Owner has established that this Project shall generate the least amount of waste possible and that processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors shall be employed.

B. The Contractor shall use all means available to divert the greatest extent practical and economically feasible, construction waste from landfills and incinerators.

C. Of the inevitable waste that is generated, as many of the waste materials as economically feasible shall be reused, salvaged, or recycled. Waste disposal in landfills shall be minimized.

D. Recycle and/or salvage a minimum of 50 percent of non-hazardous construction waste by weight of the total solid waste generated by the Project.

E. With regard to these goals the Contractor shall develop, for the Designer's review, a Waste Management Plan for this Project.

F. Take a pro-active, responsible role in management of construction waste and require all subcontractors, vendors, and suppliers to participate in the effort. Establish a construction waste management program that includes the following categories:

1. Minimizing packaging waste.
2. Salvage and reuse.
3. Salvage for resale or donation.
4. Recycling.
5. Disposal.

1.5 SUBMITTALS

A. Draft Waste Management Plan: Within 30 days after receipt of Notice of Award of Bid, or prior to any waste removal, whichever occurs sooner, the Contractor shall submit three (3) of a Draft Waste Management Plan to the Construction Administrator.

B. Final Waste Management Plan: Once the Owner has determined which of the recycling options addressed in the Draft Waste Management Plan are acceptable, the Contractor shall submit within 10 days three (3) copies of a Final Waste Management Plan.

C. Progress Reports: Submit three (3) copies of monthly progress reports, at the same time as the Application for Payment, documenting the following:

1. Material category.
2. Point of waste generation.
3. Total quantity of waste in tons.
4. Quantity of waste salvaged, in tons.
5. Quantity of waste recycled, in tons.
6. Total quantity of waste recovered (salvaged plus recycled) in tons.
7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

D. Calculations: Submit three (3) copies of calculations indicating the end-of-project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Project prior to Substantial Completion.

E. Record Submittals:

1. Donations: Indicate which salvageable materials were donated, who they were donated to, and whether the recipient is tax exempt. Submit documentation indicating receipt of donations.
2. Sales: Indicate which salvageable materials were sold, who they were sold to, and whether the recipient is tax exempt. Submit documentation indicating receipt of materials.
3. Recycling: Indicate which materials were recycled and the name of the facility licensed to accept them. Submit documentation such as manifests, weight tickets, receipts, and invoices.
4. Waste Disposal: Indicate which materials were accepted as waste by landfills and incinerator facilities licensed to accept them. Submit documentation indicating receipt of materials.

1.6 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with regulations of State of Connecticut Department of Environment Protection, Waste Management Bureau Recycling Program.

B. Waste Management Conference: Review and discuss the waste management plan, requirements for documenting quantities of each type of waste and its disposition, procedures for materials separation, procedures for periodic collection and transportation to recycling and disposal facilities. Review waste management requirements for each trade. Verify availability of containers and bins needed to avoid delays.

1.7 WASTE MANAGEMENT PLAN

A. Draft Waste Management Plan: Include the following in the Draft Plan:

1. Analysis of the proposed jobsite waste to be generated, including types and quantities.
2. Landfill Options: The name of the landfill(s) where trash will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all Project waste in the landfill(s).
3. Alternatives to Landfilling: A list of each material proposed to be salvaged, reused, or recycled during the course of the Project, the proposed local market for each material, and

the estimated net cost savings or additional costs resulting from separating and recycling (versus landfilling) each material. "Net" means that the following have been subtracted from the cost of separating and recycling:

a. Revenue from the sale of recycled or salvaged materials and

b. Landfill tipping fees saved due to diversion of materials from the landfill. The list of these materials is to include, at a minimum, the following materials:

i) Cardboard.

ii) Clean dimensional wood.

iii) Beverage containers.

iv) Land clearing debris.

v) Concrete.

vi) Bricks.

vii) Concrete Masonry Units (CMU).

viii) Asphalt.

ix) Metals from banding, stud trim, ductwork, piping, rebar, roofing, other trim, steel, iron, galvanized sheet steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.

B. Resources for Development of Waste Management Plan: The following sources may be useful in developing the Draft Waste Management Plan:

1. Recycling Haulers and Markets: Local haulers and markets for recyclable materials. For more information, contact the State of Connecticut Department of Environmental Protection, Waste Management Bureau Recycling Program, (860) 424-3365,

www.dep.state.ct.us/wst/recycle/ctrecycle.htm.

C. Final Waste Management Plan: The Final Waste Management Plan shall contain the following:

1. Analysis of the proposed jobsite waste to be generated, including types and quantities.

2. Landfill Options: The name of the landfill(s) where trash will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all Project waste in the landfill(s).

3. Alternatives to Landfilling: A list of the waste materials from the Project that will be separated for reuse, salvage, or recycling.

4. Meetings: A description of the regular meetings to be held to address waste management. Refer to Section 01 31 19 "Project Meetings".

5. Materials Handling Procedures: A description of the means by which any waste materials identified in item (3) above will be protected from contamination, and a description of the means to be employed in recycling the above materials consistent with requirements for acceptance by designated facilities.

6. Transportation: A description of the means of transportation of the recyclable materials (whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site) and destination of materials.

1.8 WASTE MANAGEMENT PLAN IMPLEMENTATION

A. Manager: The Contractor shall designate an on-site party (or parties) responsible for instructing workers and overseeing and documenting results of the Waste Management Plan for the Project.

B. Distribution: The Contractor shall distribute copies of the Waste Management Plan to the Job Site Foreman, each Subcontractor, the Owner, and the Designer.

C. Instruction: The Contractor shall provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the Project.

D. Separation Facilities: The Contractor shall lay out and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse, and return. Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials.

E. Hazardous Wastes: Hazardous wastes shall be separated, stored, and disposed of according to local regulations.

F. Application for Progress Payments: The Contractor shall submit with each Application for Progress Payment a Summary of Waste Generated by the Project. Failure to submit this information shall render the Application for Payment incomplete and shall delay Progress Payment. The Summary shall be submitted on a form acceptable to the Owner and shall contain the following information:

1. The amount (in tons or cubic yards) of material landfilled from the Project, the identity of the landfill, the total amount of tipping fees paid at the landfill, and the total disposal cost. Include manifests, weight tickets, receipt, and invoices.

2. For each material recycled, reused, or salvaged from the Project: the amount (in tons or cubic yards), the date removed from the jobsite, the receiving party, the transportation cost, the amount of any money paid or received for the recycled or salvaged material, and the net total cost or savings of salvage or recycling of each material shall be indicated. Attach manifests, weight tickets, receipts, and invoices.

PART 2 – PRODUCTS

(Not Applicable)

PART 3 – EXECUTION

3.1 PLAN IMPLEMENTATION

A. Implement the waste management plan as approved by the Construction Administrator.

B. Provide training of workers, contractors, subcontractors, and suppliers on proper waste management procedures.

1. Distribute waste management plan to all parties involved in the Project within three (3] days of submittal return.

2. Distribute plan to parties when they first begin working on the Project site. Review plan procedures and locations established for salvage, recycling, and disposal.

3.2 SEPARATION OF RECYCLABLE WASTE MATERIALS

A. Provide the necessary containers and bins, to facilitate the waste management program, that are clearly and appropriately marked. Prevent contamination of recyclable materials from incompatible products and materials. Separate construction waste at the project site by one of the following methods:

1. Source Separated Method: Waste products and materials, that are recyclable, are separated from trash and sorted into appropriately marked separate containers and then transported to the respective recycling facility for further processing. Trash is transported to a landfill or incinerator.

2. Co-Mingled Method: All construction waste is placed into a single container and then transported to a recycling facility where the recyclable materials are sorted and processed and the remaining trash is transported to a landfill or incinerator.

3. Other methods proposed by the Contractor and approved by the Construction Administrator].

END OF SECTION

DIVISION 23

HVAC

SECTION 23 01 00

MECHANICAL GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 INSTRUCTIONS AND TERMS:

A. All pertinent conditions of the Bidding Requirements, Conditions of the Contract and General Requirements shall govern work under this and all Division 23 sections.

B. All materials of a given type shall be manufactured by a single source and supplied by a single supplier.

1.2 SCOPE OF WORK:

A. Refer to supplied drawings for scope of work to be performed.

1.3 INTERPRETATION OF DRAWINGS:

A. The Drawings show the location and general arrangement of equipment, piping, ductwork and related items. They shall be followed as closely as elements of the construction will permit. Examine the drawings of other trades and verify the conditions governing the work on the job site. Drawings are schematic in nature, and installation may require additional offsets and modifications, including fittings, traps, valves and accessories.

B. The architectural and structural drawings take precedence in all matters pertaining to the building structure, mechanical drawings in all matters pertaining to mechanical trades and electrical drawings in all matters pertaining to electrical trades. Report conflicts or differences to the architect/ engineer for resolution.

1.4 PROJECT RECORD DOCUMENTS:

A. For underground piping, record dimensions and invert elevations of all piping, including all offsets, fittings, cathodic protection and accessories. Locate dimensions from benchmarks that will be preserved after construction is complete.

B. For fire protection systems, record actual locations of sprinkler heads, and valves and deviations of piping from drawings. Indicate drain and test locations.

1.5 DELIVERY, STORAGE AND HANDLING:

A. Deliver, store and handle all materials to keep clean and protected from damage.

B. Store products in shipping containers and maintain in place until installation. Provide temporary inlet and outlet caps. Maintain caps in place until installation.

C. Protect equipment and other materials from damage after installed from construction debris and other damage.

1.6 QUALITY ASSURANCE:

A. Regulatory Requirements: Comply with the following:

1. 2018 North Carolina Mechanical Code.
2. 2018 North Carolina Plumbing Code.
3. 2018 North Carolina Fuel Gas Code.

B. Labeling requirement for packaged equipment:

1. Electrical panels on packaged mechanical equipment shall bear UL label or label of other approved testing agency (ETL, CSA).

C. Other referenced standards:

1. Comply with referenced standards, guidelines, data sheets from various associations, including NFPA, ANSI, ASTM, ASME, ASHRAE

PART 2 - PRODUCTS

2.1 FIRE STOPPING:

A. Provide UL classified firestopping system for mechanical penetrations through rated walls and floors to maintain the fire rating.
Manufacturers: Tremco, Hilti, 3M or approved equal.

2.2 ACCESS PANELS:

A. Furnish access panels to access valves, traps, control valves or devices, dampers, damper motors, etc. Access panels shall be sized as necessary for ample access, or as indicated on drawings, but no smaller than 12” x 12” where devices are within easy reach of operator, and at least 24"x24" when operator must pass through opening in order to reach the devices. Architectural Trades shall install access panels coordinated with Mechanical Trades.

B. Access panels in fire rated walls or ceiling must be U.L. labeled for intended use. Unless otherwise indicated on plans, access doors shall be hinged flush type steel framed panel, 14 gauge minimum for frame, and with anchor straps. Only narrow border shall be exposed. Hinges shall be concealed type. Locking device shall be flush type and screw driver operated. Metal surfaces shall be prime coated with rust-inhibitive paint. Panels shall be compatible with architectural adjacent materials Manufacturer: Milcor, Bilco or approved equal.

2.3 BUILDING ATTACHMENTS FOR MECHANICAL WORK SUPPORTS:

A. General Requirements:

1. Provide building attachments required for supporting mechanical work, suitably selected and installed for the loads applied with a minimum additional safety factor of 3.
2. Where specified attachments are not suitable for conditions, submit to Engineer for approval, proposal for alternate building attachments.
3. Approved Manufacturers: Grinnell, or equivalent products by Michigan Hanger and B-Line.

4. Provide supplemental trapeze supports where necessary. Design trapeze to support all trades. Coordinate loads, and supports with all trades. Size trapeze for maximum deflection of 1/64 of the span.

B. Attachments to Structural Steel:

1. Support mechanical work from building structural steel where possible and approved. No welding or bolting to structural steel is permitted unless authorized by Architect. C-clamps are not permitted unless approved by Engineer in certain situations.
   a. Center beam clamp - for loads over 120 lb.: Malleable center hung Grinnell Fig. 228.
   b. Side beam clamp with retaining clips - for loads up to 120 lb.

C. Cast in Place Concrete Inserts:

1. Provide inserts selected for applied load of present load plus 100% for future, and coordinated with concrete work. Except as detailed on drawings, inserts shall be Unistrut or Grinnell. Plan, lay out and coordinate setting of inserts prior to concrete pour. Use Grinnell Fig. 285 or approved equal lightweight concrete insert for loads up to 400# or Grinnell Fig. 281 or approved equal Wedge Type concrete insert for loads up to 1200#.

D. Drilled Insert Anchors:

1. Where mechanical work cannot be supported from structural steel, or cast in place concrete inserts, provide drilled concrete insert anchors. Submit for approval, project specific installation drawings for all loads over 100 lbs. Install inserts in web of beam if possible and approved. Insert depth shall not exceed two thirds the thickness of the concrete. Where existing concrete appears to be deteriorating, or where applied load at insert exceeds 1000 lbs., conduct test of concrete to determine derated capacity of insert. Anchors may be adhesive or expansion type up to 1000 lbs., and shall be adhesive type for loads over 1000 lbs.
   Manufacturers: Hilti or approved equal.

2.4 BELT DRIVES:

A. Provide V style motor pulleys, belts and driven sheaves in compliance with Rubber Manufacturers Association (RMA) standards, and as specified herein.

B. Pulleys and sheaves shall be fixed pitch for motors 5 HP and larger, statically and dynamically balanced, and shall be adjustable pitch for motor smaller than 5 HP.

C. All drive systems shall be rated for rated motor horsepower, with a service factor of 1.2.

D. For multiple belt drives, match belts as a set. Groove spacing for motor pulley and equipment sheave shall align.

E. Replace belts, pulleys and sheaves to attain specified equipment performance. Coordinate work with test and balance contractor.

F. Minimum V-belt sheave diameter shall comply with RMA recommendations.

G. Provide OSHA approved belt guard for all belt driven equipment. Coordinate with equipment supplier. Guard shall include 1" tachometer access hole.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS:

A. Install equipment and materials in accordance with manufacturer's written and illustrated instructions, as detailed on drawings and as described in these specifications. Bring discrepancies in installation methods to the attention of the owner and A/E.

B. Install hanger rod straight, without bending.

3.2 REFRIGERANT HANDLING (THIS WILL BE PERFORMED BY THE OWNER)

A. Refrigerant Installation and Disposal: Perform all work related to refrigerant contained in chillers, cooling coils, air conditioners, and similar equipment, including related piping, in strict accordance with the following requirements:

1. ASHRAE Standard 15 and Related Revisions: Safety Code for Mechanical Refrigeration.
2. ASHRAE Standard 34 and Related Revisions: Number Designation and Safety Classification of Refrigerants.
3. United States Environmental Protection Agency (US EPA) requirements of Section 808 (Prohibition of Venting and Regulation of CFC) and applicable State and local regulations of authorities having jurisdiction.

B. Recovered refrigerant is the property of the Contractor. Dispose of refrigerant legally, in accordance with applicable rules and regulations of authorities having jurisdiction.

END OF SECTION

DIVISION 26

ELECTRICAL

SECTION 26 00 00

ELECTRICAL - GENERAL

PART 1 GENERAL

1.1 DESCRIPTION

This section of the specifications includes the furnishing and installation of all labor, materials, tools, equipment, and operations necessary for the proper execution and completion of all electrical work indicated on the drawings and specified herein.

The Contractor shall furnish and install all conduit, cable, systems for power, and shall furnish and install raceways for special systems as specified herein and as indicated on the electrical drawings, complete and ready to operate in every respect, including connection of Owner furnished equipment, if applicable.

1.2 CODES & ORDINANCES

All electrical work and materials shall comply with the National Electrical Code (NEC), the National Electrical Safety Code (NESC), American Society for Testing and Material (ASTM), Insulated Cable Engineers Association (ICEA), National Electrical Manufacturers Association (NEMA), National Fire Protection Association (NFPA), Underwriters' Laboratories (UL) and applicable local codes and regulations.

All electrical equipment shall be UL listed.

If discrepancies occur between laws, codes, ordinances, rules and regulations, and the specifications or drawings, each discrepancy shall be called to the attention of the Engineer in writing before the bids are submitted. That work which is shown or specified in violation of these rules and regulations shall be done in compliance with the regulations, and no claim for additional cost required to make implied systems complete will be accepted.

1.3 UTILITY COORDINATION, PERMITS AND FEES

The Contractor shall coordinate power service modifications with the local power utility and provide equipment in full conformance with their requirements.

The Contractor shall notify the utility to provide new service indicated on the drawings. Contractor shall provide load sheet to utility as required.

The Contractor shall obtain all permits and inspections required for the completion of this contract.

1.4 WORKMANSHIP

Workmanship in the fabrication, preparation, and installation of materials and equipment shall conform to the best standards of practice of the trades involved. Experienced and skilled electricians and mechanics under the supervision of a competent foreman shall perform work. Substandard workmanship will be cause for rejection of work and replacement by Contractor.

1.5 DRAWINGS AND SPECIFICATIONS

The drawings show the location and general arrangement of conduits and equipment. The electrical contractor shall work closely with the equipment supplier to confirm the final location of equipment and to locate conduit locations. In addition, the electrical contractor shall work closely with equipment supplier to determine the exact number of power and control wires required for each piece of equipment. The layout shown shall be followed as closely as circumstances will permit, but the Contractor shall lay out his work so as to avoid conflict with other contractors and trades, and to avoid any unnecessary cutting or damage to walls, floors, and supporting structural members. The Contractor shall install at the proper time all necessary sleeves, hangers and inserts that will be required for the completion of his work, and shall be solely responsible for the accurate and proper location of the above items.

The Contractor shall refer to the general drawings and cooperate fully with other contractors and trades while installing electrical equipment because of close space limits. In case of conflict, the Engineer shall be notified before proceeding with installation.

The Engineer drawings, manufacturer drawings and specifications complement each other and together are intended to give a complete description of the work. Any item of equipment or note of work to be done as shown on plans and not mentioned in the specifications, or mentioned in specifications and not shown on plans, shall be furnished the same as if mentioned or shown in both places. If conflicts exist, then the most stringent method shown or described should apply.

Any discrepancy, omission, or conflict found in plans or specifications shall be called to the immediate attention of the Engineer, prior to receipt of bids.

The drawings are not intended to show complete details. It is the Contractor's responsibility to comply with the evident intent for centering and symmetric arrangement. The Contractor shall take all field measurements and be responsible therefore. Exact locations are to be defined in the field.

1.6 CUTTING AND PATCHING

The Contractor shall do any cutting of walls or structures required for the installation of work under this section. Holes through walls for passage of conduits shall be properly and neatly sleeved and grouted. Sleeves through exterior walls shall be effectively sealed against passage of water. All disturbed areas shall be refinished and left in a finished and matching condition and shall meet the approval of the Engineer.

1.7 ALLOWANCE FOR ADDITIONAL WORK

Before proceeding with any work for which compensation may be claimed or the Owner may claim credit, a detailed estimate shall be submitted and approved in writing. No claim for addition to the contract will be valid unless so ordered and approved by the Owner and Engineer.

1.8 AS INSTALLED PRINTS

The Contractor shall maintain a set of prints, showing exact location of all relocated equipment, concealed equipment, service accesses, hand holes, underground duct banks, and all other changes to the plans. This set of prints shall be kept current and turned over to the Engineer upon completion of the job. Dimensions shall be shown to locate all underground conduit duct banks from permanent reference points.

1.9 INCIDENTAL CONSTRUCTION WORK

The Contractor shall provide all openings as required for the electrical work. The Contractor shall do all cutting and fitting of his work and of other work that may be required to make the several parts come together properly and to fit his work to receive or be received by the work of other Contractors as shown upon, or reasonably implied by the drawings and specifications. He shall properly complete and finish up his work after other contractors have finished as the Engineer may direct. All excavating required for the installation of the system shall be done by the Contractor. Backfill shall be accomplished as specified in the appropriate section of the specifications.

1.10 CLEANING AND PAINTING

The Contractor shall at all times keep the Owner's premises, adjoining driveways and streets clean of rubbish caused by the Contractor's operations and at the completion of the work shall remove all the rubbish from and about the premises, all his tools, equipment, temporary work, surplus material and shall leave the area clean and ready for use.

The Contractor shall be required to perform touch-up painting on factory-finished equipment installed under this contract where necessary to repair damaged areas. All metal exposed to weather shall be properly painted. Any equipment installed where exposed to weather shall have all damaged areas cleaned, primed, and painted by the Contractor.

1.11 GUARANTEE

The Contractor shall guarantee all materials, equipment, and workmanship in this contract against defects and failures of any nature for a period of one year from date on which the system is accepted. Apparatus furnished by the Contractor shall be guaranteed to be satisfactory when operated under rated conditions in accordance with manufacturer's instructions and to be of size, function, and capacity as indicated on the drawings or in the specifications. Upon notice from the Engineer or Owner, the Contractor shall immediately check the system, make necessary repairs or adjustments as required due to faulty workmanship, materials, faults, operation, or equipment, without cost to the Owner, and instruct the Owner in proper operation, adjustment, and care of the systems.

1.12 IDENTIFICATION

All equipment shall be identified and properly marked. All marking must meet the Engineer's approval. All markers shall be of appropriate size. Each panel, transformer, contactor, starter, and other piece of electrical equipment shall be identified as to their service.

All disconnect switches, junction boxes, motor controllers, and other equipment requiring electrical owner connection shall be marked with voltage present, as appropriate to designate 120, 208, 240, 277, or 480 volts and single or three-phase, as applicable.

1.13 MAINTENANCE AND OPERATING INSTRUCTIONS

The Contractor shall furnish to the Engineer five (5) complete sets of applicable drawings, instructions and parts lists on all equipment furnished, providing names and addresses of manufacturers or subcontractors and suppliers. Two (2) copies of manufacturer's warranties on all equipment shall be provided to the Owner and one (1) copy to the Engineer.

The one-year warranty period on all equipment and systems installed by this Contractor shall start upon final approval and acceptance following the installation and commissioning of the equipment.

1.14 SHOP DRAWINGS

Upon award of the contract, the Contractor shall submit to the Engineer for approval, a list of all proposed subcontractors and materials he proposes to utilize and five (5) sets of shop drawings consisting of detailed drawings or manufacturer's cuts of all manufactured equipment he proposes to use on the job. The drawings or cuts shall show details of construction and arrangement of all pertinent data pertaining to equipment proposed to be furnished. Where manufacturer's cut sheets include more than one option or model number, the Contractor must clearly indicate the proposed option or model number. The approval of the Engineer shall be obtained before equipment is ordered for delivery. It will be the duty of the Contractor to verify quantities, dimensions, and details, and determine suitability of equipment for installation in space provided. Approval of shop drawings by the Engineer does not relieve the Contractor of the responsibility for coordination, dimensions, quantities or conformance with contract documents.

The Contractor shall check and initial shop drawings making such notations and corrections as may be appropriate or necessary to comply with contract documents before submission to the Engineer.

1.15 STORAGE AND PROTECTION OF MATERIALS AND EQUIPMENT

The Contractor shall be responsible for furnishing suitable shelter and protection for all materials and equipment stored on the job. Equipment shall be protected from damage from any source both during storage and after installation until completion of the job. No damaged equipment will be accepted. Existing equipment removed from service shall be protected from damage and loss of parts until turned over to the owner.

1.16 COORDINATION WITH EQUIPMENT SUPPLIER

The Electrical Contractor shall coordinate electrical equipment sizes, power and control requirements and locations with the belt press equipment supplier and the pump system supplier.

PART 2 MATERIALS

2.1 ELECTRICAL MATERIALS AND METHODS

Materials and workmanship on all work installed under this contract shall be new and of the best quality and shall conform to the best practice for such work and be installed in accordance with manufacturer's recommendations and instructions, including all hardware and accessories recommended or appropriate. Any work or materials not specifically mentioned in these plans and specifications, but required to make this job a complete and workable system shall be furnished and installed by the Contractor.

Substitution for equipment specified must be equal in every respect and the Contractor shall base his proposal on the quality of materials and equipment covered in these specifications and shown on the drawings.

Where substitutions alter the design or space requirements indicated on the plans, the Contractor shall include all items of cost for the revised design and construction, including the cost of any changes or modifications in structural or mechanical details and electric service resulting from substitution of electrical equipment, and the cost of all allied trades involved.

All manufactured and fabricated assemblies of electrically operated equipment furnished under this contract shall have Underwriter's Laboratories approval or UL Re-examination listing in every case where such approval has been established for the particular type of materials or devices in question.

2.2 CONDUITS AND RACEWAYS

2.2.1 All wiring shall be in conduit or other approved raceways except as shown on the drawings or otherwise specified, and shall be concealed unless otherwise noted. Conduit shall be one of the types listed below.

A. Conduit Types:

1. Above Ground Exterior: Galvanized Rigid

2. Above Ground Interior: EMT

3. Underground: Schedule 40 PVC

B. Conduit Installation:

1. Conduits shall be installed between the reinforcing steel in walls or slabs that have reinforcement in both faces. In slabs that have only a single layer of reinforcing steel, conduits shall be placed under the reinforcement. Conduit shall be neatly grouted into any openings cut into concrete and masonry structures. Conduits shall be capped during construction to prevent entrance of dirt, trash, and water.

2. All conduits that enter enclosures shall be terminated by fittings that ensure that the NEMA rating of the enclosure is not affected or changed.

3. Underground conduit bend radius shall be not less than 2 feet at vertical risers or less than 3 feet elsewhere. Underground conduits and conduit banks shall have 2-feet minimum earth cover except where indicated otherwise. Underground conduits shall be sloped to drain to the handholes. All underground conduit to have tracer wire installed

4. After cable has been installed and connected, conduit ends shall be sealed by non-hardening duct sealing compound forced into conduits to a minimum depth equal to the conduit diameter. This shall apply for all conduits at handholes and building entrance junction boxes, and for all conduit connections to equipment.

5. All exposed conduit runs shall be so located that pull or junction boxes will not be made inaccessible due to inadequate clearance with piping or equipment.

6. All conduits used for service entrance feeders from supply point to first overcurrent device shall be bonded with suitable bonding locknuts and/or bonding insulating bushings, or by separate copper bonding conductor.

2.3 CONDUCTORS

2.3.1 General:

The Contractor shall furnish and install all wire and cable necessary to complete the work herein outlined, as shown on drawings, as required by equipment supplier, except such items as are specifically noted as being furnished by others. All wiring in the entire system must be color-coded and all conductors shall have their size, voltage, manufacturer, and type clearly marked on the outer covering. All wire and cable shall be as herein specified or as shown on the drawings.

2.3.2 Conductors:

Conductors shall consist of annealed copper wire of size indicated on drawings or as may be specified herein. No conductors smaller than #12 AWG copper shall be used unless otherwise indicated on the drawings. All conductors #12 AWG and larger shall be of Class B concentric stranded construction, unless specified otherwise herein or on drawings.

2.3.3 Wire Insulation:

All wire and cable unless otherwise specified shall be single conductor type THHN 600-volt insulation. Service entrance conductors shall be RHH/RHW-USE type insulation. Conductors shall be color coded as follows:

A. black, blue, red, white, and green on 120/208 volt wye systems

B. black, orange, red, white, and green on 120/240 volt delta systems

C. brown, orange, yellow, gray, and green on 277/480 volt wye systems.

2.3.4 Installation:

The Engineer reserves the right to inspect any and all joints in wiring. If the joint is already taped, the Contractor shall properly re-tape after inspection. Conductors shall be continuous without joints or splices in runs between outlet boxes. All splices shall be made at boxes only.

2.3.5 Splices And Terminations:

Splices shall be made by use of mechanical connectors of the following manufacturers' types, T & B Sta-Kon, Burndy Crimpit, Minnesota Mining and Manufacturing Company Scotchlock, and Ideal Wire-Nut. Conductors size #8 AWG and larger shall be spliced and connected with suitable, solderless, mechanical lugs and connectors. All splices, taps, and connections shall be insulated with Scotch electrical tape as made by Minnesota Mining & Manufacturing Company as applicable to installation.

2.4 SUPPORTING DEVICES

2.4.1 General:

All secondary electrical devices such as outlet boxes, poles, bases, switches, and receptacles shall be located generally as shown on the drawings. No device utilized by the handicapped shall be located higher than 4'-0" from the finished floor level to the top of the device.

2.4.2 Outlet and Switch Boxes:

Boxes shall be pvc. Corrosion resistant end use covers for all receptacles. Corrosion resistant cover for all switches.

