

**SECTION 00 00 00
COVER SHEET**



**JUDGE E. MAURICE BRASWELL CUMBERLAND COUNTY
COURTHOUSE
FIRE ALARM UPGRADE**

**117 DICK ST
FAYETTEVILLE, NC 28301**

**CONSTRUCTION DOCUMENTS
MAY 30, 2024**

TWC PROJECT #: 2877-O

CERTIFICATIONS PAGE

A. Electrical Specifications

I, Robert E. Egan, P.E., hereby certify that Division 01, Division 26, and Division 28 of the, Cumberland County Braswell Courthouse Fire Alarm Upgrades Project Manual were prepared by me or under my direct supervision.



END OF SECTION

5/30/2024

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ADVERTIMENT FOR BIDS

INVITATION FOR PROPOSALS

FOR

CUMBERLAND COUNTY ENGINEERING & INFRASTRUCTURE DEPARTMENT

Cumberland County Braswell Courthouse Fire Alarm Upgrades, Fayetteville, North Carolina

Cumberland County

A mandatory pre-bid conference will be held at 2:00 PM on June 19, 2024, at 117 Dick St, Fayetteville, NC 28301.

Pursuant to Section 143-131 of the General Statutes of North Carolina, informal bids are solicited and will be received in the office of the Cumberland County Engineering & Infrastructure Department, Room 214, in the Historic Courthouse located at 130 Gillespie Street, Fayetteville, North Carolina at any time before 1:00 PM on 07-03-2024, and then publicly opened in the office of the Cumberland County Engineering & Infrastructure Department in the Historic Courthouse and read for construction of the proposed:

Proposals must be enclosed in a sealed envelope addressed to Mr. Jermaine Walker, Engineering and Infrastructure Director, 130 Gillespie Street, Room 214, Fayetteville, NC 28301. The outside of the envelope must be marked "PROPOSAL FOR Cumberland County Braswell Courthouse Fire Alarm Upgrades" and shall indicate the name, address, telephone number and state license number of the bidder. Proposals must be submitted on the printed form, or exact copies thereof, contained in the Contract Documents.

A bid bond is required for this project.

Minority bidders are strongly encouraged to participate.

Cumberland County MWBE goal is 15%.

Performance and Payment Bonds are required.

All Contractors are notified that North Carolina Statutory provisions as to licensing for Contractors will be observed in receiving, reading and awarding of contracts.

Plans and specifications, including Contract Documents, are open to public inspection and available upon request at the Cumberland County Engineering & Infrastructure Department Office, 130 Gillespie Street, Fayetteville, NC.

The County reserves the right to reject any or all proposals. The bidder to whom the contract may be awarded must comply with the requirements of G.S. Section 143-131, as amended.

No bids may be withdrawn after the scheduled closing time for the receipt of proposals for a period of forty-five (45) days.

SECTION 00 42 00
PROPOSAL FORM

The undersigned hereby signifies that it is
(his or her) intention and purpose to enter
into a contract to furnish labor, materials, equipment, apparatus, etc., as required and to do all
the work necessary for the:

Cumberland County Braswell Courthouse Fire Alarm Upgrades

as described in the specifications and shown on the plans in accordance with the terms of the Advertisement, Instructions to Bidders, the foregoing Specifications, and the following form of Contract, and this Proposal and the Plans; and pursuant with the requirements of the Advertisement and Instructions to bidders which are as follows:

THAT: The undersigned carefully examined the Instructions to Bidders, the Specifications, Plans, this form of Proposal, and the Contract and Fully understands them.

THAT: The undersigned carefully examined the site or sites of the project or projects and is familiar with the conditions under which the work, or any part of it, is to be done and the conditions which must be fulfilled in furnishing and/or erection or construction of any or all items of the project, and the furnishing only of any materials, equipment, or apparatus specified in connection therewith.

THAT: The undersigned will provide all necessary tools, machinery apparatus, and all means necessary to complete such Contract as may be entered into, and in the manner prescribed in the Contract and Specifications and according to the Plans and requirements under the of the Engineer, in the first class manner.

THAT: The right of Cumberland County and the recommendations of the Engineer are not to be questioned in the award of the Contract.

THAT: It is the intention of Cumberland County, North Carolina, subject to the conditions set forth, to award contracts for the project on the basis of bids received at this letting and in such manner as they may decide as being in the best interests of the County.

THAT: The County reserves the right to reject any of all proposals.

THAT: A proposal made by a corporation must be signed by its proper officers in a legal manner and its official address stated herein.

THAT: A proposal made by a firm shall be signed with the name of each member of said firm and the firm name added, with the official address of said firm.

THAT: The undersigned will complete such contract as is hereby proposed to enter into within the time stated in the notice to proceed and stipulated in the Contract.

THAT: The Bidder acknowledges receipt of the following Addendum (write in addendum #'s):

THAT: The Contractor agrees to furnish all materials, labor and equipment and to install complete in place the work in accordance with the Plans and Specifications for the lump sum of:

BASE BID:

_____ Dollars (\$_____).

UNIT PRICE 1: Add or deduct cost on one fire alarm speaker/strobe, including installation assuming 25' on fire alarm cabling.

_____ Dollars (\$_____).

UNIT PRICE 2: Add or deduct cost on one fire alarm smoke detector, including installation assuming 25' on fire alarm cabling.

_____ Dollars (\$_____).

Submitted, this _____ day of _____, 2023.

CONTRACTOR

By: _____
(Signature of Person, Firm or Corporation making Bid)

Title: _____

Address: _____

Attest: _____

License No. _____

Phone: _____

INSTRUCTIONS ON PROPER SIGNING

If Contractor is an individual, sign on first line only and designate trade name below first line, thus:

_____(Seal)

Trading as [Type of Company Name Here]

If Contractor is a partnership, sign partnership name on first line; have at least one general (not limited) partner sign on second line, and put his designation as partner on third line, thus:

By: _____(Seal)
_____ (Seal)

Title: _____

If Contractor is a corporation, sign corporate name on first line (exactly as such name appears on the corporate seal); have the President or Vice-President sign on second line, put his title on third line, have the Secretary or Assistant Secretary sign on the left "ATTEST" line (adding the word "Assistant before the word "Secretary", if the Assistant Secretary is signing), and imprint corporate seal above the word "Attest", thus:

_____(Seal)
(Corporate Seal) _____(Seal)
Title: _____ President _____

ATTEST:

Assistant Secretary

Attach to bid Attach to bid Attach to bid Attach to bid Attach to bid Attach to bid Attach to bid Attach to bid Attach to bid

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: _____

(SEAL)

Title: _____

State of _____, County of _____

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

Notary Public _____

My commission expires _____

Attach to bid Attach to bid Attach to bid Attach to bid Attach to bid Attach to bid Attach to bid Attach to bid Attach to bid

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 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: _____

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 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.

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

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: _____

(SEAL)

Title: _____

State of _____, County of _____

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

Notary Public _____

My commission expires _____

SECTION 00 52 00
CONTRACT

THIS CONTRACT, made the ____ day of _____, [2024] between the County of Cumberland, a body politic and a subdivision of the State of North Carolina, hereinafter referred to as COUNTY, and _____, a business located at _____ hereinafter referred to as CONTRACTOR.

WITNESSETH:

THAT WHEREAS, a contract for the Cumberland County Braswell Courthouse Fire Alarm Upgrades has recently been awarded to CONTRACTOR by the COUNTY, at and for a sum of:

(\$ _____) as shown in the Proposal attached hereto:

AND WHEREAS, it is provided in said award that a formal contract would be executed by and between CONTRACTOR and the COUNTY, evidencing the terms of said award, and that CONTRACTOR would commence the work to be performed under this agreement on a date to be specified in a written order by the COUNTY, and would fully complete all work within 240 calendar days from the date the Notice to Proceed is issued.

NOW, THEREFORE, CONTRACTOR doth hereby covenant and agree with the COUNTY that it will well and faithfully perform and execute such work and furnish such labor, materials, equipment, apparatus, and supplies, in accordance with each and every one of the conditions, covenants, stipulations, terms, and provisions contained in said Specifications and in accordance with the Plans, at and for a sum named therefore in the Proposal attached hereto, and will well and faithfully comply with and perform each and every obligation imposed upon it by said Plans and Specifications and the terms of said award.

CONTRACTOR shall promptly make payments to all persons supplying materials in the prosecution of the work, and to all laborers and others employed thereon.

CONTRACTOR shall be responsible for all damages to the property of Cumberland County and other utilities that may be consequent upon the normal procedure of its work or that may be caused by or result from the negligence of the CONTRACTOR, its employees or agents, during the progress of or connected with the prosecution of the work, whether within the limits of the work or elsewhere. CONTRACTOR must restore all property so injured to a condition as good as it was when CONTRACTOR entered upon the work.

CONTRACTOR shall furthermore be responsible for and required to make good at its expense any and all damages of whatever nature to persons or property, arising during the period of the Contract, caused by carelessness, neglect, or want of due precaution on the part of the CONTRACTOR, its agents, employees or workmen. CONTRACTOR shall also indemnify and save harmless the COUNTY, and the officers and agents thereof from all claims, suits, and proceedings of every name and description which may be brought against the COUNTY, or the officers and agents thereof, for or on account of any injuries or damages to persons or property received or sustained by any person or persons, firm or corporation, or by or in consequence of any materials used in said work or by or on account of any improper material or workmanship in its construction, or by or on account of any accident, or any other act or omission of CONTRACTOR, its agents, employees, servants, or workmen.

It is agreed and understood that the Advertisement for Bids, Instructions To Bidders, the General Conditions, the Specifications, the accepted Proposal, and the enumerated addenda and drawings are parts and parcels of this Contract, to the same extent as if incorporated herein in full.

It is further mutually agreed that, if at any time after the execution of this agreement and the surety bond hereto attached for its faithful performance, the COUNTY shall deem the surety or sureties upon such bond to be unsatisfactory, or if, for any reason, such bond ceases to be adequate to cover the performance of the work, CONTRACTOR shall at its expense, within five days after the receipt of notice from the COUNTY so to do, furnish an additional bond or bonds in such form and amount, and with such surety or sureties as shall be satisfactory to the COUNTY. In such event no further payment to CONTRACTOR shall be deemed to be due under this agreement until new or additional security for the performance of the work shall be furnished in manner and form satisfactory to the COUNTY.

And the COUNTY doth hereby covenant and agree with CONTRACTOR that it will pay to CONTRACTOR, when due and payable under the terms of said Specifications and said award, the above mentioned sum, and that it will well and faithfully comply with and perform each and every obligation imposed upon it by said Specifications and the terms of said award.

NON-APPROPRIATION CLAUSE: This agreement is subject to and contingent upon appropriation of funds for fiscal years subsequent to FY23.

E-VERIFY. CONTRACTOR shall comply with the requirements of Article 2 of Chapter 64 of the General Statutes. Further, if CONTRACTOR utilizes a subcontractor, CONTRACTOR shall require the subcontractor to comply with the requirements of Article 2 of Chapter 64 of the General Statutes.

Iran Divestment Act Certification. Contractor hereby certifies that Contractor, and all subcontractors, are not on the Iran Final Divestment List ("List") created by the North Carolina State Treasurer pursuant to N.C.G.S. 147-86.55-69. Contractor shall not utilize any subcontractor that is identified on the List.

Whenever used herein, the singular shall include the plural, the plural the singular, and the use of any gender shall be applicable to all genders as the context may require.

IN TESTIMONY WHEREOF, CONTRACTOR and the COUNTY have duly signed and sealed this Contract.

