

# STATE OF NORTH CAROLINA STANDARD FORM OF INFORMAL CONTRACT AND GENERAL CONDITIONS

FOR

NC State Bureau of Investigation  
Campus Fire Alarm Conversion  
Raleigh, NC  
SCO # 25-29800-02

## SCOPE OF WORK

Provide new cellular dialers for existing fire alarm systems.

## NOTICE TO BIDDERS

Sealed bid for this work will be received by:

John Biggs  
NC State Bureau of Investigation  
3320 Garner Road  
984-292-4468

up to **2:00 PM**, on December 2, 2025, and immediately thereafter publicly opened and read aloud. Complete plans and specification and contract documents can be obtained from

Matt Johnson  
Salas O'Brien, NC  
702 Oberlin Rd, Suite 300  
Raleigh, NC 27605  
matt.johnson@salasobrien.com

A **pre-bid meeting** will be held at 1:30pm on November 12, 2025, at SBI Building 14, 3320 Garner Road, Raleigh, NC 27610. Meet in front of Building 14. All interested contractors are encouraged to attend.

Contractors are hereby notified that they must have proper license under the State laws governing their respective trades and that North Carolina General Statute 87 will be observed in receiving and awarding contracts. General Contractors must have general license classification for Unlimited Electrical.

No bid may be withdrawn after the opening of bids for a period of 30 days. The Owner reserves the right to reject any or all bids and waive informalities. Bids shall be made only on the BID/ACCEPTANCE form provided herein with all blank spaces for bids properly filled in and all signatures properly executed.

Please note on the envelope – **Bid : Attn:** John Biggs  
NC SBI Campus Fire Alarm Conversion  
(Bid Date)  
(Contractor)  
(License Number)

# SBI CAMPUS FA DIALER REPLACEMENT

## 3320 GARNER ROAD RALEIGH, NORTH CAROLINA

CONSTRUCTION DOCUMENTS  
OCTOBER 13, 2025

### SITE MAP



DRAWING LIST	
NO.	TITLE
G001	COVER SHEET
G010	BUILDING CODE SUMMARY - BUILDING 9
G013	BUILDING CODE SUMMARY - BUILDING 13
G014	BUILDING CODE SUMMARY - BUILDING 14
G016	BUILDING CODE SUMMARY - BUILDING 16
G018	BUILDING CODE SUMMARY - BUILDING 18
E001	STANDARDS, SYMBOLS & ABBREVIATIONS
E109	BUILDING 9 FLOOR PLAN
E113	BUILDING 13 FLOOR PLAN
E114	BUILDING 14 FLOOR PLAN
E116	BUILDING 16 FLOOR PLAN
E118	BUILDING 18 FLOOR PLAN

**Salas O'Brien**  
North Carolina, Inc.  
salasobrien.com  
Raleigh (919) 832-8118  
702 Oberlin Road, Suite 300  
Raleigh, NC 27605  
Registration: F-1434

Project Number: 2572-0065  
SCO Number: 25-29800-02

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**PROFESSIONAL SEAL**

MATT HENRY JOHNSON  
ENGINEER  
039503  
10/28/2025

ISSUE DATE	DESCRIPTION
10/13/2025	CONSTRUCTION DOCUMENTS



**CLIENT NAME**  
NCSBI

**PROJECT NAME**  
SBI Campus FA Dialer Replacement

3320 Garner Road  
Raleigh, N.C. 27610

**REVISIONS**

Δ	DESCRIPTION	DATE

**CHECKED BY** MJJ  
**DRAWN BY** RDH

**SHEET NAME**

**COVER SHEET**

**SHEET NUMBER** G001  
**REVISION**







APPENDIX B 2018 BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS

Name of Project: SBI Campus FA Dialer Replacement - Building 16
Address: 3320 Garner Rd, Raleigh, NC 27610
Owner/Authorized Agent: JOHN BIGGS
Phone # (984) 292-4468
Email: jbiggs@ncsbi.gov

Contact: Name DESIGNER FIRM NAME LICENSE PHONE E-MAIL
MATTHEW J. JOHNSON 039503 (919) 832-8118 matt.johnson@salasobrien.com

2018 NC Building Code:
2018 NC Existing Building Code:
Constructed: (date) 1938
Renovated: (date)

BASIC BUILDING DATA

Construction Type:
Sprinklers:
Standpipes:
Primary Fire District:
Special Inspections Required:

GROSS BUILDING AREA TABLE

Table with 4 columns: FLOOR, EXISTING (SQ FT), NEW (SQ FT), SUB-TOTAL. Rows include 3rd Floor, 2nd Floor, Mezzanine, 1st Floor, and Basement.

ALLOWABLE AREA

Primary Occupancy Classification(s):
Accessory Occupancy Classification(s):
Incidental Uses (Table 509):
Special Uses (Chapter 4 - List Code Sections):
Special Provisions (Chapter 5 - List Code Sections):

Actual Area of Occupancy A + Actual Area of Occupancy B ≤ 1
Allowable Area of Occupancy A + Allowable Area of Occupancy B ≤ 1

Table with 5 columns: STORY NO., DESCRIPTION AND USE, (A) BLDG AREA PER STORY (ACTUAL), (B) TABLE 506.2 AREA, (C) AREA FOR FRONTAGE INCREASE, (D) ALLOWABLE AREA PER STORY OR UNLIMITED.

1 Frontage area increases from Section 506.2 are computed thus:
a. Perimeter which fronts a public way or open space having 20 feet minimum width = ... (F)
b. Total Building Perimeter = ... (P)
c. Ratio (F/P) = ... (F/P)
d. W = Minimum width of public way = ... (F/W)

ALLOWABLE HEIGHT

Table with 4 columns: ALLOWABLE, SHOWN ON PLANS, CODE REFERENCE. Rows include Building Height in Feet (Table 504.3) and Building Height in Stories (Table 504.4).

FIRE PROTECTION REQUIREMENTS

Table with 7 columns: BUILDING ELEMENT, FIRE SEPARATION DISTANCE (FEET), REQ'D RATING, PROVIDED (W/ REDUCTION) RATING, DETAIL # AND SHEET #, DESIGN # FOR RATED ASSEMBLY, SHEET # FOR RATED PENETRATION, SHEET # FOR RATED JOINTS.

PERCENTAGE OF WALL OPENING CALCULATIONS

Table with 4 columns: FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINES, DEGREE OF OPENINGS PROTECTION (TABLE 705.8), ALLOWABLE AREA (%), ACTUAL SHOWN ON PLANS (%).

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting:
Exit Signs:
Fire Alarm:
Smoke Detection Systems:
Carbon Monoxide Detection:

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #.
[X] Fire and/or smoke rated wall locations (Chapter 7)
[X] Assumed and real property line locations (if not on the site plan)
[X] Exterior wall opening area with respect to distance to assumed property lines (705.8)
[X] Occupancy Use for each area as it relates to occupant load calculation (Table 1004.1.2)
[X] Occupant loads for each area
[X] Exit access travel distances (1017)
[X] Common path of travel distances (1006.2.1 & 1010.3.2(1))
[X] Dead end lengths (1020.4)
[X] Clear exit widths for each exit door
[X] Maximum calculated occupant load capacity each exit door to accommodate based on egress width (1005.3)
[X] Actual occupant load for each exit door
[X] A separate schematic plan indicating where fire rated walls and/or roof structure is provided for purposes of occupancy separation
[X] Location of doors with panic hardware (1010.1.10)
[X] Location of doors with delayed egress locks and the amount of delay (1010.1.9.7)
[X] Location of doors with electromagnetic egress locks (1010.1.9.9)
[X] Location of doors equipped with hold-open devices
[X] Location of emergency escape windows (1030)
[X] The square footage of each fire area (202)
[X] The square footage of each smoke compartment for Occupancy Classification I-2 (406.5)
[X] Note any code exceptions or table notes that may have been utilized regarding the items above

ACCESSIBLE DWELLING UNITS (Section 1107)

Table with 8 columns: TOTAL UNITS, ACCESSIBLE UNITS REQUIRED, ACCESSIBLE UNITS PROVIDED, TYPE A UNITS REQUIRED, TYPE A UNITS PROVIDED, TYPE B UNITS REQUIRED, TYPE B UNITS PROVIDED, TOTAL ACCESSIBLE UNITS PROVIDED.

ACCESSIBLE PARKING (Section 1106)

Table with 5 columns: TOTAL # OF PARKING SPACES, # OF ACCESSIBLE SPACES PROVIDED, TOTAL # ACCESSIBLE PROVIDED. Rows include REQUIRED, PROVIDED, REGULAR WITH 5' ACCESS AISLE, VAN SPACES WITH 132" ACCESS AISLE, and ACCESS AISLE.

PLUMBING FIXTURE REQUIREMENTS (TABLE 2902.1)

Table with 10 columns: USE, WATERCLOSETS, URINALS, SINKS, SHOWERS/TUBS, DRINKING FOUNTAINS. Rows include MALE, FEMALE, UNISEX, and SPACE EXISTG, NEW, REQ'D.

SPECIAL APPROVALS

Special approval: (Local Jurisdiction, Department of Insurance, OSC, DPI, DHHS, ICC, etc., describe below)
Special Approvals Text Text Special Approvals Text Text Special Approvals Text Text Special Approvals Text Text Special Approvals Text Text Special Approvals Text Text Special Approvals Text Text Special Approvals Text Text Special Approvals Text Text Special Approvals Text Text Special Approvals Text Text

ENERGY SUMMARY

ENERGY REQUIREMENTS:
Existing building envelope complies with code: Yes or No (if checked, the remainder of this section is not applicable.)
Exempt Building: Yes or No Provide code or statutory reference: reference.
Climate Zone:
Method of Compliance:
Energy Code:
ASHRAE 90.1:
Other:

THERMAL ENVELOPE (Prescriptive method only)

Roof/ceiling Assembly (each assembly)
Description of assembly:
U-Value of total assembly:
R-Value of insulation:
Skylights in each assembly:
Total square footage of skylights in each assembly:
Exterior Walls (each assembly)
Description of assembly:
U-Value of total assembly:
R-Value of insulation:
Openings (windows or doors with glazing):
U-Value of assembly:
Solar heat gain coefficient:
Projection Factor:
Door R-Values:
Walls below grade (each assembly)
Description of assembly:
U-Value of total assembly:
R-Value of insulation:
Floor over unconditioned space (each assembly)
Description of assembly:
U-Value of total assembly:
R-Value of insulation:
Floors slab on grade
Description of assembly:
U-Value of total assembly:
R-Value of insulation:
Horizontal/vertical requirement:
Slab heated:

APPENDIX B 2018 BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS

DESIGN LOADS:
Importance Factors:
Live Loads:
Ground Snow Load:
Wind Load:
SEISMIC DESIGN CATEGORY:

Provide the following Seismic Design Parameters:
Occupancy Category (Table 1604.5):
Spectral Response Acceleration:
Site Classification (ASCE 7):
Basic Structural System (check one):
Analysis Procedure:
LATERAL DESIGN CONTROL:
SOIL BEARING CAPACITIES:

APPENDIX B 2018 BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT
Thermal Zone:
Interior design conditions:
Building heating load:
Building cooling load:
Mechanical Spacing Conditioning System:
List equipment efficiencies: SEE PLANS AND SPECIFICATIONS

APPENDIX B 2018 BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS

ELECTRICAL SYSTEM AND EQUIPMENT
Method of Compliance:
Lighting Schedule (each fixture type):
Additional Prescriptive Compliance:

Salas O'Brien logo and contact information: Raleigh, NC 27605, 702 Oberlin Road, Suite 300, Phone: (919) 832-8118.

Project Number: 2572-00065
SCO Number: 25-29800-02



ISSUE DATE: 10/13/2025
DESCRIPTION: CONSTRUCTION DOCUMENTS



CLIENT NAME: NCSBI

PROJECT NAME: SBI Campus FA Dialer Replacement

3320 Garner Road, Raleigh, N.C. 27610

REVISIONS table with columns: #, DESCRIPTION, DATE.