2.4.3 All exterior mounted boxes shall have approved weather-proof plates and/or covers.

2.4.4 Outlet Locations:

All outlets for receptacles or switches shall be installed in the location indicated on the drawings. When necessary, the Contractor shall relocate outlets to coordinate with other equipment.

2.4.5 Unless otherwise indicated on the drawings, electrical devices shall be placed at the following distances from finished floors:

A. Light Switches – center of switch 45” above finished floor (45” AFF).
B. Duplex receptacles – center of receptacle 18” above finished floor (18” AFF).
C. Power Panelboards - top of cabinet 6'-6" above finished floor.
D. Safety switches and/or circuit breakers - handle not over 6'-6" above finished floor.

2.4.6 The Electrical Contractor is cautioned to review general drawings to confirm location of equipment and to adjust the exact installed location of receptacles and devices accordingly to avoid interference between electrical devices and equipment. Responsibility for locating devices in the field is the Contractor's. The Engineer should be contacted for clarification before installation.

2.4.7 Structural Steel:

The Contractor shall provide miscellaneous structural steel necessary to mount electrical equipment. All structural steel furnished shall be standard shapes and sizes and shall be stainless steel. All steel shall be firmly and rigidly welded or bolted in place. All structural steel shall be structural quality conforming to ASTM A7-497.

2.4.8 Tap and Pull Boxes:

Boxes shall be pvc. Holes for raceways shall be drilled on the job. Where necessary for boxes to be supported away from the ceiling or beams, strap iron or threaded rod shall be used for supports. Outdoor boxes shall be pvc unless otherwise noted.

2.4.9 Boxes shall have covers fastened on with screws. Sizes of boxes shall be determined by NEC requirements.

2.4.10 Secondary Systems:

The Contractor shall furnish and install all conduit, junction boxes, outlet boxes, and plates for conduit systems as indicated on the drawings.

2.5 GROUNDING

All electrical systems and equipment connected under this contract shall be grounded in strict accordance with the National Electrical Code and state and local regulations. Provide a green insulated equipment grounding conductor in all conduits. It is intended that equipment grounding is not dependent on conduit connections.

Metal raceways, metal enclosures or electrical devices, switchgear enclosures, transformer frames, and other equipment shall be completely grounded in an approved manner prescribed by the NEC. All necessary conduit, conductors, clamps and connectors for the grounding system shall be furnished, installed and connected by the Electrical Contractor. The service shall be grounded as indicated on the drawings and as required by the NEC.

All grounding conductors shall be bare or green insulated in accordance with the National Electrical Code, soft drawn copper cable or bar, not smaller than 12 AWG. Ground cable splices and joints which will be inaccessible upon completion of construction shall meet the requirements of IEEE Standard 837, and shall be Cadweld "Exothermic" or Burndy "Hyground" type. Ground cable near the base of a structure shall be in earth and as far from the structure as the excavation permits but not closer than 6 inches.

Ground connections to equipment and ground buses shall be by copper or high conductivity copper alloy ground lugs or clamps. Connections to enclosures not provided with ground buses or ground terminals shall be by clamp type lugs added under permanent assembly bolts or under new bolts drilled and added through enclosures or by grounding locknuts or bushings.

Ground rods not described elsewhere shall be 3/4 inch diameter by 10 feet long, with a copper jacket bonded to a steel core.

2.6 DISCONNECT SWITCH

Unless otherwise specified, each disconnect switch shall be 3 phase, heavy-duty, with a voltage and continuous current rating as indicated on the drawings. Where required, disconnects shall be se rated.

Each disconnect switch shall have an enclosure rating as indicated on the drawings.

Disconnect switches shall have nameplates identifying related equipment, and unit numbers where applicable. Nameplates shall be laminated black-over-white plastic, with 1/8 inch engraved letters, and shall be securely fastened to the enclosure.

2.7 RECEPTACLES

Receptacles shall be ground fault, duplex, 20 amperes, 125 volts, weatherproof/in use enclosure, Arrowhart GF5352, Hubbell GF5352, Eagle GF5352, or equal.

- End of Section-

SECTION 26 05 00

BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide conduits, cable trays, surface raceways, boxes, fittings and supports to form a complete, coordinated, and continuously grounded raceway system.

1.2 CONDUIT AND WIRE REQUIREMENTS

A. Conduit:

1. Conduit shall be in accordance with The National Electrical Code (NEC), local and state requirements. All wiring shall be in conduit.

2. Where required, all wiring shall be installed in conduit or raceway. Conduit fill shall not exceed 40 percent of interior cross sectional area where three or more cables are contained within a single conduit.

3. Cable must be separated from any open conductors of power, or Class 1 circuits, and shall not be placed in any conduit, junction box or raceway containing these conductors, per NEC Article 760-29.

4. With the exception of telephone connections, wiring for 24 volt DC control, alarm notification , emergency communication and similar power-limited auxiliary functions may be run in the same conduit as initiating and signaling line circuits. All circuits shall be provided with transient suppression devices and the system shall be designed to permit simultaneous operation of all circuits without interference or loss of signals.

5. Conduit shall not enter the fire alarm control panel or any other remotely mounted control panel equipment or back boxes, except where conduit entry is specified by the FACP manufacturer.

6. Conduit shall be ¾-inch (19.1mm) minimum.

B. Wire:

1. All fire alarm system wiring shall be new.

2. Wiring shall be in accordance with local, state, and national codes (e.g., NEC Atticle 760) and as recommended by the manufacturer of the fire detection system. Number and size of conductors shall be as recommended by the fire detection system manufacturer, but not less than 8 AWG (1.02 mm) for Initiating Device Circuits, Signaling Line Circuits, and Notification Appliance Circuits.

3. All wire and cable shall be listed and/or approved by a recognized testing agency for use with a protective signaling system.

4. Wire and cable not installed in conduit shall have a fire resistance rating suitable for the installation as indicated in NFPA 70 (e.g., FPLR).

5. Wiring used for the multiplex communication circuit (SLC) shall be twisted and support a minimum wiring distance of 10,000 feet when sized at 12 AWG. The design of the system shall

permit use of IDC and NAC wiring in the same conduit with the SLC communication circuit. Shielded wire shall not be required.

6. All field wiring shall be electrically supervised for open circuit and ground fault.

7. The fire alarm control panel shall be capable of T-tapping Class B (NFPA Style 4) Signaling Line Circuits (SLCs). Systems which do not allow or have restrictions in, for example, the amount of T-taps, length of T-taps etc., is not acceptable.

C. Terminal Boxes, Junction Boxes, and Cabinets:

1. All boxes and cabinets shall be UL listed for their use and purpose.

2. Provide fire alarm terminal boxes for all risers between floors.

D. The fire alarm control panel shall be connected to a separate dedicated branch circuit, maximum 20 amperes. This circuit shall be labeled at the main power distribution panel as FIRE ALARM. Fire alarm control panel primary power wiring shall be 12 AWG. The control panel cabinet shall be grounded securely to either a cold water pipe or grounding rod.

E. The control panel enclosure shall feature a quick removal chassis to facilitate rapid replacement of the FACP electronics.

PART 2 - PRODUCTS

2.1 CONDUITS

A. EMT shall be hot dipped galvanized inside and outside, in 10' lengths and threaded on both ends. Fittings and bushings shall be cast or malleable iron, and hot dipped galvanized inside and outside.

2.2 SURFACE RACEWAYS

A. Where surface raceways are called for on the drawings, or when conduits in finished areas cannot be concealed in walls or above ceilings, surface raceways shall be used. Boxes and fittings shall match and be from the same manufacturer as the surface raceway.

B. Surface raceways shall consist of a base and cover, sized for the number of conductors contained within, complete with all connectors, fittings, bushings, boxes, covers and mounting hardware.

C. Raceways shall be 600 volt rated, and be in compliance with the applicable paragraphs of NEC Article 352.

D. They shall be non-flammable, and UL labeled, under UL 5, or UL 5A (as applicable).

E. The completed raceway system shall be vandal resistant.

F. The cover plates used for wiring devices and telecommunication outlets shall be of the 'overlapping' type, and shall therefore cover the 'cut-end' of the raceway cover.

2.3 BOXES

A. Boxes for fixtures, outlets, switches, equipment connections and wire pulling shall be

1. Cast or formed from carbon steel sheets of commercial grade steel not less than 14-gauge,
2. One-piece construction, zinc, or cadmium plated,
3. Tapped for mounting plates and covers as required.

B. Pull and junction boxes shall be

1. Fabricated from galvanized or painted code gauge cold rolled carbon steel sheets.
2. Welded construction with flat removable covers fastened to the box with machine screws.
3. Seams and joints shall be closed and reinforced with flanges formed of the same material from which the box is constructed or by continuous welding which will provide equivalent strength to flange construction.
4. Preferably not provided with 'knockouts'.

C. Box covers shall be fastened in place by machine screws or hinges and latches. Self-tapping or sheet metal fasteners are not acceptable.

2.4 SUPPORTS

A. Hangers and brackets shall be made of steel pipe, channel iron, angle iron or prefabricated steel channel. Prefabricated steel channel shall be by B-Line, Hilti, Powerstrut, Unistrut or approved equal.

B. Anchors shall be lead shield anchors or plastic expansion anchors for small loads, and expansion or epoxy anchors for large loads. Powder-driven anchors shall not be used.

2.5 LABELS AND DIRECTORIES

A. Equipment nameplates shall be engraved .125 inch (1/8") thick lamacoid plastic. White, with black letters. The engraved letters shall be at least one quarter inch (¼") high.

B. Receptacles and lighting switches shall be labeled using clear adhesive backed nylon or Mylar tape with black text permanently laminated to the tape.

C. Panel directories shall be typed on supplied card stock with panel, or card stock similar in thickness and material as those supplied with the panels. Install supplied clear plastic cover, or one of like material.

PART 3 - EXECUTION

3.1 RACEWAYS

A. Size conduits in accordance with the NEC, but not less than the sizes shown on the drawings. Minimum power and control conduit size shall be 1/2".

B. All branch circuits and feeders require an equipment grounding conductor be run in each raceway.

C. Install concealed and exposed conduits and cable trays parallel to or at right angles to building lines. Conduits shall not be embedded in concrete slabs except where specifically shown. Install surface raceways as close to room corners or trim features as possible to make the surface raceways less obvious.

D. Make directional changes in primary power distribution conduits above ground with sweeps and long radius elbows, and underground with 20' minimum radius bends.

E. Conceal conduits wherever possible and practical. When conduits cannot be concealed in finished areas, use surface raceways with matching boxes from the same manufacturer as the raceways.

F. Metal conduits, fittings, enclosures and raceways shall be mechanically joined together in a firm assembly to form a continuous electrical conductor providing effective electrical grounding continuity.

G. Provide expansion fittings at the intervals specified in the manufacturer's instructions.

H. Conduits entering panels located outdoors, in parking structures, in steam tunnels and on cooling towers shall enter from the sides, back, or bottom. Conduits shall not enter from the top.

I. Separate raceways from uninsulated steam pipes, hot water pipes, and other hot surfaces by a minimum of 4” horizontally or 12” vertically. Separate raceways from ventilation ducts and insulated pipes so that they do not come into contact with each other.

J. EMT conduit shall be secured with locknut inside and set screw connector on outside. Sufficient thread on the connector or conduit shall extend into the enclosure so that the bushing will butt tight into the connector or conduit. Bushings shall not be used as jamb nuts or in lieu of locknuts.

K. Flexible metallic conduit to motors and similar equipment shall not exceed 3'-0" in length, and shall have adequate slack to absorb the maximum vibration. Flexible conduit connections to lighting fixtures shall not exceed 6'-0" in length.

3.2 MOUNTING HEIGHTS

A. Except where shown otherwise, install equipment and devices at the following heights:

1. See drawings.

3.3 SUPPORTS

A. Support all electrical items independently of supports provided by the other trades.

B. Support conduits and boxes using steel conduit straps or uni-strut. Suspended ceiling hangers or hanger wire shall not be used (except to support flexible metallic conduit and manufactured wiring systems).

C. Hangers shall be of sufficient strength that their deflection at mid span does not exceed 1/240 of the hanger span length after the cables are installed.

3.4 PENETRATIONS, SLEEVES AND FIRE SEALS

A. Cut floor and wall penetrations neatly and to the minimum size required for installation of the equipment and raceways.

B. Provide galvanized steel pipe sleeves for all conduits penetrating floors, exterior walls and roofs.

1. Extend floor sleeves above the floor a minimum of 2 inches.
2. Seal exterior wall and roof penetrations water tight.

C. Patch both sides of wall penetrations cut for electrical equipment and raceways to seal against the passage of air, sound and fire.

1. Seal cable tray penetrations in fire rated walls using fire sealant bags approved by a Nationally Recognized Testing Laboratory.
2. Seal conduit penetrations in fire rated walls using fire-sealing caulk approved by a Nationally Recognized Testing Laboratory.
3. Seal conduit penetrations in non-rated walls using masonry materials that match the wall construction.
4. Fire seal between recessed outlet boxes located on opposite sides of a fire rated wall if the box openings are over 16 square inches and the boxes are less than 24 inches apart.

3.5 EXPANSION FITTINGS

A. Provide expansion fittings at all building expansion joints. Expansion fittings shall be bonded to the raceway on both sides.

B. Provide expansion fittings, in accordance with manufacture recommendations, in all areas subject to swings in temperature of more than 15 degrees C.

C. Install expansion fittings in all locations were expected expansion difference is ¼", or more, between boxes

3.6 IDENTIFICATION

A. Provide nameplates and labels in accordance with Article 2.5.

1. Lamacoid labels shall be mechanically secured in place with sheet metal screws and/or bolts and nuts
2. Labels shall be neatly centered. Place labels in like positions on similar equipment.

B. Color code wiring as noted in Section 26120

C. Color code junction boxes and box covers of emergency and fire alarm circuits with red paint. Color code junction boxes and box covers of temperature control circuits with blue paint.

D. Mark junction box covers in indelible ink with the panel and breaker numbers of the circuits contained within.

E. Provide a 3" by 5" yellow "Warning Arc Flash Hazard" label on the outside of panels in 'occupant areas' - Brady Type 99454 or equivalent from another manufacturer. Center the label horizontally and vertically on outside of door.

F. Provide a 4" by 6"'red "Danger Arc Flash and Shock Hazard" label on the outside of panels in areas open only to 'qualified personnel', and on the inside panel door of panels in 'occupant areas' - Brady Type 99459. Center label on gutter areas of distribution panels, centered above or below the directory of panels, and otherwise centered in other applications. In all cases, label will be no lower than 48" or above 84" AFF

END OF SECTION

SECTION 26 05 10

ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The general provisions of the contract including General and Special Conditions and General Requirements shall apply to all work under this Section.

1.02 DESCRIPTION OF WORK

A. Provide identification on all equipment, raceways, boxes and conductors.

1.03 RELATED WORK IN OTHER SECTIONS

A. Related work in other sections:

1. Electrical General Provisions
2. Raceways and Boxes
3. Wire and Cable
4. Wiring Devices

PART 2 - PRODUCTS

2.01 Nameplates

A. Unless otherwise noted, nameplates shall be black lamacoid plates with white engraved upper case letters enclosed by white border on beveled edge.

B. Nameplates for equipment, supplied by the emergency system, shall be red lamacoid with white lettering.

C. All nameplates shall be engraved and must be secured with rivets, brass or cadmium plate screws. The use of Dymo tape or the like is unacceptable.

D. Nameplate inscriptions shall bear the name and number of equipment to which they are attached as indicated on the Drawings. The engineer reserves the right to make modifications in the inscriptions as necessary.

2.02 Cable tags and wire identification labels.

A. Cable tags shall be flameproof secured with nylon ties.

B. Wire markers shall be preprinted cloth tape type or approved equivalent.

2.03 Identification Labels

1. Acceptable Manufacturers
   a) W.H. Brady Company (Style A)
   b) Thomas & Betts Company (T&B), Style A.
2. Plasticized Cloth
   a) Non-conductive.
   b) Waterproof.
   c) Capable of withstanding continuous temperatures of 235 degrees F and intermittent temperatures to 300 degrees F.
   d) Overcoating for protection against oil, solvents, chemicals, moisture, abrasion and dirt.

3. Heavy, thermo-resistant industrial grade adhesive, for adhesion of label to any surface without curling, peeling or falling off.
4. Label Designations, Nominal System Voltages Applied to the covers of all medium and low voltage pull, splice and junction boxes.
5. Machine printed.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Switchboards.

1. Furnish and install a master nameplate for each switchboard, engraved with the equipment identification indicated on the Drawings. Mount at top of incoming section.
2. Provide on each main switch an identifying nameplate. Where multiple mains are employed each switch shall be numbered. Inscription shall be "main switch" or "main switch no. 1" et al.

B. Panelboards and Load Centers.

1. Furnish and install a nameplate for each panelboard and load center engraved with the identification indicated on the Drawings. Mount at top of panel.
2. After installations are complete, provide and mount under sturdy transparent shield in the directory frame of each panel door, a neat, accurate, and carefully typed directory properly identifying the lighting, receptacles, outlets, and equipment each overcurrent device controls.
3. Include on directory the panel or load center identification, the cable and raceway size of panel feeder, and the feeder origination point.

C. Disconnect Switches.

1. Furnish and install a nameplate for each disconnect switch engraved with the equipment designation which the disconnect serves.

D. Motor Controllers.

1. Furnish and install a nameplate for each motor controller or combination motor controller for both individual motor controllers and those in a motor control center. Engraving must indicate the motor served and the type of service (e.g., AC-8 - 1st floor supply, EF-2 electric closet exhaust.)

E. Feeder Switches.

1. Furnish and install for each feeder switch including, but not limited to those in switchboards, switch and fuse panelboards, take-offs at bus ducts, motor control centers, multiple meter centers, etc., two (2) nameplates as follows:
   a) The first nameplate must be white background with red lettering. Engrave with the words "REPLACE ONLY WITH _____ FUSE." Engrave with proper fuse trade name and ampere rating (i.e. Bussman LPS-R 100).
   b) The second nameplate shall indicate the load served, the size and type of cable and raceway example:
      i) LP-4, LP-5, LP-6
      ii) 4#500 KCM I LS-THW-CU-3-1 /2"C

F. Remote Smoke Detector Lamps and Test Stations.

1. Furnish and install a nameplate on each remote smoke detector lamp and/or test station.
2. Engraving must indicate the location of the device to which the lamp is connected, as approved by the Engineer.

G. Switches.

1. Furnish and install an engraved nameplate for each switch, controlling loads that are not local to the switch. Engraving shall be as directed by the Engineer.

H. Pullboxes, Enclosures, and Cable Terminations.

1. Circuits rated over 40 Amp and all cables over 600V:
   a) Provide identification label with circuit numbers on enclosure cover.
   b) Furnish and install cable tags on each cable that enters a pullbox, enclosure, switchboard, and at terminations. Mark tags with type written inscription noting the load served, type and size of cable, and the overcurrent device protecting the cable.
2. Branch circuits:
   a) Provide identification label with panel and circuit numbers on enclosure cover.
   b) Identify each circuit with wire markers when enclosure label and wire colors do not provide enough information to identify each circuit without tracing.
   c) 4 square box covers hidden above lay-in ceilings may be marked with indelible ink marker in lieu of using printed labels.

I. Fire Alarm Terminal Cabinets.

1. Furnish and install an approved nameplate on each fire alarm terminal cabinet.
2. Nameplates shall indicate floor and where multiple terminal cabinets are installed a prime designation for each cabinet (e.g. FATC-1A, FATC-1 B).
3. Terminals shall be permanently identified in an approved manner.
4. Label all wiring.

J. Telecommunications System.

1. Each horizontal cable from a termination block or patch panel to a telecommunications outlet shall be labeled at both ends. Tags shall be consecutively numbered so that no two (2) cables have the same identification. In addition cable tag shall note the room number in which the data transmission outlet is located.
2. Each backbone cable shall have a flameproof tag attached at both ends of the tag. Tags shall be consecutively numbered so that no two (2) cables have the same identification. Additional inscriptions shall be provided as directed by the Owner.
3. Patch panel ports shall be consecutively numbered so that no two (2) ports have the same number.

K. Generator Control Panel.

1. Furnish and install a red nameplate for each generator control panel. Engraving shall indicate the generator controlled by the panel.

L. UPS & Computer Power Centers.

1. Furnish and install a black with lettering nameplate for each unit.

M. Provide identification labels for all low voltage and medium voltage pull, splice and junction boxes in main feeder and subfeeder runs, indicating nominal system voltage.

1. Apply labels after painting of boxes, conduits, and surrounding areas have been completed.
2. Clean surfaces before applying labels; clean aluminum surfaces with solvent wipe.
3. Apply labels on cover and minimum of one (1) fixed side; one (1) label visible from floor where boxes are installed exposed.

N. Provide identification for all equipment, boxes, enclosures and devices according to the following table:

Type	Identification material	Information/example
Equipment Cabinet	Nameplate	Equipment identification / "Outdoor lighting control"
Major Equipment	Nameplate	Equipment identification / "Panel
Minor Equipment	Identification Label	Equipment identification / "Fire alarm relay R-2"
J-box, enclosure (screw cover)	Identification Label, indelible ink marker above lay-in ceilings.	System type and circuit numbers / "Fire Alarm zone 3"
Receptacle	Identification Label	Circuit identification / "PNL A2- CKT1 8"

Fire alarm device	Identification Label	Device id number & zone / "SD3-4"
Security device	Identification Label	Device identification /

END OF SECTION

DIVISION 28

ELECTRONIC SAFETY AND SECURITY

SECTION 28 31 00
FIRE DETECTION AND ALARM SYSTEM

INTELLIGENT REPORTING FIRE DETECTION SYSTEM

PART 1 GENERAL

1.01 RELATED SECTIONS

1.02 DESCRIPTION

A. The fire alarm system shall comply with requirements of NFPA Standard 72 for Protected Premises Signaling Systems except as modified and supplemented by this specification. The system shall be electrically supervised and monitor the integrity of all conductors.

B. The fire alarm system shall be manufactured by an ISO 9001:2008 certified company and meet the requirements of BS EN9001: ANSI/ASQC Q9001-1994.

C. The FACP and peripheral devices shall be manufactured 100% by a single U.S. manufacturer (or division thereof). It's acceptable for peripheral devices to be manufactured outside of the U.S. by a division of the U.S. based parent company.

D. The system and its components shall be Underwriters Laboratories, Inc. listed under the appropriate UL testing standard as listed herein for fire alarm applications and the installation shall be in compliance with the UL listing.

E. Any fire alarm system that can't be programmed from the front panel or requires proprietary software is not eligible for this project.

F. The installing company shall employ NICET (minimum Level II Fire Alarm Technology) technicians on site to guide the final checkout and to ensure the systems integrity.

G. All wiring to be in EMT conduit.

1.03 VOICE PANEL DESCRIPTION

A. The voice evacuation panel shall comply with NFPA 72, Chapter 24 requirements.

B. The Voice Evacuation Control Panel shall be UL 864 listed (Fire Protective Signaling), UL 2572 listed (Mass Notification), ULC listed and Compliant with Unified Facilities Criteria UFC 4-021-01.

C. The installing company shall employ factory certified NICET (minimum Level II Fire Alarm Technology) technicians on site to guide the final check-out and to ensure the systems integrity.

1.04 GUARANTY

A. The fire alarm control panel, voice panels and any head-end equipment shall have a manufacturer's warranty of a minimum of 3 years.

1.05 POST CONTRACT MAINTENANCE

A. Complete maintenance and repair service for the fire detection system shall be available from a factory trained authorized representative of the manufacturer of the major equipment for a period of five (5) years after expiration of the guaranty.

B. As part of the bid/proposal, include a quote for a maintenance contract to provide all maintenance, required tests, and list pricing for any replacement products included on the bill of materials, along with the list pricing for products not on the bill of materials; if test and inspection rates are different than full service rates the bid/proposal shall include pricing for all levels for a minimum period of five (5) years Rates and costs shall be valid for the period of five (5) years after expiration of the guaranty.

C. Also include a quote for unscheduled maintenance/repairs, including hourly rates for technicians trained on this equipment, and response travel costs for each year of the maintenance period. Submittals that do not identify all post contract maintenance costs will not be accepted. Rates and costs shall be valid for the period of five (5) years after expiration of the guaranty.

1.06 APPLICABLE STANDARDS AND SPECIFICATIONS:

A. The specifications and standards listed below form a part of this specification. The system shall fully comply with the latest issue of these standards, if applicable.

B. National Fire Protection Association (NFPA) - USA:

No. 12	Extinguishing Systems (low and high)
No. 12A	Halon 1301 Extinguishing Systems
No. 13	Sprinkler Systems
No. 15	Water Spray Systems
No. 16	Foam / Water Deluge and Spray Systems
No. 17	Dry Chemical Extinguishing Systems
No. 17A	Wet Chemical Extinguishing Systems
No. 2001	Clean Agent Extinguishing Systems
No. 72	National Fire Alarm Code
No. 70	National Electric Code
No. 90A	Air Conditioning Systems
No. 101	Life Safety Code

C. Underwriters Laboratories Inc. (UL) - USA:

No. 268	Smoke Detectors for Fire Protective Signaling Systems
No. 864	Control Units for Fire Protective Signaling Systems
No. 2572	Mass Notification Systems
No. 217	Smoke Detectors, Single and Multiple Station
No. 228	Door Closers - Holders for Fire Protective Signaling Systems
No. 268A	Smoke Detectors for Duct Applications
No. 521	Heat Detectors for Fire Protective Signaling Systems
No. 464	Audible Signaling Appliances
No. 38	Manually Actuated Signaling Boxes
No. 1481	Power Supplies for Fire Protective Signaling Systems
No. 346	Waterflow Indicators for Fire Protective Signaling Systems
No. 1076	Control Units for Burglar Alarm Proprietary Protective Signaling Sysems
No. 1971	Visual Notification Appliances
No. 2017	Standard for General-Purpose Signaling Devices and Systems
No.60950	Safety of Information Technology Equipment

D. Local and State Building Codes.

E. All requirements of the Authority Having Jurisdiction (AHJ).

1.07 APPROVALS

A. The system shall have proper listing and / or approval from the following nationally recognized or regional agencies:

UL	Underwriters Laboratories, Inc
ULC	Underwriters Laboratories Canada
FM	Factory Mutual
NYFD	New York Fire Department
CSFM	California State Fire Marshal

B. The system shall be approved for use in Marine applications by the following agencies.

1. United States Coast Guard
2. Lloyd's Register
3. American Bureau of Shipping

C. The system shall be certified for seismic applications in accordance with the International Building Code (IBC). For OSHPD applications in California the system shall be Pre-Approved for seismic applications. The basis for qualification of seismic approval shall be via shake table testing.

PART 2 PRODUCTS

2.01 MAIN FIRE ALARM CONTROL PANEL OR NETWORK NODE

A. Main FACP shall be modeled after NOTIFIER Model NFS-320 and shall contain a microprocessor based Central Processing Unit (CPU) and power supply in an economical space saving single board design. The CPU shall communicate with and control the following types of equipment used to make up the system: intelligent addressable smoke and thermal (heat) detectors, addressable modules, printer, annunciators, and other system-controlled devices.

2.02 SYSTEM CAPACITY AND GENERAL OPERATION

A. The FACP shall be capable of communicating on a Local Area Network (LAN) or Wide Area Network (WAN) utilizing a peer-to-peer, inherently regenerative communication format and protocol. The network shall support communication speed up to 100 Mb and support up to 200 panels / nodes per network.

B. Each network node shall provide, or be capable of 318 intelligent / addressable devices per SLC loop. Alarm, trouble and supervisory signals from all intelligent reporting devices shall be encoded on NFPA Style 4 (Class B) Signaling Line Circuits (SLC).

C. The Notification Appliance Circuits shall be programmable to Synchronize with System Sensor, Gentex and Wheelock Notification Appliances.

D. The system shall include a full featured operator interface control and annunciation panel that shall include a backlit Liquid Crystal Display (LCD), individual color coded system status LEDs, and an alphanumeric keypad with easy touch rubber keys for the field programming and control of the fire and gas detection system.

E. The system shall be programmable, configurable, and expandable in the field without the need for special tools, PROM programmers or PC based programmers. It shall not require replacement of memory ICs to facilitate programming changes.