(Imprint corporate seal below this line)

ATTEST:

By:

Title:

ATTEST:

For the COUNTY OF
CUMBERLAND COUNTY, NC

By:

This instrument has been Pre-audited in the
manner
Required by the local Government Budget and
Fiscal Control Act.

Marshall Faircloth, Chairman
Approved for Legal Sufficiency
upon formal execution by all parties
COUNTY ATTORNEYS OFFICE

County Finance Office

() Renewable ()
Nonrenewable
Expiration Date:

INSTRUCTIONS ON PROPER SIGNING

If Contractor is an individual, sign on first line only and designate trade name below first line, thus:

_____(Seal)

Trading as [Type Company Name Here]

If Contractor is a partnership, sign partnership name on first line; have at least one general (not limited) partner sign on second line, and put his designation as partner on third line, thus:

_____(Seal)

By: _____(Seal)

Title: _____

If Contractor is a corporation, sign corporate name on first line (exactly as such name appears on the corporate seal); have the President or Vice-President sign on second line, put his title on third line, have the Secretary or Assistant Secretary sign on the left "ATTEST" line (adding the word "Assistant before the word "Secretary", if the Assistant Secretary is signing), and imprint corporate seal above the word "Attest", thus:

(Corporate Seal)

_____(Seal)

_____(Seal)

Title: _____

ATTEST:

Assistant Secretary

PERFORMANCE BOND

Contractor Name: Address:	Surety Name: Address:
Owner Name: Mailing Address	Contract Description Contract Price: Effective Date of Contract:
Bond Bond Amount: Date of Bond: <small>(date of Bond cannot be earlier than Effective Date of Contract)</small> Modifications to this Bond Form: ___ None ___ See Paragraph 18	
Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:
4. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;

5. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
6. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.
7. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

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

1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;
2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;
3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or
4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:
 - 4.1. After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
 - 4.2. Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.

If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and
3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

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

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

Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the 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 periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.

Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

Definitions

1. **Balance of the Contract Price**—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

2. Construction Contract—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.
3. Contractor Default—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.
4. Owner Default—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
5. Contract Documents—All the documents that comprise the agreement between the Owner and Contractor.

If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

Modifications to this Bond are as follows: [Describe modification or enter "None"]

END OF SECTION

PAYMENT BOND

Contractor Name: Address:	Surety Name: Address:
Owner Name: Mailing Address	Contract Description Contract Price: Effective Date of Contract:
Bond Bond Amount: Date of Bond: <small>(date of Bond cannot be earlier than Effective Date of Contract)</small> Modifications to this Bond Form: ___ None ___ See Paragraph 18	
Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond will arise after the following:

- 5.1. Claimants who do not have a direct contract with the Contractor
 - 5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).
- 5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
 - 7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
 - 7.2. Pay or arrange for payment of any undisputed amounts.
 - 7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.
8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

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

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

No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, 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 Construction 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 will be applicable.

Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.

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

Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

Definitions

1. Claim—A written statement by the Claimant including at a minimum:
 - 1.1. The name of the Claimant;
 - 1.2. The name of the person for whom the labor was done, or materials or equipment furnished;
 - 1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
 - 1.4. A brief description of the labor, materials, or equipment furnished;
 - 1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 - 1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 - 1.7. The total amount of previous payments received by the Claimant; and

- 1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
2. Claimant—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the 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.
3. Construction Contract—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
4. Owner Default—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
5. Contract Documents—All the documents that comprise the agreement between the Owner and Contractor.

If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

Modifications to this Bond are as follows: [Describe modification or enter "None"]

END OF SECTION

SECTION 00 72 00
GENERAL CONDITIONS

- A. The "General Conditions" referred to in this and the following section of the specifications is EJCDC "Standard General Conditions of the Construction Contract", EJCDC No. C-700 (2013 Edition) and SHALL BE considered Section II of this specification by reference.
 - 1. A copy of the "General Conditions" may be examined in the office of the Cumberland County Engineering & Infrastructure Department.
- B. Wherein the Supplementary Conditions are in conflict with the "General Conditions" (EJCDC No. C-700 (2013 Edition), the Provisions of the Supplementary Conditions SHALL govern.
- C. All work is to be performed by Contractors licensed in their respective fields of competence.

SECTION 00 73 00
SUPPLEMENTARY GENERAL CONDITIONS

GENERAL

The following Supplements modify, change, delete from or add to the "General Conditions of the Contract of Construction". Where any Article of the General Conditions is modified or any Paragraph, Subparagraph or Clause thereof is modified or deleted by these supplements, the unaltered provisions of that Article, Paragraph, Subparagraph or Clause shall remain in effect.

DEFINITIONS:

1. "Owner" or "County" - Cumberland County, North Carolina
2. "Engineer" - Cumberland County Engineering & Infrastructure Department
3. "Drawings" - All drawings, or reproductions of drawings pertaining to the construction under the Contract.
4. "Work" or "Project" - The work shown on the drawings and specified herein.

CONTRACT COMPLETION TIME AND LIQUIDATED DAMAGES:

The time for completion of the work including clean-up, under this contract shall be 240 calendar days from the date specified in a written "Notice to Proceed" to the Contractor(s). Liquidated damages in the amount of \$500.00 per day for each day in excess of the time allowed will be deducted from the contract amount to be paid to the Contractor(s).

See General Conditions of the Contract, Article 12, regarding construction schedules, delays and extensions of time.

NORTH CAROLINA SALES TAX:

The following procedure shall be followed relative to the North Carolina Sales Tax applicable to this project. Contractors shall comply fully with the requirements outlined hereinafter, in order that the County may recover the amount of the tax permitted under the law.

- a. It shall be the Contractor's responsibility to furnish the County documentary evidence showing the materials used and sales tax paid by the Contractor and each of his subcontractors. Such evidence shall be transmitted to the County together with the Contractor's monthly payment request on the form provided by the County.
- b. The documentary evidence shall consist of a certified statement, by the Contractor and each of his subcontractors individually showing total purchases of materials from each separate vendor, total sales taxes paid to each vendor, and the county to which the local sales tax was paid. The certified statement must show the invoice number, or numbers, covered and inclusive dates of such invoices.
- c. Materials used from Contractor's or subcontractor's warehouse stock shall be shown in a certified statement at warehouse stock prices.
- d. The Contractor shall not be required to certify the subcontractor's statements.
- e. The documentary evidence to be furnished to the County eligible for sales tax refunds covers sales taxes paid on building materials, supplies, fixtures and equipment which become a part of or annex to buildings or structures being erected, altered or repaired

- under contracts with governmental units.
- f. The Contractor to whom award is made on this project will be required to follow the procedure outlined above. Failure to comply with these requirements will result in delays in payment to the Contractor.

PLANS AND SPECIFICATIONS:

The Engineer will furnish to the Contractor two (2) copies of the Plans and Specifications, and the Contractor shall have available on the site at all times during the prosecution of the work one copy of said Plans and Specifications. This copy shall be accurately marked by the Contractor indicating all approved changes occurring during the construction process and delivered to the Engineer upon completion of the project.

MANUFACTURER'S RECOMMENDATIONS AND CERTIFICATION:

The Contractor shall submit to the Engineer for approval a list of proposed materials, equipment, or products to be incorporated in the work, within (10) days after award of the Contract.

The Contractor shall submit to the Engineer, the manufacturer's recommendations for each material or procedure to be utilized which is required to be in compliance with such recommendations. The Contractor shall have a copy of the manufacturer's instructions available at the construction site at all times and shall follow these instructions unless otherwise directed by the Engineer.

The Contractor shall be responsible at his own expense to provide certification to the Engineer by the manufacturer that all materials used for this project meet project specifications and are in compliance with referenced American Society for Testing Materials (ASTM). Materials or material suppliers shall not be changed after submittal or certifications without written approval by the Engineer. Any changes and re-certification cost shall be at the Contractor's expense and approval.

CONTRACTORS INSURANCE:

The Contractor shall not commence work under this Contract until he has obtained all insurance required below and submitted to the Owner in the form of a Certificate of Liability Insurance naming the County of Cumberland, P.O. Box 1829, Fayetteville, NC 28302 as the certificate holder, and such insurance has been approved by the Owner; nor shall the Contractor allow any subcontractor to commence work until such insurance has been obtained and approved. If a subcontractor does not take-out insurance in his own name and his principle Contractor wishes to provide insurance protection for such subcontractor and such subcontractor's employees, a rider must be attached to the principal policy, the Contractor must take out appropriate policies in the name of the subcontractor.

Minimum acceptable coverages are as follows:

Workers Compensation	Statutory
General Liability	\$1,000,000
Vehicle Bodily Injury	\$300,000 per Occurrence
	\$500,000 Annual Aggregate
Property Damage	\$500,000 Annual Aggregate

The Contractor and/or subcontractors shall furnish and keep in force the insurance requirements for a period of one (1) year after completion and acceptance of the work by the Owner. The certificate is to make reference to the project and the Owner.

FIELD DIRECTIVES FROM THE ENGINEER:

The Contractor shall communicate with and take field directives only from the Engineer or his representative. Any and all changes in the work are to be accomplished only by written change order or written field orders which can be issued only by the Engineer or his representative. No claims for monetary or other considerations will be allowed that are based on verbal agreements only or that are based on Contractor agreements with any agent other than the Engineer or his representative.

FORCE ACCOUNT WORK:

Should unforeseen circumstances arise which, in the opinion of the Engineer, require work to be done for which no price can be agreed upon, the Engineer may require that the work be done on a force account basis. Work done on this basis shall be paid as follows:

- g. Skilled and common labor at the regular rate of pay for such men. Pay for the foreman may be included provided in the judgment of the Engineer, a foreman is required.
- h. To the foregoing shall be added such social security and old age benefit payments made by the Contractor.
- i. Materials used, to be listed with invoices.
- j. Equipment used shall be paid for at an hourly rate schedule mutually agreed upon, but in no case shall it exceed the hourly rate schedule established for such units by the Associated General Contractors.

To the sum of a, b, c, and d shall be added ten percent (10%) for overhead and profit.

When force account work has been authorized, such authority shall be in writing.

LOCAL LAWS AND REGULATIONS:

The Bidder's attention is directed to the fact that all applicable state laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the Contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full. The Contractor will be responsible for notifying proper inspectors at various stages of construction for inspection and approval before continuing his work.

PERMITS AND LICENSES:

The Contractor shall procure and pay all charges and fees for all permits and licenses incidental to the due and lawful prosecution of the work.

CONSTRUCTION TRASH & DEBRIS REMOVAL:

During construction of the Project, the Contractor shall be responsible for the removal of any trash or debris created by his work to an approved disposal site. The site will be maintained in a clean condition at all times. Trash and debris from daily operations are to be stored in appropriate storage containers or trucks until removal to the disposal facility.

PAYMENTS:

Payments shall be made on a basis of 95% of monthly estimated cost of labor and materials, including freight or hauling on receipted bills until the work is 50% complete. Upon completion of 50% of the work, no additional retainage shall be held provided the work is progressing satisfactorily. If the Contractor fails to maintain the work on schedule,

the Owner has the right to reinstate retainage such that the total amount withheld does not exceed 2.5% of the total contract amount. The contract payment shall be due and payable within fifteen (15) days after the Contractor's invoice has been certified for payment by the Engineer, the balance to be paid upon completion and acceptance of the job. Final payment shall be made to the Contractor within thirty (30) days after all work has been finally completed and each and every provision of the specifications and accompanying drawings comply with to the Owner's or Engineer's satisfaction. Acceptance of the completed job shall be made by the Owner or his representative and the Engineer not later than the 25th of the month following in order to receive consideration.