CHECKED BY: MJJ, DRAWN BY: RDH

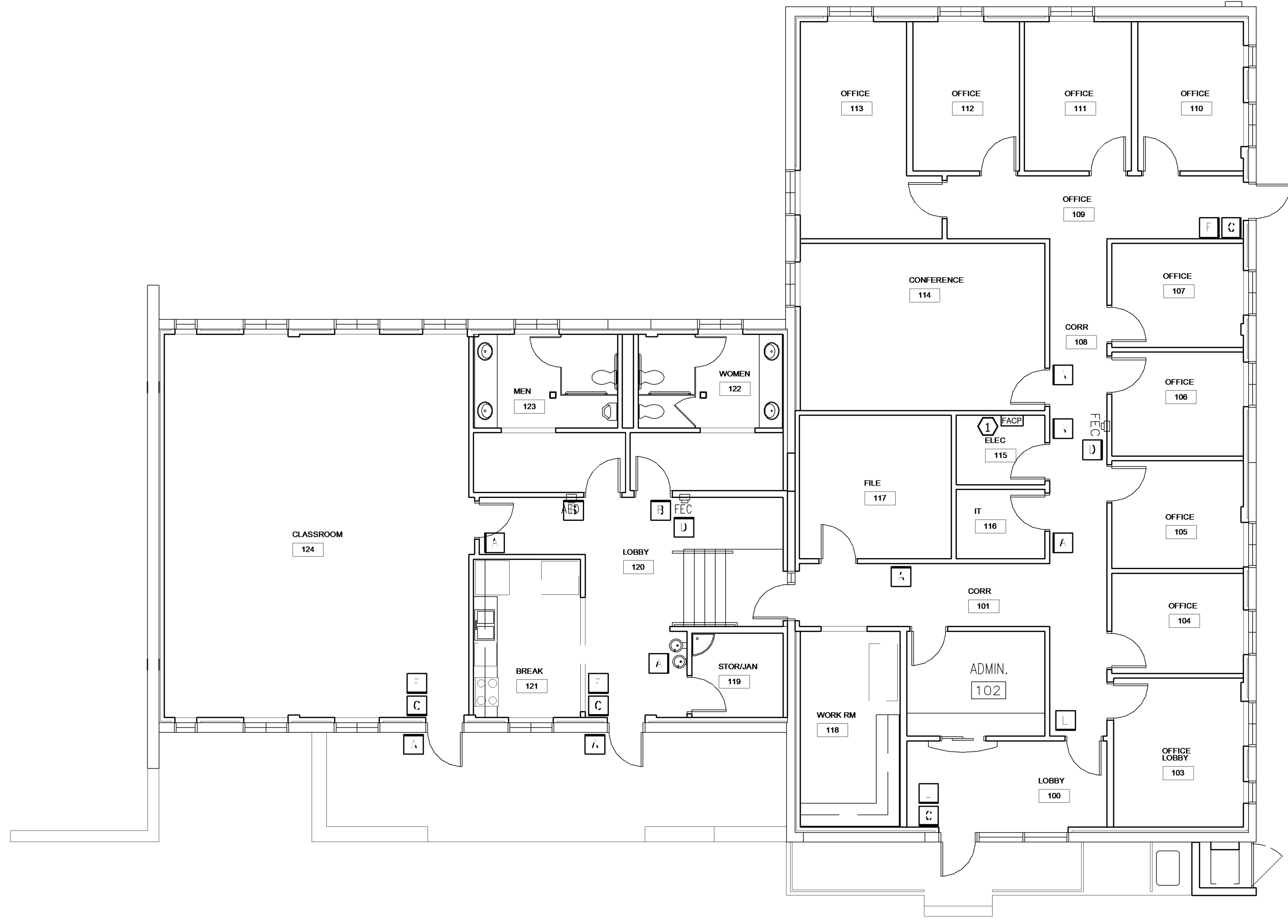
BUILDING CODE SUMMARY - BUILDING 16

SHEET NUMBER: G016, REVISION





F  
E  
D  
C  
B  
A



**1 BUILDING 9 FLOOR PLAN**  
SCALE: 1/8" = 1'-0"  
4' 0 4' 8' 12' 16' 20'

KEY NOTES TO E109  
1 REPLACE POTS SYSTEM WITH CELLULAR DIALER. SEE RISER DIAGRAM ON SHEET E001.

**Salas O'Brien**  
North Carolina, Inc.  
salasobrien.com  
Raleigh (919) 832-8118  
702 Oberlin Road, Suite 300  
Raleigh, NC 27605  
Registration: F-1434  
Project Number: 2572-0065  
SCO Number: 25-29800-02

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**PROFESSIONAL SEAL**  
  
10/28/2025

**ISSUE DATE DESCRIPTION**  
10/13/2025 CONSTRUCTION DOCUMENTS



**CLIENT NAME**  
NCSBI

**PROJECT NAME**  
SBI Campus FA Dialer Replacement

3320 Garner Road  
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**REVISIONS**

Δ	DESCRIPTION	DATE

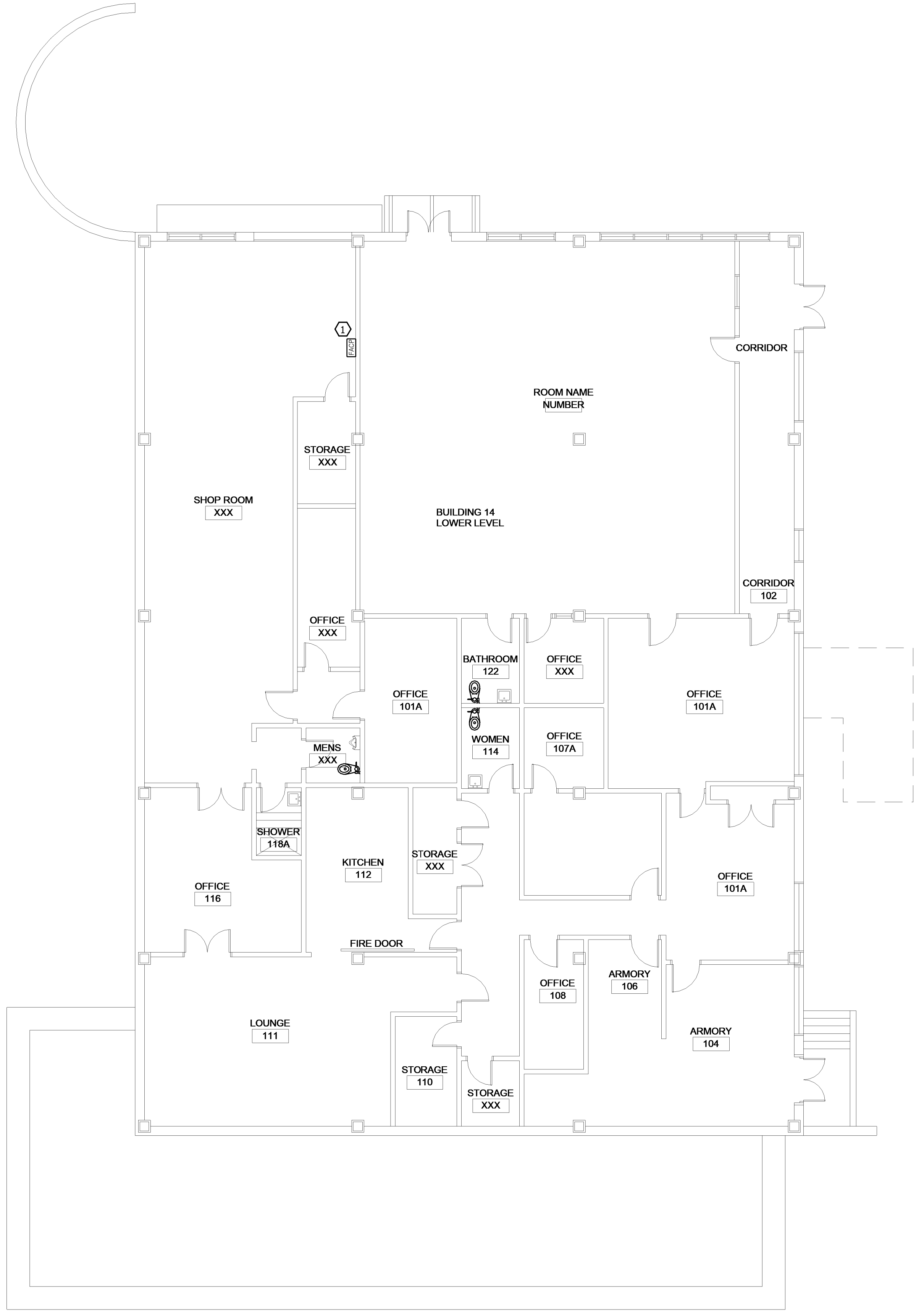
**CHECKED BY DRAWN BY**  
MJJ RDH

**SHEET NAME**  
BUILDING 9 FLOOR PLAN

**SHEET NUMBER REVISION**  
E109



F  
E  
D  
C  
B  
A



**1 BUILDING 14 FLOOR PLAN**  
 SCALE: 1/8" = 1'-0"  
 4' 0' 4' 8' 12' 16' 20'

**KEY NOTES TO E114**  
 1 REPLACE POTS SYSTEM WITH CELLULAR DIALER. SEE RISER DIAGRAM ON SHEET E001.

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 North Carolina, Inc.  
 salasobrien.com  
 Raleigh (919) 832-8118  
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Δ	DESCRIPTION	DATE

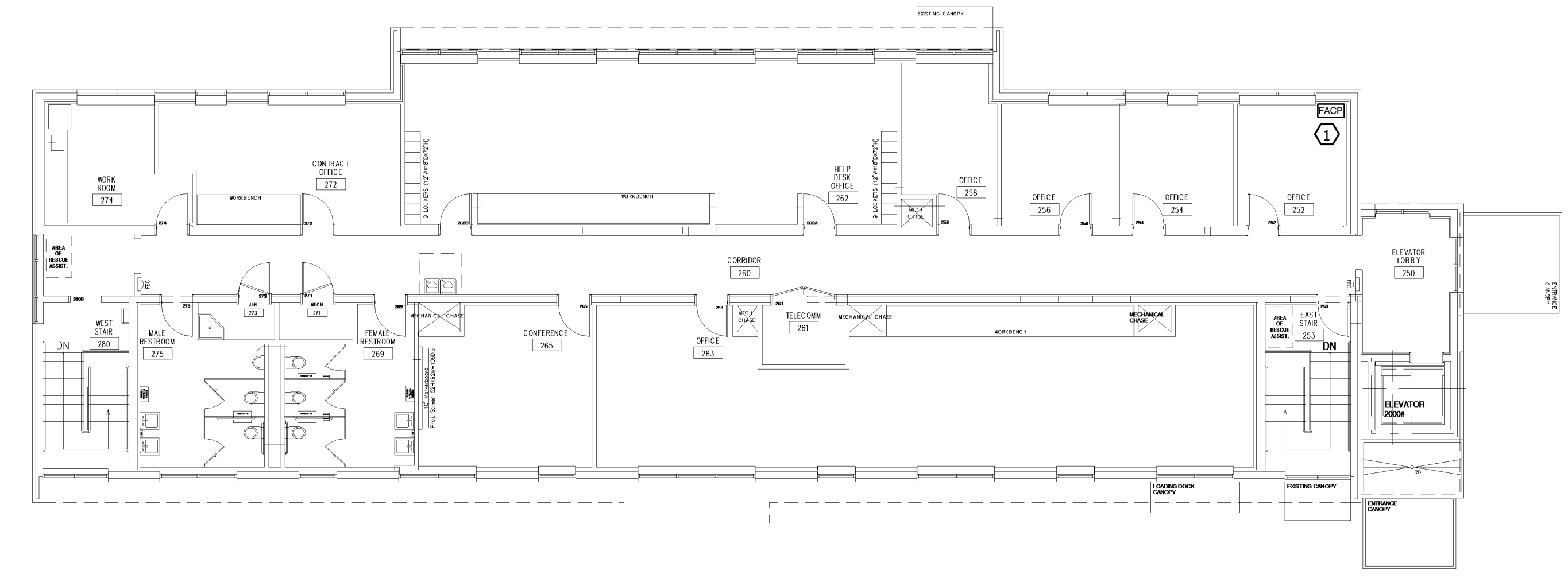
**CHECKED BY DRAWN BY**  
 MJJ RDH

**SHEET NAME**  
 BUILDING 14 FLOOR PLAN

**SHEET NUMBER REVISION**  
 E114



F  
E  
D  
C  
B  
A



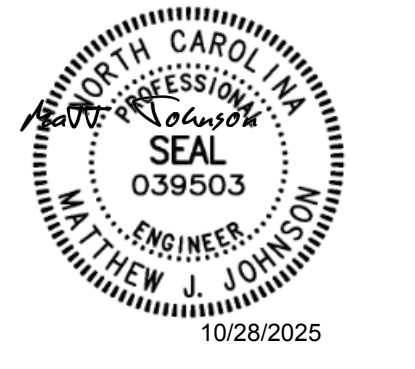
**1 BUILDING 18 FLOOR PLAN**  
E118 SCALE: 3/32" = 1'-0"  
8' 0 8' 16' 24'

**KEY NOTES TO E118**  
1 REPLACE POTS SYSTEM WITH CELLULAR DIALER. SEE RISER DIAGRAM ON SHEET E001.

**Salas O'Brien.**  
North Carolina, Inc.  
salasobrien.com  
Raleigh (919) 832-8118  
702 Oberlin Road, Suite 300  
Raleigh, NC 27605  
Registration: F-1434  
Project Number: 2572-0065  
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PROFESSIONAL SEAL



ISSUE DATE DESCRIPTION  
10/13/2025 CONSTRUCTION DOCUMENTS



CLIENT NAME  
NCSBI

PROJECT NAME  
**SBI Campus FA Dialer Replacement**

3320 Garner Road  
Raleigh, N.C. 27610

REVISIONS

Δ	DESCRIPTION	DATE

CHECKED BY MJJ DRAWN BY RDH

SHEET NAME  
**BUILDING 18 FLOOR PLAN**

SHEET NUMBER REVISION  
**E118**

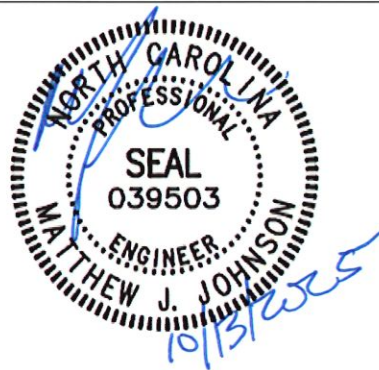
PROJECT MANUAL  
including  
SPECIFICATIONS  
for

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STATE BUREAU OF INVESTIGATION CAMPUS FIRE ALARM CONVERSION

RALEIGH, NC

---



Salas O'Brien  
North Carolina, Inc.  
702 Oberlin Road  
Suite 300  
Raleigh, NC 27605  
919-832-8118  
salasobrien.com  
license (NC): F-1434

DATE: October 13, 2025

PROJECT NUMBERS

SO: 2572-00065

SCO: 25-29800-01

Code: 42451 ITEM: 433016

Owner: State Bureau of Investigation

SET:



Send all project communication to:  
Salas O'Brien

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**DIVISION 00 – GENERAL CONDITIONS**

<b>Section</b>	<b>Title</b>
	Advertisement for Bids
	Notice to Bidders
	HUB participations Recording Requirements
	General Conditions
	Instructions to Bidders & General Conditions of the Contract
	Form of Proposal
	Identification of HUB Certified/Minority Business Participation
	<ul style="list-style-type: none"> <li>• Affidavit A – Listing of Good Faith Efforts</li> <li>• Affidavit B – Intent to Perform Contract with Own Workforce</li> <li>• Affidavit C – Portion of the Work to be Performed by HUB Certified/Minority Business</li> <li>• Affidavit D – Good Faith Efforts</li> <li>• Appendix E – MBE Documentation for Contract Payments</li> </ul>
	Form of Bid Bond
	Form of Construction Contract
	Form of Performance Bond
	Sheet for Attaching Power of Attorney
	Sheet for Attaching Insurance Certificates
	Certification by the Office of State Budget and Management

**DIVISION 01 – GENERAL REQUIREMENTS**

<b>Section</b>	<b>Title</b>
011100	Summary of Work
013100	Project Management and Coordination
015000	Temporary Facilities and Controls
017700	Project Closeout
019913	General Requirements
019916	Work in Existing Buildings
019926	Owner Instruction and Training

**DIVISION 26 - ELECTRICAL**

<b>Section</b>	<b>Title</b>
260000	Summary of Electrical Work
260500	Basic Electrical Requirements
260519	Secondary Voltage Wires and Cables
260526	Grounding
260529	Supporting Devices
260533	Electrical Identification
260534	Raceways
260535	Electrical Boxes and Fittings

**DIVISION 28 – ELECTRONIC SAFETY AND SECURITY**

<b>Section</b>	<b>Title</b>
283110	Fire Alarm System Modifications

**END OF TABLE OF CONTENTS**

**ADVERTISEMENT FOR BIDS**

Sealed proposals for Single- Prime bids will be received until 2:00pm on December 2, 2025, in the basement of Building 14 (entrance at west end of building), 3320 Garner Road, Raleigh, NC 27610 for construction of State Bureau of Investigation Fire Alarm Dialer Replacement at which time and place bids will be opened and read.

A pre-bid meeting will be held at 1:30pm on November 12, 2025, at SBI Building 14, 3320 Garner Road, Raleigh, NC 27610. Meet in front of Building 14. All interested contractors are encouraged to attend.

Complete plans and specifications for this project can be obtained from

Wanda Hill  
Wanda.hill@salasobrien.com  
Salas O'Brien  
702 Oberlin Road Suite 300  
Raleigh, NC 27605

during normal office hours after October 29, 2025.

Plans and Specifications are available electronically (Bid Deposit not required). Hard copies are available upon a Plan Deposit of \$100.

The Owner reserves the unqualified right to waive any informalities or reject any and all proposals. All inquires should be directed to:

Signed:

John Biggs  
Maintenance/Construction Project Manager  
NC State Bureau of Investigation  
3320 Garner Road  
Raleigh NC 27610  
984-292-4468



# STATE OF NORTH CAROLINA STANDARD FORM OF INFORMAL CONTRACT AND GENERAL CONDITIONS

FOR

NC State Bureau of Investigation  
Campus Fire Alarm Conversion  
Raleigh, NC  
SCO # 25-29800-02

## SCOPE OF WORK

Provide new cellular dialers for existing fire alarm systems.

## NOTICE TO BIDDERS

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Salas O'Brien, NC  
702 Oberlin Rd, Suite 300  
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Please note on the envelope – **Bid : Attn:** John Biggs  
NC SBI Campus Fire Alarm Conversion  
(Bid Date)  
(Contractor)  
(License Number)

# BID/ACCEPTANCE FORM

for

SBI Campus Fire Alarm Conversion

SCO# 25-29800-02

Replacement of existing fire alarm system telephone dialers with cellular dialers.

The undersigned, as bidder, proposes and agrees if this bid is accepted to contract with the State of North Carolina through the NC State Bureau of Investigations for the furnishing of all materials, equipment, and labor necessary to complete the construction of the work described in these documents in full and complete accordance with plans, specifications, and contract documents, and to the full and entire satisfaction of the State of North Carolina and the NC State Bureau of Investigations for the sum of:

**BASE BID:** \_\_\_\_\_ **Dollars \$** \_\_\_\_\_

Respectively submitted this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_

\_\_\_\_\_  
**(Contractor's Name)**

Federal ID#: \_\_\_\_\_

By: \_\_\_\_\_

Witness: \_\_\_\_\_

Title: \_\_\_\_\_

*(Owner, partner, corp. Pres. Or Vice President)*

\_\_\_\_\_  
*(Proprietorship or Partnership)*

Address: \_\_\_\_\_

Attest: *(corporation)*

Email Address: \_\_\_\_\_

**(Corporate Seal)**

By: \_\_\_\_\_ License #: \_\_\_\_\_

Title: \_\_\_\_\_

*(Corporation, Secretary./Ass't Secretary.)*

**ACCEPTED by the STATE OF NORTH CAROLINA**  
through the

---

*NC State Bureau of Investigations*

Total amount of accepted by the owner, included base bid and bid alternates: \_\_\_\_\_

BY: \_\_\_\_\_ TITLE: \_\_\_\_\_

Date: \_\_\_\_\_

# GENERAL CONDITIONS

## 1. GENERAL

It is understood and agreed that by submitting a bid that the Contractor has examined these contract documents, drawings and specifications and has visited the site of the Work, and has satisfied himself relative to the Work to be performed.

## 2. DEFINITIONS

**Owner:** "Owner" shall mean, The State of North Carolina through (*NC State Bureau of Investigations*)

**Contractor:** "Contractor" shall mean the entity that will provide the services for the Owner.

**Designer:** The **designer(s)** are those referred to within this contract, or their authorized representatives. The Designer(s), as referred to herein, shall mean architect and/or engineer responsible for preparing the project plans and specifications. They will be referred to hereinafter as if each were of the singular number, masculine gender.

**Contract Documents:** "Contract Documents" shall consist of the Notice to Bidders; General Conditions of the Contract; special conditions if applicable; Supplementary General Conditions; the drawing and specifications, including all bulletins, addenda or other modifications of the drawings and specifications incorporated into the documents prior to their execution; the bid; the contract; the performance bond if applicable; and insurance certificates. All of these items together form the contract.

## INTENT AND EXECUTION OF DOCUMENTS

The drawings and specifications are complementary, one to the other. That which is shown on the drawings or called for in the specifications shall be as binding as if it were both called for and shown. The intent of the drawings and specifications is to establish the scope of all labor, materials, transportation, equipment, and any and all other things necessary to provide a complete job. In case of discrepancy or disagreement in the Contract Documents, the order of precedence shall be: Form of Contract, specifications, large-scale detail drawings, small-scale drawings.

In such cases where the nature of the work requires clarification by the Designer/ Owner, the Designer/ Owner shall furnish such clarification. Clarifications and drawings shall be consistent with the intent of the Contract Documents, and shall become a part thereof.

## 4. AS-BUILT MARKED-UP CONSTRUCTION DOCUMENTS

Contractor shall provide one complete set of legible "as-built" marked-up construction drawings and specifications recording any and all changes made to the original design during the course of construction. In the event no changes occurred, submit construction drawings and specifications set with notation "No Changes." The Designer/Owner must receive "As-built" marked-up construction drawings and specifications before the final pay request can be processed.

## 5. SUBMITTAL DATA

The Contractor awarded the contract shall submit all specified submittals to the Owner/Designer. A minimum number of copies as specified by the owner, of all required submittal data pertaining to construction, performance and general dimensional criteria of the components listed in the technical specifications shall be submitted. No material or equipment shall be ordered or installed prior to written approval of the submittals by the Designer/Owner. Failure to provide submittal data for review on equipment listed in the technical specifications will result in removal of equipment by the Contractor at his expense if the equipment is not in compliance with the specifications.

## 6. SUBSTITUTIONS

In accordance with the provisions of G.S. 133-3, material, product, or equipment substitutions proposed by the bidders to those specified herein can only be considered during the bidding phase until five (5) days prior to the receipt of bids or by the date specified in the pre bid conference, when submitted to the Designer with sufficient data to confirm material, product, or equipment equality. Proposed substitutions submitted after this time will be considered only as potential change order.

Submittals for proposed substitutions shall include the following information:

- a. Name, address, and telephone number of manufacturer and supplier as appropriate.
- b. Trade name, model or catalog designation.
- c. Product data including performance and test data, reference standards, and technical descriptions of material, product, or equipment. Include color samples and samples of available finishes as appropriate.
- d. Detailed comparison with specified products including performance capabilities, warranties, and test results.
- e. Other pertinent data including data requested by the Designer to confirm product equality.

If a proposed material, product, or equipment substitution is deemed equal by the Designer to those specified, all bidders of record will be notified by Addendum.

## 7. WORKING DRAWINGS AND SPECIFICATIONS AT THE JOB SITE

The contractor shall maintain, in readable condition at his job site one complete set of working drawings and specifications for his work including all shop drawings. Such drawings and specifications shall be available for use by the owner, designer or his authorized representative.

The contractor shall maintain at the job site, a day-to-day record of work-in-place that is at variance with the contract documents. Such variations shall be fully noted on project drawings by the contractor and submitted to the designer upon project completion and no later than 30 days after acceptance of the project.

## 8. MATERIALS, EQUIPMENT, EMPLOYEES

- a. The contractor shall, unless otherwise specified, supply and pay for all labor, transportation, materials, tools, apparatus, lights, power, fuel, heat, sanitary facilities, water, scaffolding and incidentals necessary for the completion of his work, and shall install, maintain and remove all equipment of the construction, other utensils or things, and be responsible for the safe, proper and lawful construction, maintenance and use of same, and shall construct in the best and most workmanlike manner, a complete job and everything incidental thereto, as shown on the plans, stated in the specifications, or reasonably implied therefrom, all in accordance with the contract documents.
- b. All materials shall be new and of quality specified, except where reclaimed material is authorized herein and approved for use. Workmanship shall at all times be of a grade accepted as the best practice of the particular trade involved, and as stipulated in written standards of recognized organizations or institutes of the respective trades except as exceeded or qualified by the specifications.
- c. Upon notice, the contractor shall furnish evidence as to quality of materials.

- d. Products are generally specified by ASTM or other reference standard and/or by manufacturer's name and model number or trade name. When specified only by reference standard, the Contractor may select any product meeting this standard, by any manufacturer. When several products or manufacturers are specified as being equally acceptable, the Contractor has the option of using any product and manufacturer combination listed. However, the contractor shall be aware that the cited examples are used only to denote the quality standard of product desired and that they do not restrict bidders to a specific brand, make, manufacturer or specific name; that they are used only to set forth and convey to bidders the general style, type, character and quality of product desired; and that equivalent products will be acceptable. Request for substitution of materials, items, or equipment shall be submitted to the designer for approval or disapproval; the designer prior to the opening of bids shall make such approval or disapproval. Alternate materials may be requested after the award if it can clearly be demonstrated that it is an added benefit to the owner and the designer and owner approves.
- e. The designer is the judge of equality for proposed substitution of products, materials or equipment.
- f. If at any time during the construction and completion of the work covered by these contract documents, the language, conduct, or attire of any workman of the various crafts be adjudged a nuisance to the owner or designer, or if any workman be considered detrimental to the work, the contractor shall order such parties removed immediately from grounds.
- g. The Contractor shall cooperate with the designer and the owner in coordinating construction activities.
- h. The Contractor shall maintain qualified personnel and effective supervision at the site at all times during the project, and exercise the appropriate quality control program to ensure compliance with the project drawings and specifications. The designer is responsible for determining compliance with the drawings and specifications.

## 9. CODES, PERMITS AND INSPECTIONS

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

All work under this contract shall conform to the current North Carolina Building Code and other state and national codes as are applicable.

Projects constructed by the State of North Carolina or by any agency or institution of the State are not subject to county or municipal building codes and may\* not be subject to inspection by county or municipal authorities. Where appropriate, the Contractor shall, cooperate with the county or municipal authorities by obtaining building permits. The contractor at no cost may obtain permits to the owner.

All fire alarm work shall be in accordance with the latest State Construction Office (SCO) *Guidelines for Fire Alarm Installation* (NFPA72). Where the contract documents are in conflict with the SCO guidelines, the SCO guidelines shall govern. The Contractor shall be responsible for all the costs for the correction of the work where he installs it in conflict with the latest edition of the SCO *Guidelines for Fire Alarm Installation*.

\*Inspection and certification of compliance by local authorities is necessary if an architect or engineer was not employed on the project, or if the plans and specifications were not approved and the construction inspected by the State Construction Office.