F. The system shall allow the programming of any input to activate any output or group of outputs. Systems that have limited programming (such as general alarm), have complicated programming (such as a diode matrix), or require a laptop personal computer are not considered suitable substitutes.

G. The FACP shall support up to 20 logic equations, including "and," "or," and "not," or time delay equations to be used for advanced programming. Logic equations shall require the use of a PC with a software utility designed for programming.

H. The FACP or each network node shall provide the following features:

1. Drift compensation to extend detector accuracy over life. Drift compensation shall also include a smoothing feature, allowing transient noise signals to be filtered out.

2. Detector sensitivity test, meeting requirements of NFPA 72.

3. Maintenance alert, with two levels (maintenance alert/maintenance urgent), to warn of excessive smoke detector dirt or dust accumulation.

4. Up to nine sensitivity levels for alarm, selected by detector. The alarm level range shall be 0.5 to 2.35 percent per foot for photoelectric detectors, 0.5 to 2.5 percent per foot for ionization detectors, 0.5 to 4.0 percent per foot for acclimate detectors and 1.0 to 4.0 percent per foot for multi-criteria (IntelliQuad and IntelliQuad PLUS) detectors . The system shall also support sensitive advanced detection laser detectors with an alarm level range of .02 percent per foot to 2.0 percent per foot. The system shall also include up to nine levels of Prealarm, selected by detector, to indicate impending alarms to maintenance personnel.

5. The ability to display or print system reports.

6. Alarm verification, with counters and a trouble indication to alert maintenance personnel when a detector enters verification 20 times.

I. PAS presignal, meeting NFPA 72 requirements.

1. Self optimizing pre-alarm for advanced fire warning, which allows each detector to learn its particular environment and set its prealarm level to just above normal peaks.

2. Cross zoning with the capability of counting: two detectors in alarm, two software zones in alarm, or one smoke detector and one thermal detector.

3. Control-by-time for non-fire operations, with holiday schedules.

4. Day/night automatic adjustment of detector sensitivity.

5. Device blink control for sleeping areas.

J. The FACP shall be capable of coding main panel node notification circuits in March Time (120 PPM), Temporal (NFPA 72 A-2-2.2.2), and California Code. Panel notification circuits (NAC 1,2,3 and 4) shall also support Two-Stage operation, Canadian Dual Stage (3 minutes) and Canadian Dual Stage (5 minutes). Two stage operation shall allow 20 Pulses Per Minute (PPM) on alarm and 120 PPM after 5

minutes or when a second device activates. Canadian Dual stage is the same as Two-Stage except will only switch to second stage by activation of Drill Switch 3 or 5 minute timer. The panel shall also provide a coding option that will synchronize specific strobe lights designed to accept a specific "sync pulse."

K. For flexibility and to ensure program validity, an optional Windows(TM) based program utility shall be available. This program shall be used to off-line program the system with batch upload/download, and have the ability to upgrade the manufacturers (FLASH) system code changes. This program shall also have a verification utility, which scans the program files, identifying possible errors. It shall also have the ability to compare old program files to new ones, identifying differences in the two files to allow complete testing of any system operating changes. This shall be in compliance with the NFPA 72 requirements for testing after system modification.

   1. This utility shall provide the ability to create and print NFPA style Test and Inspection reports.

   2. This utility shall provide the ability to create and print Device Maintenance information.

L. The 80-character display keypad shall be an easy to use QWERTY type keypad, similar to a PC keyboard. This shall be part of the standard system and have the capability to command all system functions, entry of any alphabetic or numeric information, and field programming. Two different password levels shall be provided to prevent unauthorized system control or programming.

M. Each FACP or FACP network node shall support one SLC. Each SLC interface shall provide power to and communicate with up to 159 intelligent detectors (ionization, photoelectric, multi-criteria, thermal, laser, fire/CO) and 159 intelligent modules (monitor, control, relay, releasing) for a loop capacity of 318 devices. SLC shall be capable of NFPA 72 Style 4, Style 6, or Style 7 (Class A or B) wiring.

N. CPU shall receive analog information from all intelligent detectors to be processed to determine whether normal, alarm, pre-alarm, or trouble conditions exist for each detector. The software shall automatically maintain the detector's desired sensitivity level by adjusting for the effects of environmental factors, including the accumulation of dust in each detector. The analog information shall also be used for automatic detector testing and for the automatic determination of detector maintenance requirements.

2.03 SERIAL INTERFACES

A. The system shall include two serial EIA-232 interfaces. Each interface shall be a means of connecting UL Listed Information Technology Equipment (ITE) peripherals.

B. EIA-232 interface shall be used to connect an UL-Listed 40 or 80 column printer. Printers that are not UL-Listed are not considered acceptable substitutes.

C. The system shall include an EIA-485 port for the serial connection of optional annunciators and remote LCD displays.

D. The EIA-485 interface may be used for network connection to a proprietary-receiving unit.

2.04 SPECIFIC SYSTEM OPERATIONS

A. Smoke Detector Sensitivity Adjust: A means shall be provided for adjusting the sensitivity of any or all addressable intelligent detectors in the system from the system keypad. Sensitivity range shall be within the allowed UL window and have a minimum of 9 levels.

B. Alarm Verification: Each of the intelligent addressable smoke detectors in the system may be independently selected and enabled to be an alarm verified detector. The alarm verification delay shall be programmable from 0 to 60 seconds and each detector shall be able to be selected for verification. The FACP shall keep a count of the number of times that each detector has entered the verification cycle. These counters may be displayed and reset by the proper operator commands.

C. Point Disable: Any addressable device may be enabled or disabled through the system keypad.

D. Point Read: The system shall be able to display or print the following point status diagnostic functions:

1. Device status

2. Device type

3. Custom device label

4. View analog detector values

5. Device zone assignments

E. System History Recording and Reporting: The fire alarm control panel shall contain a history buffer that will be capable of storing up to 800 events. Up to 200 events shall be dedicated to alarm and the remaining events are general purpose. Systems that do not have dedicated alarm storage, where events are overridden by non-alarm type events, are not suitable substitutes. Each of these activations will be stored and time and date stamped with the actual time of the activation. The contents of the history buffer may be manually reviewed, one event at a time, or printed in its entirety. The history buffer shall use non-volatile memory. Systems that use volatile memory for history storage are not acceptable substitutes.

F. Automatic Detector Maintenance Alert: The fire alarm control panel shall automatically interrogate each intelligent detector and shall analyze the detector responses over a period of time. If any intelligent detector in the system responds with a reading that is above or below normal limits, then the system will enter the trouble mode, and the particular detector will be annunciated on the system display and printed on the optional printer. This feature shall in no way inhibit the receipt of alarm conditions in the system, nor shall it require any special hardware, special tools, or computer expertise to perform.

G. Pre-Alarm Function: The system shall provide two levels of pre-alarm warning to give advance notice of a possible fire situation. Both pre-alarm levels shall be fully field adjustable. The first level shall give an audible indication at the panel. The second level shall give an audible indication and may also activate control relays. The system shall also have the ability to activate local detector sounder bases at the pre-alarm level, to assist in avoiding nuisance alarms.

H. Software Zones: The FACP shall support 142 independent programmable software zones.

I. Multiple Agent Releasing Zones: The system shall support up to 10 releasing zones to protect against 10 independent hazards. Releasing zones shall provide up to three cross-zone and four abort options to satisfy any local jurisdiction requirements.

J. Mass Notification Override: The system shall be UL 2572 listed for Mass Notification and shall be capable, based on the Risk Analysis, of being programmed so that Mass Notification/Emergency Communications events take precedence over fire alarm events.

K. The fire alarm control panel shall include a walk test feature. It shall include the ability to test initiating

device circuits and notification appliance circuits from the field without returning to the panel to reset the system. Operation shall be as follows:

1. Alarming an initiating device shall activate programmed outputs, which are selected to participate in walk test, for 3 seconds.

2. Introducing a trouble into the initiating device shall activate the programmed outputs for 8 seconds.

3. All devices tested in walk test shall be recorded in the history buffer.

2.05 CONVENTIONAL ASPIRATING DETECTION

A. An optional air aspiration detection system shall be available.

B. The aspirating system shall support multiple sensitivity settings.

C. The aspirating system shall operate from 24 VDC.

D. The aspirating system shall provide alarm and trouble relays used to activate a fire alarm control panel.

2.06 ASPIRATION SYSTEM INTERFACE

A. The system shall be capable of supporting Interface Modules for integrating VESDA Aspiration detectors into SLC loop of the fire alarm control panel. The Interface Module shall support up to 19 aspiration detectors, each SLC loop shall support one interface module.

2.07 HIGH LEVEL ASPIRATION SYSTEM INTERFACE

A. The system shall be capable of supporting a High-Level Interface for VESDA Aspirating Detection Systems. The interface shall support up to 100 detectors and allow the fire alarm network to monitor and control events on the aspiration system.

2.08 COMMUNICATORS

A. The UDACT shall be compact in size, mounting in a standard module position of the fire alarm control cabinet. Optionally, the UDACT shall have the ability for remote mounting, up to 6,000 feet from the fire alarm control panel. The wire connections between the UDACT and the control panel shall be supervised with one pair for power and one pair for multiplexed communication of overall system status. Systems that utilize relay contact closures are not acceptable.

B. The UDACT shall include connections for dual telephone lines (with voltage detect), per UL/NFPA/FCC requirements. It shall include the ability for split reporting of panel events up to three different telephone numbers.

C. The UDACT shall be capable of transmitting events in 4+2, SIA, and Contact ID.

D. Communication shall include vital system status such as:

1. Independent Zone (Alarm, trouble, non-alarm, supervisory)

2. Independent Addressable Device Status

3. AC (Mains) Power Loss

4. Low Battery and Earth Fault

5. System Off Normal

6. 12- and 24-Hour Test Signal

7. Abnormal Test Signal (per UL requirements)

8. EIA-485 Communications Failure

9. Phone Line Failure

E. The UDACT shall support independent zone/point reporting when used in the Contact ID format. In this format the UDACT shall support transmission of up to 3,064 points. This enables the central station to have exact details concerning the origin of the fire or response emergency.

F. The UDACT shall be capable of being programmed with the same programming utility as the host FACP, and saved, edited and uploaded and downloaded using the utility. UDACT shall be capable of being programmed online or offline. The programming utility shall also support upgrading UDACT operating firmware.

G. The UDACT shall be capable of generating Central Station reports providing detailed programming information for each point along with the central station point address.

H. An IP or IP/GSM Communicator option shall be available to interface to the UDACT and be capable of transmitting signals over the internet/intranet or Cellular (GSM) network to a compatible receiver.

I. Smoke Control Annunciator

1. On/Auto/Off switches and status indicators (LEDS) shall be provided for monitoring and manual control of each fan, damper, HVAC control unit, stairwell pressurization fan, and smoke exhaust fan. To ensure compliance the units supplied shall meet the following UL categories: UUKL, PAZX, UDTZ, QVAX as well as the requirements of NFPA 90A, HVAC, and NFPA 92A & 92B, Smoke Control. The control System shall be field programmable for either 90A operation or 92A/B operation to allow for future use and system expansion.

2. The OFF LED shall be Yellow, the ON LED shall be green, the Trouble/Fault LED shall be Amber/Orange for each switch. The Trouble/Fault indicator shall indicate a trouble in the control and/or monitor points associated with that switch. In addition, each group of eight switches shall have two LEDS and one momentary switch which allow the following functions: An Amber LED to indicate an OFF-NORMAL switch position, in the ON or OFF position; A Green LED to indicate ALL AUTO switch position; A Local Acknowledge/Lamp Test momentary switch.

3. Each switch shall have the capability to monitor and control two addressable inputs and two addressable outputs. In all modes, the ON and OFF indicators shall continuously follow the device status not the switch position. Positive feedback shall be employed to verify correct operation of the device being controlled. Systems that indicate on/off/auto by physical switch position only are not acceptable.

4. All HVAC switches (i.e., limit switches, vane switches, etc.) shall be provided and installed by the HVAC contractor.

5. It shall be possible to meet the requirements mentioned above utilizing wall mounted custom graphic.

2.09 SYSTEM COMPONENTS & ADDRESSABLE DEVICES

A. General

1. Addressable devices shall use simple to install and maintain decade, decimal address switches. Devices shall be capable of being set to an address in a range of 001 to 159.

2. Addressable devices, which use a binary-coded address setting method, such as a DIP-switch, are not an allowable substitute. Addressable devices that require the address be programmed using a special tool or programming utility are not an allowable substitute.

3. Detectors shall be intelligent (analog) and addressable, and shall connect with two wires to the fire alarm control panel Signaling Line Circuits.

4. Addressable smoke and thermal detectors shall provide dual alarm and power/polling LEDs. Both LEDs shall flash green under normal conditions, indicating that the detector is operational and in regular communication with the control panel, and both LEDs shall be placed into steady red illumination by the control panel, indicating that an alarm condition has been detected. If required, the LED flash shall have the ability to be removed from the system program. An output connection shall also be provided in the base to connect an external remote alarm LED.

5. The fire alarm control panel shall permit detector sensitivity adjustment through field programming of the system. The panel on a time-of-day basis shall automatically adjust sensitivity.

6. Using software in the FACP, detectors shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. The detectors shall be listed by UL as meeting the calibrated sensitivity test requirements of NFPA Standard 72.

7. The detectors shall be ceiling-mount and shall include a separate twist-lock base with tamper proof feature. Base options shall include a sounder base with a built-in (local) sounder rated at 85 DBA minimum, a relay base and an isolator base designed for Style 7 applications. The system shall also support an intelligent programmable sounder base, the programmable sounder base shall be capable of providing multiple tones based on programming and at a minimum be capable of providing a Temp-4 tone for CO (Carbon Monoxide) activation and a Temp-3 tone for fire activations and be capable of being synchronized with other programmable sounder bases and common area notification appliances; 85 DBA minimum.

8. The detectors shall provide a test means whereby they will simulate an alarm condition and report that condition to the control panel. Such a test may be initiated at the detector itself (by activating a magnetic switch) or initiated remotely on command from the control panel.

9. Detectors shall also store an internal identifying type code that the control panel shall use to identify the type of device (ION, PHOTO, THERMAL).

10. Detectors will operate in an analog fashion, where the detector simply measures its designed environment variable and transmits an analog value to the FACP based on real-time measured values. The FACP software, not the detector, shall make the alarm/normal decision, thereby allowing the sensitivity of each detector to be set in the FACP program and allowing the system operator to view the current analog value of each detector.

11. Addressable devices shall store an internal identifying code that the control panel shall use to identify the type of device.

12. A magnetic test switch shall be provided to test detectors and modules. Detectors shall report an indication of an analog value reaching 100% of the alarm threshold.

13. Addressable modules shall mount in a 4-inch square (101.6 mm square), 2-1/8 inch (54 mm) deep electrical box. An optional surface mount Lexan enclosure shall be available.

14. Addressable manual fire alarm boxes shall, on command from the control panel, send data to the panel representing the state of the manual switch and the addressable communication module status; Modeled after NOTIFIER model # NBG-12LX They shall use a key operated test-reset lock, and shall be designed so that after actual emergency operation, they cannot be restored to normal use except by the use of a key. The key used to reset the pull station must be the same as the key used to lock and unlock the FACP door(s).

15. All operated stations shall have a positive, visual indication of operation and utilize a key type reset.

16. Manual fire alarm boxes shall be constructed of Lexan with clearly visible operating instructions provided on the cover. The word FIRE shall appear on the front of the stations in raised letters, 1.75 inches (44 mm) or larger.

B. Intelligent Photoelectric Smoke Detector: The intelligent photoelectric smoke detector shall be modeled after NOTIFIER model # FSP-851 and shall use the photoelectric (light-scattering) principal to measure smoke density and shall, on command from the control panel, send data to the panel representing the analog level of smoke density.

C. Intelligent VIEW® Laser Photo Smoke Detector: The intelligent laser photo smoke detector shall be a spot type detector, Modeled after NOTIFIER model # FSL-751, that incorporates an extremely bright laser diode and an integral lens that focuses the light beam to a very small volume near a receiving photo sensor. The scattering of smoke particles shall activate the photo sensor.

1. The laser detector shall have conductive plastic so that dust accumulation is reduced significantly.

2. The intelligent laser photo detector shall have nine sensitivity levels and be sensitive to a minimum obscuration of 0.02 percent per foot.

3. The laser detector shall not require expensive conduit, special fittings or PVC pipe.

4. The intelligent laser photo detector shall support standard, relay, isolator and sounder detector bases.

5. The laser photo detector shall not require other cleaning requirements than those listed in NFPA 72. Replacement, refurbishment or specialized cleaning of the detector head shall not be required.

6. The laser photo detector shall include two bicolor LEDs that flash green in normal operation and turn on steady red in alarm.

D. Intelligent Ionization Smoke Detector: The intelligent ionization smoke detector shall be modified after NOTIFIER model # FSI-851 and shall use the dual-chamber ionization principal to measure products of combustion and shall, on command from the control panel, send data to the panel representing the analog level of products of combustion.

E. Intelligent Multi Criteria Acclimating Detector: The intelligent multi-criteria detector shall be an addressable device, Modeled after NOTIFIER model # FAPT-851, that is designed to monitor a minimum of photoelectric and thermal technologies in a single sensing device. The design shall include the ability to adapt to its environment by utilizing a built-in microprocessor to determine its environment and choose the appropriate sensing settings. The detector design shall allow a wide sensitivity window, no less than 1 to 4% per foot obscuration. This detector shall utilize advanced electronics that react to slow smoldering fires and thermal properties all within a single sensing device.

1. The microprocessor design shall be capable of selecting the appropriate sensitivity levels based on the environment type it is in (office, manufacturing, kitchen etc.) and then have the ability to automatically change the setting as the environment changes (as walls are moved or as the occupancy changes).

2. The intelligent multi criteria detection device shall include the ability to combine the signal of the thermal sensor with the signal of the photoelectric signal in an effort to react hastily in the event of a fire situation. It shall also include the inherent ability to distinguish between a fire condition and a false alarm condition by examining the characteristics of the thermal and smoke sensing chambers and comparing them to a database of actual fire and deceptive phenomena.

F. Intelligent Thermal Detectors: The intelligent thermal detectors shall be Modeled after NOTIFIER FST- series addressable devices rated at 135 degrees Fahrenheit (58 degrees Celsius) and have a rate-of-rise element rated at 15 degrees F (9.4 degrees C) per minute. A high heat thermal detector rated at 190 degrees Fahrenheit shall also be available. The thermal detectors shall connect via two wires to the fire alarm control panel signaling line circuit.

G. Intelligent Duct Smoke Detector: The smoke detector housing shall accommodate an intelligent photoelectric detector that provides continuous analog monitoring and alarm verification from the panel. When sufficient smoke is sensed, an alarm signal is initiated at the FACP, and appropriate action taken to change over air handling systems to help prevent the rapid distribution of toxic smoke and fire gases throughout the areas served by the duct system. The Intelligent Duct Smoke Detector shall support the installation of addressable Photoelectric detector capable or being tested remotely. The Intelligent Duct Detector housing shall be modeled after model # DNR(W) and the remote test capable photoelectric smoke detector shall be Modeled after NOTIFIER model # FSP-851R. Shall be installed by Division 23 and wired by Division 26.

H. IntelliQuad™ Advanced Multi-Criteria Intelligent Detector

1. Intelligent multi-criteria fire detector shall be modeled after NOTIFIER model number FSC-851. Smoke detector shall be an addressable intelligent multi-criteria smoke detector. The detector shall be comprised of four sensing elements, including a photoelectric (light-scattering) particulate sensor, an electrochemical carbon monoxide (CO) sensor, a daylight-filtered infrared sensor and solid state thermal sensor(s) rated at 135°F (57.2°C). The device shall be able to indicate distinct smoke and heat alarms.

2. The intelligent multi-criteria detection device shall include the ability to combine the signal of the photoelectric signal with other sensing elements in an effort to react quickly in the event of a fire situation. It shall also include the inherent ability to distinguish between a fire condition and a nuisance alarm condition. The product design shall be capable of selecting the appropriate sensitivity levels based on the environment type chosen by user in which it is installed (office, manufacturing, kitchen etc.) and then have the ability to automatically change the setting as the environment changes.

3. The detector shall be capable of automatically adjusting its sensitivity by means of drift compensation and smoothing algorithms. The detector shall be capable of automatically adjusting its sensi-

tivity by means of drift compensation and smoothing algorithms. The device shall provide unique signals to indicate when 20% of the drift range is remaining, when 100% of drift range is used, and when there is a chamber fault to show unit requires maintenance.

4. The detector shall indicate CO trouble conditions including 6 months of sensor life remaining and sensor life has expired. The detector shall indicate a combined signal for any of the following: low chamber trouble, thermistor trouble, CO self test failure, IR self test failure, and freeze warning.

5. The detectors shall provide address-setting means on the detector head using rotary switches. Because of the possibility of installation error, systems that use binary jumpers or DIP switches to set the detector address are not acceptable. The detectors shall also store an internal identifying code that the control panel shall use to identify the type of detector. Systems that require a special programmer to set the detector address (including temporary connection at the panel) are labor intensive and not acceptable. Each detector occupies any one of at least 99 possible addresses on the signaling line circuit (SLC) loop. It responds to regular polls from the system and reports its type and status.

6. The detectors shall provide a test means whereby they will simulate an alarm condition and report that condition to the control panel. Such a test may be initiated at the detector itself (by activating a switch) or initiated remotely on command from the control panel. There are three test methods: functional magnet, smoke entry aerosol, or direct heat method.

7. The detectors shall provide two LEDs to provide 360° visibility. The LEDs are placed into steady red illumination by the control panel indicating that an alarm condition has been detected. An output connection shall also be provided in the base to connect an external remote alarm LED, sounder base, and / or relay base (optional accessories). The external remote alarm can be interconnected to other sounder or relay bases for activating all devices in a space via a single alarming unit.

8. Two LEDs on the sensor are controlled by the panel to indicate sensor status. Coded signals, transmitted from the panel, can cause the LEDs to blink, latch on, or latch off. Refer to the control panel technical documentation for sensor LED status operation and expected delay to alarm.
9. The detectors shall be ceiling-mount and shall be plug-in mounted into a twist-lock base. These detectors shall be constructed of off-white UV resistant polymer and shall be detachable from the mounting base to simplify installation, service and maintenance. Mounting base wiring connections shall be made by means of SEMS screws. The detector shall allow pre-wiring of the base and the head shall be a plug-in type. Mounting base shall be mounted on junction box which is at least 1.5 inches (3.81 cm) deep. Mounting base shall be available to mount to standard junction boxes. Suitable boxes include:
    a. 4.0" (10.16 cm) square box with and without plaster ring.
    b. 4.0" (10.16 cm) octagonal box.
    c. 3.5" (8.89 cm) octagonal box.
    d. Single-gang box.

10. Meets Agency Standards
    a. ANSI/UL 268 -Smoke Detectors for Fire Alarm Signaling Systems
    b. CAN/ULC-S529- Smoke Detectors for Fire Alarm Systems
    c. FM 3230-3250- Smoke Actuated Detectors for Automatic Fire Alarm Signaling

I. Multi-Criteria Intelligent Fire/CO Detector

1. Advanced Multi-Criteria Fire/CO detector shall be Modeled after NOTIFIER model # FCO-851 and shall be an addressable advanced multi-criteria smoke detector with a separate signal for carbon monoxide (CO) detection per UL 2075 standards.

2. The detector shall be comprised of four sensing elements, including a photoelectric (light-scattering) particulate sensor, an electrochemical CO sensor, a daylight-filtered infrared (IR) sensor and solid-state thermal sensor(s) rated at 135°F (57.2°C). The device shall be able to indicate distinct smoke and heat alarms.

3. The advanced multi-criteria detection device shall include the ability to combine the signal of the photoelectric signal with other sensing elements in order to react quickly in the event of a fire situation. It shall also include the inherent ability to distinguish between a fire condition and a nuisance alarm condition. The detector shall be capable of selecting the appropriate sensitivity levels based on the environment type (office, manufacturing, kitchen, etc.) in which it is installed, and then have the ability to automatically change the setting as the environment changes.

4. The CO detector component shall be capable of a functional gas test using a canned test agent to test the functionality of the CO sensing cell.

5. The detector shall be capable of automatically adjusting its sensitivity by means of drift compensation and smoothing algorithms. The device shall provide unique signals to indicate when 20 percent of the drift range is remaining, when 100 percent of drift range is used, and when there is a chamber fault to show the unit requires maintenance.

6. The detector shall indicate CO trouble conditions, including six months of sensor life remaining and sensor life has expired. The detector shall indicate a combined signal for any of the following: low chamber trouble, thermistor trouble, CO self test failure, IR self test failure, and freeze warning.

7. The detector shall provide address-setting means on the detector head using rotary switches. Because of the possibility of installation error, systems that use binary jumpers or DIP switches to set the detector address are not acceptable. The detector shall also store an internal identifying code that the control panel shall use to identify the type of detector. Systems that require a special programmer to set the detector address (including temporary connection at the panel) are labor intensive and not acceptable. Each detector occupies any one of at least 159 possible addresses on the signaling line circuit (SLC) loop. It responds to regular polls from the system and reports its type and status.

8. The detector shall provide a test means whereby it will simulate an alarm condition and report that condition to the control panel. Such a test may be initiated at the detector itself (by activating a switch) or initiated remotely on command from the control panel. There shall be four test methods: functional magnet, smoke entry aerosol, carbon monoxide aerosol or direct heat method.

9. The detector shall provide two LEDs to provide 360° visibility. The LEDs shall be placed into steady red illumination by the control panel indicating that an alarm condition has been detected. An output connection shall also be provided in the base to connect an external remote alarm LED. The detector must be capable of connecting to a sounder base that provides both temporal 3 and temporal 4 patterns for fire and CO alarm.

10. Two LEDs on the sensor shall be controlled by the panel to indicate sensor status. Coded signals, transmitted from the panel, shall cause the LEDs to blink, latch on, or latch off. Refer to the control panel technical documentation for sensor LED status operation and expected delay to alarm.

11. The detector shall be plug-in mounted into a twist-lock base. The detector shall be constructed of off-white, UV-resistant polymer and shall be detachable from the mounting base to simplify installation, service, and maintenance. Mounting base wiring connections shall be made by means of SEMS screws. The detector shall allow pre-wiring of the base and the head shall be a plug-in type. The mounting base shall be mounted on a junction box that is at least 1.5 inches (3.81 cm) deep. The mounting base shall be available to mount to standard junction boxes. Suitable boxes include:
    a. 4.0" (10.16 cm) square box with and without plaster ring.
    b. 4.0" (10.16 cm) octagonal box.
    c. 3.5" (8.89 cm) octagonal box.
    d. Single-gang box.
    e. Double-gang box

12. Meets Agency Standards
    a. ANSI/UL 268 -Smoke Detectors for Fire Alarm Signaling Systems
    b. CAN/ULC-S529- Smoke Detectors for Fire Alarm Systems
    c. FM 3230-3250- Smoke Actuated Detectors for Automatic Fire Alarm Signaling
    d. UL 2075 – Gas and Vapor Detector and Sensors – Systems Connected

J. Intelligent Addressable Aspiration Detector: The intelligent aspiration detector shall be modeled after NOTIFIER model # FSA-8000 an addressable aspiration detector that communicates directly with the fire alarm control panel via the SLC communication protocol, no modules or high-level interfaces shall be required. The fire alarm control panel shall support up to thirty-one intelligent aspiration detectors per SLC loop. The aspiration detector shall have dual source (blue LED and infra-red laser) optical smoke detection for a wide range of fire detection with enhanced immunity to nuisance particulates. The FACP shall be capable of monitoring and annunciating up to five smoke event thresholds and eleven trouble conditions. Each event threshold shall be capable of being assigned a discrete type ID at the FACP.

K. Intelligent Addressable Reflected Beam Detector: The intelligent single-ended reflected beam smoke detector shall connect with two wires to the fire alarm control panel signaling line circuit (SLC). The detectors shall consist of a transmitter/receiver unit and a reflector and shall send data to the panel representing the analog level of smoke density. The detector shall be capable of being tested remotely via a key switch; Modeled after NOTIFIER model # FSB-200. Model # FSB-200S shall be equipped with an integral sensitivity test feature.

L. Addressable Dry Contact Monitor Module

1. Addressable monitor modules shall be provided to connect one supervised IDC zone of conventional alarm initiating devices (any N.O. dry contact device) to one of the fire alarm control panel SLCs. The addressable monitor module shall be modeled after NOTIFIER model # FMM-1 (Class A or B) or FMM-101 (Class B)

2. The IDC zone shall be suitable for Style D/Class A or Style B/Class B operation. An LED shall be provided that shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control panel.