DISPUTE RESOLUTION:

The parties must resolve any claim, dispute or other matter in contention arising out of, or relating to, this Contract which involves \$15,000 or more through the following procedure. The parties shall first negotiate in good faith to reach an equitable settlement to the dispute. If a negotiated settlement cannot be reached within 10 business days, the parties shall submit to mediation. The parties shall select a mediator, licensed by either North Carolina or federal courts and mutually agreeable to all parties in the dispute to conduct the proceedings which shall be held at the Owner's place of business. If the parties cannot agree on the selection of a mediator within 10 business days, then the parties agree that the Cumberland County Attorney shall select the mediator. The mediators cost shall be equally shared by all parties to the dispute. If a mediated settlement cannot be reached, the final recourse to the aggrieved party is legal action instituted and tried in the General Court of Justice of North Carolina under North Carolina Law with venue for trial being Cumberland County. No party shall have a right to resort to litigation until mediation shall first have occurred and not been successful.

In accordance with North Carolina General Statute 143-135.26(12) and as a condition to this Contract, the prime CONTRACTOR shall incorporate this dispute resolution clause in any and all contracts with first-tier subcontractors who in turn shall incorporate this clause in any contracts with lower-tier subcontractors.

WARRANTY

The CONTRACTOR shall provide a 12-month warranty on all materials and workmanship beginning on the date of final acceptance.

END OF SECTION

SECTION 01 10 00
SUMMARY

PART 1 GENERAL

1.01 PROJECT

- A. Project Name: Cumberland County Braswell Courthouse Fire Alarm Upgrades
- B. Owner's Name: Cumberland County.
- C. Engineer's Name: The Wooten Company.

1.02 CONTRACT DESCRIPTION

- A. Contract Type: A single prime contract based on a Stipulated Price as described in Document 00 52 00 - Agreement Form.

1.03 DESCRIPTION OF ALTERATIONS WORK

- A. Scope of demolition and removal work is indicated on drawings.
- B. Fire Alarm: Replace existing system with new construction, keeping existing in operation until ready for changeover.

1.04 OWNER OCCUPANCY

- A. Owner intends to continue to occupy adjacent portions of the existing building during the entire construction period.
- B. Owner intends to occupy the Project upon Substantial Completion.
- C. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- D. Schedule the Work to accommodate Owner occupancy. Work shall not occur in operational public areas between 8:00 am and 5:00 pm. Contractor may work in mechanical and restricted access spaces during business hours.

1.05 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: Limited to areas noted on Drawings.
 - 1. Locate and conduct construction activities in ways that will limit disturbance to site.
- B. Arrange use of site and premises to allow:
 - 1. Owner occupancy.
- C. Provide access to and from site as required by law and by Owner:
 - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- D. Utility Outages and Shutdown:
 - 1. Limit disruption of utility services to hours the building is unoccupied.
 - 2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.

3. Prevent accidental disruption of utility services to other facilities.

1.06 WORK SEQUENCE

A. Coordinate construction schedule and operations with Owner.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 20 00
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

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

1.02 SCHEDULE OF VALUES

- A. Use Schedule of Values Form: AIA G703, edition stipulated in the Agreement.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Engineer for approval.
- C. Forms filled out by hand will not be accepted.
- D. Submit Schedule of Values in duplicate within 20 days after date of Owner-Contractor Agreement.
- E. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification section. Identify site mobilization and bonds and insurance.
- F. Include in each line item, the amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.
- G. Revise schedule to list approved Change Orders, with each Application For Payment.

1.03 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Submit at intervals stipulated in the General and Supplementary Conditions..
- B. Use Form AIA G702 and Form AIA G703, edition stipulated in the Agreement.
- C. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Engineer for approval.
- D. Forms filled out by hand will not be accepted.
- E. Execute certification by signature of authorized officer.
- F. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
- G. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.
- H. Submit one electronic and three hard-copies of each Application for Payment.

- I. Include the following with the application:
 1. Transmittal letter as specified for submittals in Section 01 30 00.
 2. Construction progress schedule, revised and current as specified in Section 01 30 00.
 3. State Tax Form if required.

1.04 MODIFICATION PROCEDURES

- A. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Engineer will issue instructions directly to Contractor.
- B. For other required changes, Engineer will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
 1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
 2. Promptly execute the change.
- C. For changes for which advance pricing is desired, Engineer will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 7 days.
- D. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
- E. Execution of Change Orders: Engineer will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

1.05 APPLICATION FOR FINAL PAYMENT

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

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 21 00
ALLOWANCES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Material allowances.
- B. Contingency allowance.

1.02 RELATED REQUIREMENTS

- A. Section 01 20 00 - Price and Payment Procedures: Additional payment and modification procedures.

1.03 CONTINGENCY ALLOWANCE

- A. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead and profit will be included in Change Orders authorizing expenditure of funds from this Contingency Allowance.
- B. Funds will be drawn from the Contingency Allowance only by Change Order.
- C. At closeout of Contract, funds remaining in Contingency Allowance will be credited to Owner by Change Order.

1.04 ALLOWANCES SCHEDULE

- A. Section 28 31 00: Include a quantity of ten (10) ceiling mounted fire alarm audio visual annunciating devices including purchase, delivery, and installation.
- B. Section 28 31 00: Include a quantity of ten (10) ceiling mounted fire alarm smoke detectros including purchase, delivery, and installation.
- C. Contingency Allowance: Include the stipulated sum/price of \$15,000 for use upon Owner's instructions.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 22 00

UNIT PRICES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. List of unit prices, for use in preparing Bids.

1.02 COSTS INCLUDED

- A. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.

1.03 SCHEDULE OF UNIT PRICES

- A. Item: Fire Alarm Speaker Strobe; Section 28 31 00.
- B. Item: Fire Alarm Smoke Detector; Section 28 31 00.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General administrative requirements.
- B. Electronic document submittal service.
- C. Preconstruction meeting.
- D. Site mobilization meeting.
- E. Progress meetings.
- F. Construction progress schedule.
- G. Contractor's daily reports.
- H. Progress photographs.
- I. Coordination drawings.
- J. Submittals for review, information, and project closeout.
- K. Number of copies of submittals.
- L. Requests for Interpretation (RFI) procedures.
- M. Submittal procedures.

1.02 GENERAL ADMINISTRATIVE REQUIREMENTS

- A. Comply with requirements of Section 01 70 00 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.
- B. Make the following types of submittals to Engineer:
 - 1. Requests for Interpretation (RFI).
 - 2. Requests for substitution.
 - 3. Shop drawings, product data, and samples.
 - 4. Test and inspection reports.
 - 5. Design data.
 - 6. Manufacturer's instructions and field reports.
 - 7. Applications for payment and change order requests.
 - 8. Progress schedules.
 - 9. Coordination drawings.
 - 10. Correction Punch List and Final Correction Punch List for Substantial Completion.
 - 11. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 ELECTRONIC DOCUMENT SUBMITTAL SERVICE

- A. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF, MS Word, or MS Excel) format, as appropriate to the document, and transmitted via an Internet-based submittal service that receives, logs and stores documents, provides electronic stamping and signatures, and notifies addressees via email.
 - 1. Besides submittals for review, information, and closeout, this procedure applies to Requests for Interpretation (RFIs), progress documentation, contract modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, Contractor's correction punchlist, and any other document any participant wishes to make part of the project record.
 - 2. Contractor and Engineer are required to use this service.
 - 3. It is Contractor's responsibility to submit documents in allowable format.
 - 4. Subcontractors, suppliers, and Engineer's consultants will be permitted to use the service at no extra charge.
 - 5. Users of the service need an email address, internet access, and PDF review software that includes ability to mark up and apply electronic stamps (such as Adobe Acrobat, www.adobe.com, or Bluebeam PDF Revu, www.bluebeam.com), unless such software capability is provided by the service provider.
 - 6. Paper document transmittals will not be reviewed; emailed electronic documents will not be reviewed.
 - 7. All other specified submittal and document transmission procedures apply, except that electronic document requirements do not apply to samples or color selection charts.
- B. Submittal Service: The selected service is:
- C. Training: One, one-hour, web-based training session will be arranged for all participants, with representatives of Engineer and Contractor participating; further training is the responsibility of the user of the service.
- D. Project Closeout: Engineer will determine when to terminate the service for the project and is responsible for obtaining archive copies of files for Owner.

3.02 PRECONSTRUCTION MEETING

- A. Engineer will schedule a meeting after Notice of Award.
- B. Attendance Required:
 - 1. Owner.
 - 2. Engineer.
 - 3. Contractor.
- C. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
 - 5. Submission of initial Submittal schedule.
 - 6. Designation of personnel representing the parties to Contract, Owner and Engineer.

7. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 8. Scheduling.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, Owner, participants, and those affected by decisions made.

3.03 SITE MOBILIZATION MEETING

- A. Attendance Required:
1. Contractor.
 2. Owner.
 3. Engineer.
 4. Contractor's superintendent.
 5. Major subcontractors.
- B. Agenda:
1. Use of premises by Owner and Contractor.
 2. Owner's requirements.
 3. Construction facilities and controls provided by Owner.
 4. Temporary utilities provided by Owner.
 5. Survey and building layout.
 6. Security and housekeeping procedures.
 7. Schedules.
 8. Application for payment procedures.
 9. Procedures for testing.
 10. Procedures for maintaining record documents.
 11. Requirements for start-up of equipment.
 12. Inspection and acceptance of equipment put into service during construction period.
- C. Record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, Owner, participants, and those affected by decisions made.

3.04 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the work at maximum bi-monthly intervals.
- B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Attendance Required:
1. Contractor.
 2. Owner.
 3. Engineer.
 4. Contractor's superintendent.
 5. Major subcontractors.
- D. Agenda:
1. Review minutes of previous meetings.
 2. Review of work progress.
 3. Field observations, problems, and decisions.
 4. Identification of problems that impede, or will impede, planned progress.

5. Review of submittals schedule and status of submittals.
6. Review of RFIs log and status of responses.
7. Review of off-site fabrication and delivery schedules.
8. Maintenance of progress schedule.
9. Corrective measures to regain projected schedules.
10. Planned progress during succeeding work period.
11. Coordination of projected progress.
12. Maintenance of quality and work standards.
13. Effect of proposed changes on progress schedule and coordination.
14. Other business relating to work.

- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, Owner, participants, and those affected by decisions made.

3.05 CONSTRUCTION PROGRESS SCHEDULE - SEE SECTION 01 32 16

- A. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of work, with a general outline for remainder of work.

3.06 PROGRESS PHOTOGRAPHS

- A. Submit photographs with each application for payment, taken not more than 3 days prior to submission of application for payment.
- B. Maintain one set of all photographs at project site for reference; same copies as submitted, identified as such.
- C. Photography Type: Digital; electronic files.
- D. Provide photographs of site and construction throughout progress of work produced by an experienced photographer, acceptable to Engineer.
- E. In addition to periodic, recurring views, take photographs of each of the following events:
- F. Views:
 1. Provide non-aerial photographs from four cardinal views at each specified time, until date of Substantial Completion.
 2. Consult with Engineer for instructions on views required.
 3. Provide factual presentation.
 4. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.
- G. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
 1. Delivery Medium: Via email.
 2. File Naming: Include project identification, date and time of view, and view identification.
 3. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.
 4. Hard Copy: Printed hardcopy (grayscale) of PDF file and point of view sketch.