**10. PROTECTION OF WORK, PROPERTY, THE PUBLIC AND SAFETY**

- a. The contractors shall be jointly responsible for the entire site and the building or construction of the same and provide all the necessary protections, as required by the owner or designer, and by laws or ordinances governing such conditions. They shall be responsible for any damage to the owner's property or of that of others on the job, by them, their personnel, or their subcontractors, and shall make good such damages. They shall be responsible for and pay for any damages caused to the owner. All contractors shall have access to the project at all times, except as indicated in the Supplemental General Conditions.
- b. The contractor shall provide cover and protect all portions of the structure when the work is not in progress, provide and set all temporary roofs, covers for doorways, sash and windows, and all other materials necessary to protect all the work on the building, whether set by him, or any of the subcontractors. Any work damaged through the lack of proper protection or from any other cause, shall be repaired or replaced without extra cost to the owner.
- c. No fires of any kind will be allowed inside or around the operations during the course of construction without special permission from the designer and owner.
- d. The contractor shall protect all trees and shrubs designated to remain in the vicinity of the operations by building substantial boxes around it. He shall barricade all walks, roads, etc., as directed by the designer to keep the public away from the construction. All trenches, excavations or other hazards in the vicinity of the work shall be well barricaded and properly lighted at night.
- e. The contractor shall provide all necessary safety measures for the protection of all persons on the job, including the requirements of the A.G.C. *Accident Prevention Manual in Construction*, as amended, and shall fully comply with all state laws or regulations and North Carolina State Building Code requirements to prevent accident or injury to persons on or about the location of the work. He shall clearly mark or post signs warning of hazards existing, and shall barricade excavations, elevator shafts, stairwells and similar hazards. He shall protect against damage or injury resulting from falling materials and he shall maintain all protective devices and signs throughout the progress of the work.
- f. The contractor shall adhere to the rules, regulations and interpretations of the North Carolina Department of Labor relating to Occupational Safety and Health Standards for the Construction Industry (Title 29, Code of Federal Regulations, Part 1926, published in Volume 39, Number 122, Part II, June 24, 1974, *Federal Register*), and revisions thereto as adopted by General Statutes of North Carolina 95-126 through 155.
- i. In the event of emergency affecting the safety of life, the protection of work, or the safety of adjoining properties, the contractor is hereby authorized to act at his own discretion, without further authorization from anyone, to prevent such threatened injury or damage. Any compensation claimed by the contractor on account of such action shall be determined as provided for under Article 13(b).
- j. Any and all costs associated with correcting damage caused to adjacent properties of the construction site or staging area shall be borne by the contractor. These costs shall include but not be limited to flooding, mud, sand, stone, debris, and discharging of waste products.

**11. SUBCONTRACTS AND SUBCONTRACTORS**

The Contractor is and remains fully responsible for his own acts or omissions as well as those of any subcontractor or of any employee of either. The Contractor agrees that no contractual relationship exists between the subcontractor and the Owner in regard to the contract, and that the subcontractor acts on this work as an agent or employee of the Contractor.

**12. CONTRACTOR-SUBCONTRACTOR RELATIONSHIPS**

The Contractor agrees that the terms of these Contract Documents shall apply equally to each Subcontractor as to the Contractor, and the Contractor agrees to take such action as may be necessary to bind each Subcontractor to these terms. The Contractor further agrees to conform to the Code of Ethical Conduct as adopted by the Associated General Contractors of America, Inc., with respect to Contractor-Subcontractor relationships. The Owner reserves the right to limit the amount of portions of work to be subcontracted as hereinafter specified.

**13. CHANGES IN THE WORK AND CLAIMS FOR EXTRA COST**

- a. The owner may have changes made in the work covered by the contract. These changes will not invalidate and will not relieve or release the contractor from any guarantee given by him pertinent to the contract provisions. These changes will not affect the validity of the guarantee bond and will not relieve the surety or sureties of said bond. All extra work shall be executed under conditions of the original contract.

- b. Except in an emergency endangering life or property, no change shall be made by the contractor except upon receipt of approved change order from the designer, countersigned by the owner authorizing such change. No claim for adjustments of the contract price shall be valid unless this procedure is followed. Should a claim for extra compensation by the contractor be denied by the designer or the owner, the contractor may pursue his claim in accordance with G.S. 143-135.3.

In the event of emergency endangering life or property, the contractor may be directed to proceed on a time and material basis whereupon the contractor shall proceed and keep accurately on such form as specified by the designer or owner, a correct account of costs together with all proper invoices, payrolls and supporting data. Upon completion of the work the change order will be prepared as outlined under either Method "c(1)" or Method "c(2)" or both.

- c. In determining the values of changes, either additive or deductive, contractors are restricted to the use of the following methods:
1. Where the extra work involved is covered by unit prices quoted in the proposal, or subsequently agreed to by the Contractor, Designer, Owner and State Construction Office the value of the change shall be computed by application of unit prices based on quantities, estimated or actual as agreed of the items involved, except in such cases where a quantity exceeds the estimated quantity allowance in the contract by one hundred percent (100%) or more. In such cases, either party may elect to proceed under subparagraph c (2) herein. If neither party elects to proceed under c (2), then unit prices shall apply.
  2. The contracting parties shall negotiate and agree upon the equitable value of the change prior to issuance of the change order, and the change order shall stipulate the corresponding lump sum adjustment to the contract price.
- d. Under Paragraph "b" and Methods "c(2)" above, the allowances for overhead and profit combined shall be as follows: all contractors (the single contracting entity (prime), his subcontractors(1<sup>st</sup> tier subs), or their sub-subcontractors (2<sup>nd</sup> tier subs, 3<sup>rd</sup> tier subs, etc.) shall be allowed a maximum of 10% on work they each self-perform; the prime contractor shall be allowed a maximum of 5% on contracted work of his 1<sup>st</sup> tier sub; 1<sup>st</sup> tier, 2<sup>nd</sup> tier, 3<sup>rd</sup> tier, etc. contractors shall be allowed a maximum of 2.5% on the contracted work of their subs. ; Under Method "c(1)", no additional allowances shall be made for overhead and profit. In the case of deductible change orders, under Method "c(2)" and Paragraph (b) above, the contractor shall include no less than five percent (5%) profit, but no allowances for overhead.
- e. The term "net cost" as used herein shall mean the difference between all proper cost additions and deductions. The "cost" as used herein shall be limited to the following:
1. The actual costs of materials and supplies incorporated or consumed as part of the work;

2. The actual costs of labor expended on the project site; labor expended in coordination, change order negotiation, record document maintenance, shop drawing revision or other tasks necessary to the administration of the project are considered overhead whether they take place in an office or on the project site.
3. The actual costs of labor burden, limited to the costs of social security (FICA) and Medicare/Medicaid taxes; unemployment insurance costs; health/dental/vision insurance premiums; paid employee leave for holidays, vacation, sick leave, and/or petty leave, not to exceed a total of 30 days per year; retirement contributions; worker's compensation insurance premiums; and the costs of general liability insurance when premiums are computed based on payroll amounts; the total of which shall not exceed thirty percent (30%) of the actual costs of labor;
4. The actual costs of rental for tools, excluding hand tools; equipment; machinery; and temporary facilities required for the work;
5. The actual costs of premiums for bonds, insurance, permit fees and sales or use taxes related to the work.

Overtime and extra pay for holidays and weekends may be a cost item only to the extent approved by the owner.

- f. Should concealed conditions be encountered in the performance of the work below grade, or should concealed or unknown conditions in an existing structure be at variance with the conditions indicated by the contract documents, the contract sum and time for completion may be equitably adjusted by change order upon claim by either party made within thirty (30) days after the condition has been identified. The cost of such change shall be arrived at by one of the foregoing methods. All change orders shall be supported by a unit cost breakdown showing method of arriving at net cost as defined above.
- g. Change orders shall be submitted by the contractor in writing to the owner/designer for review and approval. The contractor will provide such proposal and supporting data in suitable format. The designer shall verify correctness. Delay in the processing of the change order due to lack of proper submittal by the contractor of all required supporting data shall not constitute grounds for a time extension or basis of a claim. Within fourteen (14) days after receipt of the contractor's accepted proposal including all supporting documentation required by the designer, the designer shall prepare the change order and forward to the contractor for his signature or otherwise respond, in writing, to the contractor's proposal. Within seven (7) days after receipt of the change order executed by the contractor, the designer shall, certify the change order by his signature, and forward the change order and all supporting data to the owner for the owner's signature. The owner shall execute the change order, within seven (7) days of receipt.

At the time of signing a change order, the contractor shall be required to certify as follows:

"I certify that my bonding company will be notified forthwith that my contract has been changed by the amount of this change order, and that a copy of the approved change order will be mailed upon receipt by me to my surety."

- h. A change order, when issued, shall be full compensation, or credit, for the work included, omitted or substituted. It shall show on its face the adjustment in time for completion of the project as a result of the change in the work.

- i. If, during the progress of the work, the owner requests a change order and the contractor's terms are unacceptable, the owner, may require the contractor to perform such work on a time and material basis whereupon the contractor shall proceed and keep accurately on such form as specified by the Designer or owner, a correct account of cost together with all proper invoices, payrolls and supporting data. Upon completion of the work a change order will be prepared with allowances for overhead and profit per paragraph d. above and "net cost" and "cost" per paragraph e. above. Without prejudice, nothing in this paragraph shall preclude the owner from performing or to have performed that portion of the work requested in the change order.

#### 14. ANNULMENT OF CONTRACT

If the contractor fails to begin the work under the contract within the time specified, or the progress of the work is not maintained on schedule, or the work is not completed within the time specified, or fails to perform the work with sufficient workmen and equipment or with sufficient materials to ensure the prompt completion of said work, or shall perform the work unsuitably or shall discontinue the prosecution of the work, or if the contractor shall become insolvent or be declared bankrupt or commit any act of bankruptcy or insolvency, or allow any final judgment to stand against him unsatisfied for a period of forty-eight (48) hours, or shall make an assignment for the benefit of creditors, or for any other cause whatsoever shall not carry on the work in an acceptable manner, the owner may give notice in writing, sent by certified mail, return receipt requested, to the contractor and his surety (if applicable) of such delay, neglect or default, specifying the same, and if the contractor within a period of seven (7) days after such notice shall not proceed in accordance therewith, then the owner shall, declare this contract in default, and, thereupon, the surety shall promptly take over the work and complete the performance of this contract in the manner and within the time frame specified. In the event the contractor, or the surety (if applicable) shall fail to take over the work to be done under this contract within seven (7) days after being so notified and notify the owner in writing, sent by certified mail, return receipt requested, that he is taking the same over and stating that he will diligently pursue and complete the same, the owner shall have full power and authority, without violating the contract, to take the prosecution of the work out of the hands of said contractor, to appropriate or use any or all contract materials and equipment on the grounds as may be suitable and acceptable and may enter into an agreement, either by public letting or negotiation, for the completion of said contract according to the terms and provisions thereof or use such other methods as in his opinion shall be required for the completion of said contract in an acceptable manner. All costs and charges incurred by the owner, together with the costs of completing the work under contract, shall be deducted from any monies due or which may become due said contractor and surety (if applicable). In case the expense so incurred by the owner shall be less than the sum which would have been payable under the contract, if it had been completed by said contractor, then the said contractor and surety (if applicable) shall be entitled to receive the difference, but in case such expense shall exceed the sum which would have been payable under the contract, then the contractor and the surety (if applicable) shall be liable and shall pay to the owner the amount of said excess.

#### 15. TERMINATION FOR CONVENIENCE

- a. Owner may at any time and for any reason terminate Contractor's services and work at Owner's convenience, after notification to the contractor in writing via certified mail. Upon receipt of such notice, Contractor shall, unless the notice directs otherwise, immediately discontinue the work and placing of orders for materials, facilities and supplies in connection with the performance of this Agreement.
- b. Upon such termination, Contractor shall be entitled to payment only as follows: (1) the actual cost of the work completed in conformity with this Agreement; plus, (2) such other costs actually incurred by Contractor as approved by Owner; (3) plus ten percent (10%) of the cost of the balance of the work to be completed for overhead and profit. There shall be deducted from such sums as provided in this subparagraph the amount of any payments made to Contractor prior to the date of the termination of this Agreement. Contractor shall not be entitled to any claim or claim of lien against Owner for any additional compensation or damages in the event of such termination and payment.

**16. OWNER'S RIGHT TO DO WORK**

If, during the progress of the work or during the period of guarantee, the contractor fails to prosecute the work properly or to perform any provision of the contract, the owner, after seven (7) days' written notice sent by certified mail, return receipt requested, to the contractor from the designer, may perform or have performed that portion of the work. The cost of the work may be deducted from any amounts due or to become due to the contractor, such action and cost of same having been first approved by the designer. Should the cost of such action of the owner exceed the amount due or to become due the contractor, then the contractor or his surety, or both, shall be liable for and shall pay to the owner the amount of said excess.

**17. REQUESTS FOR PAYMENT**

Contractor shall refer to the Supplemental General Conditions for specific directions on payment schedule, procedures and the name and address where to send applications for payments for this project. It is imperative that invoices be sent only to the above address in order to assure proper and timely delivery and handling.

The Designer/Owner will process all Contractor pay requests as the project progresses. The Contractor shall receive payment within thirty (30) consecutive days after Designer/Owner's approval of each pay request. Payment will only be made for work performed as determined by the Designer/Owner.

**Retainage:**

- a. Retainage withheld will not exceed 5% at any time.
- b. The same terms apply to general contractor and subcontractors alike.
- c. Following 50% completion of the project no further retainage will be withheld if the contractor/subcontractor has performed their work satisfactorily.
- d. Exceptions:
  1. Owner/Contractor can reinstate retainage if the contractor/subcontractor does not continue to perform satisfactorily.
  2. Following 50% completion of the project, the owner is authorized to withhold additional retainage from a subsequent periodic payment if the amount of retainage withheld falls below 2.5%.

Final payment will be made within forty-five (45) consecutive days after acceptance of the work, receipt of marked-up "as-built" drawings and specifications and the submission both of notarized Contractor's affidavit and final pay request. All pay requests shall be submitted to the Designer/Owner for approval.