3. For difficult to reach areas, the monitor module shall be available in a miniature package and shall be no larger than 2-3/4 inch (70 mm) x 1-1/4 inch (31.7 mm) x 1/2 inch (12.7 mm). This version need not include Style D or an LED.

4. For multiple dry contact monitoring a module shall be available that provides 10 Style B or 5 Style

D input circuits; Modeled after NOTIFIER model # XP10-M.

M. Two Wire Detector Monitor Module

1. Addressable monitor modules shall be provided to connect one supervised IDC zone of conventional 2-wire smoke detectors or alarm initiating devices (any N.O. dry contact device); Modeled after NOTIFIER model # FZM-1.

2. The IDC zone may be wired for Class A or B (Style D or Style B) operation. An LED shall be provided that shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control panel.

3. For multiple 2-wire smoke detector circuit monitoring a module shall be available that provides 6 Style B/Class A or 3 Style D/Class B input circuits; Modeled after NOTIFIER model # XP6-MA.

N. Addressable Control Module

1. Addressable control modules shall be provided to supervise and control the operation of one conventional circuit of compatible Notification Appliances, 24 VDC powered, polarized audio/visual notification appliances; Modeled after NOTIFIER model # FCM-1.

2. The control module NAC may be wired for Style Z or Style Y (Class A/B) with a current rating of 2 Amps for Style Z and 3 Amps for Style Y;

3. Audio/visual power shall be provided by a separate supervised circuit from the main fire alarm control panel or from a supervised UL listed remote supply.

4. For multiple circuit control a module shall be available that provides 6 Style Y (Class B) or 3 Style Z (Class A) control circuits; Modeled after NOTIFIER model # XP6-C.

O. Addressable Releasing Control Module

1. An addressable FlashScan releasing module shall be available to supervise and control compatible releasing agent solenoids; Modeled after NOTIFIER model # FCM-1-REL.

2. The module shall operate on a redundant protocol for added protection.

3. The module shall be configurable for Style Z or Style Y (Class A/B) and support one 24 volt or two 12 volt solenoids.

P. Addressable Relay Module:

1. Addressable Relay Modules shall be available for HVAC control and other network building functions; Modeled after NOTIFIER model # FRM-1.

2. The module shall provide two form C relays rated at up to 3 Amps resistive and up to 2.0 Amps inductive.

3. The relay coil shall be magnetically latched to reduce wiring connection requirements, and to insure that 100% of all auxiliary devices energize at the same time on the same pair of wires.

4. For multiple relay control, a module shall be available that provides 6 programmable Form-C relays; Modeled after NOTIFIER model # XP6-R.

Q. Addressable Two-In / Two-Out Monitor/Relay Module:

1. An addressable Two-In / Two-Out module shall be available; Modeled after NOTIFIER model # FDRM-1.

2. The two-in/two-out module shall provide two Class B/Style B dry-contact input circuits and two independent Form-C relays rated at up to 3 Amps resistive and up to 2.0 Amps inductive.

R. Voice Evacuation Control Panel

1. The voice evacuation panel shall distribute and control emergency voice messages over the speaker circuits.

2. The system shall provide the capability to interface to distributed voice evacuation control panels from the same manufacturer.

3. The Voice Evacuation Control Panel shall be activated by the Fire Alarm Control Panel via a direct serial connection allowing the Fire Alarm Control panel to control speaker circuit(s) and message activation.

4. Shall have as minimum requirements:
   a. Integral 50 Watt, 25 Vrms audio amplifier with optional converter for 70.7-volt systems. The main system shall be capable of expansion to 100 watts total via the insertion of an additional 50-watt audio amplifier module into the same cabinet.
   b. Speaker circuit that can be wired both Class A and / or B.

5. Integral Digital Message Generator with a memory capacity for up to fourteen messages, each message shall be up 60 seconds long. These messages shall field programmable without the use of additional equipment.

6. Built in alert tone generators with steady, slow whoop, high/low and chime tone field programmable.

7. The Voice Control Panel will be capable of detecting and annunciating the following conditions: Loss of Power (AC and DC), System Trouble, Ground Fault, Alarm, Microphone Trouble, Message Generator Trouble, Tone Generator Trouble, and Amplifier Fault.

8. The Voice Control Panel shall be fully supervised including microphone, amplifier output, message generator, speaker wiring, and tone generation.

9. Speaker outputs shall be fully power-limited.

10. Amplifiers will be supplied power independently to eliminate a short on one circuit from affecting other circuits.

11. The Voice Control Panel will provide full supervision on both active (alarm or music) and standby conditions.

12. Optional distributed amplifier units shall be available to increase total system capacity to up to 24 speaker circuits and up to 1,100 watts of power.

S. Speakers

1. The Speaker appliance shall be modeled after System Sensor SpectrAlert Advance model _____ Speaker. The speaker shall be listed to UL 1480 for Fire Protective Signaling Systems. It shall be a dual-voltage transformer speaker capable of operation at 25.0 or 70.7 nominal Vrms. The speaker shall have a frequency range of 400 to 4,000 Hz and shall have an operating temperature between 32°F and 120°F. It shall mount to a 4 x 4 x 2 1/8-inch back box.

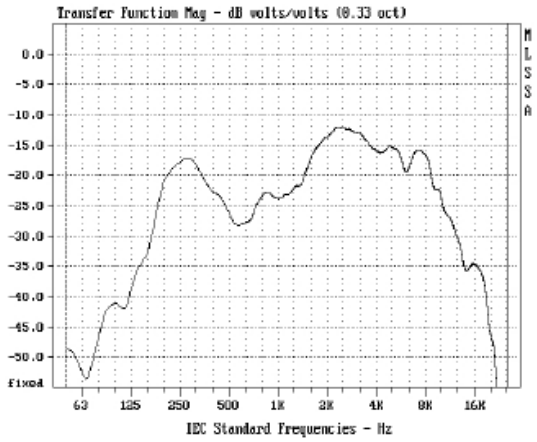
2. A universal mounting plate shall be used for mounting ceiling and wall speaker products. The notification appliance circuit and amplifier wiring shall terminate at the universal mounting plate.

3. Speakers shall be plug-in and shall have the ability to check wiring continuity via a shorting spring on the universal mounting plate. The shorting spring shall also provide tamper resistance via an open circuit if the device is removed. Speaker design shall isolate speaker components to reduce ground fault incidents.

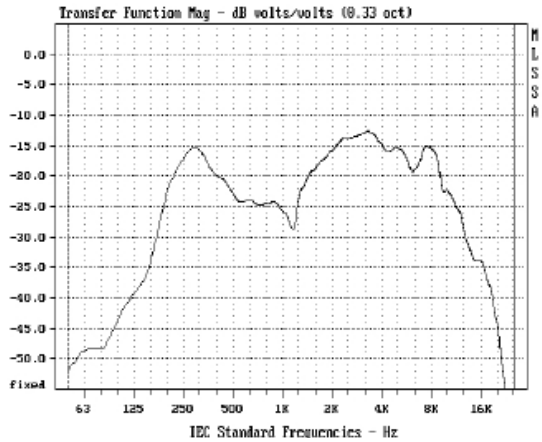
4. The speaker shall have power taps (from ¼ watt to 2 watts) and voltage that are selected by rotary switches. All models shall have a maximum sound output of 86 dB at 10 feet and shall incorporate an open back construction.

5. All notification appliances shall be backward compatible.

Ceiling Speaker
Wide Band Frequency Response



Wall Speaker
Wide Band Frequency Response



Note: The wide band frequency response is derived using MLS methods

T. Speaker Strobes

1. The Speaker Strobe appliance shall be modeled after System Sensor SpectrAlert Advance model _____ Speaker Strobe. The speaker strobe shall be listed to UL 1971 and UL 1480 and be approved for fire protective signaling systems. It shall be a dual-voltage transformer speaker strobe capable of operation at 25.0 or 70.7 nominal Vrms. The speaker shall have a frequency range of 400 to 4,000 Hz and shall have an operating temperature between 32°F and 120°F. It shall mount to a 4 x 4 x 2 1/8-inch back box.

2. A universal mounting plate shall be used for mounting ceiling and wall speaker strobe products. The notification appliance circuit and amplifier wiring shall terminate at the universal mounting plate. Also, SpectrAlert Advance speaker strobes and the Sync•Circuit™ Module MDL3 accessory, if used, shall be powered from a non-coded notification appliance circuit output, and shall operate on a nominal 12 or 24 volts (includes fire alarm panels with built in sync). When used with the Sync•Circuit Module MDL3, 12-volt rated notification appliance circuit outputs shall operate be-

tween 8.5 and 17.5 volts; 24-volt rated notification appliance circuit outputs shall operate between 16.5 to 33 volts. If the notification appliances are not UL 9th edition listed with the corresponding panel or power supply being used, then refer to the compatibility listing of the panel to determine maximum devices on a circuit.

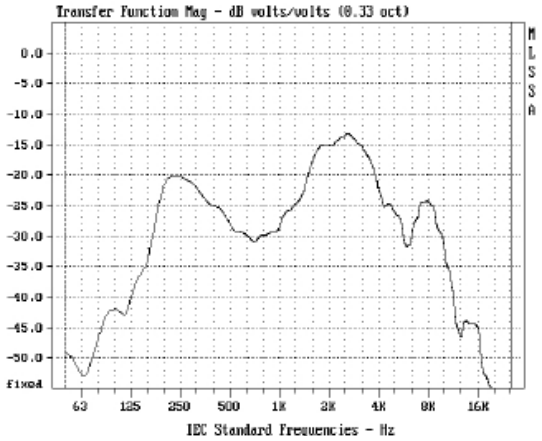
3. Speaker strobes shall be plug-in and shall have the ability to check wiring continuity via a shorting spring on the universal mounting plate. The shorting spring shall also provide tamper resistance via an open circuit if the device is removed. Speaker strobe design shall isolate speaker components to reduce ground fault incidents.

4. The speaker strobe shall have power taps (from ¼ watt to 2 watts) and voltage that are selected by rotary switches. All models shall have a maximum sound output of 86 dB at 10 feet and shall incorporate an open back construction. The strobe shall consist of a xenon flash tube with associated lens/reflector system and operate on either 12V or 24V. The strobe shall also feature selectable candela output, providing options for 15 or 15/75 candela when operating on 12V and 15, 15/75, 30, 75, 110, or 115 when operating on 24V. The strobe shall comply with NFPA 72 and the Americans with Disabilities Act requirement for visible signaling appliances, flashing at 1 Hz over the strobe's entire operating voltage range.

5. All notification appliances shall be backward compatible.

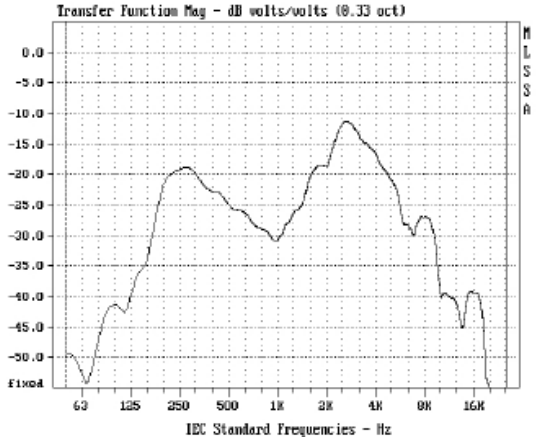
Ceiling Speaker Strobe

Wide Band Frequency Response



Wall Speaker Strobe

Wide Band Frequency Response



Note: The wide band frequency response is derived using MLS methods

6. Strobe lights shall meet the requirements of the ADA, UL Standard 1971and be fully synchronized.

U. Door Holders

1. Existing 24VDC door holders to remain and be powered by new fire alarm system.

2. Door holders will be designed for Fail Safe operation (power failure release door to close)

V. Batteries and External Charger

1. The battery shall have sufficient capacity to power the fire detection system for not less than 24 hours plus 5 minutes of alarm upon a normal AC power failure.

2. The batteries are the be completely maintenance free. No liquids are required. Fluid level checks for refilling, spills and leakage shall not be required.

3. If necessary to meet standby requirements, external battery and charger systems may be used.

PART 3 EXECUTION

3.01 INSTALLATION

A. Installation shall be in accordance with the NEC, NFPA 72, local and state codes, as shown on the drawings, and as recommended by the major equipment manufacturer.

B. All conduit, junction boxes, conduit supports and hangers shall be concealed in finished areas and may be exposed in unfinished areas. Smoke detectors shall not be installed prior to the system programming and test period. If construction is ongoing during this period, measures shall be taken to protect smoke detectors from contamination and physical damage.

C. All fire detection and alarm system devices, control panels and remote annunciators shall be flush mounted when located in finished areas and may be surface mounted when located in unfinished areas.

D. Manual fire alarm boxes shall be suitable for surface mounting or semi-flush mounting as shown on the plans and shall be installed not less than 42 inches (1067 mm), nor more than 48 inches (122 mm) above the finished floor.

3.02 TEST

A. The service of a competent, factory-trained engineer or technician authorized by the manufacturer of the fire alarm equipment shall be provided to technically supervise and participate during all of the adjustments and tests for the system. All testing shall be in accordance with NFPA 72.

B. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation.

C. Close each sprinkler system flow valve and verify proper supervisory alarm at the FACP.

D. Verify activation of all waterflow switches.

E. Open initiating device circuits and verify that the trouble signal actuates.

F. Open and short signaling line circuits and verify that the trouble signal actuates.

G. Open and short notification appliance circuits and verify that trouble signal actuates.

H. Ground all circuits and verify response of trouble signals.

I. Check presence and audibility of tone at all alarm notification devices.

J. Check installation, supervision, and operation of all intelligent smoke detectors using the walk test.

K. Each of the alarm conditions that the system is required to detect should be introduced on the

system. Verify the proper receipt and the proper processing of the signal at the FACP and the correct activation of the control points.

L. When the system is equipped with optional features, the manufacturer's manual shall be consulted to determine the proper testing procedures. This is intended to address such items as verifying controls performed by individually addressed or grouped devices, sensitivity monitoring, verification functionality and similar.

M. When the system is equipped with a Voice Evacuation Control panel, the manufacturer's manual shall be consulted to determine the proper testing procedures. This is intended to address such items as verifying voice messages.

3.03 FINAL INSPECTION

A. At the final inspection, a factory-trained representative of the manufacturer of the major equipment shall demonstrate that the system functions properly in every respect.

3.04 INSTRUCTION

A. Instruction shall be provided as required for operating the system. Hands-on demonstrations of the operation of all system components and the entire system including program changes and functions shall be provided.

B. The contractor and/or the systems manufacturer's representatives shall provide a typewritten "Sequence of Operation."

END OF SECTION

SECTION 28 31 05
FACILITY COMMUNICATION SYSTEM (VOICE EVAC)

1.01 FACILITY COMMUNICATIONS SYSTEM

A. The system shall be a multi-purpose NFPA compliant, supervised, general-purpose audio, and fire/emergency evacuation system. The system shall be a single channel voice evacuation system incorporating supervision during the broadcasting of background music and general paging. The system shall be capable of delivering 40 watts of supervised audio power and 2 amps of supervised 24 VDC synchronized strobe power. Minimum supervised audio power shall be 40 watts, expandable to 5280 watts, depending on system configuration and with additional modules and power boosters. Supervised 24 VDC synchronized strobe power shall be 2 amps, expandable to the requirements of the installation. The system shall be capable of operating from a 120 VAC power source. E models shall be capable of operating from a 240 VAC power source. All models shall have a 24 VDC battery backup. Standard on-board system features shall include: digital voice messaging, a hand-held push-to-talk microphone with override priority, and a power supply/battery charger. The system shall be capable of interfacing with telephone systems for general paging announcements and will have night ringer capabilities. Form C contacts shall be provided for system alarm and trouble conditions.

B. The system shall have 8 message contacts with contact closure activation. Background music input voltage shall be capable of handling less then 2.5 V peak to peak or less then 0.3 volts. The system shall have thirteen priority ordered inputs, including: On Board Microphone, Auxiliary Input (Line Level), 8 Digital Messages, Night Ringer Input, Telephone Paging Input, and Background Music Input. The system shall have preset audio levels for emergency messaging (prerecorded and live mic). The system shall revert back to a preset level regardless of the volume set for background music (BGM) or general paging. Background music inputs can be an AM/FM tuner, cassette, CD, MP3, or any other remote source. The system shall be supplied with 8 pre-recorded messages and be capable of in-field recording of customer unique messages. The system shall have a dual-tone tone generator with Code-3 Tone and Slow Whoop. When the system is on battery power, telephone page, night ring and background music shall be disengaged.

C. The panel shall have power-limited circuitry with an internal battery charger and power supply. The power supply/charger section shall be able to charge 24 VDC batteries with a maximum capacity of 33 amp hours. Up to two 12 VDC, 12 AH batteries may be housed in the enclosure. Batteries larger than 12 Ah shall be housed in a separate enclosure such as the Cooper Wheelock BATC or equivalent. Batteries shall be supplied separately.

D. The system shall have power limited circuitry and class B wiring. Wiring terminal blocks will be removable and accept #22–#12 AWG wire. Audio output voltage shall be selectable for 25V or 70.7V. The voice (live microphone or recorded message) frequency response shall be 275 Hz– 6.5 kHz, background music frequency response shall be 100 Hz– 15 kHz. Stand by current draw shall be 140mA. Alarm current draw shall be 4.7 amps. The signal to noise ratio shall be better than 65 dB, dynamic range shall be better than 65 dB, total harmonic distortion shall be less than 2%.

E. The system shall be wall mountable, enclosed in a steel locking enclosure. The required batteries for 40-watt systems shall fit inside the enclosure. The 40-watt system shall weigh no more than 36 lbs (without batteries) and its dimensions shall not exceed 21" H x 16" W x 6" D. Approvals for the system shall include: UL Standard 864, 9th edition, UL Standard 1711, FCC part 15, California State Fire Marshal (CSFM) and New York City (MEA). The system shall be OSHA 1910.165 and ADA compliant. To meet both NFPA 72 (fire signaling) and NFPA 720 (CO signaling) low frequency tone requirements for sleeping areas, the system shall be listed to UL 2017 (code 4), UL 864 (code 3) and the low frequency requirements of UL 464 (520 Hz). 1 Year Warranty.

1.02 AUDIO BOOSTERS

A. The audio boosters shall be modeled after Wheelock SPB-320, SPB-160 or SPB-80/4. Audio Boosters shall be NFPA compliant supervised audio and supervised 24VDC synchronized strobe power boosters (some models will have supervised 24VDC synchronized strobe booster capability). The booster shall have 24VDC battery backup capabilities. The booster shall have the capability to supervise the circuitry during playback of background music. The booster shall have the capability to be inter-connected to accommodate large installations with supervised audio power and also supervised and synchronized strobe power requirements. Three versions of the booster shall be made available: SPB-80/4, (80 watts of supervised audio power and 4 amps of supervised and synchronized strobe power), SPB-160 (160 watts of supervised audio) or SPB-320 (320 watts of supervised audio).

B. Each booster shall use 1.2 watts of audio input power (The SPB-320 requires 2.4 watts of audio power) to properly operate and provide additional supervised audio output power. A combination of boosters can be added together to provide for a maximum of 5,280 watts of supervised audio power. Additional strobe power can be obtained via a combination of boosters. The audio section of the booster shall be connected via a selectable 70V or 25V input from the Wheelock SP40S. The strobe section of the booster shall be divided into two sections each supplying 2 amps of 24VDC, NAC, supervised, synchronizable, power limited, Class B strobe outputs, with selectable outputs offering Wheelock sync, pass through, or constant DC and can be activated via 8-33VDC NAC input or contact closure.

C. The internal battery charger/power supply shall be capable of charging 24 VDC batteries with a maximum capacity of 33 amp hours. The enclosure shall be capable of housing the correct number of 12 VDC rechargeable batteries [SPB-80/4 (2), SPB-160 (2), SPB-320 (4)] with a maximum capacity of 12 amp hours. Batteries with a larger capacity require an external battery enclosure(s) such as the Cooper Wheelock BATC or equivalent.

D. The boosters shall have power-limited circuitry and be a class D amplifier with an internal battery charger and power supply. The required batteries (purchased separately) shall fit inside the enclosure (two 12VDC, 12 AH for the SPB-80/4 or SPB-160 and four 12 VDC, 12 AH for the SPB-320). The booster shall operate on 120VAC, 3.8A, 50–60 Hz input. E model boosters shall operate on 240 VAC, 2.5A, 50–60 Hz input. The SPB-80/4 or SPB-160 standby current draw shall be 120mA and alarm current draw shall be 9 amps. The SPB-320 consists of two SPB-160's. Each SPB-160 shall have its own power supply and battery charger. The voice frequency response shall be 400 Hz–6.5 kHz +/- 3 dB, the BGM frequency response shall be 275 Hz–15 kHz +/- 3 dB. Removable quick connect/disconnect terminals that accept 12–22 AWG shall be used. Multiple LED's for easy indication of system diagnostic conditions shall be present on the PC board. The Signal-to-Noise Ratio shall be > 70 dB, the dynamic range shall be > 65 dB, the Total Harmonic Distortion spec shall be 2%.

E. The booster shall be wall mountable, enclosed in a steel locking enclosure, with a red finish. Approvals for the booster shall include; UL Standard 864, UL Standard 1711, UL 2017, CSFM and MEA. The system shall be OSHA 1910.165, ADA and UFC compliant. The booster shall carry a 1 Year Warranty.

F. The SPB-80/4 & SPB-160 enclosure dimensions are 21" H x 16" W x 6" D and the SPB-320 enclosure dimensions are 36" H x 24" W x 6" D.

1.03 4 ZONE CLASS B SPEAKER SPLITTER

A. Shall be UL Standard 864, 9th edition, California State Fire Marshal (CSFM) and New York City (MEA) approved, 2-Zone Class A or 4-Zone Class B Speaker Splitter for operation with the Wheelock, SP40S, SP40/2, SPB-80/4, SPB-160 and SPB-320. The SP4Z-A/B shall enable a single supervised speaker audio output to drive up to two Class A supervised speaker audio outputs or four Class B supervised speaker audio outputs. Each Class A zone shall be capable of accepting up to 40 watts and operate on either 25 or 70.7V RMS of audio input. Each Class B zone shall be capable of accepting up to 40 watts of audio and operate on either 25 or 70.7V RMS of audio input. The SP4Z-A/B shall be capable of supporting live microphone paging, prerecorded emergency voice evacuation messages, supervised background music and general paging announcements.

B. The SP4Z-A/B shall mount inside the enclosure of the SP40S, SP40/2, SPB-80/4, SPB-160 and SPB-320 and shall have power and trouble LED's with individual zone short and open LED indication. The SP4Z-A/B shall be capable of detecting wiring faults. The SP4Z-A/B shall be powered by 24VDC, which is to be supplied by the SP40S, SP40/2, SPB-80/4, SPB-160 or SPB-320. Standby and Alarm current at 24VDC shall be 15mA. Removable wiring terminals for quick connect/disconnect accepting 12–22 AWG shall be incorporated. All output circuitry shall be power limited. Space shall be provided to allow for naming of the zones.

1.04 ADDRESSABLE PAGING SPLITTER AND TELEPHONE ZONE CONTROLLER

A. The paging splitter and telephone zone controller shall be modeled after Wheelock Addressable Paging Splitter (SP4-APS) and Telephone Zone Controller (SP4-TZC). They shall be used to control and direct telephone paging and background music zones connected to the Multi-Function Facility Communication System using an RS485 connection.

B. The Addressable Paging Splitter shall be UL Standard 864, 9th edition and California State Fire Marshal (CSFM) approved, addressable and supervised 2-zone Class A or 4-zone Class B Speaker splitter. The SP4-APS shall be used with Wheelock's SP40S or SP40/2 panel and the Audio Booster (SPB-160, SPB-80/4, and SPB-320) panels. Each SP4-APS shall have a single audio input capable of 25 Vrms or 70.7 Vrms at a maximum of 80 Watts. The input audio power shall be distributed to the zone connections with the total not exceeding the input and no zone exceeding 40 Watts. When audio boosters are connected, each audio booster module shall consume 1.2 Watts from the total input power of the SP4-APS. The splitter shall be mounted inside the SP40S, SP40/2 or Audio Booster that it is associated with, and it shall operate on 24VDC supplied by the supported module. The SP4-APS shall contain 16 LED indicators used to monitor and troubleshoot the module.

C. The Telephone Zone Controller Module shall be used to address the output zones on the SP4-APS. The SP4-TZC shall be capable of supporting 17 SP4-APS speaker splitter modules and shall be capable of addressing all zones at once ("All Call"), a maximum of 68 separate zones, 17 fixed zone groups and 9 programmed logical zone groups. This shall be accomplished using two digit DTMF tones from a page port, an unused CO port, or a stand alone telephone with a loop start circuit. Also, the SP4-TZC shall be able to select zones for background music. The SP4-TZC has the following inputs: Power, USB port, Background Music (BGM), Page Audio in. The outputs are: Audio out and RS485 Digital Control. The basic operating parameters of the SP4-APS shall be pre-programmed. Customized programming shall be accomplished using a USB cable and programming computer software. The SP4-TZC shall be powered using a 24VDC filtered and regulated power supply such as the Wheelock RPS-2406. The Controller Module assembly is mounted in a metal enclosure measuring 13"L x 7 5/8"W x 2"D.

1.05 SUPERVISED VOLUME CONTROL

A. Shall be UL Standard 864, 9th edition approved, supervised volume control for use with the Facility Communications System.

B. The supervised volume control shall provide for manual volume setting for telephone paging and background music for a specific speaker or speaker zone. The selected adjustment will not affect the volume setting of emergency prerecorded messages or live microphone usage. The SP-SVC shall be capable of handling up to 35 watts of audio power @ 70.7 volts or 4 watts audio power @ 25 volts and shall operate on either 70.7 or 25 volt input from an SP40S or Audio Booster. The SP-SVC shall be capable of operating in Class B or Class A wiring configurations (for Class A, the SP4-APS is required). The SP-SVC shall receive operating power from an Audio Booster, SP40S or SP40/2. Volume adjustment settings shall be off, 1–10, in 3dB increments. The SP-SVC shall be supplied with a stainless steel mounting plate with a black knob and require a double gang, 3-1/2" deep back box for mounting.

1.06 REMOTE MICROPHONE

A. Shall be UL Standard 864, 9th edition and California State Fire Marshal (CSFM) approved, Remote Microphone for use with the Facility Communications System.

B. Shall be a supervised hand held push to talk microphone and a key shall be required to enable remote microphone use. (Same key as SP40S or SP40/2). Removable wiring terminals for quick connect/disconnect accepting 12–22 AWG shall be incorporated. All output circuitry shall be power limited. Individual front panel LED's shall be provided for indication of System Normal, System Trouble and Alarm. Multiple on board diagnostic LED's shall be provided. When used with the SP40S or SP40/2, the priority level shall be number two. Remote microphone usage shall disengage background music and general paging.

C. Voice frequency response shall be 275 Hz–6.5 kHz +/- 2.4 dB. Power requirements shall be 24VDC and will be supplied by the SP40S or SP40/2. Input current for Standby shall be 26mA and for Alarm 38mA. Audio output level shall be 1.05V RMA. There shall be a 6-wire connection to the SP40S or SP40/2. The mounting plate shall be red and measure, 8-3/4" x 5-1/4", and shall fit into a 4 gang back box.

1.07 REMOTE MICROPHONE EXPANSION MODULE

A. Shall be UL Standard 864, 9th edition and California State Fire Marshal (CSFM) approved for use with Facility Communications System.