3.07 REQUESTS FOR INTERPRETATION (RFI)

- A. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the

issuance of a formal RFI.

- B. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
 - 1. Prepare a separate RFI for each specific item.
 - 2. Prepare using software provided by the Electronic Document Submittal Service.
 - 3. Combine RFI and its attachments into a single electronic file. PDF format is preferred.
- C. Review Time: Engineer will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.
 - 1. Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.

3.08 SUBMITTAL SCHEDULE

- A. Submit to Engineer for review a schedule for submittals in tabular format.
 - 1. Submit at the same time as the preliminary schedule specified in Section - 01 32 16 - Construction Progress Schedule.
 - 2. Coordinate with Contractor's construction schedule and schedule of values.
 - 3. Format schedule to allow tracking of status of submittals throughout duration of construction.

3.09 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
 - 1. Product data.
 - 2. Design data.
 - 3. Shop drawings.
 - 4. Samples for selection.
 - 5. Samples for verification.
- B. Submit to Engineer for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.
- C. Samples will be reviewed for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 78 00 - Closeout Submittals.

3.10 SUBMITTALS FOR INFORMATION

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

3.11 SUBMITTALS FOR PROJECT CLOSEOUT

- A. Submit Correction Punch List for Substantial Completion.
- B. Submit Final Correction Punch List for Substantial Completion.
- C. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 78 00 - Closeout Submittals:
 - 1. Project record documents.
 - 2. Operation and maintenance data.
 - 3. Warranties.
 - 4. Bonds.
 - 5. Other types as indicated.
- D. Submit for Owner's benefit during and after project completion.

3.12 NUMBER OF COPIES OF SUBMITTALS

- A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
- B. Samples: Submit the number specified in individual specification sections; one of which will be retained by Engineer.
 - 1. After review, produce duplicates.
 - 2. Retained samples will not be returned to Contractor unless specifically so stated.

3.13 SUBMITTAL PROCEDURES

- A. General Requirements:
 - 1. Use a single transmittal for related items.
 - 2. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
 - 3. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
 - 4. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
 - a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
 - 5. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
 - a. Send submittals in electronic format via email to Engineer.
 - 6. Schedule submittals to expedite the Project, and coordinate submission of related items.
 - a. For each submittal for review, allow 10 business days excluding delivery time to and from the Contractor.
 - b. For sequential reviews involving Engineer's consultants, Owner, or another affected party, allow an additional 7 days.
 - 7. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
 - 8. Provide space for Contractor and Engineer review stamps.

9. When revised for resubmission, identify all changes made since previous submission.
 10. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
- B. Shop Drawing Procedures:
1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
 2. Do not reproduce Contract Documents to create shop drawings.
 3. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.

3.14 SUBMITTAL REVIEW

- A. Submittals for Review: Engineer will review each submittal, and approve, or take other appropriate action.
- B. Submittals for Information: Engineer will acknowledge receipt, but will take no other action.
- C. Engineer's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
- D. Engineer's and consultants' actions on items submitted for review:
1. Authorizing purchasing, fabrication, delivery, and installation:
 - a. "Approved", or language with same legal meaning.
 - b. "Approved as Noted, Resubmission not required", or language with same legal meaning.
 - 1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
 - c. "Approved as Noted, Resubmit for Record", or language with same legal meaning.
 - 1) Resubmit corrected item, with review notations acknowledged and incorporated. Resubmit separately, or as part of project record documents.
 2. Not Authorizing fabrication, delivery, and installation:
 - a. "Rejected".
 - 1) Submit item complying with requirements of Contract Documents.
- E. Engineer's and consultants' actions on items submitted for information:
1. Items for which no action was taken:
 - a. "Received" - to notify the Contractor that the submittal has been received for record only.
 2. Items for which action was taken:
 - a. "Reviewed" - no further action is required from Contractor.

END OF SECTION

SECTION 01 32 16
CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preliminary schedule.
- B. Construction progress schedule, bar chart type.

1.02 SUBMITTALS

- A. Within 10 days after date of Agreement, submit preliminary schedule.
- B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
- D. Submit updated schedule with each Application for Payment.
- E. Submit in PDF format.

1.03 SCHEDULE FORMAT

- A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRELIMINARY SCHEDULE

- A. Prepare preliminary schedule in the form of a horizontal bar chart.

3.02 CONTENT

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- B. Identify each item by specification section number.
- C. Identify work of separate stages and other logically grouped activities.
- D. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
- E. Provide legend for symbols and abbreviations used.

3.03 BAR CHARTS

- A. Include a separate bar for each major portion of Work or operation.
- B. Identify the first work day of each week.

3.04 UPDATING SCHEDULE

- A. Maintain schedules to record actual start and finish dates of completed activities.
- B. Indicate progress of each activity to date of revision, with projected completion date of each activity.
- C. Annotate diagrams to graphically depict current status of Work.
- D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- E. Indicate changes required to maintain Date of Substantial Completion.
- F. Submit reports required to support recommended changes.

3.05 DISTRIBUTION OF SCHEDULE

- A. Distribute copies of updated schedules to Contractor's project site file, to subcontractors, suppliers, Engineer, Owner, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

END OF SECTION

SECTION 01 40 00 QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. References and standards.
- B. Testing and inspection agencies and services.
- C. Control of installation.
- D. Defect Assessment.
- E. Section 01 21 00 - Allowances: Allowance for payment of testing services.

1.02 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Engineer shall be altered from Contract Documents by mention or inference otherwise in any reference document.

1.03 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. Owner will employ services of an independent testing agency to perform certain specified testing; payment for cost of services will be derived from allowance specified in Section 01 21 00; see Section 01 21 00 and applicable sections for description of services included in allowance.
- B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 TESTING AND INSPECTION

- A. Testing Agency Duties:
 - 1. Provide qualified personnel at site. Cooperate with Engineer and Contractor in performance of services.
 - 2. Perform specified sampling and testing of products in accordance with specified standards.
 - 3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 4. Promptly notify Engineer and Contractor of observed irregularities or non-compliance of Work or products.
 - 5. Perform additional tests and inspections required by Engineer.
 - 6. Submit reports of all tests/inspections specified.
- B. Limits on Testing/Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the Work.
 - 3. Agency may not assume any duties of Contractor.
 - 4. Agency has no authority to stop the Work.
- C. Contractor Responsibilities:
 - 1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 - 2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
 - 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing of test samples.
 - 4. Notify Engineer and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
 - 5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond

specified requirements.

6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- D. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Engineer.
- E. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.03 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not complying with specified requirements.

END OF SECTION

SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Requirements for alterations work, including selective demolition.
- C. Cutting and patching.
- D. Cleaning and protection.
- E. Starting of systems and equipment.
- F. Demonstration and instruction of Owner personnel.
- G. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
- H. General requirements for maintenance service.
- I. Section 07 84 00 - Firestopping.

1.02 REFERENCE STANDARDS

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Owner or separate Contractor.
- C. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.04 PROJECT CONDITIONS

- A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- B. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
 - 1. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.

1.05 COORDINATION

- A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

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

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

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

Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

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

3.03 GENERAL INSTALLATION REQUIREMENTS

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

3.04 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 - 1. Verify that construction and utility arrangements are as indicated.
 - 2. Report discrepancies to Engineer before disturbing existing installation.
 - 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
 - 2. Relocate items indicated on drawings.
 - 3. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
 - 4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- C. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, Telecommunications, and _____): Remove, relocate, and extend existing systems to accommodate new construction.
 - 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
 - 2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
 - 3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are

complete and ready for service.

- a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
 - b. Provide temporary connections as required to maintain existing systems in service.
4. Verify that abandoned services serve only abandoned facilities.
 5. Remove abandoned pipe, ducts, conduits, and equipment , including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.
- D. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 3. Repair adjacent construction and finishes damaged during removal work.
- E. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
- F. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- G. Refinish existing surfaces as indicated:
1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
 2. If mechanical or electrical work is exposed accidentally during the work, recover and refinish to match.
- H. Clean existing systems and equipment.
- I. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- J. Do not begin new construction in alterations areas before demolition is complete.
- K. Comply with all other applicable requirements of this section.

3.05 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.
- C. Perform whatever cutting and patching is necessary to:
1. Complete the work.
 2. Fit products together to integrate with other work.
 3. Provide openings for penetration of mechanical, electrical, and other services.
 4. Match work that has been cut to adjacent work.
 5. Repair areas adjacent to cuts to required condition.
 6. Repair new work damaged by subsequent work.
 7. Remove samples of installed work for testing when requested.
 8. Remove and replace defective and non-complying work.
- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize

damage and restore to original condition.

- E. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- G. Restore work with new products in accordance with requirements of Contract Documents.
- H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00, to full thickness of the penetrated element.
- J. Patching:
 - 1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 - 2. Match color, texture, and appearance.
 - 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.06 PROGRESS CLEANING

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

3.07 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

- G. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.08 SYSTEM STARTUP

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Engineer and Owner seven days prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
- G. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.09 DEMONSTRATION AND INSTRUCTION

- A. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- C. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of Owner's personnel.

3.10 ADJUSTING

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

3.11 FINAL CLEANING

- A. Use cleaning materials that are nonhazardous.
- B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- E. Clean filters of operating equipment.
- F. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, drainage systems, and _____.
- G. Clean site; sweep paved areas, rake clean landscaped surfaces.

- H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.12 CLOSEOUT PROCEDURES

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

3.13 MAINTENANCE

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

END OF SECTION

SECTION 01 78 00 CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Project record documents.
- B. Operation and maintenance data.
- C. Warranties and bonds.
- D. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- E. Individual Product Sections: Specific requirements for operation and maintenance data.
- F. Individual Product Sections: Warranties required for specific products or Work.

1.02 SUBMITTALS

- A. Project Record Documents: Submit documents to Engineer with claim for final Application for Payment.
- B. Operation and Maintenance Data:
 - 1. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
 - 2. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Engineer comments. Revise content of all document sets as required prior to final submission.
 - 3. Submit two sets of revised final documents in final form within 10 days after final inspection.
- C. Warranties and Bonds:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 - 1. Changes made by Addenda and modifications.
- F. Record Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 3. Field changes of dimension and detail.
 - 4. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

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

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:
 - 1. Product data, with catalog number, size, composition, and color and texture designations.
 - 2. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- D. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the

operation and maintenance of the specific products.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
 - 1. Description of unit or system, and component parts.
 - 2. Identify function, normal operating characteristics, and limiting conditions.
 - 3. Include performance curves, with engineering data and tests.
 - 4. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
- D. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- E. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- F. Provide servicing and lubrication schedule, and list of lubricants required.
- G. Include manufacturer's printed operation and maintenance instructions.
- H. Include sequence of operation by controls manufacturer.
- I. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- J. Provide control diagrams by controls manufacturer as installed.
- K. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.
- L. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- M. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- N. Include test and balancing reports.

3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

- A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

- D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Engineer, Consultants, Contractor and subcontractors, with names of responsible parties.
- F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- H. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.
- I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- J. Provide a PDF copy, properly bookmarked as well.

3.06 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.
- E. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.

END OF SECTION

SECTION 26 05 00.01
GENERAL ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General provisions specifically applicable to Division 26 Sections, in addition to Division 1 - General Requirements.
- B. The electrical work includes the furnishing of all labor, materials, accessories, and equipment required to install a complete and fully operational fire alarm system as shown, specified and/or reasonably implied for a complete project.

1.02 RELATED DOCUMENTS

- A. General provisions specifically applicable to Division 26 Sections, in addition to Division 1 - General Requirements.
- B. ANSI/NFPA 70.