**THE CONTRACTOR'S FINAL PAYMENT AFFIDAVIT SHALL STATE:** "THIS IS TO CERTIFY THAT ALL COSTS OF MATERIALS, EQUIPMENT, LABOR, SUBCONTRACTED WORK, AND ALL ELSE ENTERING INTO THE ACCOMPLISHMENT OF THIS CONTRACT, INCLUDING PAYROLLS, HAVE BEEN PAID IN FULL."

**18. PAYMENTS WITHHELD**

The designer with the approval of the Owner may withhold payment for the following reasons:

- a. Faulty work not corrected.
- b. The unpaid balance on the contract is insufficient to complete the work in the judgment of the designer.
- c. To provide for sufficient contract balance to cover liquidated damages that will be assessed.
- d. The secretary of the Department of Administration may authorize the withholding of payment for the following reasons:
  - i. Claims filed against the contractor or evidence that a claim will be filed.

- ii. Evidence that subcontractors have not been paid.

When grounds for withholding payments have been removed, payment will be released. Delay of payment due the contractor without cause will make owner liable for payment of interest to the contractor as provided in G.S. 143-134.1. As provided in G.S. 143-134.1(e), the owner shall not be liable for interest on payments withheld by the owner for unsatisfactory job progress, defective construction not remedied, disputed work, or third-party claims filed against the owner or reasonable evidence that a third-party claim will be filed.

## 19. MINIMUM INSURANCE REQUIREMENTS

The work under this contract shall not commence until the contractor has obtained all required insurance and verifying certificates of insurance have been approved in writing by the owner. These certificates shall document that coverages afforded under the policies will not be cancelled, reduced in amount or coverages eliminated until at least thirty (30) days after mailing written notice, by certified mail, return receipt requested, to the insured and the owner of such alteration or cancellation. If endorsements are needed to comply with the notification or other requirements of this article copies of the endorsements shall be submitted with the certificates.

### a. **Worker's Compensation and Employer's Liability**

The contractor shall provide and maintain, until final acceptance, workmen's compensation insurance, as required by law, as well as employer's liability coverage with minimum limits of \$100,000.

### b. **Public Liability and Property Damage**

The contractor shall provide and maintain, until final acceptance, comprehensive general liability insurance, including coverage for premises operations, independent contractors, completed operations, products and contractual exposures, as shall protect such contractors from claims arising out of any bodily injury, including accidental death, as well as from claims for property damages which may arise from operations under this contract, whether such operations be by the contractor or by any subcontractor, or by anyone directly or indirectly employed by either of them and the minimum limits of such insurance shall be as follows:

Bodily Injury:	\$500,000 per occurrence
Property Damage:	\$100,000 per occurrence / \$300,000 aggregate

In lieu of limits listed above, a \$500,000 combined single limit shall satisfy both conditions.

Such coverage for completed operations must be maintained for at least two (2) years following final acceptance of the work performed under the contract.

### c. **Property Insurance (Builder's Risk/Installation Floater)**

The contractor shall purchase and maintain property insurance until final acceptance, upon the entire work at the site to the full insurable value thereof. This insurance shall include the interests of the owner, the contractor, the subcontractors and sub-subcontractors in the work and shall insure against the perils of fire, wind, rain, flood, extended coverage, and vandalism and malicious mischief. If the owner is damaged by failure of the contractor to purchase or maintain such insurance, then the contractor shall bear all reasonable costs properly attributable thereto; the contractor shall effect and maintain similar property insurance on portions of the work stored off the site when request for payment per articles so includes such portions.

### d. **Deductible**

Any deductible, if applicable to loss covered by insurance provided, is to be borne by the contractor.

e. **Other Insurance**

The contractor shall obtain such additional insurance as may be required by the owner or by the General Statutes of North Carolina including motor vehicle insurance, in amounts not less than the statutory limits.

f. **Proof of Carriage**

The contractor shall furnish the owner with satisfactory proof of carriage of the insurance required before written approval is granted by the owner.

## 20. ASSIGNMENT

No assignment of the Contractor's obligations or the Contractor's right to receive payment hereunder shall be permitted. However, upon written request approved by the Owner and solely as a convenience to the Contractor, the Owner may: (1) forward the Contractor's payment check directly to any person or entity designated by the Contractor, and (2) include any person or entity designated by Contractor as a joint payee on the Contractor's payment check. In no event shall such approval and action obligate the Owner to anyone other than the Contractor, and the Contractor shall remain responsible for fulfillment of all contract obligations.

## 21. CLEANING UP AND RESTORATION OF SITE

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

At the end of construction, the contractor shall oversee and implement the restoration of the construction site to its original state. Restoration includes but not limited to walks, drives, lawns, trees and shrubs, corridors, stairs and other elements shall be repaired, cleaned or otherwise restored to their original state.

## 22. GUARANTEE

The contractor shall unconditionally guarantee materials and workmanship against patent defects arising from faulty materials, faulty workmanship or negligence for a period of twelve (12) months following the final acceptance of the work and shall replace such defective materials or workmanship without cost to the owner.

Where items of equipment or material carry a manufacturer's warranty for any period in excess of twelve (12) months, then the manufacturer's warranty shall apply for that particular piece of equipment or material. The contractor shall replace such defective equipment or materials, without cost to the owner, within the manufacturer's warranty period.

Additionally, the owner may bring an action for latent defects caused by the negligence of the contractor, which is hidden or not readily apparent to the owner at the time of beneficial occupancy or final acceptance, whichever occurred first, in accordance with applicable law.

Guarantees for roofing workmanship and materials shall be stipulated in the specifications sections governing such roof, equipment, materials, or supplies.

**23. STANDARDS**

All manufactured items and/or fabricated assemblies subject to operation under pressure, operation by connection to an electric source, or operation involving a connection to a manufactured, natural, or LP gas source shall be constructed and approved in a manner acceptable to the appropriate State inspector which customarily requires the label or re-examination listing or identification marking of appropriate safety standard organization, such as the American Society of Mechanical Engineers for pressure vessels; the Underwriters Laboratories and/or National Electrical Manufacturers Association for electrically operated assemblies; or the American Gas Association for gas operated assemblies, where such approvals of listings have been established for the type of device offered and furnished. Further, all items furnished shall meet all requirements of the Occupational Safety and Health Act (OSHA), and State and federal requirements relating to clean air and water pollution.

All equipment and products must be independent third party tested and labeled (UL, FM, or CTS) before final connections to Owner services or utilities.

**24. TAXES**

- a. Federal excise taxes do not apply to materials entering into state work (Internal Revenue Code, Section 3442(3)).
- b. Federal transportation taxes do not apply to materials entering into state work (Internal Revenue Code, Section 3475(b) as amended).
- c. North Carolina sales tax and use tax, as required by law, do apply to materials entering into state work and such costs shall be included in the bid proposal and contract sum.
- d. Local option sales and use taxes, as required by law, do apply to materials entering into state work as applicable and such costs shall be included in the bid proposal and contract sum.
- e. **Accounting Procedures for Refund of County Sales & Use Tax**

Amount of county sales and use tax paid per contractor's statements:

Contractors performing contracts for state agencies shall give the state agency for whose project the property was purchased a signed statement containing the information listed in G.S. 105-164.14(e).

The Department of Revenue has agreed that in lieu of obtaining copies of sales receipts from contractors, an agency may obtain a certified statement as of April 1, 1991 from the contractor setting forth the date, the type of property and the cost of the property purchased from each vendor, the county in which the vendor made the sale and the amount of local sales and use taxes paid thereon. If the property was purchased out-of-state, the county in which the property was delivered should be listed. The contractor should also be notified that the certified statement may be subject to audit.

In the event the contractors make several purchases from the same vendor, such certified statement must indicate the invoice numbers, the inclusive dates of the invoices, the total amount of the invoices, the counties, and the county sales and use taxes paid thereon.

Name of taxing county: The position of a sale is the retailer's place of business located within a taxing county where the vendor becomes contractually obligated to make the sale. Therefore, it is important that the county tax be reported for the county of sale rather than the county of use.

When property is purchased from out-of-state vendors and the county tax is charged, the county should be identified where delivery is made when reporting the county tax.

Such statement must also include the cost of any tangible personal property withdrawn from the contractor's warehouse stock and the amount of county sales or use tax paid thereon by the contractor.

Similar certified statements by his subcontractors must be obtained by the general contractor and furnished to the claimant.

Contractors are not to include any tax paid on supplies, tools and equipment which they use to perform their contracts and should include only those building materials, supplies, fixtures and equipment which actually become a part of or annexed to the building or structure.

## **25. EQUAL OPPORTUNITY CLAUSE**

The non-discrimination clause contained in Section 202 (Federal) Executive Order 11246, as amended by Executive Order 11375, relative to equal employment opportunity for all persons without regard to race, color, religion, sex or national origin, and the implementing rules and regulations prescribed by the secretary of Labor, are incorporated herein.

The contractor(s) agree not to discriminate against any employee or applicant for employment because of physical or mental disabilities in regard to any position for which the employee or applicant is qualified. The contractor agrees to take affirmative action to employ, advance in employment and otherwise treat qualified individuals with such disabilities without discrimination based upon their physical or mental disability in all employment practices.

## **26. MINORITY BUSINESS PARTICIPATION**

GS 143-128.2 establishes a ten percent (10%) goal for participation by minority business in total value of work for each State building project.

For construction contracts with a value of less than \$300,000, the Owner has the responsibility to make a good faith effort to solicit minority bids and to attain the goal. The contractor shall include with his bid a completed Identification of HUB Certified/Minority Business Participation form. Contractor shall submit completed Appendix E MBE Documentation for Contract Payments form with final payment request.

For construction contracts with a value of \$300,000 or greater, the contractor shall comply with the document *Guidelines for Recruitment and Selection of Minority Businesses for Participation in State Construction Contracts* including Identification of Minority Business Participation, Affidavits A, B, C, and D, and Appendix E. These forms provided herein are hereby incorporated and made a part of this contract.

## **27. ACCESS TO PERSONS AND RECORDS**

The State Auditor shall have access to persons and records as a result of all contracts or grants entered into by the Owner in accordance with General Statute 147-64.7. The Owner's internal auditors shall also have the right to access and copy the Contractor's records relating to the Contract and Project during the term of the Contract and within two years following the completion of the Project/close-out of the Contract to verify accounts, accuracy, information, calculations and/or data affecting and/or relating to Contractor's requests for payment, requests for change orders, change orders, claims for extra work, requests for time extensions and related claims for delay/extended general conditions costs, claims for lost productivity, claims for lost efficiency, claims for idle equipment or labor, claims for price/cost escalation, pass-through claims of subcontractors and/or suppliers, and/or any other type of claim for payment or damages from Owner and/or its project representatives.

## **28. GOVERNING LAWS**

This contract is made under and shall be governed by and construed in accordance with the laws of the State of North Carolina. The Contractor shall comply with all applicable federal, State and local laws, statutes, ordinances and regulations including, but not limited to, the Omnibus Transportation Act of 1991 and its implementing regulations.

**29. CONTRACTOR EVALUATION**

The contractor's overall work performance on the project shall be fairly evaluated in accordance with the State Building Commission policy and procedures, for determining qualifications to bid on future State projects. In addition to final evaluation, an interim evaluation may be prepared during the progress of project. The owner may request the contractor's comments to evaluate the designer.

## **SUPPLEMENTARY GENERAL CONDITIONS**

### **TIME OF COMPLETION**

The Contractor shall commence work to be performed under this Contract on a date to be specified in written order from the Designer/Owner and shall fully complete all work hereunder within seventy (70) consecutive calendar days from the Notice to Proceed. For each day in excess of the above number of days, the Contractor shall pay the Owner the amount of Two hundred fifty Dollars (\$ 250.00 ) as liquidated damages reasonably estimated in advance to cover the losses to be incurred by the Owner should the Contractor fail to complete the Work within the time specified.

If the Contractor is delayed at anytime in the progress of his work by any act or negligence of the Owner, his employees or his separate contractor, by changes ordered in the work; by abnormal weather conditions; by any causes beyond the Contractor's control or by other causes deemed justifiable by Owner, then the contract time may be reasonably extended in a written order from the Owner upon written request from the contractor within ten days following the cause for delay. Time extensions for weather delays, acts of God, labor disputes, fire, delays in transportation, unavoidable casualties or other delays which are beyond the control of the Owner do not entitle the Contractor to compensable damages for delays. Any contractor claim for compensable damages for delays is limited to delays caused solely by the owner or its agents.

### **FIRE ALARM WORK**

*Contractor for fire alarms shall be approved by Design and Construction Services Department prior to beginning work.*

### **PERFORMANCE AND PAYMENT BONDS**

Contractor shall furnish a Performance Bond and Payment Bond executed by a surety company authorized to do business in North Carolina. The bonds shall be in the full contract amount. Bonds shall be executed in the form bound with these specifications (Forms 307 & 308). An authorized agent of the bonding company who is licensed to do business in North Carolina shall countersign all bonds.