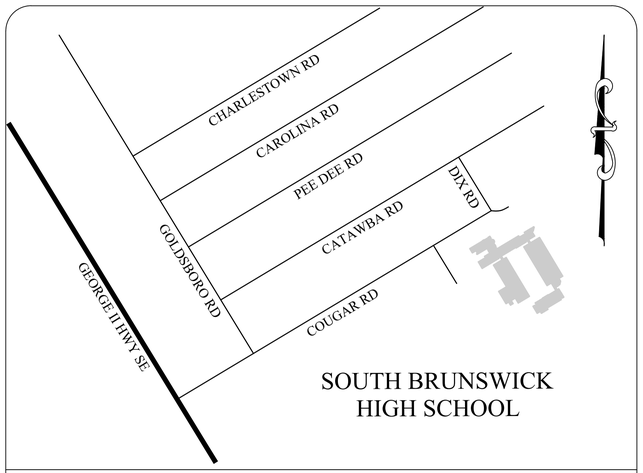
B. Shall be a supervised outboard expansion module. It shall be used to expand the number of optional supervised Remote Microphone (SPRM) modules up to three. Two SP4-RMX Remote Microphone Expansion Modules can be connected to the SP40S or SP40/2 and shall have the capability of providing the SP40S or SP40/2 with up to six system wide "All Call" Remote Microphone (SPRM) modulesa. The SP4-RMX can be programmed to provide either priority override for each SPRM module input or First In First Out. First In First Out allows the active SPRM to complete its communication before another SPRM can be used. All output circuitry shall be power limited. Multiple on board diagnostic LED indicators shall be provided. All wiring shall be connected to the module using quick connect/disconnect wiring terminals, capable of accepting 12–22 AWG wiring.

C. The SP4-RMX PCB assembly is mounted in a metal enclosure measuring 13"L x 7 5/8"W x 2"D. The SP4-RMX can support each SPRM at a range up to 2000 feet.

END OF SECTION

Printed: Mon 25-Mar-2024 - 12:37PM

SOUTH BRUNSWICK HIGH SCHOOL
FIRE ALARM REPLACEMENT
BRUNSWICK COUNTY BOARD OF EDUCATION
280 COUGAR RD, SOUTH PORT, NC 28461



VICINITY MAP
NTS

OWNER & BUILDER'S NOTES:

1. PLANS SHALL NOT BE USED FOR CONSTRUCTION UNTIL STAMPED AND SIGNED BY AN ENGINEER AND APPROVED BY THE LOCAL INSPECTION DEPARTMENT. THE CONTRACTOR IS EXPECTED TO FOLLOW THESE PLANS, APPLICABLE BUILDING CODES AND LOCAL ORDINANCES. CONTRACTOR SHALL VERITY THAT SITE CONDITIONS ARE CONSISTENT WITH PLANS BEFORE STARTING WORK. WHILE PLANS ARE DRAWN TO SHOW THE PROPOSED WORK AS ACCURATELY AS POSSIBLE, SCHEMATIC DETAILS MAY BE USED IN SOME CASES FOR CLARITY. WORK NOT SPECIFICALLY DETAILED SHALL BE CONSTRUCTED TO THE SAME QUALITY AS SIMILAR DETAILED WORK.
2. WRITTEN DIMENSIONS AND SPECIFIC NOTES SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS AND GENERAL NOTES. THE ENGINEER SHALL BE CONSULTED FOR CLARIFICATION IF SITE CONDITIONS ARE ENCOUNTERED THAT ARE DIFFERENT THAN SHOWN, IF DISCREPANCIES ARE FOUND IN THE PLANS OR NOTES, OR IF A QUESTION ARISES OVER THE INTENT OF THE PLANS / NOTES.
3. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR SCHEDULING, FABRICATION, CONSTRUCTION TECHNIQUES OR MATERIALS, OR QUANTITIES USED IN THE WORK. THE ENGINEER/ DESIGNER ASSUMES NO RESPONSIBILITY FOR FIELD CHANGES, SITE VARIANCES OR DISCREPANCIES NOT BROUGHT TO ENGINEER'S ATTENTION FOR CLARIFICATION.

811 Know what's **below.** **Call** before you dig.

Sheet List Table

Sheet Number	Sheet Title	REV #	DATE
CS	COVER SHEET		
FA001	FIRE ALARM GENERAL NOTES AND ABBREVIATIONS		
FA101	FIRE ALARM PLAN - AREA A		
FA102	FIRE ALARM PLAN - AREA B		
FA103	FIRE ALARM PLAN - AREA C		
FA104	FIRE ALARM PLAN - AREA D		
FA105	FIRE ALARM PLAN - AREA E		
FA106	FIRE ALARM PLAN - AREA F		
FA107	FIRE ALARM PLAN - AREA G		
FA108	FIRE ALARM PLAN - AREA H		
FA109	FIRE ALARM PLAN - AREA I		
FA110	FIRE ALARM PLAN - AREA J		
FA111	FIRE ALARM PLAN - AREA K		
FA112	FIRE ALARM PLAN - AREA L		
FA113	FIRE ALARM PLAN - AREA M		
FA114	FIRE ALARM PLAN - AREA N LOFT		
FA501	FIRE ALARM DETAILS		

PREPARED BY:

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LOCKLEAR, LOCKLEAR & JACOBS CONSULTING ENGINEERS P-0754

NORTH CAROLINA PROFESSIONAL SEAL 028880 ENGINEER ROBBY LOCKLEAR

PROJECT INFORMATION:
SOUTH BRUNSWICK HIGH SCHOOL
FIRE ALARM REPLACEMENT
BRUNSWICK COUNTY BOARD OF EDUCATION
280 COUGAR RD, SOUTH PORT, NC 28461

DATE: 3/25/2024
DRAWN BY: CKD
CHECKED BY: RL
SHEET TITLE
COVER SHEET
SHEET NUMBER
CS
PROJECT# 24-01233

BID SET - 3-25-2024

C:\Users\LLJ-CH-1\AppData\Local\Temp\AcPublish_13708\24-01233 South Brunswick High Fire Alarm Replacement.dwg, CS, LLJ-Charlier

BELOW IS A LIST OF ITEMS THAT SHOULD BE REVIEWED AND/OR COMPLETED PRIOR TO THE ARRIVAL OF A FIRE ALARM TECHNICIAN. PLEASE KEEP IN MIND THAT IF SOME ASPECTS OF SYSTEM TESTING CANNOT BE COMPLETED DURING THE TECHNICIANS SCHEDULED ON SITE DATES (IE DEVICES NOT IN PLACE, WIRING PROBLEMS, OR OTHER TRADES NOT ON SITE AS NEEDED TO COMPLETE INTERCONNECTION AND TESTING) IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY FIRE ALARM INSTALLER WHEN THE TECHNICIAN WILL BE REQUIRED BACK ON SITE. PLEASE PROVIDE FIRE ALARM INSTALLER A FIVE (5) BUSINESS DAY NOTIFICATION IN ORDER TO SCHEDULE/RESCHEDULE A TECHNICIAN.

PLEASE REVIEW THE FOLLOWING ITEMS:

1. ALL EQUIPMENT INSTALLED BY OTHER TRADES THAT NEED TO BE MONITORED OR CONTROLLED BY THE FIRE ALARM EQUIPMENT IS TO BE READY FOR TESTING.
2. CENTRAL STATION MONITORING INSTALLED AND A MONITORING ACCOUNT SETUP. (ALL ACCOUNT INFORMATION SHALL BE PROVIDED TO FIRE ALARM INSTALLER IF PROVIDED BY OTHERS).
3. FIRE MARSHALL INSPECTION (REQUIRES A 5 BUSINESS DAY NOTICE TO FIRE ALARM INSTALLER FOR TECHNICIAN SCHEDULING).
4. CUSTOMER TRAINING (REQUIRES A 5 BUSINESS DAY NOTICE TO FIRE ALARM INSTALLER FOR TECHNICIAN SCHEDULING).

FIRE ALARM SYSTEM PROTECTION:

NFPA-72 (2013) SECTION A.10.4.4 OF THE NATIONAL FIRE ALARM CODE HANDBOOK STATES THAT SMOKE DETECTION SHALL BE PROVIDED AT THE LOCATION OF EACH FACP, NAC AND SUPERVISING STATION TRANSMITTING EQUIPMENT TO PROVIDE NOTIFICATION OF FIRE AT THAT LOCATION.

EXCEPTION #1: WHERE AMBIENT CONDITIONS PROHIBIT INSTALLATION OF AUTOMATIC SMOKE DETECTION, AUTOMATIC HEAT DETECTORS SHALL BE PERMITTED.

SMOKE DETECTOR INSTALLATION LOCATION:

NFPA-72 SECTION A.17.4.8 STIPULATES:

1. WHERE THE CEILING IS 15FT IN HEIGHT OR LESS, THE SMOKE DETECTOR SHOULD BE LOCATED ON THE CEILING OR THE WALL WITHIN 21ft OF THE CENTERLINE OF THE FIRE ALARM CONTROL UNIT BEING PROTECTED BY THE DETECTOR.
2. WHERE THE CEILING EXCEEDS 15FT IN HEIGHT, THE AUTOMATIC SMOKE DETECTOR SHOULD BE INSTALLED ON THE WALL ABOVE AND WITHIN 60in FROM THE TOP OF THE CONTROL UNIT.

SEE DETAIL 2 ON THIS SHEET AND INSTALLATION REQUIREMENTS FOR SMOKE DETECTOR LOCATION REQUIREMENTS.

FIRE ALARM DRAWING NOTES:

1. ALL FIRE ALARM SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH APPLICABLE PROVISIONS OF NFPA, FIRE CODE, BUILDING CODE AND ANSI STANDARDS.
2. ALL CONDUIT TO BE 3/4" EMT UNLESS NOTED OTHERWISE.
3. FIRE ALARM VISUAL DEVICES SHALL BE SYNCHRONIZED.
4. PRIOR TO PROGRAMMING AND ROUGH-IN, COORDINATE ROOM NUMBERS WITH OWNER AND ENGINEER.
5. VOLTAGE DROP CALCULATIONS ARE BASED ON CONDUIT LOCATIONS SHOWN ON FIRE ALARM DRAWINGS. FINAL CONDUIT LOCATIONS TO BE PROVIDED BY ELECTRICAL CONTRACTOR.
6. JUNCTION BOXES NOT SHOWN FOR CLARITY. JUNCTION BOX LOCATIONS TO BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
7. FIRE ALARM SYSTEM TO BE CLASS 'B' SUPERVISED SYSTEM (STYLE 'B' INITIATING DEVICE CIRCUITS, STYLE 4 SIGNALING LINE CIRCUITS, CLASS 'B' NOTIFICATION APPLIANCE CIRCUITS). FURNISH & INSTALL END-OF-LINE (EOL) RESISTORS WHERE SHOWN ON PLANS.
8. ALL VERTICAL WIRING AND STUB-UPS SHALL BE IN CONDUIT UP PAST DROP CEILING. ALL HORIZONTAL WIRING SHALL BE SECURED TO STRUCTURE BY ACCEPTABLE MEANS PER THE NFPA-70.
9. SMOKE DETECTORS SHALL BE LOCATED AS NEAR THE CENTER OF THE ROOM AS PRACTICAL. DO NOT LOCATE ANY DETECTOR WITHIN 3'-0" OF AN HVAC SUPPLY GRILLE. PROVIDE AUXILIARY CONTACT ON SMOKE DETECTORS LOCATED IN CORRIDORS AT SMOKE DOORS. WIRE MAGNETIC DOOR HOLDERS THRU AUXILIARY CONTACT TO RELEASE DOOR WHEN THOSE DETECTORS ARE ACTUATED.
10. FIRE ALARM SYSTEM WIRING WILL BE BY FIRE ALARM INSTALLER. CONTROL WIRING WILL BE BY THE FIRE ALARM CONTRACTOR. PROVIDE AUXILIARY CONTACT ON EACH DUCT DETECTOR FOR DIVISION 23 USE. A RELAY MODULE AND REMOTE TEST STATION MAY NOT BE DISPLAYED ON PLANS FOR CLARITY.
11. LOCATE MANUAL PULL STATIONS WITHIN 5'-0" OF THE EXIT DOOR PER NFPA AND IBC REQUIREMENTS. PROVIDE ANY SPECIAL ADAPTER PLATES OR COVER PLATES REQUIRED TO MOUNT PULL STATIONS IN DOOR MULLIONS WHERE APPLICABLE.
12. EACH SPEAKER / STROBE LOCATED AT THE END OF A CORRIDOR MUST BE WITHIN 15'-0" OF THE END WALL PER NFPA 72. SPEAKER / STROBES IN CLASSROOMS AND OFFICES MUST BE ROUGHLY CENTERED ON WALL PER NFPA 72. DO NOT ADJUST THE LOCATIONS OF ANY SPEAKER / STROBES WITHOUT CONSULTING THE ENGINEER AND OBTAINING WRITTEN PERMISSION.
13. FIELD VERIFY LOCATION OF FIRE ALARM CONTROL PANEL "FACP" AND FIRE ALARM ANNUCIATOR PANELS "FAAP" WITH OWNER AND AUTHORITY HAVING JURISDICTION PRIOR TO ROUGH-IN.
14. LETTERS "I" AND "O" ARE NOT USED IN SCHEDULES DUE TO CONFLICTS WITH NUMBERS THAT LOOK SIMILAR.
15. PER NFPA 72 (2013), 17.4.4 STATES: INITIATING DEVICES SHALL BE INSTALLED IN A MANNER THAT PROVIDES ACCESSIBILITY FOR PERIODIC INSPECTION, TESTING, AND MAINTENANCE.
16. NO "T" TAPS ARE ALLOWED.
17. POWER SUPPLIES AND AMPLIFIER QUANTITIES TO BE DETERMINED BY INSTALLATION REQUIREMENTS.
18. ALL FIRE ALARM DEVICES LOCATED IN HALLWAYS AND CLASSROOMS TO BE 1 WATT UNLESS NOTED OTHERWISE.
19. ALL FIRE ALARM DEVICES LOCATED IN DANCE ROOMS, CAFETERIA, GYM, BAND ROOM, ETC. TO BE 2 WATTS.
20. CONTRACTOR TO SUPPLY RELAY FOR FIRE RATED ROLL UP DOOR CLOSURE.
21. INSTALLATION HAS TO BE PER NEC REQUIREMENTS. CABLING CAN NOT BE SUPPORTED BY CEILING GRID. HAS TO BE INSTALLED A MINIMUM 2" ABOVE CEILING GRID.
22. IF DUCT DETECTOR CAN NOT BE INSTALLED IN DUCT WORK LOCATED IN MECHANICAL ROOM DUE TO SPACE CONSTRAINTS, CONTRACTOR IS REQUIRED TO INSTALL REMOTE INDICATOR IN HALLWAY CEILING NEAR MECHANICAL ROOM.

1 FINAL ALARM GENERAL NOTES
NTS

FIRE DETECTION LEGEND	
SYMBOL	DESCRIPTION
FACP	FIRE ALARM CONTROL PANEL
FAAP	FIRE ALARM ANNUCIATOR PANEL
NAC	FIRE ALARM REMOTE POWER SUPPLY PANEL
DAP	DISTRIBUTED AMPLIFIER PANEL
XX	AUDIO / VISUAL INDICATING DEVICE - WALL MOUNT
XX	AUDIO / VISUAL INDICATING DEVICE - CEILING MOUNT
XX	VISUAL ONLY INDICATING DEVICE - WALL MOUNT
XX	VISUAL ONLY INDICATING DEVICE - CEILING MOUNT
F	PULL STATION
SD	SMOKE DETECTOR CEILING MOUNTED
HD	HEAT DETECTOR CEILING MOUNTED
M EXH	EXHAUST HOOD MONITOR MODULE
CO	CARBON MONOXIDE DETECTOR
DS	DUCT SMOKE DETECTOR
L	REMOTE INDICATOR LIGHT
R	DUCT DETECTOR RELAY
DM	EXISTING DOOR MAGNETS TO REMAIN
M	MONITOR MODULE
ANSUL	ANSUL ALARM PANEL
A	AUDIO ONLY CEILING MOUNT
ER	ELEVATOR RELAY

ELECTRICAL ABBREVIATIONS	
&	AND
ABBREV	ABBREVIATION
AC	ALTERNATING CURRENT
ANSI	AMERICAN NATIONAL STANDARD INSTITUTE
ASTM	AMERICAN SOCIETY FOR TESTING MATERIAL
ATM	ATMOSPHERE
BL	BRANCH LINE
BLDG	BUILDING
BOP	BOTTOM OF PIPE
°C	DEGREE CELSIUS
Cm	CENTIMETER
DC	DIRECT CURRENT
DN	DROP NIPPLE
DOL	DIRECT ON-LINE STARTER
DR	DRAIN
DWGS	DRAWINGS
°F	DEGREE FAHRENHEIT
FD	FLOOR DRAIN
FM	FACTORY MUTUAL
FP	FIRE PUMP
FPM	FEET PER MINUTE
FS	FLOW SWITCH
FT	FEET
GPM	GALLON PER MINUTE
HP	HORSE POWER
Hz	HERTZ
JP	JOCKEY PUMP
KG	KILOGRAM
KW	KILOWATT
LB	POUND
M	METRE
MAX	MAXIMUM
MIN	MINIMUM
MM	MILIMETRE
NC	NORMALLY CLOSED
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NO	NORMALLY OPEN
NO	NUMBER
NPT	NATIONAL PIPE TREAD
NRSV	NON RISING STEM VALVE
PIV	POST INDICATOR VALVE
PS	PRESSURE SWITCH
RN	RISER NIPPLE
TYP	TYPICAL

NOTE: NOT ALL ABBREVIATIONS MAY APPLY TO PLANS

NOTE: ALL AUDIO DEVICES TO BE SPEAKER TYPE.
* WP = WEATHER PROOF DEVICE

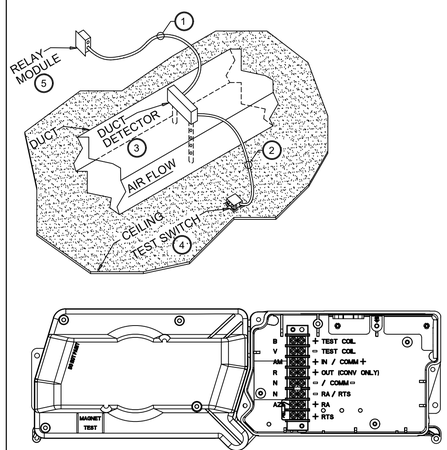
NOTES:

1. THIS DRAWING SHOWN FOR ILLUSTRATION ONLY. FIRE ALARM CONTRACTOR SHALL INSTALL FIRE ALARM SYSTEM PER NFPA, ALL LOCAL/STATE CODES, AND AUTHORITY HAVING JURISDICTION.
2. CANDELA RATING FOR DEVICES SHALL BE 15 UNLESS NOTED OTHERWISE. FIRE ALARM INSTALLER IS RESPONSIBLE FOR CANDELA CALCULATIONS AND SHALL VERIFY/MODIFY SYSTEM AS REQUIRED.
3. FIRE ALARM CONTRACTOR TO COORDINATE WITH ELECTRICAL CONTRACTOR ON FIRE ALARM COMMUNICATION TYPE. IF USING HARD COPPER WIRING, PRIMARY AND SECONDARY COMMUNICATIONS ARE REQUIRED.

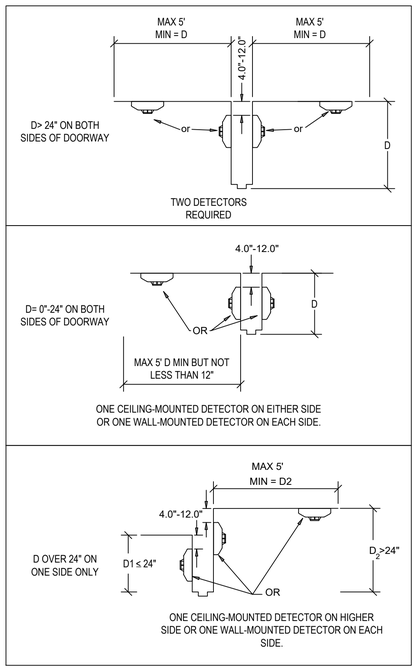
KEY NOTE SCHEDULE	
SYMBOL	DESCRIPTION
1	#18 / 2 WIRE (SLC) IN 3/4" CONDUIT.
2	(2) #18 / 2 WIRE IN 3/4" CONDUIT (TEST STATION), OR #18 / 2 WIRE IN 3/4" CONDUIT (REMOTE INDICATOR)
3	DUCT DETECTOR MOUNTED IN MECHANICAL DUCTWORK.
4	TEST SWITCH WITH INDICATOR LIGHT. SEE PLANS FOR MOUNTING LOCATION (CEILING, WALL).
5	RELAY MODULE INSTALLED BY ELECT (TO BE WITHIN 3'-0" FROM DUCT DETECTOR)

NOTES:

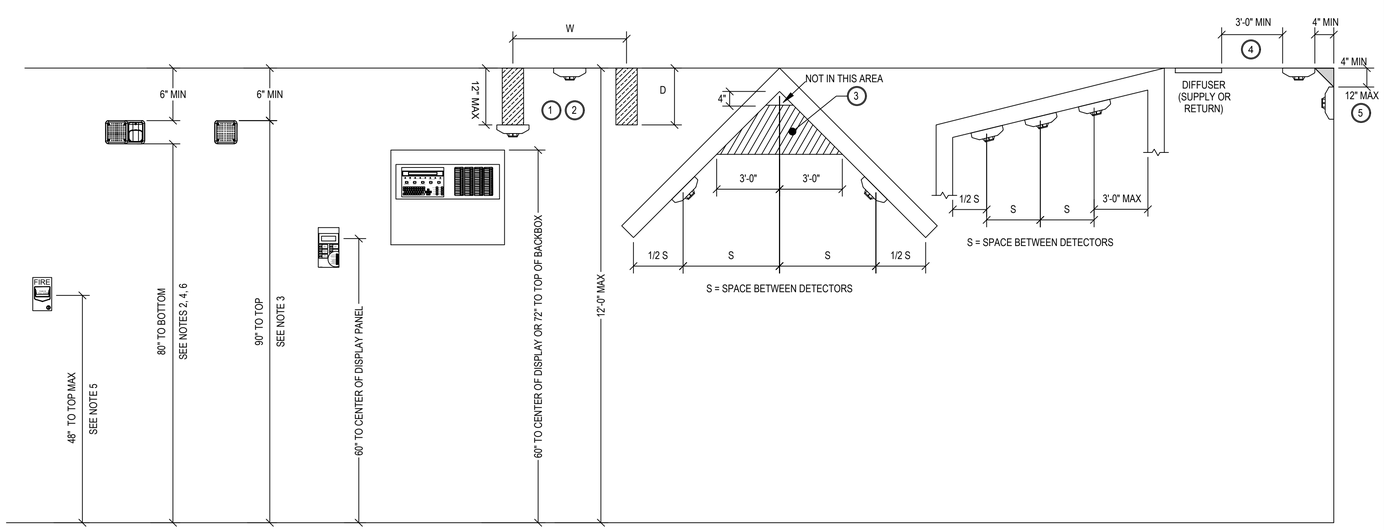
1. REFER TO FIRE ALARM DRAWINGS FOR LOCATION AND QUANTITY OF DUCT DETECTORS.
2. REFER TO PLANS FOR SPECIFIED COMBINATIONS (DUCT DETECTOR + TEST SWITCH, DUCT DETECTOR + TEST SWITCH + RELAY MODULE)
3. DUCT DETECTOR TO BE INSTALLED BY ELECTRICAL CONTRACTOR.



2 DUCT DETECTOR WIRING DETAIL
NTS



3 DETECTOR LOCATION REQUIREMENTS FOR WALL SECTIONS
NTS



FIRE ALARM DEVICE MOUNTING NOTES:

1. ALL MOUNTING HEIGHTS SHOWN ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS.
2. VISUAL UNIT (NOTIFICATION): DEVICE 80" ABOVE HIGHEST FLOOR LEVEL OR 6" BELOW CEILING, WHICHEVER IS LOWER (ADA STANDARD ICC A117.1_2009). BOTTOM OF DEVICE 80 AFF (NFPA).
3. AUDIO UNIT (NOTIFICATION): TOP OF UNIT AT LEAST 90" AFF OR 6" BELOW CEILING, WHICH EVER IS LOWER (NFPA).
4. AUDIO / VISUAL UNIT (NOTIFICATION): LOCATION DETERMINED BY VISUAL UNIT REQUIREMENTS (NFPA).
5. PULL STATION (ACTIVATION): HIGHEST OPERABLE PART SHALL NOT BE MORE THAN 48" ABOVE THE FLOOR (FRONT APPROACH) ADA STANDARD ICC A117.1_2009. OPERABLE PART (T-HANDLE) SHALL BE NOT LESS THAN 42" AFF (NFPA).
6. WHERE LOW CEILING HEIGHTS DO NOT PERMIT WALL MOUNTING AT A MINIMUM OF 80", WALL MOUNTED VISIBLE APPLIANCES SHALL BE MOUNTED WITHIN 6" OF THE CEILING (2013 NFPA 72 18.5.5.2).

KEYED NOTE SCHEDULE	
MARK	DESCRIPTION
1	LOCATE SMOKE DETECTORS AT BOTTOM OF BEAMS (OR JOISTS) OR AT CEILING. (REDUCE SPACING BY .5 PERPENDICULAR TO BEAM OR JOIST DIRECTION). PER NFPA 72-2013 17.6.3.3.2
2	LOCATE HEAT DETECTORS AT BOTTOM OF BEAMS IF EITHER D/H < .1 OR W/H < .4: OTHERWISE LOCATE IN BEAM POCKET.
3	LOCATE SMOKE DETECTOR ANYWHERE IN SHADED AREA. PER NFPA 72-2013 17.6.3.4
4	PER NFPA 72-2013 A.17.7.4.1
5	PER NFPA 72-2013 17.7.3.2.1

4 TYPICAL FIRE ALARM MOUNTING DETAILS
NTS

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NORTH CAROLINA PROFESSIONAL SEAL 028880 ENGINEER ROBERT LOCKLEAR

PROJECT INFORMATION:

SOUTH BRUNSWICK HIGH SCHOOL
FIRE ALARM REPLACEMENT
BRUNSWICK COUNTY BOARD OF EDUCATION
280 COUGAR RD
SOUTH PORT, NC 28461

REV# - DATE - DESCRIPTION:
1 2 3 4 5

DATE: 3/25/2024
DRAWN BY: CKD
CHECKED BY: RL
SHEET TITLE

FIRE ALARM GENERAL NOTES AND ABBREVIATIONS

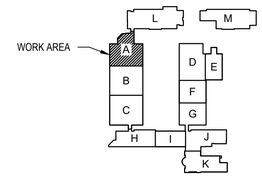
SHEET NUMBER

FA001

PROJECT# 24-01233

BID SET - 3-25-2024

1 FIRE ALARM PLAN - AREA A
SCALE: 1/8" = 1'-0"



KEY PLAN

CONTRACTOR NOTES:
1. ALL AIR HANDLING UNITS WILL REQUIRE NEW DUCT DETECTORS. INSTALL NEW DUCT DETECTORS NEAR EXISTING. DUCT DETECTORS LOCATED ABOVE CEILINGS OR IN HIDDEN LOCATIONS WILL REQUIRE VISUAL NOTIFICATION. GLOBAL SHUTDOWN IS REQUIRED OF ALL AIR HANDLING UNITS.
2. NEW DUCT DETECTORS WILL HAVE TO BE INSTALLED NEAR EXISTING ONES AND EXISTING ONES LEFT IN PLACE UNTIL FIRE ALARM SYSTEM HAS BEEN TESTED. DRAWINGS WILL BE UPDATED TO REFLECT THIS.
3. THE CEILING TILE IN HALLWAYS TO BE ARMSTRONG CORTEGA 824. CEILING IN KITCHEN AREA TO BE ARMSTRONG KITCHEN ZONE 673 AND ALL OTHER AREAS TO BE ARMSTRONG CORTEGA 770.
4. BRUNSWICK COUNTY SCHOOLS WILL PAINT ANY EXPOSED CONDUIT, COVER PLATES, ETC.
5. BRUNSWICK COUNTY SCHOOLS TO PROVIDE A MAXIMUM OF 50 CEILING TILE FOR THE PROJECT. ANY CEILING TILES REQUIRED ABOVE 50 SHALL BE SUPPLIED BY THE CONTRACTOR.