1.03 COORDINATION

- A. The Electrical Contractor shall coordinate his work with the other contractors in accordance with the provisions of Division 1.

1.04 QUALITY ASSURANCE

- A. Perform work in accordance with NECA Standard of Installation.

1.05 FEES, PERMITS, AND INSPECTIONS

- A. Electrical Contractor shall obtain permits and arrange all inspections necessary for the installation of his work in accordance with General Conditions and furnish the Architect with certificates of inspection from all authorities having jurisdiction.
- B. Inspections and tests shall be made upon formal written notice to the Architect from the Contractor sufficiently in advance to allow representatives of the Architect and Owner to be present for each test.
- C. No construction shall be covered up or concealed until it has been inspected or approved. The Contractor shall furnish all material, labor, fuel, equipment, and apparatus, and bear all expenses of such tests as are hereinafter specified for the work.

1.06 REGULATORY REQUIREMENTS

- A. Conform to the North Carolina State Building Code.
- B. Conform to requirements of ANSI/NFPA 70.
- C. Conform to requirements of ANSI/IEEE C2 where applicable.
- D. Furnish products listed and classified by Underwriters Laboratories, Inc. or other North Carolina recognized third party testing agency.

1.07 QUALIFICATIONS

- A. Manufacturer: Furnish products of manufactures listed or, where substitutions are allowed, furnish products of a company specializing in manufacturing products specified with minimum of three years experience.
- B. Installation: Equipment and systems installers shall have a minimum of 5 years experience in installation of systems similar to those on this project unless indicated otherwise.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect, and handle products to site under provisions of Division 1.

1.09 ALLOWANCES

- A. Refer to provisions of Section 012100 - Allowances.

1.10 UNIT PRICES

- A. Refer to provisions of Section 012200– Unit Prices.

1.11 OPERATION AND MAINTENANCE MANUALS

- A. Three (3) complete sets of operating and maintenance manuals shall be submitted to the Owner through the Architect/Engineer two (2) weeks prior to the pre-final inspection date.
- B. The O&M manuals shall be installed in a 3-ring heavy back note book with the name of the building and the words "Operation and Maintenance Manuals" on the cover and spine. The manuals shall contain the following items as a minimum:
 1. Index and page numbers.
 2. Certificate of substantial completion.
 3. All warranties.
 4. List of all subcontractors and suppliers with names, addresses and phone numbers.
 5. Certified testing and balancing report.
 6. Complete start-up operation, and shut-down procedures for each system including sequence of events, locations of switches, emergency procedures and any other critical items.
 7. Complete set of current shop drawings and equipment description showing all capacities and other operation conditions.
 8. All submittal data and shop drawings.
 9. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of replacement parts.
 10. Manufacturer's printed operating procedures to include start-up, break-in, and routine and normal operating instructions; regulation, control, stopping, shutdown, and emergency instruction.
 11. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly; aligning and adjusting instructions.
 12. Wiring and control diagrams.
 13. Manufacturer's cuts, part numbers, and serial numbers.

PART 2 PRODUCTS

2.01 EQUIPMENT AND MATERIAL

- A. Equipment and material of the same general type shall be of the same make throughout the work to provide uniform appearance, operation and maintenance.
- B. Equipment and material shall be new and shall bear the manufacturer's name or trade name.

2.02 MANUFACTURER'S DIRECTIONS

- A. The Contractor shall promptly notify the Architect in writing of any conflict between the requirements of the contract documents and manufacturer's directions and shall obtain the Architect's written instructions before proceeding with the work. Should the Contractor perform any work that does not comply with the manufacturer's directions or such written instructions from the Architect, he shall bear all costs arising in correcting the deficiencies.

2.03 EQUIPMENT ACCESSORIES

- A. The Contractor shall provide all equipment, accessories, connections, and incidental items necessary to fully complete the work, ready for use, occupancy and operation by the Owner.

PART 3 EXECUTION

3.01 MATERIALS AND WORKMANSHIP

- A. All materials and workmanship shall comply with all applicable codes, specifications, state and local ordinances, industry standards, and utility company regulations. At the completion of the work, fixtures, equipment and materials shall be cleaned and polished thoroughly and turned over to the Owner in a condition satisfactory to the Architect. Damage or defects developing before acceptance of the work shall be made good at the Contractor's expense.

3.02 LOCATION OF CONDUIT, FIXTURES, EQUIPMENT AND APPURTENANCES

- A. These locations shall be adjusted to accommodate the work to ductwork and equipment installed by other Contractors in mechanical equipment rooms and similar areas.

3.03 BUILDING AND FINISHES

- A. Building and finishes shall be protected. The Contractor will be held responsible for damage incurred and shall repair all damage done.

3.04 SUPPORTS

- A. The Contractor shall support plumb, rigid, and true to line all work and equipment installed under this contract. The Contractor shall thoroughly study project construction drawings, shop drawings, and catalog data to determine how equipment, accessories, fixtures, and related items are to be supported, mounted, or suspended. He shall provide all bolts, inserts, brackets, structural supports, and accessories for proper support whether or not shown on the drawings.

3.05 FIRESTOPPING

- A. Firestopping of penetrations for electrical work shall be installed by Electrical Contractor.

- B. The Electrical Contractor shall be responsible for firestopping all partitions, walls and floor penetration resulting from his work. Penetrations shall be firestopped to meet or exceed rating of wall or floor systems as required by code.

3.06 TESTING

- A. All test reports shall be typewritten and submitted in triplicate. Reports shall include: Item(s) tested, date of each test, name and signature of person(s) conducting test, and complete test results.
- B. Provide testing on each product or system as hereinafter specified in individual sections, and/or as recommended by product manufacturer.
- C. All test reports shall be submitted, reviewed, and approved prior to substantial completion.

3.07 CLEAN-UP

- A. The Contractor shall clean equipment, fixtures, and wiring device covers with cleaning materials appropriate to the surface and material being cleaned. Bottoms of equipment enclosures shall be cleaned to remove metal filings and other debris. All debris and excess materials shall be removed from the work area. The Contractor shall remove from the site all debris, crating, temporary facilities, waste, tools, construction equipment, machinery, and surplus materials resulting from his work.

END OF SECTION

SECTION 26 05 19.01
BUILDING WIRE AND CABLE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Building wire and cable.
- B. Wiring connectors and connections.

1.02 RELATED SECTIONS

- A. General provisions specifically applicable to Division 26 Sections, in addition to Division 1 - General Requirements.
- B. Section 260532 - Conduit.
- C. Section 260533 - Boxes.
- D. Section 260553 - Identification.

1.03 REFERENCES

- A. ANSI/NFPA 70

1.04 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. Product Data: Provide for each wire and cable type.
- C. Insulation Resistance Test Report.
- D. Bolted Connections Torque Measurements.

1.05 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Division 1.
- B. Accurately record feeder sizes.

1.06 PROJECT CONDITIONS

- A. Verify that field measurements are as shown on Drawings.
- B. Conductor sizes are based on copper, expressed in American Wire Gage (AWG) and Thousand Circular Mils (kcmil).
- C. Wire and cable routing shown on Drawings is approximate unless dimensioned. Route wire and cable as required to meet Project Conditions.
- D. Where wire and cable routing is not shown, and destination only is indicated, determine exact routing and lengths required.

1.07 COORDINATION

- A. Determine required separation between cable and other work.
- B. Determine routing to avoid interference with other work.

PART 2 PRODUCTS

2.01 BUILDING WIRE AND CABLE

- A. Description: Single conductor insulated wire.
- B. Conductor:
 - 1. Branch circuits: Copper.
 - 2. Feeders: Copper.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation: ANSI/NFPA 70, Type THHN2/THWN.

2.02 CLASS 2 CONTROL CIRCUIT CONDUCTORS

- A. Description: Solid or stranded, per system manufacturer's recommendations.
- B. Conductor: Copper.
- C. Insulation: Min. 150 volt 60°C.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that mechanical work likely to damage wire and cable has been completed.

3.02 PREPARATION

- A. Completely and thoroughly swab raceway before installing wire.

3.03 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Use solid conductor for feeders and branch circuits 10 AWG and smaller, unless otherwise indicated
- C. Use stranded conductors for control circuits.
- D. Use stranded conductors in liquid tight flex for final connection to motors.
- E. Use conductor not smaller than 12 AWG for power and lighting circuits.
- F. Use conductor not smaller than 22 AWG for control circuits.
- G. Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 100 feet.
- H. Pull all conductors into raceway at same time.
- I. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- J. Use split bolt connectors for copper conductor splices and taps, 8 AWG and larger. Tape uninsulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor.

3.04 INTERFACE WITH OTHER PRODUCTS

- A. Identify wire and cable under provisions of Section 260553.
- B. Identify each conductor with its circuit number or other designation indicated on Drawings.

3.05 FIELD QUALITY CONTROL

- A. Perform field inspection and testing under provisions of Division 1.
- B. Inspect wire for physical damage and proper connection.

END OF SECTION

SECTION 26 05 26.01 GROUNDING AND BONDING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Equipment grounding conductors.

1.02 REFERENCES

- A. General provisions specifically applicable to Division 26 Sections, in addition to Division 1 - General Requirements.
- B. ANSI/NFPA 70.

1.03 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Division 1.
- B. Accurately record actual locations of grounding electrodes and ground rings.

PART 2 PRODUCTS

2.01 WIRE

- A. Material: Copper.
 - 1. Wire #10 (AWG) and smaller shall be solid.
 - 2. Wire #8 (AWG) and larger shall be stranded.
- B. Grounding Electrode Conductor: Size to meet NFPA 70 requirements.
- C. Insulation (Where applicable): Green THWN.

PART 3 EXECUTION

3.01 EXAMINATION

3.02 INSTALLATION

- A. Install Products in accordance with manufacturer's instructions.
- B. Provide bonding to meet Regulatory Requirements.
- C. Equipment Grounding Conductor: Provide separate, insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing.

3.03 EQUIPMENT AND CIRCUITS

- A. Conduit Systems:
 - 1. Ground all metallic conduit systems.
 - 2. Conduit provided for mechanical protection and containing only a grounding conductor shall be bonded to that conductor at the entrance and exit from the conduit.
- B. Boxes, Cabinets, Enclosures, and Panelboards:

1. Bond the grounding wires to each pullbox, junction box, outlet box, cabinets, and other enclosures through which the ground wires pass.
2. Provide lugs in each box and enclosure for ground wire termination.
3. Provide ground bars in panelboards, bolted to the housing, with sufficient lugs for terminating the ground wires.
4. Isolated ground bars for isolated ground system.

C. Electrical Appliance and Equipment:

1. Fixed electrical appliances and equipment shall have a ground lug installed for termination of the green ground conductor.

3.04 FIELD QUALITY CONTROL

- A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.

END OF SECTION

SECTION 26 05 29.01 SUPPORTING DEVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Conduit and equipment supports.
- B. Anchors and fasteners.
- C. Bridle rings.

1.02 REFERENCES

- A. General provisions specifically applicable to Division 26 Sections, in addition to Division 1 - General Requirements.
- B. ANSI/NFPA 70.