**TECHNICAL SPECIFICATIONS**  
**SHOULD FOLLOW THE SUPPLEMENTARY GENERAL CONDITIONS.**



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

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

### **SECTION A: INTENT**

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

### **SECTION B: DEFINITIONS**

1. Minority - a person who is a citizen or lawful permanent resident of the United States and who is:
  - a. Black, that is, a person having origins in any of the black racial groups in Africa;
  - b. Hispanic, that is, a person of Spanish or Portuguese culture with origins in Mexico, South or Central America, or the Caribbean Islands, regardless of race;
  - c. Asian American, that is, a person having origins in any of the original peoples of the Far East, Southeast Asia and Asia, the Indian subcontinent, the Pacific Islands;
  - d. American Indian, that is, a person having origins in any of the original peoples of North America; or
  - e. Female
2. Minority Business - means a business:
  - a. In which at least fifty-one percent (51%) is owned by one or more minority persons, or in the case of a corporation, in which at least fifty-one percent (51%) of the stock is owned by one or more minority persons or socially and economically disadvantaged individuals; and
  - b. Of which the management and daily business operations are controlled by one or more of the minority persons or socially and economically disadvantaged individuals who own it.
3. Socially and economically disadvantaged individual - means the same as defined in 15 U.S.C. 637. "Socially disadvantaged individuals are those who have been subjected to racial or ethnic prejudice or cultural bias because of their identity as a member of a group without regard to their individual qualities". "Economically disadvantaged individuals are those socially disadvantaged individuals whose ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities as compared to others in the same business area who are not socially disadvantaged".
4. Public Entity - means State and all public subdivisions and local governmental units.
5. Owner - The State of North Carolina, through the Agency/Institution named in the contract.
6. Designer – Any person, firm, partnership, or corporation, which has contracted with the State of North Carolina to perform architectural or engineering, work.
7. Bidder - Any person, firm, partnership, corporation, association, or joint venture seeking to be awarded a public contract or subcontract.

8. Contract - A mutually binding legal relationship or any modification thereof obligating the seller to furnish equipment, materials or services, including construction, and obligating the buyer to pay for them.
9. Contractor - Any person, firm, partnership, corporation, association, or joint venture which has contracted with the State of North Carolina to perform construction work or repair.
10. Subcontractor - A firm under contract with the prime contractor or construction manager at risk for supplying materials or labor and materials and/or installation. The subcontractor may or may not provide materials in his subcontract.

## **SECTION C: RESPONSIBILITIES**

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

The HUB Office has established a program, which allows interested persons or businesses qualifying as a minority business under G.S. 143-128.2, to obtain certification in the State of North Carolina procurement system. The information provided by the minority businesses will be used by the HUB Office to:

- a. Identify those areas of work for which there are minority businesses, as requested.
- b. Make available to interested parties a list of prospective minority business contractors and subcontractors.
- c. Assist in the determination of technical assistance needed by minority business contractors.

In addition to being responsible for the certification/verification of minority businesses that want to participate in the State construction program, the HUB Office will:

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

2. State Construction Office

The State Construction Office will be responsible for the following:

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

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

### 3. Owner

Before awarding a contract, owner shall do the following:

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

### 4. Designer

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

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

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

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

5. Prime Contractor(s), CM at Risk, and Its First-Tier Subcontractors

Under the single-prime bidding, the separate-prime bidding, construction manager at risk and alternative contracting methods, contractor(s) will:

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

If there are more than three (3) minority businesses in the general locality of the project who offer similar contracting or subcontracting services in the specific trade, the contractor(s) shall notify three (3), but may contact more, if the contractor(s) so desires.

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

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

6. Minority Business Responsibilities

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

**SECTION 4: DISPUTE PROCEDURES**

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

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

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

## MINORITY BUSINESS CONTRACT PROVISIONS (CONSTRUCTION)

### APPLICATION:

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

### MINORITY BUSINESS SUBCONTRACT GOALS:

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

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

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

**OR**

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

**OR**

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

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

## **MINIMUM COMPLIANCE REQUIREMENTS:**

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

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

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

**APPENDIX E**

**MBE DOCUMENTATION FOR CONTRACT PAYMENTS**

Prime Contractor/Architect: \_\_\_\_\_

Address & Phone: \_\_\_\_\_

Project Name: \_\_\_\_\_

Pay Application #: \_\_\_\_\_ Period: \_\_\_\_\_

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

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

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

Date: \_\_\_\_\_ Approved/Certified By: \_\_\_\_\_

Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Signature

**SUBMIT WITH EACH PAY REQUEST & FINAL PAYMENT**





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

County of \_\_\_\_\_

(Name of Bidder)

Affidavit of \_\_\_\_\_

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

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

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

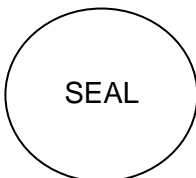
The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon scope of contract to be executed with the Owner. Substitution of contractors must be in accordance with GS143-128.2(d) Failure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

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

Date: \_\_\_\_\_ Name of Authorized Officer: \_\_\_\_\_

Signature: \_\_\_\_\_

Title: \_\_\_\_\_



State of \_\_\_\_\_, County of \_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_

Notary Public \_\_\_\_\_

My commission expires \_\_\_\_\_

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

County of \_\_\_\_\_

Affidavit of \_\_\_\_\_

(Name of Bidder)

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

\_\_\_\_\_ contract.

(Name of Project)

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

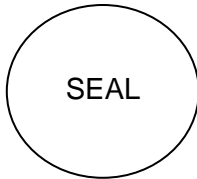
The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement. The Bidder agrees to make a Good Faith Effort to utilize minority suppliers where possible.

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

Date: \_\_\_\_\_ Name of Authorized Officer: \_\_\_\_\_

Signature: \_\_\_\_\_

Title: \_\_\_\_\_



State of \_\_\_\_\_, County of \_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_

Notary Public \_\_\_\_\_

My commission expires \_\_\_\_\_

# 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

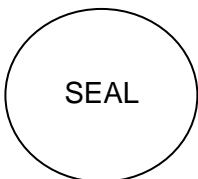
\*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**\*\* 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: \_\_\_\_\_

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 ID# \_\_\_\_\_ (Project Name) Amount of Bid \$ \_\_\_\_\_

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

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

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

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

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

- A. Copies of solicitations for quotes to at least three (3) minority business firms from the source list provided by the State for each subcontract to be let under this contract (if 3 or more firms are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.
- B. Copies of quotes or responses received from each firm responding to the solicitation.
- C. A telephone log of follow-up calls to each firm sent a solicitation.
- D. For subcontracts where a minority business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.
- E. Documentation of any contacts or correspondence to minority business, community, or contractor organizations in an attempt to meet the goal.
- F. Copy of pre-bid roster
- G. Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.
- H. Letter detailing reasons for rejection of minority business due to lack of qualification.
- I. Letter documenting proposed assistance offered to minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

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

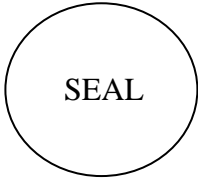
Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

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

Date: \_\_\_\_\_ Name of Authorized Officer: \_\_\_\_\_

Signature: \_\_\_\_\_

Title: \_\_\_\_\_



State of \_\_\_\_\_, County of \_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_

Notary Public \_\_\_\_\_

My commission expires \_\_\_\_\_

FORM OF BID BOND

KNOW ALL MEN BY THESE PRESENTS THAT \_\_\_\_\_  
 \_\_\_\_\_ as principal, and  
 \_\_\_\_\_, as surety, who is duly licensed to act as surety in North  
 Carolina, are held and firmly bound unto the State of North Carolina\* through  
 \_\_\_\_\_ as obligee, in the penal sum of  
 \_\_\_\_\_ DOLLARS, lawful money of the United States of America, for the payment of which,  
 well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and  
 severally, firmly by these presents.

Signed, sealed and dated this \_\_\_\_ day of \_\_\_\_ 20\_\_

WHEREAS, the said principal is herewith submitting proposal for  
 and the principal desires to file this bid bond in lieu of making  
 the cash deposit as required by G.S. 143-129.

NOW, THEREFORE, THE CONDITION OF THE ABOVE OBLIGATION is such, that if the principal shall be  
 awarded the contract for which the bid is submitted and shall execute the contract and give bond for the faithful  
 performance thereof within ten days after the award of same to the principal, then this obligation shall be null and void; but  
 if the principal fails to so execute such contract and give performance bond as required by G.S. 143-129, the surety shall,  
 upon demand, forthwith pay to the obligee the amount set forth in the first paragraph hereof. Provided further, that the bid  
 may be withdrawn as provided by G.S. 143-129.1

\_\_\_\_\_(SEAL)

\_\_\_\_\_(SEAL)

\_\_\_\_\_(SEAL)

\_\_\_\_\_(SEAL)

\_\_\_\_\_(SEAL)

\*(Community college projects: Delete State of North Carolina as owner and replace with community college name.)



FORM OF PERFORMANCE BOND

Date of Contract: \_\_\_\_\_

Date of Execution: \_\_\_\_\_

Name of Principal  
(Contractor) \_\_\_\_\_

Name of Surety: \_\_\_\_\_

Name of Contracting Body: \_\_\_\_\_

Amount of Bond: \_\_\_\_\_

Project **CAMPUS FIRE ALARM CONVERSION**  
**State Bureau of Investigation**

KNOW ALL MEN BY THESE PRESENTS, that we, the principal and surety above named, are held and firmly bound unto the above named contracting body, hereinafter called the contracting body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind, ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the contracting body, identified as shown above and hereto attached:

NOW, THEREFORE, if the principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the contracting body, with or without notice to the surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Executed in \_\_\_\_\_ counterparts.

State Bureau of Investigation

Form of Performance Bond

Witness:

\_\_\_\_\_  
Contractor: (Trade or Corporate Name)

\_\_\_\_\_  
(Proprietorship or Partnership)

By: \_\_\_\_\_

Attest: (Corporation)

Title: \_\_\_\_\_  
(Owner, Partner, or Corp. Pres. or Vice Pres. only)

By: \_\_\_\_\_

Title: \_\_\_\_\_  
(Corp. Sec. or Asst. Sec. only)

(CORPORATE SEAL)

\_\_\_\_\_  
(Surety Company)

By: \_\_\_\_\_

Witness: \_\_\_\_\_

Title: \_\_\_\_\_  
(Attorney in Fact)

Countersigned:

\_\_\_\_\_

(Surety Corporate Seal)

\_\_\_\_\_  
(N.C. Licensed Resident Agent)

\_\_\_\_\_

\_\_\_\_\_  
Name and Address-Surety Agency

\_\_\_\_\_

\_\_\_\_\_  
Surety Company Name and N.C. Regional or Branch  
Office Address

FORM OF PAYMENT BOND

Date of Contract: \_\_\_\_\_

Date of Execution: \_\_\_\_\_

Name of Principal  
(Contractor) \_\_\_\_\_

Name of Surety: \_\_\_\_\_

Name of Contracting Body: \_\_\_\_\_

Amount of Bond: \_\_\_\_\_

Project **CAMPUS FIRE ALARM CONVERSION**  
**State Bureau of Investigation**

KNOW ALL MEN BY THESE PRESENTS, that we, the principal and surety above named, are held and firmly bound unto the above named contracting body, hereinafter called the contracting body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the contracting body identified as shown above and hereto attached:

NOW, THEREFORE, if the principal shall promptly make payment to all persons supplying labor/material in the prosecution of the work provided for in said contract, and any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Executed in \_\_\_\_\_ counterparts.

State Bureau of Investigation

Form of Payment Bond

Witness:

\_\_\_\_\_  
Contractor: (Trade or Corporate Name)

\_\_\_\_\_  
(Proprietorship or Partnership)

By: \_\_\_\_\_

Attest: (Corporation)

Title: \_\_\_\_\_  
(Owner, Partner, or Corp. Pres. or Vice Pres. only)

By: \_\_\_\_\_

Title: \_\_\_\_\_  
(Corp. Sec. or Asst. Sec. only)

(CORPORATE SEAL)

\_\_\_\_\_  
(Surety Company)

By: \_\_\_\_\_

Witness: \_\_\_\_\_

Title: \_\_\_\_\_  
(Attorney in Fact)

Countersigned:

\_\_\_\_\_

(Surety Corporate Seal)

\_\_\_\_\_  
(N.C. Licensed Resident Agent)

\_\_\_\_\_

\_\_\_\_\_  
Name and Address-Surety Agency

\_\_\_\_\_

\_\_\_\_\_  
Surety Company Name and N.C. Regional or Branch  
Office Address

**Sheet for Attaching Power of Attorney**



**APPENDIX E**

**MBE DOCUMENTATION FOR CONTRACT PAYMENTS**

Prime Contractor/Architect: \_\_\_\_\_

Address & Phone: \_\_\_\_\_

Project Name: \_\_\_\_\_

Pay Application #: \_\_\_\_\_ Period: \_\_\_\_\_

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

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

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

Date: \_\_\_\_\_ Approved/Certified By: \_\_\_\_\_  
Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Signature

**SUBMIT WITH EACH PAY REQUEST & FINAL PAYMENT**



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**SECTION 011100 - SUMMARY OF THE WORK**

**RELATED DOCUMENTS**

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

**WORK COVERED BY CONTRACT DOCUMENTS**

The Work of the Project is defined by the Contract Documents and generally consists of the following:

**Replacement of existing fire alarm dialers and plain old telephone (POTS) lines with new cellular based dialers to emulate a POTS dialer.**

**ACCESS TO SITE**

Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as follows:

**Use of site during regular business hours only.**

**WORK RESTRICTIONS**

General Work Restrictions: Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

Owner' work rules and/or restrictions on construction operations, as appended at the end of this Section, must be adhered to by all Contractor personnel.

Controlled Substances: Use of tobacco products and other controlled substances on Project site is not permitted.

Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

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

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION 011000**



**SECTION 013100 – PROJECT MANAGEMENT AND COORDINATION****PART 1 - GENERAL****RELATED DOCUMENTS**

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 specification sections, apply to work of this section.

**SUMMARY**

This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

- Coordination procedures.
- Requests for Information (RFIs).
- Request for Proposal (RFP).
- Project meetings.

**INFORMATIONAL SUBMITTALS**

Subcontractor & Material Suppliers List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

- Name, address, and telephone number of entity performing subcontract or supplying products.
- Number and title of related Specification Section(s) covered by subcontract.

Key Personnel Names: Prepare a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

**GENERAL COORDINATION PROCEDURES**

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

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

- Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.