FIRE ALARM DEMOLITION NOTES:
1. ENTIRE EXISTING FIRE ALARM SYSTEM TO BE DEMOED AFTER CERTIFICATION BY AHJ OF NEW FIRE ALARM SYSTEM, EXISTING FIRE ALARM SYSTEM TO REMAIN OPERATIONAL UNTIL THIS TIME. DEMOLITION EXCEPTIONS OF THE ITEMS LISTED BELOW:
   - PULL ALL FIRE ALARM CIRCUITRY BACK TO NEAREST JUNCTION BOX. LABEL JUNCTION BOX AS "OLD FIRE ALARM DEVICE".
   - 4"X4" BLANK COVERS TO BE INSTALLED OVER DEMOED WALL DEVICES.
   - EXISTING DOOR HOLDERS/MAGNETS TO BE RE-USED. FIRE ALARM CONTRACTOR TO INSTALL NEW 24V DC CIRCUITRY.
2. DEMO DUCT DETECTORS, CONTRACTOR TO RE-SEAL DUCT.
3. DEMO DUCT DETECTORS AFTER CERTIFICATION BY AHJ OF NEW FIRE ALARM SYSTEM, CONTRACTOR TO RE-SEAL DUCT. EXISTING DUCT DETECTORS MAY BE LOCATED ABOVE CEILING OUTSIDE OF MECHANICAL ROOM. DUCT DETECTORS LOCATED OUTSIDE OF MECHANICAL ROOM WILL REQUIRE A REMOTE INDICATOR LIGHT.)

FIRE ALARM NOTES:
1. THIS DRAWING SHOWN FOR ILLUSTRATION ONLY, FIRE ALARM CONTRACTOR SHALL INSTALL FIRE ALARM SYSTEM PER NFPA, ALL LOCAL/STATE CODES, AND AUTHORITY HAVING JURISDICTION.
2. CONTRACTOR TO INSTALL A NAPCO STARLINK SLE-LTEA-FIRE CELLULAR RADIO WITH (1) MONITOR MODULE FOR SUPERVISION OF THE RADIO.
3. SMOKE DETECTORS SHALL BE LOCATED A MINIMUM OF 3FT AWAY FROM HVAC GRILLES.ALL CANDELA RATINGS PER NATIONAL FIRE PROTECTION ASSOCIATION. FIRE ALARM CONTRACTOR IS RESPONSIBLE FOR CANDELA CALCULATIONS AND SHALL VERIFY/MODIFY SYSTEM AS REQUIRED. FIRE ALARM CONTRACTOR TO VERIFY AUDIBLE DEVICES ARE 15 DECIBELS OVER AMBIENT NOISE LEVELS.
4. INSTALL WIREGUARDS OVER FIRE ALARM DEVICES INSTALLED IN GYMNASIUM.
5. ELECTRICAL CONTRACTOR IS REQUIRED TO INSTALL DUCT DETECTORS AND CONTROLS TO AHU.
6. FIRE ALARM CONTRACTOR TO INSTALL ALL SHUTDOWN CIRCUITS.
7. FIRE ALARM CONTRACTOR SHALL BE RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND MATERIALS SUPPLIED FOR THE CONSTRUCTION AND INSTALLATION, VERIFICATION OF DIMENSIONS AT THE SITE, AND THE VERIFICATION OF QUANTITIES BEFORE BIDDING. THE CONTRACTOR SHALL VERIFY THAT SITE CONDITIONS ARE CONSISTENT WITH THESE PLANS BEFORE STARTING WORK.
8. GLOBAL SHUTDOWN OF ALL AIR HANDLING UNITS WHEN INPUT IS RECEIVED FROM A PULL STATION, SMOKE/HEAT DETECTOR OR DUCT DETECTOR.
9. MECHANICAL CONTRACTOR TO RE-SEAL DUCT. FIRE ALARM CONTRACTOR TO INSTALL SHUTDOWN CIRCUITS IN ALL UNITS.
10. CANDELA RATING FOR DEVICES SHALL BE 15 UNLESS NOTED OTHERWISE. FIRE ALARM INSTALLER IS RESPONSIBLE FOR CANDELA CALCULATIONS AND SHALL VERIFY/MODIFY SYSTEM AS REQUIRED.
11. FIRE ALARM CONTRACTOR TO COORDINATE WITH GENERAL CONTRACTOR ON FIRE ALARM COMMUNICATION TYPE. IF USING HARD COPPER WIRING, PRIMARY AND SECONDARY COMMUNICATIONS ARE REQUIRED.
12. ALL EXTERIOR FIRE ALARM DEVICES TO BE BLANKED OFF AFTER REMOVAL OF OLD DEVICES.
13. POWER SUPPLIES AND AMPLIFIER QUANTITIES TO BE DETERMINED BY INSTALLATION REQUIREMENTS.
14. ALL FIRE ALARM DEVICES LOCATED IN HALLWAYS AND CLASSROOMS TO BE 1 WATT UNLESS NOTED OTHERWISE.
15. ALL FIRE ALARM DEVICES LOCATED IN DANCE ROOMS, CAFETERIA, GYM, BAND ROOM, ETC. TO BE 2 WATTS.
16. CONTRACTOR TO SUPPLY RELAY FOR FIRE RATED ROLL UP DOOR CLOSURE.
17. INSTALLATION HAS TO BE PER NEC REQUIREMENTS. CABLING CAN NOT BE SUPPORTED BY CEILING GRID. HAS TO BE INSTALLED A MINIMUM 2" ABOVE CEILING GRID.
18. IF DUCT DETECTOR CAN NOT BE INSTALLED IN DUCT WORK LOCATED IN MECHANICAL ROOM DUE TO SPACE CONSTRAINTS, CONTRACTOR IS REQUIRED TO INSTALL REMOTE INDICATOR IN HALLWAY CEILING NEAR MECHANICAL ROOM.

FIRE DETECTION LEGEND	
SYMBOL	DESCRIPTION
FACP	FIRE ALARM CONTROL PANEL
FAAP	FIRE ALARM ANNUCIATOR PANEL
NAC	FIRE ALARM REMOTE POWER SUPPLY PANEL
DAP	DISTRIBUTED AMPLIFIER PANEL
XX	AUDIO / VISUAL INDICATING DEVICE - WALL MOUNT
XX	AUDIO / VISUAL INDICATING DEVICE - CEILING MOUNT
XX	VISUAL ONLY INDICATING DEVICE - WALL MOUNT
V XX	VISUAL ONLY INDICATING DEVICE - CEILING MOUNT
F	PULL STATION
SD	SMOKE DETECTOR CEILING MOUNTED
HD	HEAT DETECTOR CEILING MOUNTED
M EXH	EXHAUST HOOD MONITOR MODULE
CO	CARBON MONOXIDE DETECTOR
DS	DUCT SMOKE DETECTOR
L	REMOTE INDICATOR LIGHT
R	DUCT DETECTOR RELAY
DM	EXISTING DOOR MAGNETS TO REMAIN

NOTE: ALL AUDIO DEVICES TO BE SPEAKER TYPE.
* WP = WEATHER PROOF DEVICE

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NORTH CAROLINA PROFESSIONAL SEAL 028880 ENGINEER BOBBY LOCKLEAR

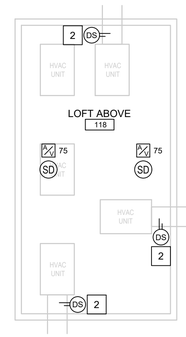
PROJECT INFORMATION:
SOUTH BRUNSWICK HIGH SCHOOL
FIRE ALARM REPLACEMENT
BRUNSWICK COUNTY BOARD OF EDUCATION
280 COUGAR RD
SOUTH PORT, NC 28461

REV# - DATE - DESCRIPTION:
1
2
3
4
5

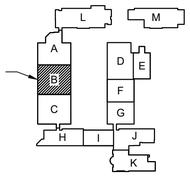
DATE: 3/25/2024
DRAWN BY: CKD
CHECKED BY: RL
SHEET TITLE
FIRE ALARM PLAN - AREA A
SHEET NUMBER
FA101
PROJECT# 24-01233

BID SET - 3-25-2024

1 FIRE ALARM PLAN - AREA B
SCALE: 1/8" = 1'-0"



2 FIRE ALARM PLAN - LOFT
SCALE: 1/8" = 1'-0"



KEY PLAN

FIRE DETECTION LEGEND	
SYMBOL	DESCRIPTION
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FAAP	FIRE ALARM ANNUCIATOR PANEL
NAC	FIRE ALARM REMOTE POWER SUPPLY PANEL
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XX	AUDIO / VISUAL INDICATING DEVICE - CEILING MOUNT
XX	VISUAL ONLY INDICATING DEVICE - WALL MOUNT
V XX	VISUAL ONLY INDICATING DEVICE - CEILING MOUNT
F	PULL STATION
SD	SMOKE DETECTOR CEILING MOUNTED
HD	HEAT DETECTOR CEILING MOUNTED
M EXH	EXHAUST HOOD MONITOR MODULE
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L	REMOTE INDICATOR LIGHT
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DM	EXISTING DOOR MAGNETS TO REMAIN

NOTE: ALL AUDIO DEVICES TO BE SPEAKER TYPE.
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2. NEW DUCT DETECTORS WILL HAVE TO BE INSTALLED NEAR EXISTING ONES AND EXISTING ONES LEFT IN PLACE UNTIL FIRE ALARM SYSTEM HAS BEEN TESTED. DRAWINGS WILL BE UPDATED TO REFLECT THIS.
3. THE CEILING TILE IN HALLWAYS TO BE ARMSTRONG CORTEGA 824. CEILING IN KITCHEN AREA TO BE ARMSTRONG KITCHEN ZONE 673 AND ALL OTHER AREAS TO BE ARMSTRONG CORTEGA 770.
4. BRUNSWICK COUNTY SCHOOLS WILL PAINT ANY EXPOSED CONDUIT, COVER PLATES, ETC.
5. BRUNSWICK COUNTY SCHOOLS TO PROVIDE A MAXIMUM OF 50 CEILING TILE FOR THE PROJECT. ANY CEILING TILES REQUIRED ABOVE 50 SHALL BE SUPPLIED BY THE CONTRACTOR.

FIRE ALARM ELECTRICAL KEYNOTES:

1 (1) 120V CIRCUIT FOR BOTH DAP AND NAC PANELS. MUST BE IDENTIFIED AND INCLUDE BREAKER LOCKS (FED FROM AVAILABLE 120V CKT IN PANEL PB1 OR PB2).

2 INSTALL NEW DUCT DETECTOR, DEMO EXISTING DUCT DETECTOR AFTER CERTIFICATION BY AHJ OF NEW FIRE ALARM SYSTEM. CONTRACTOR TO RE-SEAL DUCT. CONTRACTOR TO VERIFY LOCATIONS OF EXISTING SMOKE DETECTORS. SHUTDOWN CIRCUIT TO BE INSTALLED ON ALL UNITS (INCLUDING THOSE THAT DO NOT REQUIRE A DUCT DETECTOR). FIRE ALARM RELAY TO BE PROVIDED BY FIRE ALARM CONTRACTOR. CONTRACTOR TO INSTALL ALL SHUTDOWN CIRCUITS.

FIRE ALARM DEMOLITION NOTES:
1. ENTIRE EXISTING FIRE ALARM SYSTEM TO BE DEMOED AFTER CERTIFICATION BY AHJ OF NEW FIRE ALARM SYSTEM, EXISTING FIRE ALARM SYSTEM TO REMAIN OPERATIONAL UNTIL THIS TIME. DEMOLITION EXCEPTIONS OF THE ITEMS LISTED BELOW:
   - PULL ALL FIRE ALARM CIRCUITRY BACK TO NEAREST JUNCTION BOX. LABEL JUNCTION BOX AS "OLD FIRE ALARM DEVICE".
   - 4"X4" BLANK COVERS TO BE INSTALLED OVER DEMOED WALL DEVICES.
   - EXISTING DOOR HOLDERS/MAGNETS TO BE RE-USED. FIRE ALARM CONTRACTOR TO INSTALL NEW 24V DC CIRCUITRY.
2. DEMO DUCT DETECTORS, CONTRACTOR TO RE-SEAL DUCT.
3. DEMO DUCT DETECTORS AFTER CERTIFICATION BY AHJ OF NEW FIRE ALARM SYSTEM, CONTRACTOR TO RE-SEAL DUCT. EXISTING DUCT DETECTORS MAY BE LOCATED ABOVE CEILING OUTSIDE OF MECHANICAL ROOM. DUCT DETECTORS LOCATED OUTSIDE OF MECHANICAL ROOM WILL REQUIRE A REMOTE INDICATOR LIGHT.)

FIRE ALARM NOTES:
1. THIS DRAWING SHOWN FOR ILLUSTRATION ONLY, FIRE ALARM CONTRACTOR SHALL INSTALL FIRE ALARM SYSTEM PER NFPA, ALL LOCAL/STATE CODES, AND AUTHORITY HAVING JURISDICTION.
2. CONTRACTOR TO INSTALL A NAPCO STARLINK SLE-LTEA-FIRE CELLULAR RADIO WITH (1) MONITOR MODULE FOR SUPERVISION OF THE RADIO.
3. SMOKE DETECTORS SHALL BE LOCATED A MINIMUM OF 3FT AWAY FROM HVAC GRILLES.ALL CANDELA RATINGS PER NATIONAL FIRE PROTECTION ASSOCIATION. FIRE ALARM CONTRACTOR IS RESPONSIBLE FOR CANDELA CALCULATIONS AND SHALL VERIFY/MODIFY SYSTEM AS REQUIRED. FIRE ALARM CONTRACTOR TO VERIFY AUDIBLE DEVICES ARE 15 DECIBELS OVER AMBIENT NOISE LEVELS.
4. INSTALL WIREGUARDS OVER FIRE ALARM DEVICES INSTALLED IN GYMNASIUM.
5. ELECTRICAL CONTRACTOR IS REQUIRED TO INSTALL DUCT DETECTORS AND CONTROLS TO AHU.
6. FIRE ALARM CONTRACTOR TO INSTALL ALL SHUTDOWN CIRCUITS.
7. FIRE ALARM CONTRACTOR SHALL BE RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND MATERIALS SUPPLIED FOR THE CONSTRUCTION AND INSTALLATION, VERIFICATION OF DIMENSIONS AT THE SITE, AND THE VERIFICATION OF QUANTITIES BEFORE BIDDING. THE CONTRACTOR SHALL VERIFY THAT SITE CONDITIONS ARE CONSISTENT WITH THESE PLANS BEFORE STARTING WORK.
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12. ALL EXTERIOR FIRE ALARM DEVICES TO BE BLANKED OFF AFTER REMOVAL OF OLD DEVICES.
13. POWER SUPPLIES AND AMPLIFIER QUANTITIES TO BE DETERMINED BY INSTALLATION REQUIREMENTS.
14. ALL FIRE ALARM DEVICES LOCATED IN HALLWAYS AND CLASSROOMS TO BE 1 WATT UNLESS NOTED OTHERWISE.
15. ALL FIRE ALARM DEVICES LOCATED IN DANCE ROOMS, CAFETERIA, GYM, BAND ROOM, ETC. TO BE 2 WATTS.
16. CONTRACTOR TO SUPPLY RELAY FOR FIRE RATED ROLL UP DOOR CLOSURE.
17. INSTALLATION HAS TO BE PER NEC REQUIREMENTS. CABLING CAN NOT BE SUPPORTED BY CEILING GRID. HAS TO BE INSTALLED A MINIMUM 2" ABOVE CEILING GRID.
18. IF DUCT DETECTOR CAN NOT BE INSTALLED IN DUCT WORK LOCATED IN MECHANICAL ROOM DUE TO SPACE CONSTRAINTS, CONTRACTOR IS REQUIRED TO INSTALL REMOTE INDICATOR IN HALLWAY CEILING NEAR MECHANICAL ROOM.

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NORTH CAROLINA PROFESSIONAL SEAL 028880 ENGINEER ROBERT LOCKLEAR

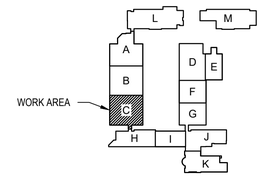
PROJECT INFORMATION:
SOUTH BRUNSWICK HIGH SCHOOL
FIRE ALARM REPLACEMENT
BRUNSWICK COUNTY BOARD OF EDUCATION
280 COUGAR RD
SOUTH PORT, NC 28461

REV# - DATE - DESCRIPTION:
1 -
2 -
3 -
4 -
5 -

DATE: 3/25/2024
DRAWN BY: CKD
CHECKED BY: RL
SHEET TITLE
FIRE ALARM PLAN - AREA B
SHEET NUMBER
FA102
PROJECT# 24-01233

BID SET - 3-25-2024

1 FIRE ALARM PLAN - AREA C
SCALE: 1/8" = 1'-0"



KEY PLAN

FIRE DETECTION LEGEND	
SYMBOL	DESCRIPTION
FACP	FIRE ALARM CONTROL PANEL
FAAP	FIRE ALARM ANNUCIATOR PANEL
NAC	FIRE ALARM REMOTE POWER SUPPLY PANEL
DAP	DISTRIBUTED AMPLIFIER PANEL
XX	AUDIO / VISUAL INDICATING DEVICE - WALL MOUNT
XX	AUDIO / VISUAL INDICATING DEVICE - CEILING MOUNT
XX	VISUAL ONLY INDICATING DEVICE - WALL MOUNT
V XX	VISUAL ONLY INDICATING DEVICE - CEILING MOUNT
F	PULL STATION
SD	SMOKE DETECTOR CEILING MOUNTED
HD	HEAT DETECTOR CEILING MOUNTED
M EXH	EXHAUST HOOD MONITOR MODULE
CO	CARBON MONOXIDE DETECTOR
DS	DUCT SMOKE DETECTOR
L	REMOTE INDICATOR LIGHT
R	DUCT DETECTOR RELAY
DM	EXISTING DOOR MAGNETS TO REMAIN

NOTE: ALL AUDIO DEVICES TO BE SPEAKER TYPE.
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2. NEW DUCT DETECTORS WILL HAVE TO BE INSTALLED NEAR EXISTING ONES AND EXISTING ONES LEFT IN PLACE UNTIL FIRE ALARM SYSTEM HAS BEEN TESTED. DRAWINGS WILL BE UPDATED TO REFLECT THIS.
3. THE CEILING TILE IN HALLWAYS TO BE ARMSTRONG CORTEGA 824. CEILING IN KITCHEN AREA TO BE ARMSTRONG KITCHEN ZONE 673 AND ALL OTHER AREAS TO BE ARMSTRONG CORTEGA 770.
4. BRUNSWICK COUNTY SCHOOLS WILL PAINT ANY EXPOSED CONDUIT, COVER PLATES, ETC.
5. BRUNSWICK COUNTY SCHOOLS TO PROVIDE A MAXIMUM OF 50 CEILING TILE FOR THE PROJECT. ANY CEILING TILES REQUIRED ABOVE 50 SHALL BE SUPPLIED BY THE CONTRACTOR.

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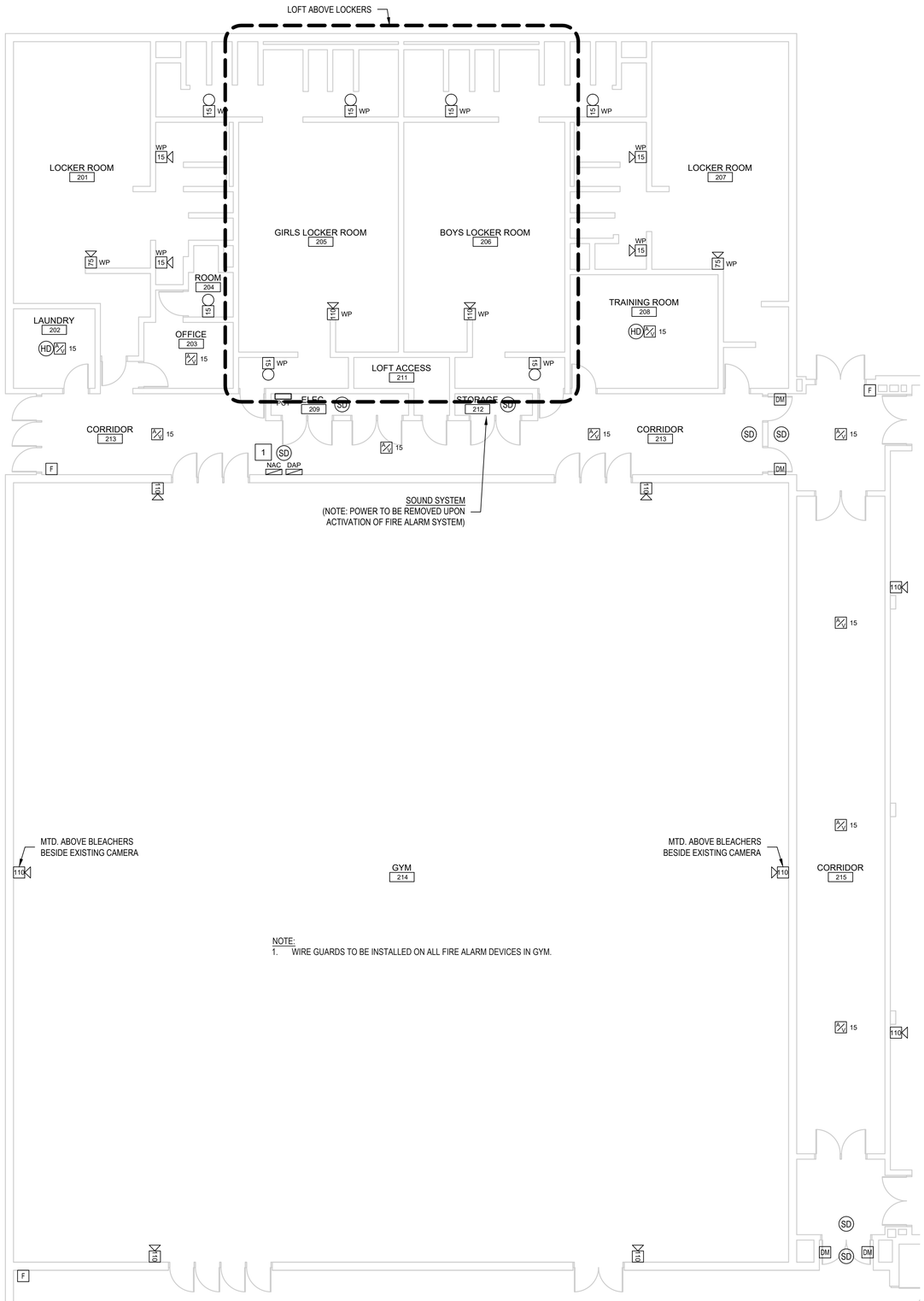
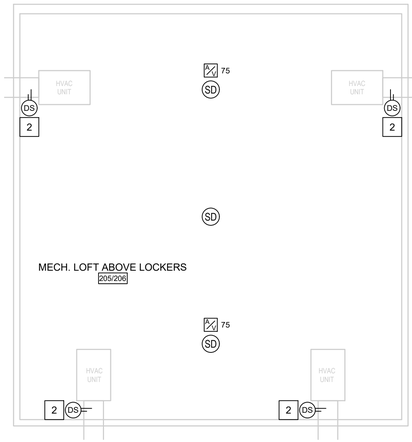
DATE: 3/25/2024
DRAWN BY: CKD
CHECKED BY: RL
SHEET TITLE
FIRE ALARM PLAN - AREA C
SHEET NUMBER
FA103
PROJECT# 24-01233

BID SET - 3-25-2024



1 FIRE ALARM PLAN - AREA D
SCALE: 1/8" = 1'-0"

NOTE:
1. WIRE GUARDS TO BE INSTALLED ON ALL FIRE ALARM DEVICES IN GYM.



2 FIRE ALARM PLAN - LOFT
SCALE: 1/8" = 1'-0"

FIRE DETECTION LEGEND	
SYMBOL	DESCRIPTION
FACP	FIRE ALARM CONTROL PANEL
FAAP	FIRE ALARM ANNUCIATOR PANEL
NAC	FIRE ALARM REMOTE POWER SUPPLY PANEL
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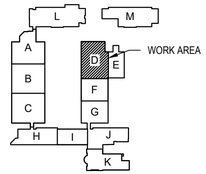

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FIRE ALARM ELECTRICAL KEYNOTES:

1 (1) 120V CIRCUIT FOR BOTH DAP AND NAC PANELS. MUST BE IDENTIFIED AND INCLUDE BREAKER LOCKS (FED FROM AVAILABLE 120V CKT IN PANEL PC1 LOCATED IN MECHANICAL LOFT ABOVE.

2 INSTALL NEW DUCT DETECTOR, DEMO EXISTING DUCT DETECTOR AFTER CERTIFICATION BY AHJ OF NEW FIRE ALARM SYSTEM. CONTRACTOR TO RE-SEAL DUCT. CONTRACTOR TO VERIFY LOCATIONS OF EXISTING SMOKE DETECTORS. SHUTDOWN CIRCUIT TO BE INSTALLED ON ALL UNITS (INCLUDING THOSE THAT DO NOT REQUIRE A DUCT DETECTOR). FIRE ALARM RELAY TO BE PROVIDED BY FIRE ALARM CONTRACTOR. CONTRACTOR TO INSTALL ALL SHUTDOWN CIRCUITS.

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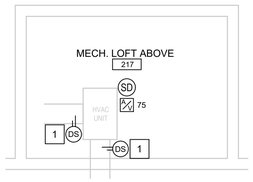
SHEET TITLE
FIRE ALARM PLAN - AREA D
SHEET NUMBER
FA104
PROJECT# 24-01233

1 FIRE ALARM PLAN - AREA E
SCALE: 1/8" = 1'-0"



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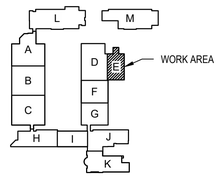

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7. FIRE ALARM CONTRACTOR SHALL BE RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND MATERIALS SUPPLIED FOR THE CONSTRUCTION AND INSTALLATION, VERIFICATION OF DIMENSIONS AT THE SITE, AND THE VERIFICATION OF QUANTITIES BEFORE BIDDING. THE CONTRACTOR SHALL VERIFY THAT SITE CONDITIONS ARE CONSISTENT WITH THESE PLANS BEFORE STARTING WORK.
8. GLOBAL SHUTDOWN OF ALL AIR HANDLING UNITS WHEN INPUT IS RECEIVED FROM A PULL STATION, SMOKE/HEAT DETECTOR OR DUCT DETECTOR.
9. MECHANICAL CONTRACTOR TO RE-SEAL DUCT. FIRE ALARM CONTRACTOR TO INSTALL SHUTDOWN CIRCUITS IN ALL UNITS.
10. CANDELA RATING FOR DEVICES SHALL BE 15 UNLESS NOTED OTHERWISE. FIRE ALARM INSTALLER IS RESPONSIBLE FOR CANDELA CALCULATIONS AND SHALL VERIFY/MODIFY SYSTEM AS REQUIRED.
11. FIRE ALARM CONTRACTOR TO COORDINATE WITH GENERAL CONTRACTOR ON FIRE ALARM COMMUNICATION TYPE. IF USING HARD COPPER WIRING, PRIMARY AND SECONDARY COMMUNICATIONS ARE REQUIRED.
12. ALL EXTERIOR FIRE ALARM DEVICES TO BE BLANKED OFF AFTER REMOVAL OF OLD DEVICES.
13. POWER SUPPLIES AND AMPLIFIER QUANTITIES TO BE DETERMINED BY INSTALLATION REQUIREMENTS.
14. ALL FIRE ALARM DEVICES LOCATED IN HALLWAYS AND CLASSROOMS TO BE 1 WATT UNLESS NOTED OTHERWISE.
15. ALL FIRE ALARM DEVICES LOCATED IN DANCE ROOMS, CAFETERIA, GYM, BAND ROOM, ETC. TO BE 2 WATTS.
16. CONTRACTOR TO SUPPLY RELAY FOR FIRE RATED ROLL UP DOOR CLOSURE.
17. INSTALLATION HAS TO BE PER NEC REQUIREMENTS. CABLING CAN NOT BE SUPPORTED BY CEILING GRID. HAS TO BE INSTALLED A MINIMUM 2" ABOVE CEILING GRID.
18. IF DUCT DETECTOR CAN NOT BE INSTALLED IN DUCT WORK LOCATED IN MECHANICAL ROOM DUE TO SPACE CONSTRAINTS, CONTRACTOR IS REQUIRED TO INSTALL REMOTE INDICATOR IN HALLWAY CEILING NEAR MECHANICAL ROOM.