PART 2 PRODUCTS

2.01 PRODUCT REQUIREMENTS

- A. Provide materials, sizes, and types of anchors, fasteners and supports to carry the loads of equipment and conduit. Consider weight of wire in conduit when selecting products.
- B. Anchors and Fasteners:
 - 1. Concrete Structural Elements: Use expansion anchors, powder actuated anchors, or preset inserts.
 - 2. Steel Structural Elements: Use beam clamps, spring steel clamps, or steel ramset fasteners.
 - 3. Concrete Surfaces: Use self-drilling anchors or expansion anchors.
 - 4. Hollow Masonry and Gypsum Board Partitions: Use toggle bolts or hollow wall fasteners.
 - 5. Solid Masonry Walls: Use expansion anchors or preset inserts.
 - 6. Sheet Metal: Use sheet metal screws. Do not fasten any materials to sheet metal which the metal does not have the strength to support.

2.02 BRIDLE RINGS

- A. 4" steel threaded bridle rings. Caddy #4BRT64 or equal with matching fasteners.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Provide anchors, fasteners, and supports in accordance with NECA "Standard of Installation".
- C. Do not fasten supports to pipes, ducts, mechanical equipment, and conduit.

- D. Obtain permission from Architect/Engineer before using powder-actuated anchors.
- E. Do not drill or cut structural members.
- F. Install surface-mounted cabinets and panelboards with minimum of four anchors.

3.02 BRIDLE RINGS

- A. Provide bridle rings for support of above ceiling voice, intercom, security and television cabling.
- B. Install bridle rings three feet on center mounted approximately 6 inches above finished ceiling in all corridors.
- C. Provide matching support fasteners.

END OF SECTION

SECTION 26 05 33.14
CONDUIT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Metal conduit.
- B. Flexible metal conduit.
- C. Electrical metallic tubing.
- D. Nonmetal conduit.
- E. Fittings and conduit bodies.

1.02 RELATED SECTIONS

- A. General provisions specifically applicable to Division 26 Sections, in addition to Division 1 - General Requirements.
- B. Section 07841 - Firestopping
- C. Section 260533 - Boxes.
- D. Section 260526 - Grounding and Bonding.
- E. Section 260529- Supporting Devices.
- F. Section 260553 - Electrical Identification.

1.03 REFERENCES

- A. ANSI C80.1
- B. ANSI C80.3
- C. ANSI C80.5
- D. ANSI/NEMA FB 1
- E. ANSI/NFPA 70
- F. NECA "Standard of Installation."
- G. NEMA RN 1
- H. NEMA TC 2
- I. NEMA TC 3

1.04 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. Product Data: Provide for each type conduit.

1.05 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Division 1.

- B. Accurately record actual routing of conduits larger than 2 inches.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect, and handle Products to site under provisions of Division 1.
- B. Accept conduit on site. Inspect for damage.
- C. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
- D. Protect PVC conduit from sunlight.

1.07 PROJECT CONDITIONS

- A. Verify routing and termination locations of conduit prior to rough-in.
- B. Conduit routing is shown on Drawings in approximate locations unless dimensioned. Route as required to complete wiring system.
- C. Conduit shall be concealed in all areas except mechanical rooms.

PART 2 PRODUCTS

2.01 CONDUIT REQUIREMENTS

- A. Minimum Size: 3/4 inch unless otherwise specified.
- B. Underground Installations:
 - 1. Use plastic coated conduit or thickwall nonmetallic conduit.
 - a. Minimum Size: 3/4 inch.
 - b. Transition from Underground to Above Grade: Use rigid steel or intermediate metal conduit elbow to turn up to above grade. Coat underground rigid steel or IMC conduit with asphaltum paint.
- C. Wet and Damp Locations: Use rigid steel conduit, intermediate metal conduit, or thickwall nonmetallic conduit.
 - 1. Schedule 80 PVC conduit may be used exposed above 8'-0" in parking deck. Expansion fittings must be used to compensate for thermal expansion to accommodate 100 degree F temperature change.
- D. Dry Locations:
 - 1. Concealed: Use rigid steel conduit, intermediate metal conduit, or electrical metallic tubing.
 - 2. Exposed eight feet or below: Use rigid steel conduit or intermediate metal conduit except that EMT may be used where branch circuits connect to the top of a surface mounted panelboard below eight feet.
 - 3. Exposed above eight feet and not subject to physical damage: Electrical Metallic Tubing.

2.02 METAL CONDUIT

- A. Manufacturers:
 - 1. Allied Tube and Conduit.
 - 2. LTV Corp.
 - 3. Wheatland Tube Co.
- B. Rigid Steel Conduit: ANSI C80.1.

- C. Intermediate Metal Conduit (IMC): Rigid steel.
- D. Fittings and Conduit Bodies: ANSI/NEMA FB 1; threaded type material to match conduit. Split couplings are not acceptable.

2.03 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

- A. Manufacturers:
 - 1. Alfex Corp.
 - 2. Carol Cable Co.
 - 3. Alliance Cable Corp.
- B. Description: Interlocked steel construction with PVC jacket.
- C. Fittings: ANSI/NEMA FB 1. Connectors; insulated throat type.

2.04 ELECTRICAL METALLIC TUBING (EMT)

- A. Manufacturers:
 - 1. Allied Tube and Conduit.
 - 2. LTV Corp.
 - 3. Wheatland Tube Co.
- B. Description: ANSI C80.3; galvanized tubing.
- C. Fittings and Conduit Bodies: ANSI/NEMA FB 1; die-cast compression type. Connectors; die-cast insulated throat type.

2.05 NONMETALLIC CONDUIT

- A. Manufacturers:
 - 1. Carlon.
 - 2. Cantex Industries
 - 3. LCP Chemicals and Plastics, Inc.
- B. Description: NEMA TC 2; Schedule 40 PVC.
- C. Fittings and Conduit Bodies: NEMA TC 3.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install conduit in accordance with NECA "Standard of Installation."
- B. Install nonmetallic conduit in accordance with manufacturer's instructions.
- C. Use suitable plastic slip caps to protect installed conduit against entrance of dirt and moisture.
- D. Identify conduit under provisions of Section 26 05 53.
- E. Tubing shall not be used in concrete or underground.
- F. Utilize liquid tight flexible metal conduit for connection to equipment.
- G. Underground conduits shall have routing accurately recorded on as-built drawings with location dimensions indicated from at least two permanent above ground structures. Depth from finished grade shall also be recorded.

3.02 CONDUIT SUPPORTS

- A. Arrange supports to prevent misalignment during wiring installation.
- B. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- C. Group related conduits; support using conduit rack. Construct rack using steel channel.
- D. Fasten conduit supports to building structure and surfaces under provisions of Section 26 05 29.
- E. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports.
- F. Do not attach conduit to ceiling support wires.
- G. Arrange conduit to maintain headroom and present neat appearance.
- H. Conduit Supports:
 - 1. Rigid Steel, IMC, and EMT: Conduit or tubing shall be fastened in place on not more than 6 feet on center for up through one inch and 8 feet on center for sizes larger than one inch and shall be fastened within 3 feet of connection to outlet boxes, junction boxes, cabinets, or fittings.
 - 2. Nonmetallic Conduit: Fasten on not more than 3 feet on center for up through one inch, 5 feet on center for 1 1/4" through 2", and 6 feet on center for sizes larger than 2 inches. Fasten within 2 feet of connection to outlet boxes, junction boxes, cabinets, or fittings.
 - 3. Flexible Conduit: Fasten not more than 4 1/2 feet on center and within 12 inches of connections to outlet boxes, junction boxes, cabinets, or fittings.

3.03 ROUTING

- A. Route exposed conduit parallel and perpendicular to walls.
- B. Route conduit installed above accessible ceilings parallel and perpendicular to walls.
- C. Maintain adequate clearance between conduit and piping.
- D. Maintain 12 inch clearance between conduit and surfaces with temperatures exceeding 104 degrees F.
- E. Conduit wall penetrations shall be perpendicular to the plane of the wall.
- F. Install conduit to preserve fire resistance rating of partitions, floors, and ceilings.

3.04 CONDUIT FITTINGS

- A. Cut conduit square using saw or pipecutter; de-burr cut ends.
- B. Bring conduit to shoulder of fittings; fasten securely.
- C. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean with approved product before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum.

- D. Use conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.
- E. Install no more than equivalent of four 90-degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use factory elbows for bends in metal conduit larger than 2-inch size.
- F. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
- G. Provide suitable fittings to accommodate expansion and deflection where conduit crosses, control and expansion joints.

3.05 SURFACE RACEWAY

- A. Mount surface raceway at 36" to center unless otherwise noted on drawings.
- B. Power receptacles shall be installed and circuited as indicated on drawing.
- C. Communications raceway shall be wired as shown, with communication cabling as indicated on drawings.

END OF SECTION

SECTION 26 05 33.17

BOXES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wall and ceiling outlet boxes.

1.02 RELATED SECTIONS

- A. General provisions specifically applicable to Division 26 Sections, in addition to Division 1 - General Requirements.
- B. Section 26 27 26 - Wiring Devices: Mounting heights of wiring device outlets.
- C. Section 26 05 29 – Supporting Devices.

1.03 REFERENCES

- A. ANSI/NEMA FB 1
- B. ANSI/NEMA OS 1
- C. ANSI/NEMA OS 2
- D. ANSI/NFPA 70
- E. NEMA 250

1.04 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. Product Data: Provide for each type of box.
- C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by Product testing agencies. Include instructions for preparation and installation of product.

1.05 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Division 1.
- B. Accurately record actual locations of all boxes and hand holes. Record mounting heights of outlet, pull, and junction boxes.

1.06 PROJECT CONDITIONS

- A. Verify field measurements are as shown on Drawings.
- B. Electrical boxes are shown on Drawings in approximate locations unless dimensioned. Install at location required for box to serve intended purpose.

PART 2 PRODUCTS

2.01 OUTLET BOXES

- A. Sheet Metal Outlet Boxes: ANSI/NEMA OS 1, galvanized steel.

1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2 inch male fixture studs where required.
- B. Nonmetallic Outlet Boxes: ANSI/NEMA OS 2.
- C. Cast Boxes: NEMA FB 1, Type FD, cast ferrous alloy. Provide threaded hubs.
- D. Minimum outlet box size: 4" square x 1-1/2" deep.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with the NFPA 70 and other regulatory requirements.
- B. Install electrical boxes to maintain headroom and to present neat mechanical appearance.
- C. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- D. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire. The Electrical Contractor will furnish panels and install in accordance with Section 08305.
- E. Align adjacent wall-mounted outlet boxes for switches, thermostats, and similar devices with each other, plumb and level.
- F. Use adjustable steel channel fasteners for hung ceiling outlet box.
- G. Do not fasten boxes to ceiling support wires.
- H. Support boxes independently of conduit, except cast box that is connected to two rigid metal conduits both supported within 12 inches of box.
- I. Use gang box where more than one device is mounted together. Do not use sectional box.
- J. Use gang box with plaster ring for single flush outlets.
- K. Use cast outlet box where exposed below 8'-0", in exterior locations and wet locations.

3.02 ADJUSTING

- A. Adjust flush-mounting outlets to make front flush with finished wall or floor material.
- B. Install knockout closure in unused box opening.
- C. The Architect shall have the right to make slight changes in the position of outlets if the contractor is notified prior to rough-in of outlet.

END OF SECTION

SECTION 26 05 53.01 ELECTRICAL IDENTIFICATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Nameplates.
- B. Wire color coding.

1.02 RELATED SECTIONS

- A. General provisions specifically applicable to Division 26 Sections, in addition to Division 1 - General Requirements.
- B. Section 09900 - Painting.

1.03 REFERENCES

- A. ANSI/NFPA 70.

PART 2 PRODUCTS

2.01 NAMEPLATES

- A. Nameplates: Engraved three-layer laminated plastic, white letters on black background. Edges shall be chamfered. Minimum size shall be 1 inch high by 2.5 inches wide.