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

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

- Preparation of Contractor's construction schedule.
- Preparation of the schedule of values.
- Installation and removal of temporary facilities and controls.

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**State Bureau of Investigation****Project Management and Coordination**

- 1 Delivery and processing of submittals.
- 2 Progress meetings.
- 3 Pre-installation conferences.
- 4 Project closeout activities.
- 5 Startup and adjustment of systems.

6  
7

**REQUESTS FOR INFORMATION (RFIs)**

8  
9

10 Upon discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall  
11 prepare and submit an RFI in the form specified below. Coordinate and submit RFIs in a prompt manner so as to  
12 avoid delays in Contractor's work or work of subcontractors. Include a detailed, legible description of item needing  
13 information or interpretation and the following:

14

- 15 Project name.
- 16 Designer and Owner project numbers.
- 17 Date.
- 18 RFI number, numbered sequentially.
- 19 RFI subject.
- 20 Specification Section number and title and related paragraphs, as appropriate.
- 21 Drawing number and detail references, as appropriate.
- 22 Field dimensions and conditions, as appropriate.
- 23 Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the  
24 Contract Sum, Contractor shall state impact in the RFI.
- 25 Contractor's signature.
- 26 Attach sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination  
27 drawings, and other information necessary to fully describe items needing interpretation.

28

29 Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log as part of  
30 documentation for monthly meetings. Include the following on the RFI log:

31

- 32 Project name.
- 33 Designer and Owner project numbers.
- 34 Name and address of Contractor.
- 35 Name and address of Designer.
- 36 RFI number including RFIs that were returned without action or withdrawn.
- 37 RFI description.
- 38 Date the RFI was submitted.
- 39 Date Designer's response was received.

40

41 On receipt of Designer's response, update the RFI log and immediately distribute the RFI response to affected  
42 parties. Review response and notify Designer within seven days if Contractor disagrees with response.

43

44

**REQUEST FOR PROPOSAL (RFP)**

45  
46

47 In the event that a change is required in the project scope, the Designer shall generate a written request for  
48 Contractor's proposal for additional work. Contractor shall prepare and submit a proposal in the form specified below.  
49 Coordinate and submit proposals in a prompt manner so as to avoid delays in Contractor's work or work of  
50 subcontractors. Include a detailed, legible description of proposed work, with the following:

51

- 52 Project name.
- 53 Designer and Owner project numbers.
- 54 Date.
- 55 Proposal number, numbered sequentially.
- 56 Description of work.
- 57 Complete breakdown of costs for materials, with units and quantities.
- 58 Complete breakdown of labor costs, with hours rates and burden.
- 59 Overhead & Profit.
- 60 Impact on Contract Time.

**State Bureau of Investigation****Project Management and Coordination**

1 Prepare, maintain, and submit a tabular log of proposals organized by the proposal number. Submit log as part of  
2 documentation for monthly meetings. Include the following on the proposal log:

- 3
- 4 Project name.
- 5 Designer and Owner project numbers.
- 6 Name and address of Contractor.
- 7 Name and address of Designer.
- 8 Proposal number, including proposals that were returned without approval or withdrawn.
- 9 Proposal description.
- 10 Date the proposal was submitted.
- 11 Date each Designer's response was received.
- 12 Date Designer's approval was received.
- 13 Date Owner's approval was received.
- 14
- 15

**PROJECT MEETINGS**

16  
17  
18 **Preconstruction Conference:** The Designer shall schedule and conduct a pre-construction conference before starting  
19 construction.

20  
21 Authorized representatives of Owner Designer, and their consultants; Contractor and its superintendent; major  
22 subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall  
23 be familiar with Project and authorized to conclude matters relating to the Work.

24  
25 The agenda shall include items of significance that could affect progress, including the following:

- 26
- 27 Designation of key personnel and their duties.
- 28 Lines of communications.
- 29 Procedures for processing field decisions and Change Orders.
- 30 Procedures for RFIs.
- 31 Procedures for testing and inspecting.
- 32 Procedures for processing Applications for Payment.
- 33 Distribution of the Contract Documents.
- 34 Submittal procedures.
- 35 Tentative construction schedule.
- 36 Phasing.
- 37 Critical work sequencing and long-lead items.
- 38

39 **Monthly Progress Meeting:** The Designer shall conduct a monthly meeting at the jobsite. These meetings shall be  
40 open to subcontractors, material suppliers and any others who can contribute toward maintaining required job  
41 progress. The Contractor be represented by both home office and project personnel. These representatives shall  
42 have authority to act on behalf of the Contractor. It shall be the purpose of these meetings to effect coordination,  
43 cooperation and assistance in maintaining progress of the project on schedule in order to complete the project within  
44 the contract time. The format of these meetings shall include the following:

- 45
- 46 Review minutes of last job conference and resolve all uncorrected problems.
- 47
- 48 Review of work in last and next 30 days.
- 49
- 50 Review the construction schedule and update when necessary.
- 51
- 52 Review of Designer's Logs. (Submittals, RFI's, RFP's, Proposals)
- 53
- 54 Review any pending change orders or field orders.
- 55

56 **Weekly Construction Meeting:** Contractor shall schedule and conduct meetings and conferences at Project site for  
57 discussing progress of construction and coordination items. Contractor shall inform participants and others involved,  
58 and individuals whose presence is required, of date and time of each meeting. Notify Owner and Designer of  
59 scheduled meeting dates and times.  
60

1 Prepare the meeting agenda and distribute to all invited attendees.

2

3 Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or  
4 behind schedule, in relation to Contractor's construction schedule. Determine how construction behind  
5 schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule  
6 revisions are required to ensure that current and subsequent activities will be completed within the Contract  
7 Time.

8

9 Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone  
10 concerned, including Owner and Designer, within three days of the meeting.

11

12

**PART 2 - PRODUCTS (NOT APPLICABLE)**

13

14

15

**PART 3 - EXECUTION (NOT APPLICABLE)**

16

17

18

19

**END OF SECTION 013100**

**SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS****PART 1 - GENERAL****RELATED DOCUMENTS**

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

**SUMMARY**

This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

**SUBMITTALS**

Site Plan: Show proposed temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

Fire Protection Plan: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

Moisture and Mold Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.

Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.

Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.

Dust and Contamination Control Plan: Submit coordination drawing and narrative that indicates the dust control measures proposed for use, proposed locations, and proposed time frame for their operation.

Project Identification Sign: Submit details of Project identification sign, including construction and installation.

**PART 2 - PRODUCTS****MATERIALS**

Temporary Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch-OD corner and pull posts, with 1-5/8-inch-OD top and bottom rails. Provide galvanized-steel bases for supporting posts.

Polyethylene Sheet for Dust Control: Reinforced, fire-resistive sheet, 6-mil minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.

**TEMPORARY STORAGE AND FABRICATION UNITS**

Provide sheds, storage containers, etc. sized, furnished, and equipped to accommodate materials and equipment for construction operations. Store combustible materials apart from building.

**PART 3 - EXECUTION****GENERAL**

Comply with NFPA 241, *Standard for Safeguarding Construction, Alterations, and Demolition Operations* and ANSI A10 Series standards for *Safety Requirements for Construction and Demolition*.

**TEMPORARY UTILITIES**

General: Install temporary service or connect to existing service. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

Water Supply: Water may be taken from the building service lines. Contractor shall provide and install all piping to convey water to point of use as required, shall be responsible for all damage to mains or water system caused by him or his sub-contractors, and upon completion, shall remove any temporary piping. Damage caused to mains or water system shall be repaired without additional cost to Owner. The point of connection shall be as designated by the Owner.

Electrical Power and Lighting: Electrical power required during construction shall be provided as described in Section 260579, *Temporary Power and Lighting*.

**TEMPORARY FACILITIES INSTALLATION**

Locate temporary facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

Parking for construction activities must be within construction line limits. Contractor's personnel will not at any time park in any Owner parking lot without the prior express consent of Owner. Any personnel violating this requirement, do so at their own risk and should be aware that their vehicles may be towed at their own expense.

Provide Project signs as indicated. Unauthorized signs are not permitted.

Identification Sign: Provide Project identification sign as indicated on Drawings.

Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project. Provide temporary, directional signs for construction personnel and visitors.

Sign Maintenance: Maintain and touchup signs so they are legible at all times.

Sanitary Provisions: Contractor shall provide, unless specifically indicated otherwise, and maintain adequate temporary portable toilets with holding tanks in approved locations for use of those engaged on work. Enclosures shall be weatherproof and kept in constant sanitary-approved condition in accordance with Local and State Health Department Regulations.

Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Provide adequate, separate cycling containers for all recyclable waste generated during construction. Containers shall be regularly emptied and construction debris shall not be allowed to accumulate on the Project site. Comply with requirements of authorities having jurisdiction.

**FIRE PROTECTION DURING CONSTRUCTION**

Building contents and all elements of new and/or existing construction must be thoroughly protected from construction procedures that produce sparks, flames, or excessive heat. Such procedures include, but are not limited to, welding, soldering, flame-cutting, using grinders or metal cutting saws, and heating of work spaces. Contractor shall maintain fire watch and/or portable fire-suppression devices, as required, during these operations.

**State Bureau of Investigation****Temporary Facilities and Controls**

1 The Contractor shall develop, provide, and post a written plan in compliance with NFPA 241 and requirements of the  
2 local authorities having jurisdiction for fire protection during construction.

3  
4 Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs  
5 with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures  
6 required to prevent fires and how to deal with them if they occur.

7  
8 Provide and maintain portable, UL rated; with class and extinguishing agent as required by locations and classes of  
9 fire exposures. Comply with NFPA 10 *Standard for Portable Fire Extinguishers*. Locate fire extinguishers where con-  
10 venient and effective for their intended purpose, but not less than one extinguisher on each floor or area at or near  
11 each usable stairwell.

12  
13 Store combustible materials in containers in fire-safe locations.

14  
15 Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and  
16 other access routes for fighting fires.

**SECURITY AND SAFETY DURING CONSTRUCTION**

17  
18  
19  
20  
21 Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting struc-  
22 turally adequate barricades, including warning signs and lighting.

23  
24 Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by au-  
25 thorities having jurisdiction.

26  
27 Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from  
28 exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclo-  
29 sure for building exterior. Where heating or cooling is needed and permanent enclosure is incomplete, insulate tem-  
30 porary enclosures.

**MOISTURE AND MOLD CONTROL DURING CONSTRUCTION**

31  
32  
33  
34  
35 Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and ex-  
36 posure and to airborne mold spores, protect as follows:

37  
38       Protect porous materials from water damage.

39       Protect stored and installed material from flowing or standing water.

40       Keep porous and organic materials from coming into prolonged contact with concrete.

41       Keep roof, wall, and/or openings covered or dammed.

42  
43  
44  
45 Partially Enclosed Construction Phase: After installation of weather barriers, but before full enclosure and condition-  
46 ing of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as  
47 follows:

48  
49       Do not load or install porous materials or components, or items with high organic content, into partially en-  
50 closed building.

51       Keep interior spaces reasonably clean and protected from water damage.

52       Periodically collect and remove waste containing cellulose or other organic matter.

53       Discard or replace water-damaged material.

54       Do not install material that is wet.

55       Discard, replace, or clean stored or installed material that begins to grow mold.

56  
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State Bureau of Investigation

Temporary Facilities and Controls

1 Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the materi-  
 2 al in drywall or other interior finishes.

3  
 4 Controlled Construction Phase of Construction: After completing and sealing of the building enclosure, maintain as  
 5 follows:

6  
 7 Control moisture and humidity inside building by maintaining effective dry-in conditions.

8  
 9 Use **temporary** HVAC units or system to control humidity.

10  
 11 Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water  
 12 limits.

13  
 14 Hygroscopic materials that may support mold growth that become wet during the course of construction and  
 15 remain wet for 48 hours are considered defective and must be replaced.

16  
 17  
 18 **DUST AND CONTAMINATION CONTROL DURING CONSTRUCTION**

19  
 20 Prevent dust, fumes, and odors from entering occupied areas or areas in which construction work is more advanced.

21  
 22 Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by  
 23 Owner from fumes and noise. Construct dustproof partitions with two layers of 6-mil polyethylene sheet on each  
 24 side. Cover floor with two layers of 6-mil polyethylene sheet, extending sheets 18 inches up the sidewalls. Over-  
 25 lap and tape full length of joints. Cover floor with fire-retardant-treated plywood.

26  
 27 Maintain negative air pressure within the work area using HEPA-equipped air-filtration units, starting with com-  
 28 mencement of temporary partition construction, and continuing until removal of temporary partitions is complete.

29  
 30 Use vacuum collection attachments on dust-producing equipment. Isolate limited work areas using portable dust-  
 31 containment devices.

32  
 33 Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.

34  
 35 Coordinate general construction activities with the work of Divisions 21-28 to avoid contamination and/or degradation  
 36 of building engineered systems by dust, over-spray of insulation or paint, etc. **Costs for the cleaning and/or com-  
 37 ponent replacement of engineered systems required by contamination and/or degradation by general con-  
 38 struction activities shall be assigned to the General Contractor.**

39  
 40  
 41 **TEMPORARY PLUMBING SYSTEMS DURING CONSTRUCTION**

42  
 43 Toilet facilities shall be provided and maintained in a sanitary condition during construction, as follows:

44

Number of Workers	Minimum Number of Facilities
Less than 20	1
20-200	1 toilet and 1 urinal for each 40 employees
201+	1 toilet and 1 urinal for each 50 employees

45  
 46 Temporary facilities may be portable, enclosed, chemically treated tank-tight units. Portable toilets shall be enclosed,  
 47 screened, and weatherproofed and provided with interior door latches.