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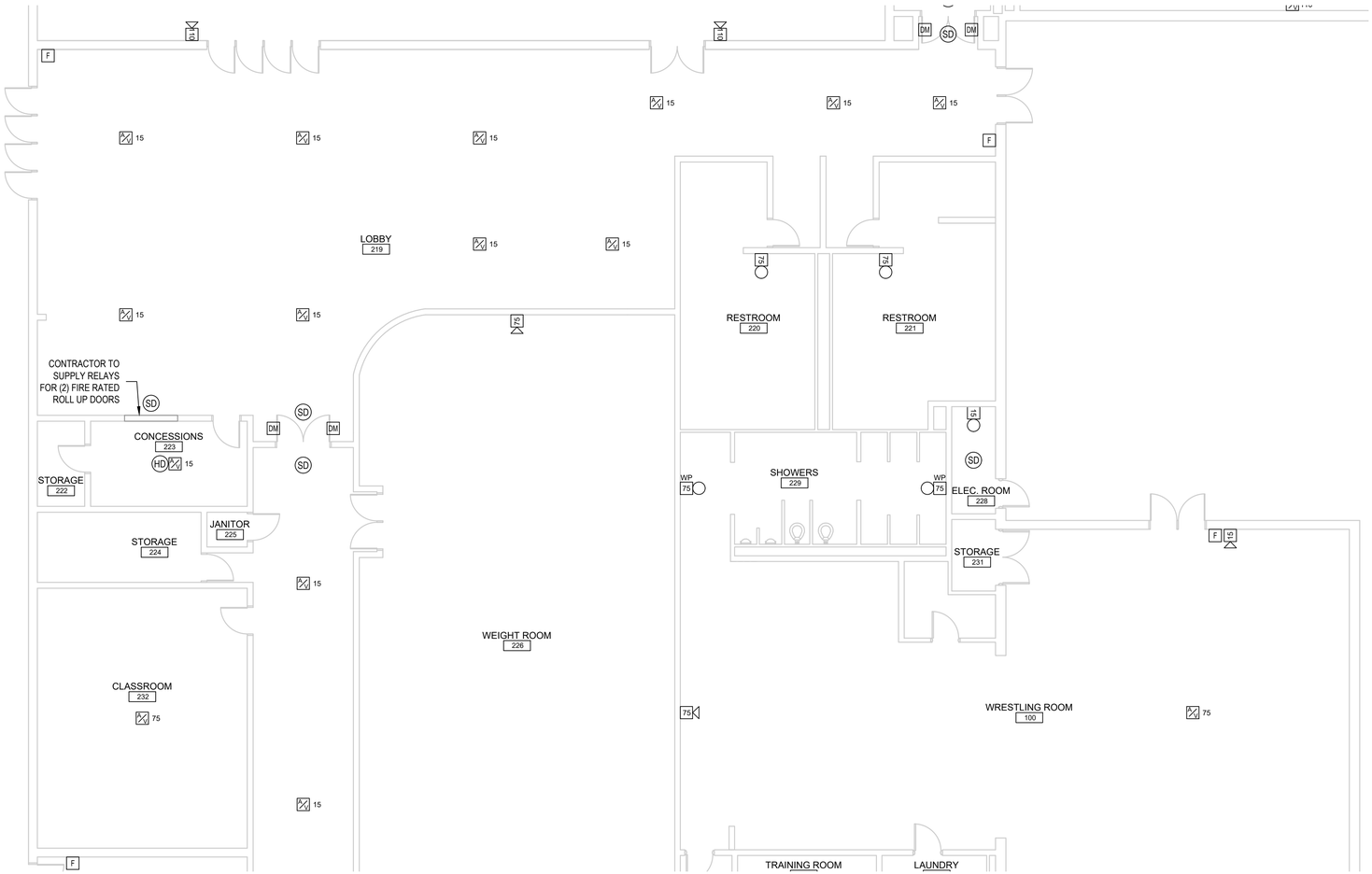
LOCKLEAR, LOCKLEAR & JACOBS CONSULTING ENGINEERS P-0754

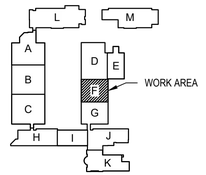
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 028880 ROBBY LOCKLEAR

PROJECT INFORMATION:
SOUTH BRUNSWICK HIGH SCHOOL
FIRE ALARM REPLACEMENT
BRUNSWICK COUNTY BOARD OF EDUCATION
280 COUGAR RD
SOUTH PORT, NC 28461

REV# - DATE - DESCRIPTION:
1.
2.
3.
4.
5.

DATE: 3/25/2024
DRAWN BY: CKD
CHECKED BY: RL
SHEET TITLE
FIRE ALARM PLAN - AREA E
SHEET NUMBER
FA105
PROJECT# 24-01233





KEY PLAN

CONTRACTOR NOTES:
1. ALL AIR HANDLING UNITS WILL REQUIRE NEW DUCT DETECTORS. INSTALL NEW DUCT DETECTORS NEAR EXISTING. DUCT DETECTORS LOCATED ABOVE CEILINGS OR IN HIDDEN LOCATIONS WILL REQUIRE VISUAL NOTIFICATION. GLOBAL SHUTDOWN IS REQUIRED OF ALL AIR HANDLING UNITS.
2. NEW DUCT DETECTORS WILL HAVE TO BE INSTALLED NEAR EXISTING ONES AND EXISTING ONES LEFT IN PLACE UNTIL FIRE ALARM SYSTEM HAS BEEN TESTED. DRAWINGS WILL BE UPDATED TO REFLECT THIS.
3. THE CEILING TILE IN HALLWAYS TO BE ARMSTRONG CORTEGA 824. CEILING IN KITCHEN AREA TO BE ARMSTRONG KITCHEN ZONE 673 AND ALL OTHER AREAS TO BE ARMSTRONG CORTEGA 770.
4. BRUNSWICK COUNTY SCHOOLS WILL PAINT ANY EXPOSED CONDUIT, COVER PLATES, ETC.
5. BRUNSWICK COUNTY SCHOOLS TO PROVIDE A MAXIMUM OF 50 CEILING TILE FOR THE PROJECT. ANY CEILING TILES REQUIRED ABOVE 50 SHALL BE SUPPLIED BY THE CONTRACTOR.

FIRE ALARM DEMOLITION NOTES:
1. ENTIRE EXISTING FIRE ALARM SYSTEM TO BE DEMOED AFTER CERTIFICATION BY AHJ OF NEW FIRE ALARM SYSTEM, EXISTING FIRE ALARM SYSTEM TO REMAIN OPERATIONAL UNTIL THIS TIME. DEMOLITION EXCEPTIONS OF THE ITEMS LISTED BELOW:
   - PULL ALL FIRE ALARM CIRCUITRY BACK TO NEAREST JUNCTION BOX. LABEL JUNCTION BOX AS "OLD FIRE ALARM DEVICE".
   - 4"X4" BLANK COVERS TO BE INSTALLED OVER DEMOED WALL DEVICES.
   - EXISTING DOOR HOLDERS/MAGNETS TO BE RE-USED. FIRE ALARM CONTRACTOR TO INSTALL NEW 24V DC CIRCUITRY.
2. DEMO DUCT DETECTORS, CONTRACTOR TO RE-SEAL DUCT.
3. DEMO DUCT DETECTORS AFTER CERTIFICATION BY AHJ OF NEW FIRE ALARM SYSTEM, CONTRACTOR TO RE-SEAL DUCT. EXISTING DUCT DETECTORS MAY BE LOCATED ABOVE CEILING OUTSIDE OF MECHANICAL ROOM. DUCT DETECTORS LOCATED OUTSIDE OF MECHANICAL ROOM WILL REQUIRE A REMOTE INDICATOR LIGHT.)

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4. INSTALL WIREGUARDS OVER FIRE ALARM DEVICES INSTALLED IN GYMNASIUM.
5. ELECTRICAL CONTRACTOR IS REQUIRED TO INSTALL DUCT DETECTORS AND CONTROLS TO AHU.
6. FIRE ALARM CONTRACTOR TO INSTALL ALL SHUTDOWN CIRCUITS.
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FIRE DETECTION LEGEND			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
FACP	FIRE ALARM CONTROL PANEL	SD	SMOKE DETECTOR CEILING MOUNTED
FAAP	FIRE ALARM ANNUCIATOR PANEL	HD	HEAT DETECTOR CEILING MOUNTED
NAC	FIRE ALARM REMOTE POWER SUPPLY PANEL	M EXH	EXHAUST HOOD MONITOR MODULE
DAP	DISTRIBUTED AMPLIFIER PANEL	CO	CARBON MONOXIDE DETECTOR
xx	AUDIO / VISUAL INDICATING DEVICE - WALL MOUNT	DS	DUCT SMOKE DETECTOR
xx	AUDIO / VISUAL INDICATING DEVICE - CEILING MOUNT	L	REMOTE INDICATOR LIGHT
xx	VISUAL ONLY INDICATING DEVICE - WALL MOUNT	R	DUCT DETECTOR RELAY
V xx	VISUAL ONLY INDICATING DEVICE - CEILING MOUNT	DM	EXISTING DOOR MAGNETS TO REMAIN
F	PULL STATION		

NOTE: ALL AUDIO DEVICES TO BE SPEAKER TYPE.
* WP = WEATHER PROOF DEVICE

1 FIRE ALARM PLAN - AREA F
SCALE: 1/8" = 1'-0"

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NORTH CAROLINA PROFESSIONAL SEAL 028880 ENGINEER BOBBY LOCKLEAR

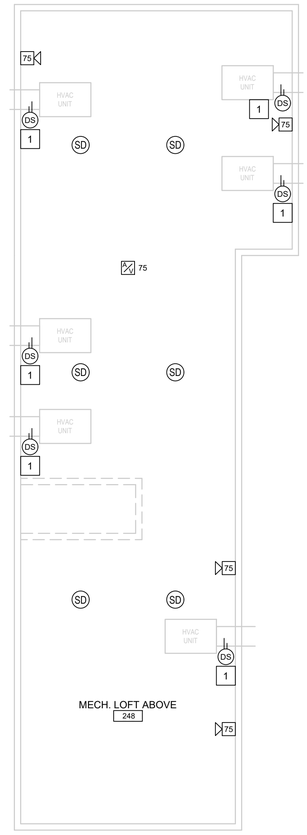
PROJECT INFORMATION:
SOUTH BRUNSWICK HIGH SCHOOL
FIRE ALARM REPLACEMENT
BRUNSWICK COUNTY BOARD OF EDUCATION
280 COUGAR RD
SOUTH PORT, NC 28461

REV# - DATE - DESCRIPTION:
1 2 3 4 5

DATE: 3/25/2024
DRAWN BY: CKD
CHECKED BY: RL
SHEET TITLE
FIRE ALARM PLAN - AREA F
SHEET NUMBER
FA106
PROJECT# 24-01233

BID SET - 3-25-2024

1 FIRE ALARM PLAN - AREA G
SCALE: 1/8" = 1'-0"



2 FIRE ALARM PLAN - LOFT
SCALE: 1/8" = 1'-0"

FIRE DETECTION LEGEND	
SYMBOL	DESCRIPTION
FACP	FIRE ALARM CONTROL PANEL
FAAP	FIRE ALARM ANNUCIATOR PANEL
NAC	FIRE ALARM REMOTE POWER SUPPLY PANEL
DAP	DISTRIBUTED AMPLIFIER PANEL
XX	AUDIO / VISUAL INDICATING DEVICE - WALL MOUNT
XX	AUDIO / VISUAL INDICATING DEVICE - CEILING MOUNT
XX	VISUAL ONLY INDICATING DEVICE - WALL MOUNT
V XX	VISUAL ONLY INDICATING DEVICE - CEILING MOUNT
F	PULL STATION
SD	SMOKE DETECTOR CEILING MOUNTED
HD	HEAT DETECTOR CEILING MOUNTED
M EXH	EXHAUST HOOD MONITOR MODULE
CO	CARBON MONOXIDE DETECTOR
DS	DUCT SMOKE DETECTOR
L	REMOTE INDICATOR LIGHT
R	DUCT DETECTOR RELAY
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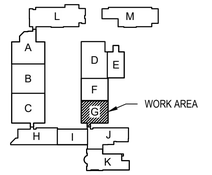

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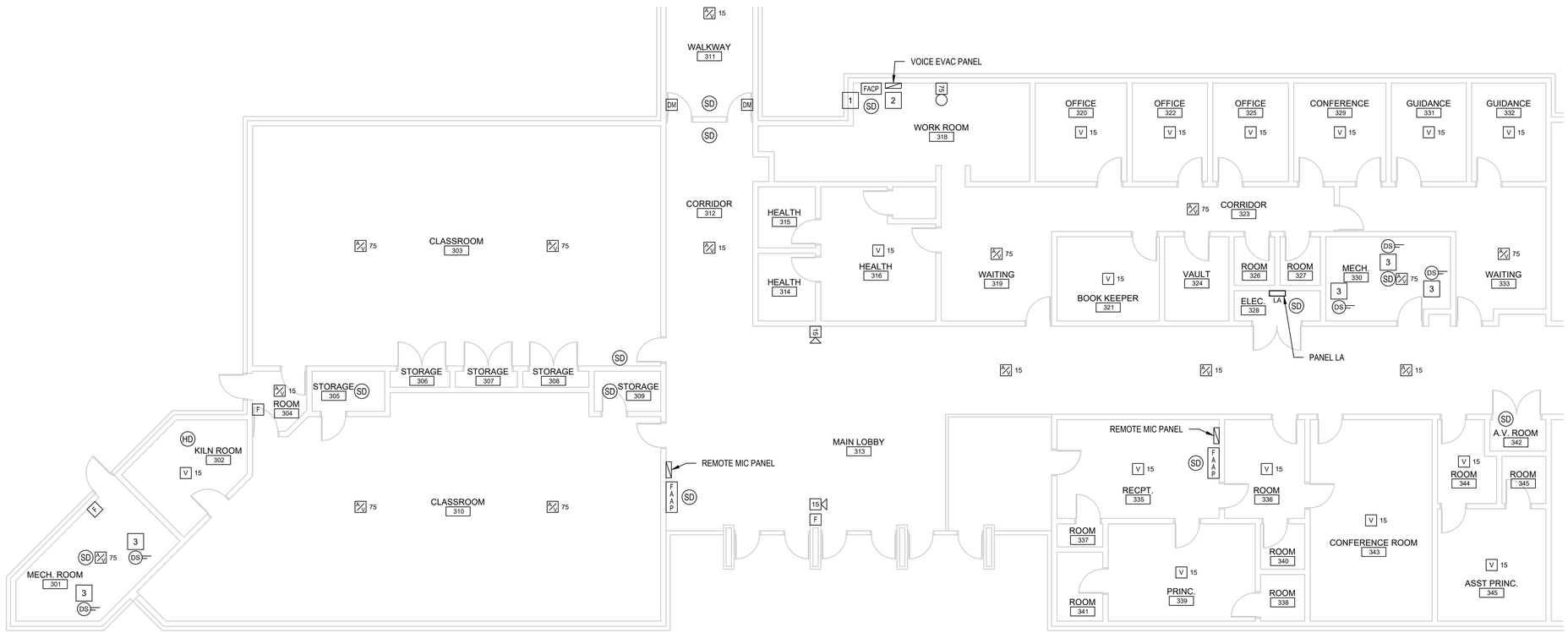
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 028880 ROBBY LOCKLEAR

PROJECT INFORMATION:
SOUTH BRUNSWICK HIGH SCHOOL
FIRE ALARM REPLACEMENT
BRUNSWICK COUNTY BOARD OF EDUCATION
280 COUGAR RD
SOUTH PORT, NC 28461

REV# - DATE - DESCRIPTION:
1 -
2 -
3 -
4 -
5 -

DATE: 3/25/2024
DRAWN BY: CKD
CHECKED BY: RL
SHEET TITLE
FIRE ALARM PLAN - AREA G
SHEET NUMBER
FA107
PROJECT# 24-01233

BID SET - 3-25-2024



1 FIRE ALARM PLAN - AREA H
SCALE: 1/8" = 1'-0"

FIRE DETECTION LEGEND	
SYMBOL	DESCRIPTION
FACP	FIRE ALARM CONTROL PANEL
FAAP	FIRE ALARM ANNUCIATOR PANEL
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HD	HEAT DETECTOR CEILING MOUNTED
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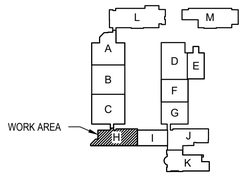

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FIRE ALARM ELECTRICAL KEYNOTES:

1. 120V DEDICATED CIRCUIT FOR NEW FACP PANEL. MUST BE IDENTIFIED AND INCLUDE BREAKER LOCKS (FED FROM AVAILABLE 120V CKT IN PANEL L2A).
2. 120V DEDICATED CIRCUIT FOR VOICE EVAC PANEL. MUST BE IDENTIFIED AND INCLUDE BREAKER LOCKS (FED FROM AVAILABLE 120V CKT IN PANEL LA).
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NORTH CAROLINA PROFESSIONAL SEAL 028880 ENGINEER ROBBIE LOCKLEAR

PROJECT INFORMATION:
SOUTH BRUNSWICK HIGH SCHOOL
FIRE ALARM REPLACEMENT
BRUNSWICK COUNTY BOARD OF EDUCATION
280 COUGAR RD
SOUTH PORT, NC 28461

REV# - DATE - DESCRIPTION:
1
2
3
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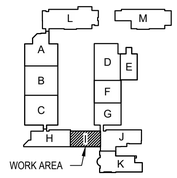
DATE: 3/25/2024
DRAWN BY: CKD
CHECKED BY: RL
SHEET TITLE

FIRE ALARM PLAN - AREA H

SHEET NUMBER
FA108
PROJECT# 24-01233

BID SET - 3-25-2024

1 FIRE ALARM PLAN - AREA I
SCALE: 1/8" = 1'-0"



KEY PLAN

FIRE DETECTION LEGEND	
SYMBOL	DESCRIPTION
FACP	FIRE ALARM CONTROL PANEL
FAAP	FIRE ALARM ANNUCIATOR PANEL
NAC	FIRE ALARM REMOTE POWER SUPPLY PANEL
DAP	DISTRIBUTED AMPLIFIER PANEL
XX	AUDIO / VISUAL INDICATING DEVICE - WALL MOUNT
XX	AUDIO / VISUAL INDICATING DEVICE - CEILING MOUNT
XX	VISUAL ONLY INDICATING DEVICE - WALL MOUNT
V XX	VISUAL ONLY INDICATING DEVICE - CEILING MOUNT
F	PULL STATION
SD	SMOKE DETECTOR CEILING MOUNTED
HD	HEAT DETECTOR CEILING MOUNTED
M EXH	EXHAUST HOOD MONITOR MODULE
CO	CARBON MONOXIDE DETECTOR
DS	DUCT SMOKE DETECTOR
L	REMOTE INDICATOR LIGHT
R	DUCT DETECTOR RELAY
DM	EXISTING DOOR MAGNETS TO REMAIN

NOTE: ALL AUDIO DEVICES TO BE SPEAKER TYPE.
* WP = WEATHER PROOF DEVICE

CONTRACTOR NOTES:
1. ALL AIR HANDLING UNITS WILL REQUIRE NEW DUCT DETECTORS. INSTALL NEW DUCT DETECTORS NEAR EXISTING. DUCT DETECTORS LOCATED ABOVE CEILINGS OR IN HIDDEN LOCATIONS WILL REQUIRE VISUAL NOTIFICATION. GLOBAL SHUTDOWN IS REQUIRED OF ALL AIR HANDLING UNITS.
2. NEW DUCT DETECTORS WILL HAVE TO BE INSTALLED NEAR EXISTING ONES AND EXISTING ONES LEFT IN PLACE UNTIL FIRE ALARM SYSTEM HAS BEEN TESTED. DRAWINGS WILL BE UPDATED TO REFLECT THIS.
3. THE CEILING TILE IN HALLWAYS TO BE ARMSTRONG CORTEGA 824. CEILING IN KITCHEN AREA TO BE ARMSTRONG KITCHEN ZONE 673 AND ALL OTHER AREAS TO BE ARMSTRONG CORTEGA 770.
4. BRUNSWICK COUNTY SCHOOLS WILL PAINT ANY EXPOSED CONDUIT, COVER PLATES, ETC.
5. BRUNSWICK COUNTY SCHOOLS TO PROVIDE A MAXIMUM OF 50 CEILING TILE FOR THE PROJECT. ANY CEILING TILES REQUIRED ABOVE 50 SHALL BE SUPPLIED BY THE CONTRACTOR.

FIRE ALARM DEMOLITION NOTES:
1. ENTIRE EXISTING FIRE ALARM SYSTEM TO BE DEMOED AFTER CERTIFICATION BY AHJ OF NEW FIRE ALARM SYSTEM, EXISTING FIRE ALARM SYSTEM TO REMAIN OPERATIONAL UNTIL THIS TIME. DEMOLITION EXCEPTIONS OF THE ITEMS LISTED BELOW:
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   - 4"X4" BLANK COVERS TO BE INSTALLED OVER DEMOED WALL DEVICES.
   - EXISTING DOOR HOLDERS/MAGNETS TO BE RE-USED. FIRE ALARM CONTRACTOR TO INSTALL NEW 24V DC CIRCUITRY.
2. DEMO DUCT DETECTORS, CONTRACTOR TO RE-SEAL DUCT.
3. DEMO DUCT DETECTORS AFTER CERTIFICATION BY AHJ OF NEW FIRE ALARM SYSTEM, CONTRACTOR TO RE-SEAL DUCT. EXISTING DUCT DETECTORS MAY BE LOCATED ABOVE CEILING OUTSIDE OF MECHANICAL ROOM. DUCT DETECTORS LOCATED OUTSIDE OF MECHANICAL ROOM WILL REQUIRE A REMOTE INDICATOR LIGHT.)

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6. FIRE ALARM CONTRACTOR TO INSTALL ALL SHUTDOWN CIRCUITS.
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13. POWER SUPPLIES AND AMPLIFIER QUANTITIES TO BE DETERMINED BY INSTALLATION REQUIREMENTS.
14. ALL FIRE ALARM DEVICES LOCATED IN HALLWAYS AND CLASSROOMS TO BE 1 WATT UNLESS NOTED OTHERWISE.
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FIRE ALARM PLAN - AREA I

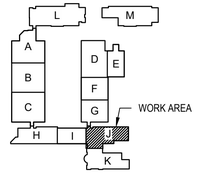
SHEET NUMBER

FA109

PROJECT# 24-01233

BID SET - 3-25-2024

1 FIRE ALARM PLAN - AREA J
SCALE: 1/8" = 1'-0"



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2 120V CIRCUIT FOR BOTH DAP AND NAC PANELS. MUST BE IDENTIFIED AND INCLUDE BREAKER LOCKS (FED FROM AVAILABLE 120V CKT IN PANEL LA). SEE SHEET FA108 FOR PANEL LA LOCATION.

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XX	VISUAL ONLY INDICATING DEVICE - WALL MOUNT
V xx	VISUAL ONLY INDICATING DEVICE - CEILING MOUNT
F	PULL STATION
SD	SMOKE DETECTOR CEILING MOUNTED
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M EXH	EXHAUST HOOD MONITOR MODULE
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DS	DUCT SMOKE DETECTOR
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NOTE: ALL AUDIO DEVICES TO BE SPEAKER TYPE.
* WP = WEATHER PROOF DEVICE

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PROJECT INFORMATION:
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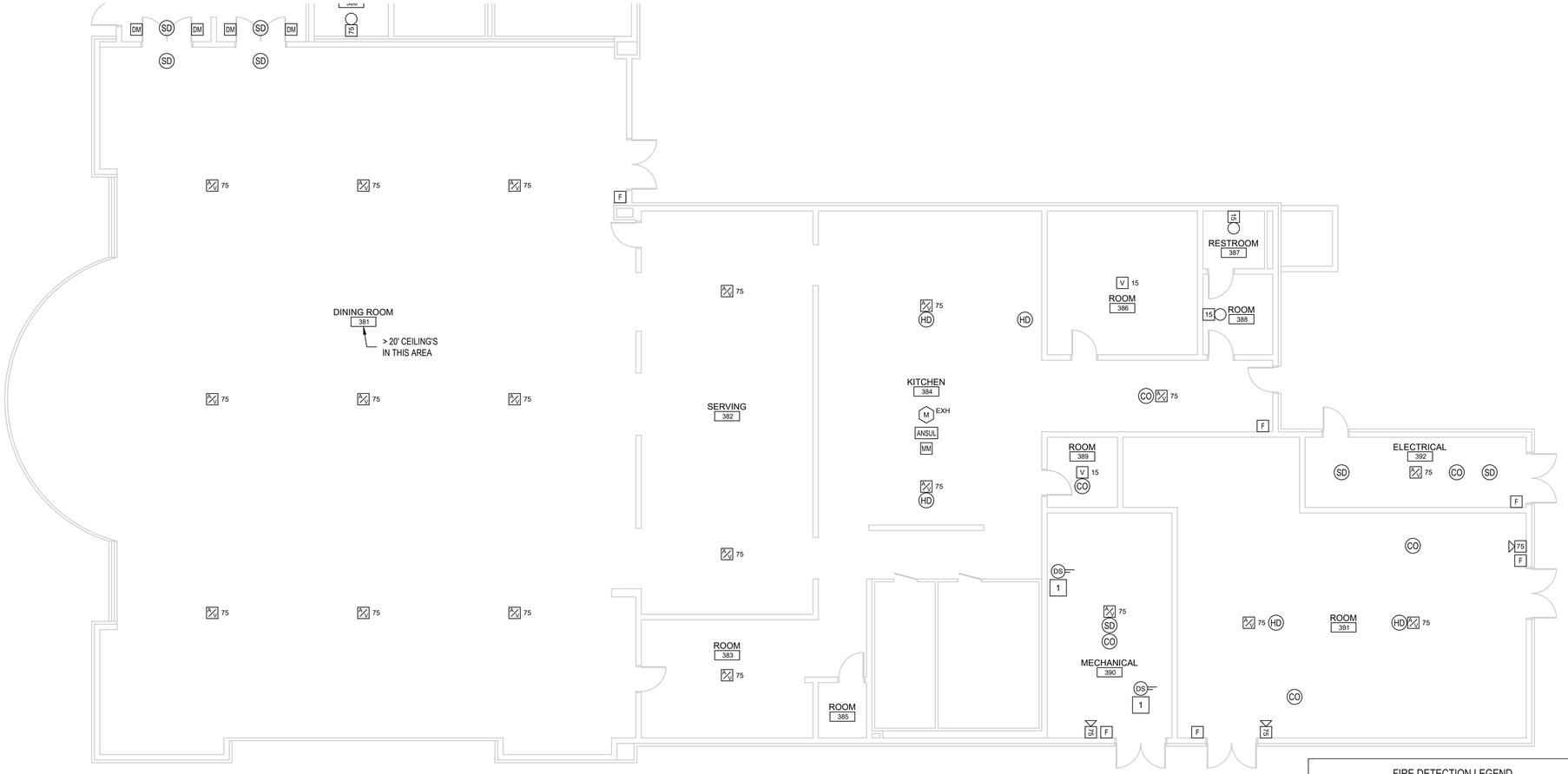
FIRE ALARM REPLACEMENT
BRUNSWICK COUNTY BOARD OF EDUCATION
280 COUGAR RD
SOUTH PORT, NC 28461

REV# - DATE - DESCRIPTION:	1	2	3	4	5

DATE: 3/25/2024
DRAWN BY: CKD
CHECKED BY: RL
SHEET TITLE
FIRE ALARM PLAN - AREA J
SHEET NUMBER
FA110
PROJECT# 24-01233

BID SET - 3-25-2024



1 FIRE ALARM PLAN - AREA K
SCALE: 1/8" = 1'-0"

FIRE DETECTION LEGEND	
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MM	MONITOR MODULE
R	DUCT DETECTOR RELAY
DM	EXISTING DOOR MAGNETS TO REMAIN
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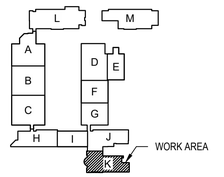

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FIRE ALARM PLAN - AREA K
SHEET NUMBER
FA111
PROJECT# 24-01233

Printed: Mon 25-Mar-2024 - 12:37PM

FIRE DETECTION LEGEND			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
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DAP	DISTRIBUTED AMPLIFIER PANEL	CO	CARBON MONOXIDE DETECTOR
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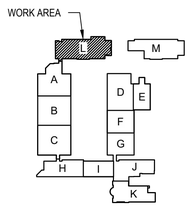

KEY PLAN

CONTRACTOR NOTES:
1. ALL AIR HANDLING UNITS WILL REQUIRE NEW DUCT DETECTORS. INSTALL NEW DUCT DETECTORS NEAR EXISTING. DUCT DETECTORS LOCATED ABOVE CEILINGS OR IN HIDDEN LOCATIONS WILL REQUIRE VISUAL NOTIFICATION. GLOBAL SHUTDOWN IS REQUIRED OF ALL AIR HANDLING UNITS.
2. NEW DUCT DETECTORS WILL HAVE TO BE INSTALLED NEAR EXISTING ONES AND EXISTING ONES LEFT IN PLACE UNTIL FIRE ALARM SYSTEM HAS BEEN TESTED. DRAWINGS WILL BE UPDATED TO REFLECT THIS.
3. THE CEILING TILE IN HALLWAYS TO BE ARMSTRONG CORTEGA 824. CEILING IN KITCHEN AREA TO BE ARMSTRONG KITCHEN ZONE 673 AND ALL OTHER AREAS TO BE ARMSTRONG CORTEGA 770.
4. BRUNSWICK COUNTY SCHOOLS WILL PAINT ANY EXPOSED CONDUIT, COVER PLATES, ETC.
5. BRUNSWICK COUNTY SCHOOLS TO PROVIDE A MAXIMUM OF 50 CEILING TILE FOR THE PROJECT. ANY CEILING TILES REQUIRED ABOVE 50 SHALL BE SUPPLIED BY THE CONTRACTOR.