2.02 WIRE MARKERS

- A. Manufacturers
 - 1. Seton Name Plate Co.
 - 2. Thomas & Betts
 - 3. 3M Electrical Products Div.
- B. Description: Tape type wire markers.
- C. Locations: Each conductor at panelboard gutters, pull boxes, junction boxes and each load connection. Provide markers on each side of bundled conductors within an enclosure.
- D. Legend:
 - 1. Control Circuits: Control wire number indicated on schematic and interconnection diagrams furnished with equipment.

2.03 IDENTIFICATION LABELS

- A. Manufacturers:
 - 1. W.H. Brady Company (Style A)
 - 2. Thomas & Betts (Style A)
- B. Laminated Tape
 - 1. Non-conductive
 - 2. Waterproof

3. Capable of withstanding continuous temperature of 235°F and intermittent temperatures of 300°F.
 4. Overcoating for protection against oil, solvents, chemicals, moisture, abrasion and dirt.
- C. Heavy, thermo-resistant industrial grade adhesive, for adhesion of label to any surface without curling, peeling or falling off.
- D. Machine printed.

PART 3 EXECUTION

3.01 PREPARATION

- A. Degrease and clean surfaces to receive nameplates and labels.

3.02 APPLICATION

- A. Install nameplate parallel to equipment lines.
- B. Secure nameplate to equipment front using screws or rivets.
- C. Secure nameplate to inside surface of door on panelboard that is recessed in finished locations.
- D. Identify underground conduits using underground warning tape. Install one tape per trench at 6 inches below finished grade.

3.03 WIRE COLOR CODING

- A. Color coding is required for all service, feeder, branch, control, and signalling circuit conductors. Color shall be green for grounding conductors. The color of the ungrounded and neutral conductors shall be as follows:

208Y/120 volt, three phase system	
Phase A	Black
Phase B	Red
Phase C	Blue
Neutral	White

- B. Conductors #8 (AWG) and smaller shall be factory color coded.
- C. Conductors #6 (AWG) and larger may be identified with plastic tape of the proper color.

3.04 BOX IDENTIFICATION

- A. All cover plates of junction boxes for power wiring shall be legibly marked with permanent marker to clearly indicate panelboard origin and circuit number of all phase conductors enclosed.
- B. All cover plates of junction boxes for fire alarm system wiring shall be painted red and shall be legibly marked with permanent marker to clearly indicate zone or signal circuit to which enclosed conductors are connected.

3.05 PAINTING

END OF SECTION

SECTION 28 46 00.01
FIRE ALARM SYSTEMS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Refer to Section 260500

1.02 MINIMUM STANDARDS

- A. The latest issue of specifications, standards and publications listed below, including items called out in fire alarm check list, amendments and errata, form a part of this specification.
 - 1. NFPA 72
 - 2. NFPA 70
 - 3. North Carolina State Building Code
 - 4. North Carolina Department of Insurance "Requirements for Fire Detection and Alarm Systems"
 - 5. Latest version available for review at NCDOI
 - 6. Local Codes and Standards
 - 7. ANSI A17.1

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data for equipment and devices indicated.
- B. Shop Drawings: Submit shop drawings indicating the location of each alarm notification and alarm initiating device, fire control panel, and annunciator. Provide a wiring and conduit diagram prepared by an authorized representative of the system manufacturer.
- C. Provide riser diagram and floor plans showing conduit runs and wires.
- D. Identify each item of equipment and device using the same symbol as shown on the drawings.
- E. Provide battery-sizing calculations.
- F. Operation and Maintenance Manuals: Provide four (4) copies of the Operation and Maintenance Manuals bound in three-ring, vinyl covered binders. Manual shall contain all of approved submittal information submitted including manufacturer's drawings. Include a certified copy of each test report. Also include instructions for system trouble shooting.
- G. Test Report(s): Submit a letter and a copy of the test report indicating proper functioning of the system, and conformance to the requirements of the Contract Documents.
- H. Copies of NICET certifications.

1.04 QUALITY ASSURANCE

- A. The system and all its components shall be listed and approved by U.L. Inc. If the building is being renovated and some components are to remain, they must be U.L. listed with the provided FACP.

- B. All fire and smoke detection and alarm systems shall comply with the North Carolina State Building Code and NFPA 72, unless otherwise approved by the NCDOT. Note: All of these documents are available for review at the NCDOT.
- C. Comply with the local authority having jurisdiction and WCPSS requirements.
- D. The manufacturer's authorized representative that terminates the FACP and performs all tests and inspections shall be NICET Level 2 certified and have at least two years of experience installing fire alarm systems. Furthermore, the manufacturer's authorized distributor must have at least one employee with a NICET Level 3 certification.

1.05 DESCRIPTION OF SYSTEM

- A. Provide new addressable fire alarm panel, all conduit, outlet boxes, fittings, addressable pull stations, analog smoke detectors, speaker/strobes, and any control modules necessary for a fully functioning, fail-safe, supervised, voice annunciated system.
- B. The system shall be electrically supervised against open circuits and grounds in the wiring to the alarm initiating, alarm indicating or control devices. Control circuit shall indicate system trouble if it is in other than normal operating condition. An open or ground in the system shall cause a visual and audible signal to sound continuously until the system is restored to normal or silenced by means of a silence switch on the control panel.
- C. Operation of any manual station, smoke detector shall cause the sounding of an alert tone followed by a voice evacuation message on all signals repeated a minimum of three times, automatically signal the supervisory agency, operate all flashing lights, annunciate the zone in which the signal originated, and indicate the type of device activated.
- D. Live voice instructions shall override all previously initiated automatic voice messages.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. The fire alarm system shall be limited to systems manufactured with a capacity of at least 2,000 input points.

2.02 COMPONENTS

- A. Control Panel:
 - 1. Fire alarm control panel shall be of the addressable type, using a two wire circuit, individual initiating devices such as automatic smoke detectors, heat detectors, and manual fire alarm pull stations shall communicate their exact identity and status. Additionally, notification appliance circuits (horns, bells, strobes, etc.) as well as other control circuits (fans, dampers, etc.) shall be individually controlled and supervised. The system shall be designed at no greater than 50% capacity with a final completion capacity of no greater than 60%. This shall be supported with documentation from the supplier/installer.
 - 2. Power supply/battery: 120V AC operation at 60 Hz. Battery and charging shall provide 24 hours of standby and 5 minutes of alarm battery. Submit calculation

- for battery selection.
 - 3. Automatic digital alarm communicator with emergency power pack (battery and charger unit), four channel, dual line communicator by Silent Knight. Communicator shall be compatible with Radionics D6500 receiver. The installer must program the communicator to Simplex Grinnell Central Monitoring Station before final inspections and tests.
 - 4. Addressable detector base with integral addressable electronics constantly monitor the status to the detachable photoelectric, ionization, or heat detector heads, and communicate changes of status to the addressable interface module.
 - 5. Annunciators:
 - a. On all systems the annunciator shall be a supervised, remotely located backlit LCD display containing a minimum of eighty (80) characters for alarm annunciation in clear English text. The LCD annunciator shall display all alarm and trouble conditions in the system.
 - 6. Zone Maps:
 - a. Zone maps shall be provided for FACP location and all annunciator locations. Zone maps shall be large enough to read all devices easily and clearly indicate their location. All zone maps shall show only the initiating devices and correct and up-to-date layout of the entire building with correct room numbers.
- B. Alarm Initiating Devices:
- 1. Addressable Pull Stations - Pull Station 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. Pull stations that employ a glass break rod, glass or plastic covers are not acceptable.
 - a. All pull stations shall have a positive, visual indication of operation and utilize a key type reset.
 - b. Construction: Pull stations shall be constructed of Lexan or other material; suitable to the installation environment 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 or larger. Stations shall be suitable for surface mounting or semi flush mounting as shown on the plans. Unless otherwise indicated on the drawings pull stations shall be mounted at 48" above finished floor to top of box.
 - 2. Photoelectric Smoke Detectors: Photoelectric smoke detectors shall use the photoelectric (light-scattering) principal to measure smoke density and shall, on command from the control panel, send data to the panel representing the analog level of smoke density. Unless otherwise indicated on the drawings all smoke detectors shall be photoelectric type.
 - a. Detectors must be the plug-in type, each having a separate base, to facilitate replacement and maintenance. When replacing a detector for maintenance reasons the detector must not require any special tools or programmer to set its address. When installed in a room, detectors shall be oriented so their alarm light is visible from the nearest door to the corridor, unless Remote Alarm Indicator light (RAIL) equipped.
 - b. A smoke detector shall be required within three feet of main FACP, power extenders, NAC expansion panels and other control equipment.
 - c. Spot type smoke detectors mounted within 12 feet of a walking surface shall have their built-in locking device activated.
 - d. Identification of individual detectors is required by the unique number indicated on the Drawings. These device numbers, which must also be

shown on the shop drawings, shall be permanently affixed to the detector base. Device labels shall be installed on permanent portion of device (i.e. base of smoke detector). Identification labels must be printed labels with black lettering on a clear or white background. Handwritten labels or labels made from embossed tape are not acceptable. Labels must be large enough to read without the use of a ladder.

3. Thermal Detectors: Thermal Detectors shall be intelligent addressable devices rated at 200°F. (93°C.) and unless otherwise indicated on the drawings shall have a rate-of-rise element rated at 15°F. (9.4°C.) per minute. Thermal detectors shall use an electronic sensor to measure thermal conditions caused by a fire and shall on command from the control panel, send data to the panel representing the analog level of such thermal measurements.
 4. Duct Smoke Detector: In-Duct Smoke Detector Housings shall accommodate an intelligent photoelectric sensor as described elsewhere. The device, independent of the type used, shall provide continuous analog monitoring from the panel. When sufficient smoke is sensed, an alarm signal shall be initiated at the FACP.
 - a. Duct detector sampling tubes shall extend the full width of the duct. Those over 36 inches long must be provided with rear support. The preferred method for doing this is to have the tube go through the far side of the duct, with the point of penetration tightly sealed to prevent air leakage around the tube. This facilitates smoke testing and tube cleaning. Duct smoke detector mounting position and air sampling tube orientation are critical for proper operation. The Manufacturer's detailed installation instructions and NFPA 72 installation instructions must be followed.
 - b. At each duct detector a 12"x12" minimum access door, removable latched type, must be provided to facilitate sampling tube inspection and cleaning. Airflow direction must be permanently indicated on the duct, to help assure sampling tubes are installed and maintained in the correct orientation.
 5. Tamper Switches: Standpipe system valve tamper switches are provided under Division 15. Provide monitor module as required.
 6. Flow Switches: Standpipe system water flow switches are provided under Division 15. Provide monitor module as required.
- C. Notification Appliances:
1. Loudspeakers and their enclosures used in emergency voice/alarm communication messaging system shall be listed for this service.
 2. Strobe Lights shall be located as shown on the drawings. Strobe lights indicated for use at exterior of the building shall be mounted at the indicated elevation and listed for use in wet locations. Strobe lights shall have the following specifications:
 3. Voltage: Strobe lights shall operate on 24 VDC nominal.
 4. The flash rate shall not exceed two flashes per second (2 Hz) nor be less than one flash every second (1 Hz) throughout the listed voltage range of the appliance.
 5. Wall-mounted appliances shall be mounted such that the entire lens is not less than 80 in. and not greater than 96 in. above the finished floor.
 6. Ceiling-mounted appliances shall be in accordance with the current NFPA 72.
 7. Spacing and candela of devices shall be in accordance with the current NFPA 72.