FIRE ALARM ELECTRICAL KEYNOTES:

1 (1) 120V CIRCUIT FOR BOTH DAP AND NAC PANELS. MUST BE IDENTIFIED AND INCLUDE BREAKER LOCKS (FED FROM AVAILABLE 120V CKT IN PANEL PG2).

FIRE ALARM DEMOLITION NOTES:
1. ENTIRE EXISTING FIRE ALARM SYSTEM TO BE DEMOED AFTER CERTIFICATION BY AHJ OF NEW FIRE ALARM SYSTEM, EXISTING FIRE ALARM SYSTEM TO REMAIN OPERATIONAL UNTIL THIS TIME. DEMOLITION EXCEPTIONS OF THE ITEMS LISTED BELOW:
   - PULL ALL FIRE ALARM CIRCUITRY BACK TO NEAREST JUNCTION BOX. LABEL JUNCTION BOX AS "OLD FIRE ALARM DEVICE".
   - 4"X4" BLANK COVERS TO BE INSTALLED OVER DEMOED WALL DEVICES.
   - EXISTING DOOR HOLDERS/MAGNETS TO BE RE-USED. FIRE ALARM CONTRACTOR TO INSTALL NEW 24V DC CIRCUITRY.
2. DEMO DUCT DETECTORS, CONTRACTOR TO RE-SEAL DUCT.
3. DEMO DUCT DETECTORS AFTER CERTIFICATION BY AHJ OF NEW FIRE ALARM SYSTEM, CONTRACTOR TO RE-SEAL DUCT. EXISTING DUCT DETECTORS MAY BE LOCATED ABOVE CEILING OUTSIDE OF MECHANICAL ROOM. DUCT DETECTORS LOCATED OUTSIDE OF MECHANICAL ROOM WILL REQUIRE A REMOTE INDICATOR LIGHT.)

FIRE ALARM NOTES:
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2. CONTRACTOR TO INSTALL A NAPCO STARLINK SLE-LTEA-FIRE CELLULAR RADIO WITH (1) MONITOR MODULE FOR SUPERVISION OF THE RADIO.
3. SMOKE DETECTORS SHALL BE LOCATED A MINIMUM OF 3FT AWAY FROM HVAC GRILLES.ALL CANDELA RATINGS PER NATIONAL FIRE PROTECTION ASSOCIATION. FIRE ALARM CONTRACTOR IS RESPONSIBLE FOR CANDELA CALCULATIONS AND SHALL VERIFY/MODIFY SYSTEM AS REQUIRED. FIRE ALARM CONTRACTOR TO VERIFY AUDIBLE DEVICES ARE 15 DECIBELS OVER AMBIENT NOISE LEVELS.
4. INSTALL WIREGUARDS OVER FIRE ALARM DEVICES INSTALLED IN GYMNASIUM.
5. ELECTRICAL CONTRACTOR IS REQUIRED TO INSTALL DUCT DETECTORS AND CONTROLS TO AHU.
6. FIRE ALARM CONTRACTOR TO INSTALL ALL SHUTDOWN CIRCUITS.
7. FIRE ALARM CONTRACTOR SHALL BE RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND MATERIALS SUPPLIED FOR THE CONSTRUCTION AND INSTALLATION, VERIFICATION OF DIMENSIONS AT THE SITE, AND THE VERIFICATION OF QUANTITIES BEFORE BIDDING. THE CONTRACTOR SHALL VERIFY THAT SITE CONDITIONS ARE CONSISTENT WITH THESE PLANS BEFORE STARTING WORK.
8. GLOBAL SHUTDOWN OF ALL AIR HANDLING UNITS WHEN INPUT IS RECEIVED FROM A PULL STATION, SMOKE/HEAT DETECTOR OR DUCT DETECTOR.
9. MECHANICAL CONTRACTOR TO RE-SEAL DUCT. FIRE ALARM CONTRACTOR TO INSTALL SHUTDOWN CIRCUITS IN ALL UNITS.
10. CANDELA RATING FOR DEVICES SHALL BE 15 UNLESS NOTED OTHERWISE. FIRE ALARM INSTALLER IS RESPONSIBLE FOR CANDELA CALCULATIONS AND SHALL VERIFY/MODIFY SYSTEM AS REQUIRED.
11. FIRE ALARM CONTRACTOR TO COORDINATE WITH GENERAL CONTRACTOR ON FIRE ALARM COMMUNICATION TYPE. IF USING HARD COPPER WIRING, PRIMARY AND SECONDARY COMMUNICATIONS ARE REQUIRED.
12. ALL EXTERIOR FIRE ALARM DEVICES TO BE BLANKED OFF AFTER REMOVAL OF OLD DEVICES.
13. POWER SUPPLIES AND AMPLIFIER QUANTITIES TO BE DETERMINED BY INSTALLATION REQUIREMENTS.
14. ALL FIRE ALARM DEVICES LOCATED IN HALLWAYS AND CLASSROOMS TO BE 1 WATT UNLESS NOTED OTHERWISE.
15. ALL FIRE ALARM DEVICES LOCATED IN DANCE ROOMS, CAFETERIA, GYM, BAND ROOM, ETC. TO BE 2 WATTS.
16. CONTRACTOR TO SUPPLY RELAY FOR FIRE RATED ROLL UP DOOR CLOSURE.
17. INSTALLATION HAS TO BE PER NEC REQUIREMENTS. CABLING CAN NOT BE SUPPORTED BY CEILING GRID. HAS TO BE INSTALLED A MINIMUM 2" ABOVE CEILING GRID.
18. IF DUCT DETECTOR CAN NOT BE INSTALLED IN DUCT WORK LOCATED IN MECHANICAL ROOM DUE TO SPACE CONSTRAINTS, CONTRACTOR IS REQUIRED TO INSTALL REMOTE INDICATOR IN HALLWAY CEILING NEAR MECHANICAL ROOM.

1 FIRE ALARM PLAN - AREA L
SCALE: 1/8" = 1'-0"

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NORTH CAROLINA PROFESSIONAL SEAL 028880 ENGINEER ROBBY LOCKLEAR

PROJECT INFORMATION:
SOUTH BRUNSWICK HIGH SCHOOL
FIRE ALARM REPLACEMENT
BRUNSWICK COUNTY BOARD OF EDUCATION
280 COUGAR RD
SOUTH PORT, NC 28461

REV# - DATE - DESCRIPTION:
1 - 2 - 3 - 4 - 5 -

DATE: 3/25/2024
DRAWN BY: CKD
CHECKED BY: RL
SHEET TITLE
FIRE ALARM PLAN - AREA L
SHEET NUMBER
FA112
PROJECT# 24-01233

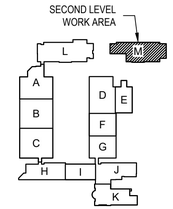
BID SET - 3-25-2024

C:\Users\LLJ-Chl-1\AppData\Local\Temp\AcPublish_19708\24-01233 South Brunswick High Fire Alarm Replacement.dwg, FA112 FIRE ALARM PLAN, LLJ-Chandler

Printed: Mon 25-Mar-2024 - 12:37PM

FIRE DETECTION LEGEND			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
FACP	FIRE ALARM CONTROL PANEL	SD	SMOKE DETECTOR CEILING MOUNTED
FAAP	FIRE ALARM ANNUCIATOR PANEL	HD	HEAT DETECTOR CEILING MOUNTED
NAC	FIRE ALARM REMOTE POWER SUPPLY PANEL	M EXH	EXHAUST HOOD MONITOR MODULE
DAP	DISTRIBUTED AMPLIFIER PANEL	CO	CARBON MONOXIDE DETECTOR
XX	AUDIO / VISUAL INDICATING DEVICE - WALL MOUNT	DS	DUCT SMOKE DETECTOR
xx	AUDIO / VISUAL INDICATING DEVICE - CEILING MOUNT	A	AUDIO ONLY CEILING MOUNT
XX	VISUAL ONLY INDICATING DEVICE - WALL MOUNT	R	DUCT DETECTOR RELAY
V xx	VISUAL ONLY INDICATING DEVICE - CEILING MOUNT	DM	EXISTING DOOR MAGNETS TO REMAIN
F	PULL STATION	ER	ELEVATOR RELAY

NOTE: ALL AUDIO DEVICES TO BE SPEAKER TYPE.
* WP = WEATHER PROOF DEVICE



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1 FIRE ALARM PLAN - AREA M
SCALE: 1/8" = 1'-0"

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NORTH CAROLINA PROFESSIONAL SEAL 028880 ENGINEER BOBBY LOCKLEAR

PROJECT INFORMATION:
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FIRE ALARM REPLACEMENT
BRUNSWICK COUNTY BOARD OF EDUCATION
280 COUGAR RD
SOUTH PORT, NC 28461

REV# - DATE - DESCRIPTION:
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4.
5.

DATE: 3/25/2024
DRAWN BY: CKD
CHECKED BY: RL
SHEET TITLE
FIRE ALARM PLAN - AREA M
SHEET NUMBER
FA113
PROJECT# 24-01233

C:\Users\LL-Ch~1\AppData\Local\Temp\AcPublish_19708\24-01233 South Brunswick High Fire Alarm Replacement.dwg, FA113 FIRE ALARM PLAN, LL-Chandler

BID SET - 3-25-2024

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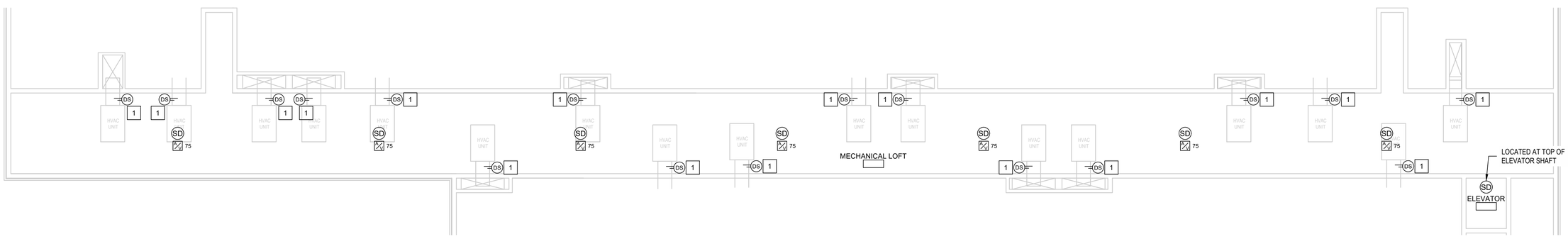

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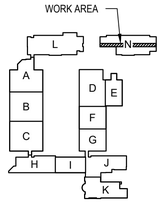

KEY PLAN

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DRAWN BY: CKD
CHECKED BY: RL
SHEET TITLE
FIRE ALARM PLAN - AREA N LOFT
SHEET NUMBER
FA114
PROJECT# 24-01233

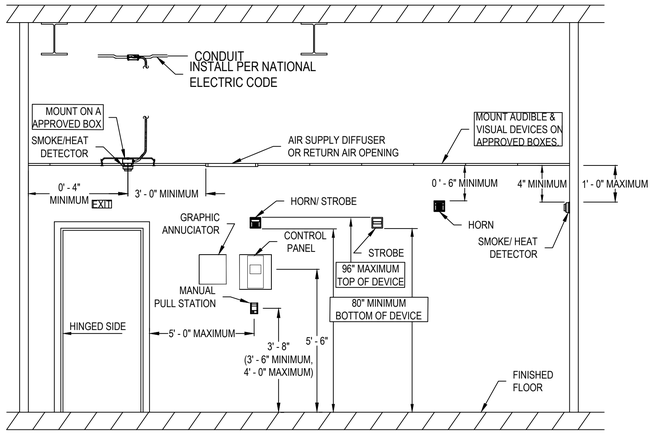
GENERAL:

1. THE WORK COVERED BY THESE CONSTRUCTION DOCUMENTS INCLUDES THE FURNISHING OF ALL LABOR, EQUIPMENT, MATERIALS AND PERFORMANCE OF ALL OPERATIONS IN CONNECTION WITH THE INSTALLATION OF THE FIRE ALARM SYSTEM AS SHOWN ON THE DRAWINGS AND AS HEREIN SPECIFIED.
2. THE COMPLETE INSTALLATION SHALL CONFORM TO THE APPLICABLE SECTIONS OF NFPA 72 (2013 EDITION), LOCAL CODE REQUIREMENTS, AND NATIONAL ELECTRICAL CODE (NFPA 70).
3. EACH AND ALL ITEMS OF THE FIRE ALARM SYSTEM SHALL BE LISTED AS A PRODUCT OF A SINGLE FIRE ALARM SYSTEM MANUFACTURER UNDER THE APPROPRIATE CATEGORY BY UNDERWRITERS' LABORATORIES, INC. (UL), AND SHALL BEAR THE "U.L." LABEL. ALL CONTROL EQUIPMENT SHALL BE LISTED UNDER UL CATEGORY UOJZ AS A SINGLE CONTROL UNIT. PARTIAL LISTING SHALL NOT BE ACCEPTABLE.
4. ALL PANELS AND PERIPHERAL DEVICES SHALL BE THE STANDARD PRODUCT OF A SINGLE MANUFACTURER AND SHALL DISPLAY THE MANUFACTURER'S NAME ON EACH COMPONENT.
5. WARRANTY ALL MATERIALS, INSTALLATION AND WORKMANSHIP FOR ONE (1) YEAR FROM DATE OF ACCEPTANCE, UNLESS OTHERWISE SPECIFIED.
6. SEAL AND FIREPROOF ALL CONDUIT PENETRATIONS THROUGH FIRE RATED WALLS PER U.L. DETAILS THIS SHEET.
7. ALL MOUNTING HEIGHTS ARE GIVEN TO THE CENTERLINE OF THE DEVICE UNLESS NOTED OTHERWISE.
8. MOUNTING HEIGHTS FOR ALL WALL MOUNTED ELECTRICAL DEVICES SHALL BE AS INDICATED IN THE 'DEVICE MOUNTING HEIGHT' SCHEDULE SHOWN ON THIS SHEET, UNLESS NOTED OTHERWISE.
9. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF NEC (NFPA 70) AND LOCAL CODES.
10. ALL CONDUCTORS, EQUIPMENT AND TERMINATION PROVISIONS SHALL BE U.L. LISTED.
11. OBTAIN AND PAY FOR ALL PERMITS REQUIRED FOR THE WORK.
12. FOR THE PURPOSES OF THE CONSTRUCTION DOCUMENTS THE WORD 'PROVIDE' SHALL MEAN TO 'FURNISH AND INSTALL'.
13. PROVIDE NEW FIRE ALARM DEVICES AS SHOWN. PROVIDE ALL HARDWARE, WIRING, CONDUIT & PROGRAMMING AS REQUIRED FOR A COMPLETE FIRE ALARM SYSTEM.

EXECUTION

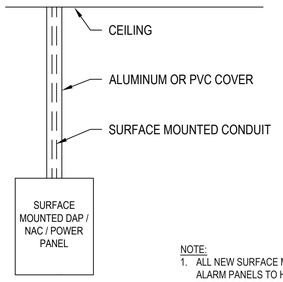
1. THE ENTIRE SYSTEM SHALL BE INSTALLED IN A WORKMANLIKE MANNER IN ACCORDANCE WITH APPROVED MANUFACTURERS MANUALS AND WIRING DIAGRAMS. THE CONTRACTOR SHALL FURNISH ALL CONDUIT, WIRING, OUTLET BOXES, JUNCTION BOXES, CABINETS AND SIMILAR DEVICES NECESSARY FOR THE COMPLETE INSTALLATION.
2. ALL JUNCTION BOXES AND CONDUITS SHALL BE PAINTED RED. WIRING COLOR CODE SHALL BE MAINTAINED THROUGHOUT THE INSTALLATION.
3. THE CONTRACTOR SHALL CLEAN ALL DIRT AND DEBRIS FROM THE INSIDE AND THE OUTSIDE OF THE FIRE ALARM EQUIPMENT AFTER COMPLETION OF THE INSTALLATION.
4. THE MANUFACTURER'S AUTHORIZED REPRESENTATIVE SHALL PROVIDE ON-SITE SUPERVISION OF INSTALLATION, AND SHALL INSTRUCT THE OWNER IN MAINTENANCE AND OPERATION PROCEDURES.
5. THE COMPLETED FIRE ALARM SYSTEM SHALL BE FULLY TESTED IN ACCORDANCE WITH NFPA-72 CHAPTER 14 BY THE CONTRACTOR IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE AND THE LOCAL AUTHORITIES HAVING JURISDICTION. UPON COMPLETION OF A SUCCESSFUL TEST, THE CONTRACTOR SHALL SO CERTIFY IN WRITING TO THE OWNER AND GENERAL CONTRACTOR. BY COMPLETING A NFPA 72 RECORD OF COMPLETION SIGNED BY THE FIRE ALARM NICET LEVEL III INSTALLER.
6. CONTRACTOR SHALL PROVIDE A FRAMED ZONE MAP POSTED AT ANNUCIATOR LOCATION TO INDICATE BUILDING ZONE AND FIRE ALARM DEVICE LOCATIONS PER THE LOCAL FIRE DEPARTMENTS REQUIREMENTS.
7. ALL STROBES SHALL BE SYNCHRONIZED PER N.F.P.A. 72.
8. THE CONTRACTOR SHALL SEAL ALL EXISTING AND/OR NEW WALL PENETRATIONS PER UL DETAILS SHOWN ON THIS SHEET.
9. ALL FIRE ALARM WIRING SHALL BE INSTALLED IN 3/4" CONDUIT MINIMUM.
10. RECORD OF COMPLETION SHALL BE SENT TO THE ENGINEER OF RECORD AND TO LOCAL AHJ.
11. THE FACP SHALL BE PROGRAMMED AS REQUIRED PER THE FIRE ALARM MATRIX.

1 GENERAL NOTES
NTS



NFPA 72 AND ADA STANDARD ICC A117.1_2009 DEVICE INSTALLATION REQUIREMENTS.

2 FIRE ALARM DEVICE MOUNTING HEIGHTS
NTS



NOTE:
1. ALL NEW SURFACE MOUNTED CONDUITS FROM BOTH POWER AND FIRE ALARM PANELS TO HAVE AN PAINTED ALUMINUM OR PVC COVER. OWNER TO CHOOSE COVER COLOR.

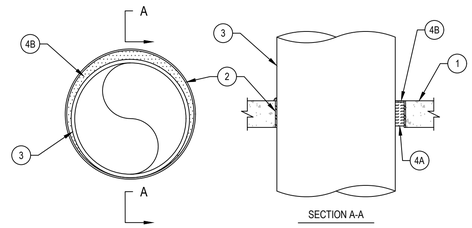
3 FIRE ALARM SYSTEM PANEL CONDUITS
NTS

FIRE ALARM SYSTEM MATRIX

SYSTEM INPUTS	ACTIVATE COMMON ALARM SIGNAL INDICATOR	ACTIVATE AUDIBLE ALARM SIGNAL	ACTIVATE COMMON TROUBLE SIGNAL INDICATOR	ACTIVATE AUDIBLE TROUBLE SIGNAL	ACTIVATE SILENCE SIGNAL INDICATOR	ACTIVATE SUPERVISORY SIGNAL INDICATOR	ACTIVATE BUILDING FIRE ALARM STROBES AND SPEAKERSTROBES	ACTIVATE LOCAL DEVICE SCHALERT IN AFFECTED AREA	TRANSMIT FIRE ALARM SIGNAL TO SUPERVISING STATION	TRANSMIT TROUBLE SIGNAL TO SUPERVISING STATION	TRANSMIT SILENCE SIGNAL TO SUPERVISING STATION	TRANSMIT SUPERVISORY SIGNAL TO SUPERVISING STATION	DEACTIVATE SPEAKERSTROBES & STROBES	SHUTDOWN HVAC UNIT	CLOSE FIRE RATED DOORS
MANUAL FIRE ALARM PULL STATION	X	X				X		X					X		
AREA SMOKE/HEAT DETECTOR	X	X				X		X					X		
DUCT DETECTOR					X						X		X		
FIRE ALARM POWER FAILURE (AFTER 2 HRS)			X	X					X						
FIRE ALARM LOW BATTERY			X	X					X						
OPEN CIRCUIT			X	X					X						
GROUND FAULT			X	X					X						
NOTIFICATION APPLIANCE SHORT CIRCUIT			X	X					X						
ALARM SILENCE AT FACP											X				
CARBON MONOXIDE DETECTOR					X		X				X				
SYSTEM TROUBLE			X						X						

4 FIRE ALARM SYSTEM MATRIX
NTS

SYSTEM NO. C-AJ-1226
F RATING --- 3HR
T RATING --- 0 HR
L RATING AT AMBIENT --- LESS THAN 1 CFM/SQFT
L RATING AT 400 F --- 4 CFM/SQFT



1. FLOOR OR WALL ASSEMBLY — MIN 4-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX DIAM OF OPENING IS 32 IN.
2. METALLIC SLEEVE — (OPTIONAL) NOM 32 IN. DIAM (OR SMALLER) SCHEDULE 40 (OR HEAVIER) STEEL SLEEVE CAST OR GROUTED INTO FLOOR OR WALL ASSEMBLY, FLUSH WITH FLOOR OR WALL SURFACES OR EXTENDING A MAX OF 3 IN. ABOVE FLOOR OR BEYOND BOTH SURFACES OF WALL. 2A. SHEET METAL SLEEVE — (OPTIONAL) MAX 6 IN. DIAM, MIN 26 GA GALV STEEL PROVIDED WITH A 26 GA GALV STEEL SQUARE FLANGE SPOT WELDED TO THE SLEEVE AT APPROX MID-HEIGHT, OR FLUSH WITH BOTTOM OF SLEEVE IN FLOORS, AND SIZED TO BE A MIN OF 2 IN. LARGER THAN THE SLEEVE DIAM. THE SLEEVE IS TO BE CAST IN PLACE AND MAY EXTEND A MAX OF 4 IN. BELOW THE BOTTOM OF THE DECK AND A MAX OF 1 IN. ABOVE THE TOP SURFACE OF THE CONCRETE FLOOR. 2B. SHEET METAL SLEEVE — (OPTIONAL) - MAX 12 IN. DIAM. MIN 24 GA GALV STEEL PROVIDED WITH A 24 GA GALV STEEL SQUARE FLANGE SPOT WELDED TO THE SLEEVE AT APPROX MID-HEIGHT, OR FLUSH WITH BOTTOM OF SLEEVE IN FLOORS, AND SIZED TO BE A MIN OF 2 IN. LARGER THAN THE SLEEVE DIAM. THE SLEEVE IS TO BE CAST IN PLACE AND MAY EXTEND A MAX OF 4 IN. BELOW THE TOP SURFACE OF THE CONCRETE FLOOR.
3. THROUGH-PENETRANT — ONE METALLIC PIPE, TUBE OR CONDUIT TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN PENETRANT AND PERIPHERY OF OPENING SHALL BE MIN 0 IN. (POINT CONTACT) TO MAX 1-7/8 IN. PENETRANT MAY BE INSTALLED WITH CONTINUOUS POINT CONTACT. PENETRANT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PENETRANTS MAY BE USED:
   A. STEEL PIPE — NOM 30 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
   B. IRON PIPE — NOM 30 IN. DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.
   C. COPPER PIPE — NOM 6 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
   D. COPPER TUBING — NOM 6 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
   E. CONDUIT — NOM 6 IN. DIAM (OR SMALLER) STEEL CONDUIT.
   F. CONDUIT — NOM 4 IN. DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING (EMT).
4. FIRESTOP SYSTEM — THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
   A. PACKING MATERIAL — MIN 4 IN. THICKNESS OF MIN 4 PCF MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OR SLEEVE OR FROM BOTH SURFACES OF WALL OR SLEEVE AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.
   B. FILL, VOID OR CAVITY MATERIAL* — SEALANT — MIN 1/4 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR OR SLEEVE OR WITH BOTH SURFACES OF WALL OR SLEEVE. AT THE POINT OR CONTINUOUS CONTACT LOCATIONS BETWEEN PENETRANT AND CONCRETE OR SLEEVE, A MIN 1/4 IN. DIAMETER BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE CONCRETE OR SLEEVE/ PIPE PENETRANT INTERFACE ON THE TOP SURFACE OF FLOOR AND ON BOTH SURFACES OF WALL.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE SEALANT

*Bearing the UL Classification Mark

5 FIRE RATED PENETRATION DETAIL
NTS

BATTERY CALCULATION				AMP/HRS
STANDBY LOAD REQUIRED CURRENT (AMPS) ( )	X	STANDBY TIME IN HOURS (24 OR 60 HOURS) ( )	=	
ALARMS LOAD CURRENT (AMPS) ( )	X	REQUIRED ALARM TIME IN HOURS (I.E. 5 MINUTES = 0.084) ( )	=	
ADD STANDBY AND ALARM LOAD FOR REQUIRED AMPERE HOUR BATTERY			=	
MULTIPLY BY THE DERATING FACTOR OR 1.2			X 1.2	
TOTAL AMPERE HOURS (AH) REQUIRED			=	

NOTES:
1. BATTERY CALCULATIONS TO BE COMPLETED BY FIRE ALARM CONTRACTOR.
2. FIRE ALARM CONTRACTOR SHALL VERIFY ALL BATTERY AND VOLTAGE DROP REQUIREMENTS OF EXISTING SYSTEM ARE ADEQUATE FOR ADDITIONAL DEVICES.

TYPICAL DEVICES MOUNTING HEIGHT (UNLESS OTHERWISE NOTED)	
FIRE ALARM PULL STATION	48" AFF TO TOP OF DEVICE
FIRE ALARM AUDIO/VISUAL ALARM (WALL)	80" AFF TO BOTTOM OF DEVICE
FIRE ALARM VISUAL ALARM ONLY (WALL)	80" AFF TO BOTTOM OF DEVICE

NOTE:
1. DIMENSIONS ARE TO DEVICE CENTERLINE UNLESS OTHERWISE NOTED.

RED CONDUIT / JUNCTION BOX NOTE
ALL JUNCTION BOXES FOR FIRE ALARM CONDUIT / WIRING SHALL BE PROVIDED WITH RED COVERS. ALL CONDUIT ASSOCIATED WITH THE FIRE ALARM SYSTEM SHALL BE FACTORY PAINTED RED UNLESS RUN EXPOSED WITHIN FINISHED SPACES SHALL BE PAINTED TO MATCH ADJACENT WALL/CEILING FINISH AS REQUIRED.

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PROJECT INFORMATION:
SOUTH BRUNSWICK HIGH SCHOOL
FIRE ALARM REPLACEMENT
BRUNSWICK COUNTY BOARD OF EDUCATION
280 COUGAR RD
SOUTH PORT, NC 28461

REV# - DATE - DESCRIPTION:
1 2 3 4 5

DATE: 3/25/2024
DRAWN BY: CKD
CHECKED BY: RL
SHEET TITLE
FIRE ALARM DETAILS
SHEET NUMBER
FA501
PROJECT# 24-01233

BID SET - 3-25-2024