D. Speaker Strobe Combination Devices:

1. Wall-mounted appliances shall be mounted such that the entire lens is not less than 80 in. and not greater than 96 in. above the finished floor. Spacing and candela of devices shall be in accordance with the current NFPA 72.
 2. Alarm notification appliance circuits are to be Class "B". The load connected to each circuit must not exceed 60% of rated module output. Shop drawings must show calculated NAC current draw and voltage drop at the EOL.
 3. All Notification Appliances shall be clearly labeled with NAC panel and circuit number.
- E. Miscellaneous System Items
1. Addressable Dry Contact Monitor Module: Addressable Monitor Modules shall be provided to connect one supervised IDC zone (either Style D or Style B) of conventional Alarm Initiating Devices (any Normally Open [N.O.] dry contact device) to one of the Fire Alarm Control Panel Signaling Line Circuit Loops. Monitor modules shall be installed as required by the system configuration. All required monitor modules may not be shown on the Drawings.
 2. Addressable Control Module: Addressable Control Modules shall be provided to supervise and control the operation of one conventional Notification Appliance Circuit (NAC) of compatible, 24 VDC powered, polarized Audio/visual (AV) Notification Appliances. For fan shutdown and other auxiliary control functions, the control module may be set to operate as a dry contract relay.
 3. Isolator Module: To minimize the impact of a wiring fault (short), isolation modules or (if the ceiling height is <10 feet) isolator base type initiating devices shall be provided as follows: After each 25 devices and control points on any addressable circuit. For each addressable circuit that extends outside the building walls. In or immediately adjacent to the FACP, at each end of the addressable loop. These two isolators must be in the same room as the FACP and within 15 feet. But they shall not be mounted inside the FACP. For loops covering more than one floor, install isolator at terminal cabinet on each floor (with additional isolator[s] on any floor with over 25 addresses).
- F. Operation: Isolator Modules shall operate such that if a wire-to-wire short occurs, the Isolator module shall automatically open-circuit (disconnect) the SLC loop. When the short circuit condition is corrected; the Isolator Module shall automatically reconnect the isolated section. The Isolator Module shall not require any address setting, and its operations shall be totally automatic. It shall not be necessary to replace or reset an Isolator Module after its normal operation.
1. Remote Annunciator Indicator Lights (RAIL): Remote annunciator indicator lights shall be provided for each duct smoke detector in the nearest corridor or other public space. RAILS shall be provided with a key type switch for testing of the annunciated device.
 2. The FACP shall have supervised bypass switches to be used by maintenance personnel that will individually bypass the audio/visuals, intercom tone, AHU Shutdown, smoke dampers, door holders, and elevator recall. All bypass switches will cause a trouble condition on the panel until restored to the normal position.

PART 3 EXECUTION

3.01 GENERAL

- A. The system shall be nominal 24 VDC, non-coded, and fully supervised (including control circuits, AHU shutdown circuits). All equipment supplied shall be new, must

be listed for the purpose for which it is used, UL approved, and installed with a warranty (parts and labor) of at least one year from the date of acceptance.

- B. The Fire Alarm Control Panel (FACP) shall be of modular type, for ease of future system expansion or modification. The FACP must display a steady "Power On" light (green) and must have separate "Alarm" (red), "Trouble" (amber), and "Signals Silenced" lights. LCD display shall indicate devices in alarm or trouble. The system shall be designed at no greater than 50% capacity with a final completion capacity of no greater than 60%. This shall be supported with documentation from the supplier.
- C. The FACP power supply shall have a continuous rating adequate to power all zones and functions in full alarm continuously and must not exceed 60% of its output rating. Detection modules and alarm modules must be able to withstand prolonged short circuits in the field wiring, either line to line or line to ground, without damage. Signal circuits shall each be loaded to no more than 60% of their rated output capacity.
- D. NAC expansion panels may be installed remote from the (FACP) at contractor's option. When expansions NAC panel are installed, contractor shall provide an additional spot type smoke detector within three feet of panel and a 120V receptacle within five feet of each location, including all additional conduit and conductors. The preferred location for remote NAC panels is in IDF communication closets. All panel locations shall be indicated on shop drawings and electrical record drawings.
- E. The following protection against voltage transients and surges must be provided by the fire alarm equipment supplier, and installed by the electrical contractor:
 - 1. On AC Input: A feed-through (not a shunt-type) branch circuit transient arrestor such as the EFI HWM-120, Leviton OEM-120EFI, Northern Technologies TCS-HW, Transtector ACP10OBWN3, or any equivalent UL Listed device submitted to and approved by the electrical design engineer. Install suppressor in a listed enclosure near the electrical panel board, and trim excess lead lengths. Wind small coil in the branch circuit conductor just downstream of the suppressor connection. The Coil is to have 5 to 10 turns, about 1" diameter, and securely tie-wrapped. This series impedance will improve the effectiveness of the arrestor in suppressing voltage transients.
 - 2. On DC Circuits Extending Outside Building: Adjacent to the FACP, and also near point of entry to outlying building, provide "pi" type filter on each leg, consisting of a primary arrestor, a series impedance, and a fast acting secondary arrestor which clamps at 30v to 40v. Example of acceptable models are:
 - a. Citel America B280-24V,
- F. The location of each fire alarm initiating device shall be clearly indicated at the FACP and all annunciators. A wood framed up-to-date map with correct room numbers that indicates the location of each device and its identifying label shall be included.

3.02 WIRING

- A. The manufacturer's recommendations for wiring shall only be used as a minimum requirement.
- B. All wire shall be new, UL approved and marked, brought to the site in original packages, and rated for use in plenums.

- C. Wire insulation shall be one of the types required by NEC. All wires shall be sized per NEC for the load serviced. All wire shall be approved for fire alarm installations.
- D. "Pig tailing" and Tee Tapping is prohibited for all system circuits.
- E. Fire alarm signal line circuit shall be wired "Class A" and notification circuits shall be wired "Class B" with the end of line resistor clearly and permanently marked on the last device. All fire alarm circuiting shall be installed in a conduit raceway system.
- F. Wire splicing should be at a minimum. Wire nuts and crimp connectors are prohibited. There shall be no splices other than by use of terminal blocks. Permanent wire markers shall be used to identify all splices and terminations for each circuit. All junction boxes shall be painted red and labeled to indicate the circuits or function of the conductors contained therein.
- G. No wire run or circuit shall be longer than 80% of the maximum allowable length and power consumption for the wire size and application.
- H. All wiring shall be color coded in accordance with the following scheme, which shall be maintained throughout the system, without color change in any wire run:
 - 1. Red (+)/White (-)
 - 2. Violet (+)/Gray (-)
 - 3. Red jacket with Red (+)/Black (-)
 - 4. Blue (+)/Black (-)
 - 5. Yellow (+)/Brown (-)
 - 6. Orange (+)/Gray (-)
 - 7. Brown
- I. Detection or alarm circuits must not be included in raceways containing AC power or AC control wiring. Within the FACP, any 120 VAC control wiring or other circuits with an externally supplied AC/DC voltage above the nominal 24 VDC system power must be properly separated from other circuits and the enclosure must have an appropriate warning label to alert service personnel to the potential hazard.
- J. The system shall be electrically supervised for open or (+/-) ground fault conditions in SLC, alarm circuits, and control circuits. Removal of any detection device, alarm appliance, plug-in relay, system module, or standby battery connection shall also result in a trouble signal. Fire alarm signal shall override trouble signals, but any pre-alarm trouble signal shall reappear when the panel is reset.
- K. All connections at the FACP must be made by the Manufacturer's authorized, factory trained representative (rather than by the electrical contractor).

3.03 MISCELLANEOUS

- A. The following spare parts shall be provided with the system, each one individually packaged and labeled. These items will be turned over to the owner. Increase any resulting decimal quantities of spare parts to the next higher whole number.
 - 1. 2 of each size used in the system
 - 2. 2% of total connected to the FACP
 - 3. 4% of total connected to the FACP
 - 4. 4% of total connected to the FACP
 - 5. 4% of total connected to the FACP
- B. Sprinkler System Monitoring:

1. The following sprinkler system alarm and supervisory functions shall be provided as a part of the fire alarm system.
 - a. Waterflow alarm, by sprinkler zone (not to exceed one floor).
 - b. Supervision of each control valve.
 - c. Supervision of air pressure, if used (both high and low).
 - d. Supervision of fire pump.
2. Sprinkler supervisory monitoring of flow switches, tamper switches, and similar functions shall be accomplished with a separate system address for each activity monitored.

C. Public Address and Sound Reinforcement Systems

1. Fire Control Module shall be provided at the amplifiers for each sound reinforcement system and the main intercom system to override amplified output of these systems when fire alarm system annunciating function are active.

3.04 SYSTEM TESTING

- A. Upon completion of the installation the Division 16 Contractor and the Manufacturer's authorized representative together shall perform a complete system test and submit test documentation to WCPSS. The test shall include but not be limited to the following:
 1. All initiating devices shall be tested for alarm. Smoke detectors shall be tested with smoke.
 2. All circuits shall be tested for supervision. Signal Line Circuits shall be tested for "Class A".
 3. All sprinkler devices shall be test for alarm, supervisory, and trouble situation.
 4. All control circuits (AHU shutdown, door holders, dampers) shall be tested for proper operation on a alarm condition and for wire supervision.
 5. Elevator recall functions shall be tested to ensure proper recall programming.
 6. All notification appliances shall be tested for proper operation, synchronization, and supervision.
 7. Check zone map for proper location of all devices.
 8. Verify that devices and wire are properly labeled.
 9. Verify that the addressable device's descriptive custom label at the panel corresponds to its actual location. Devices located at fire doors and corridors should have a room number reference (e.g. "Fire doors by room 103 L1S02" or "Exit by room 160 M3-21").
 10. Verify proper system monitoring with WCPSS Tower. Test that ALARM, WATERFLOW, SPRINKLER SUPERVISORY, and SYSTEM TROUBLE signals were sent and received properly.
- B. After the initial test has been completed and the system is clear of trouble all test documentation including a printout of all custom labels and a NFPA 72 "Record of Completion" form. The Contractor and the Manufacturer's authorized representative that installed the system must be present. Should the results of this test not be satisfactory, then corrections will be made and a re-test will be required at the Contractor's expense.
- C. After successful completion of inspections and tests, the warranty period begins. In the event of malfunctions or excessive nuisance alarms, the Contractor must take prompt corrective action. The Owner may require a repeat of the Contractor's 100% system test, or other inspections. Continued improper performance during the warranty period shall be cause to require the Contractor to remove and replace the

system.

3.05 SYSTEM DOCUMENTATION, TRAINING, AND MAINTENANCE

- A. The contractor shall provide the A/E with three copies of the following:
 - 1. As-built wiring and conduit layout diagrams, including wire color code and/or label numbers, and showing all interconnections in the system.
 - 2. Technical literature (cut sheets) of all parts of the fire alarm system, control panels, modules, annunciators, communication panels, notification appliance panels, notification devices, initiating devices, power supplies, batteries, and any other devices that are connected to the system.
- B. The Manufacturer's authorized representative shall provide a minimum of eight hours training for the Owner's designated employees in proper operation of the system and in all required periodic maintenance. Scheduling of training must be arranged to meet the Owner's schedule.
- C. The instruction shall include a minimum of two copies of a written, bound training summary for future reference.
- D. Basic operating instructions shall be framed and mounted at the FACP.

END OF SECTION