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**OPERATION, TERMINATION, AND REMOVAL OF TEMPORARY FACILITIES**

Operation: Maintain temporary facilities in good operating condition until removal.

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

Removal: Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.

**END OF SECTION 015000**



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**SECTION 017700 - PROJECT CLOSEOUT**

**RELATED DOCUMENTS**

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

**INSPECTION CERTIFICATES, WARRANTIES, BONDS, AND GUARANTEES**

Before Final Payment will be made, Contractor must submit a proper Certificate of Occupancy or a copy of all appropriate inspection certificates to A-E, signed by proper authorities, together with warranties, bonds, and/or guarantees as required.

**FINAL PAYMENT**

Properly documented Final Certificate for Payment shall include the following:

- Certificate of Completion/Compliance by Architect/Engineer
- Consent of Surety Company to Final Payment (as applicable)
- Prime Contractor's Affidavit of Release of Liens
- Prime Contractor's Affidavit of Payment of Debts and Claims
- Builder's Risk Insurance Cancellation Notice
- Inspection Certificates (as applicable)
- Warranties, Bonds and Guarantees
- Operating and Maintenance Data
- Documentation of Owner Instruction and Training
- Contractor's As-built Drawings

**END OF SECTION 017700**



**SECTION 019913 - GENERAL REQUIREMENTS****PART 1 - GENERAL****RELATED DOCUMENTS**

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

**The requirements specified herein shall govern all Sections, whether stated therein or not.**

Where items specified in the other sections of this Division conflict with requirements of this Section, the former shall govern.

**REVIEW OF CONTRACT DOCUMENTS**

The Contract Documents may represent imperfect data and may contain errors, omissions, conflicts, inconsistencies, code violations and improper use of materials. Such deficiencies will be corrected by the A-E when identified. The Contractor shall carefully study and compare the individual Contract Documents with each other and report at once in writing to the A-E any deficiencies the Contractor may discover. The Contractor shall require each subcontractor to likewise study the documents and report at once any deficiencies discovered. The Contractor shall resolve all reported deficiencies with the A-E prior to starting any work. **Any work performed prior to receipt of instructions from the A-E will be done at the Contractor's risk.** If the Contractor performs any construction activity knowing it involves a recognized error, inconsistency, or omission in the Contract Documents without such notice to the A-E, the Contractor shall assume appropriate responsibility for such performance and shall bear an appropriate amount of the attributable costs for correction.

The Contractor shall be responsible for maintaining habitable structures under this Contract rainproof, and for making equipment and utility installations properly perform the intended function. If he is prevented from so doing by any limitations of the drawings or specifications, the Contractor shall immediately notify the A-E in writing of such limitations before proceeding with construction in the area where the problem or limitation exists.

**DEFINITIONS**

Electrical Work: Work required by this Contract as defined by specification Divisions 26-28.

Labeled: Appliances, equipment, materials or products to which has been attached a label, symbol, or other identifying mark of an organization acceptable to the North Carolina Building Code Council and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials and by whose labeling the manufacturer indicates compliance with identified standards or has been tested and found suitable for a specified purpose.

Listed: Appliances, equipment, materials or products included in a list published by an organization acceptable to the North Carolina Building Code Council and concerned with product evaluation, that maintains periodic inspection of production of listed equipment or materials, and whose listing states either that the equipment or material meets appropriate designated standards or has been tested and found suitable for a specified purpose.

Concealed: Work within or behind various construction elements or in crawl spaces or trenches that is not exposed to view when the project is complete.

Exposed: Not "concealed" as defined above, or anything exposed to view when the project is complete.

Wiring: Cable, raceways, fittings, mechanical supports, wire, junction boxes, device boxes, outlet boxes, switches, cutouts, and related items.

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**State Bureau of Investigation****General Requirements****CODES, LAWS, REGULATIONS, AND STANDARDS**

Work on and for the project shall conform to requirements of each applicable volume of the *North Carolina Building Code*; shall comply with the regulations of the N.C. Department of Labor, including the latest revisions and interpretations of the *Occupational Safety and Health Act of North Carolina*; and be in accordance with all other codes, laws, rules and regulations that apply to this project.

"Confined spaces" and "permit-requiring confined spaces", as defined by U.S. Occupational Safety and Health Administration (USOSHA) may exist in the work area or may be created by the construction of this Project. The Contractor shall be responsible for identification of any permit-requiring confined spaces and for establishing all required procedures for meeting the requirements of USOSHA relative to these spaces, including written confined space entry program(s).

Codes, laws, regulations, and/or industry standards referenced in the Specification or on the Drawings shall be considered to be part of the Project requirements. Applicable edition of the referenced volume is the edition that is/was in effect at the time the construction permit was issued or at the time of approval of the Contract Documents by the Authority Having Jurisdiction.

**INTENT AND WORKMANSHIP**

The words "furnish," "furnish and install," "install," and "provide" or words with similar meaning shall be interpreted, unless otherwise specifically stated, to mean "furnish and install complete in-place and ready for service."

The work of all trades under this Contract shall be coordinated in such a manner as to obtain the best workmanship possible.

Miscellaneous items and accessories that are not specifically shown on the drawings or specified herein, but which are essential to produce a complete and properly operating installation, or usable structure or plant, providing the indicated function, shall be furnished and installed without change in the Contract price. Such miscellaneous items and accessories shall be of the same quality standards, including material, style, finish, strength, class, weight and other applicable characteristics, as specific for the major component of which the miscellaneous item or accessory is an essential part. The above requirement, however, is not intended to include major components not covered by or inferable from the drawings and specifications.

**QUALITY ASSURANCE**

The Contract Drawings indicate the extent and general arrangement of the Work. The Contractor shall coordinate the Work under his Contract so as to avoid conflicts between his work and the work of other trades. He shall carefully examine the Drawings and shall be responsible for the proper fitting of materials and equipment into the space provided. If any departures from the Contract Drawings are deemed necessary by the Contractor, detail drawings of such departures and the reasons therefore shall be submitted as soon as practicable to the A-E for his review. No such departures shall be made without this review and written clarification or change order.

**If manufacturer recommended details or installation instructions differ from the contract drawings or specifications, then the contractor shall notify the A-E immediately of any discrepancies.**

The Drawings and Specifications shall be considered supplementary, one to the other, so that materials and/or labor indicated, called for, or implied by one and not the other shall be provided as though specifically called for in both.

Firestop Materials Codes and Standards: Comply with ASTM Standard E814 and applicable categories of UL's current *Fire Resistance Directory*, Vol. I and II, for compliance with ANSI/UL Standard 1479.

Access Doors Fire-Resistance Ratings: Where fire-resistance rating is indicated for construction penetrated by access units, provide Listed and Labeled units.

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**State Bureau of Investigation****General Requirements****OBSERVATION**

All work shall be done by skilled technicians, continuously supervised by the Contractor and subject to observation and final acceptance by the A-E. Such final acceptance shall in no way relieve the Contractor from responsibility for defects in either workmanship or material that may subsequently develop.

**SUBMITTALS**

Submittals shall demonstrate compliance with technical requirements by reference to each subsection of this specification. Material and equipment schedules, catalog cuts, manufacturers' data and shop drawings, and field working drawings as required by individual Sections shall be provided.

Shop drawings, technical data and other such submittals required by individual Sections of the Divisions listed above shall be provided.

Equipment drawings, manufacturer's installation instructions as shipped with the equipment, field working and location drawings, wiring diagrams, and coordination drawings shall be provided by the Contractor for items of equipment, sleeves, foundations, curbs, wiring, ductwork, piping, etc., as necessary for information and coordination of all trades. These drawings shall be provided sufficiently in advance of installation to avoid delays and removal and reworking of installed work, and so as to provide information to other trades when and as required. No work shall be done until these drawings have been coordinated by the Contractor.

Submittals shall be checked before submission by technically qualified employees of Contractor for accuracy, completeness and compliance with Contract requirement. **All submittals shall be accompanied by the "Submittal Cover Form" provided at the end of this Section, signed by Contractor.**

Contractor shall submit complete lists or schedules of all proposed sub-contractors and material suppliers, and of all proposed construction materials and equipment. Materials and equipment lists shall be complete with trade names and/or catalog numbers of each item. Processing of the second and subsequent Certificate for Payment will be withheld until substantial portions of these lists have been submitted.

Products furnished shall be essentially the standard product of the manufacturer. Where two or more units of the same class of equipment are required, these units shall be products of a single manufacturer.

Products proposed by the Contractor shall be new except where specifically noted otherwise. Contractor(s) shall provide products only from manufacturers who have published data showing compliance with specified requirements or who certify in writing to such compliance (including laboratory and/or in-place testing, if applicable). All electrical products shall be both labeled and listed, as defined above. **Prior to purchase of major materials, equipment or systems, submit manufacturer's data to the A-E for review as hereinafter specified.**

Products of the specified type and for the specified application offered by the Contractor(s) for use on this Project shall comply with the following requirements:

Product shall have had satisfactory performance in applications of similar character to that specified for a period of at least three (3) years.

Product shall be from an established national or regional manufacturer. The A-E's experience with the manufacturer on prior projects relative to product performance, technical support, etc. may be taken into account to establish suitability of the offered product for this Project.

Product shall be provided through an authorized representative of the manufacturer. The representative shall be capable of providing technical support relative to the installation, operation, and maintenance of the product. The A-E's experience with the representative on prior projects relative to product performance, technical support, etc. may be taken into account to establish suitability of the offered product for this Project.

Repair parts and service for the product shall be available within twenty-four (24) hours of notice.

## State Bureau of Investigation

## General Requirements

1           **The manufacturer and his authorized representative shall furnish satisfactory evidence in support of**  
2           **these conditions when requested. The A-E's decision relative to the suitability and acceptability of**  
3           **any product is final and acceptance of this limitation is implicitly acknowledged by the contractor**  
4           **and the manufacturer and/or his representative offering the product for use on this Project.**  
5

6           Submittals shall demonstrate compliance with technical requirements by reference to each subsection of this  
7           specification. Where a submitted item does not **comply fully** with each and every requirement of the specifications  
8           the submittal shall clearly indicate such deviations by being marked "**NON-COMPLYING FEATURE.**" This indication  
9           shall be applied to the submittals at the appropriate location in a color contrasting with the remainder of the submittal.  
10          Additional information that might assist the Engineer in product evaluation may be included with the submittal. This  
11          information should indicate how a specific non-complying feature is believed by the Contractor to meet the intent of  
12          the specification.  
13

14           **It is the Contractor's responsibility to demonstrate compliance with the specifications and to clearly**  
15           **indicate any features that do not meet the specifications. It is not the Engineer's responsibility to**  
16           **identify non-compliance.** Substantial non-compliance, as determined by the Engineer, is grounds for  
17           rejection of the submittal. Discovery of non-complying features that have not been properly identified as  
18           such on submittals may require, at any stage of construction, the removal and replacement of the non-  
19           complying item(s).  
20

21          The A-E will review shop drawings, manufacturer's data, and samples with reasonable promptness. This review is  
22          only for general conformance with the design concept of the project and general compliance with the information  
23          given in the Contract Documents. Corrections or comments made on the shop drawings during this review do not  
24          relieve contractor from compliance with the requirements of the plans and specifications. Approval of a specific item  
25          shall not include approval of an assembly of which the item is a component. Contractor is responsible for dimensions  
26          to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication processes or to the  
27          means, methods, techniques, sequences and procedures of construction; coordination of his or her Work with that of  
28          all other trades; and for performing all work in a safe and satisfactory manner. The Contractor is responsible for any  
29          delay caused by his failure to observe submittals requirements and the time for completion of his Contract will not be  
30          extended because of such delays.  
31

32          The A-E's submittals review stamp categories shall be interpreted as follows:  
33

34           Reviewed: Fabrication and installation or erection may be undertaken.  
35

36           Exceptions indicated, revise and proceed: Fabrication and installation of erection may be undertaken.  
37           However, Contractor shall comply with all notes or corrections indicated.  
38

39           Exceptions indicated, revise and re-submit: Neither fabrication, installation, nor erection shall be undertaken.  
40           Re-submit corrected copies for review. Corrections shall be limited to items marked, except that changes  
41           required in order to coordinate the corrections indicated shall be made. All changes, other than those  
42           indicated, shall be called specifically to the A-E's attention.  
43

44           Rejected, re-submit: Neither fabrication, installation, nor erection shall be undertaken. Revise entire  
45           submission to comply with information given in the Contract Documents and re-submit.  
46

47          Submittals returned to the Contractor with the A-E's "reviewed" or "exceptions indicated, revise and proceed" stamp  
48          need not be resubmitted, except that corrected copies of "exceptions indicated, revise and proceed" submittals shall  
49          be furnished for record when requested.  
50

51          Submittals returned to the Contractor with the A-E's "revise and re-submit" or "rejected, re-submit" stamp shall be  
52          corrected to comply with Contract requirements and re-submitted to the A-E for review. The Contractor shall direct  
53          specific attention, in writing or on re-submitted shop drawings, product data or samples, to revisions other than those  
54          requested by the A-E on previous submittals.  
55

56          Shop drawings of work that involves more than one subcontractor shall be coordinated by the Contractor and  
57          submitted to A-E under one cover. No items shall be fabricated, nor any portion thereof shipped to site, prior to  
58          receipt by the Contractor of all applicable submittals, including manufacturer's data, samples and shop drawings  
59          bearing the A-E's "reviewed" or "exceptions indicated" stamp only.  
60

State Bureau of InvestigationGeneral Requirements

1 Manufacturer's data submitted as required by the technical specifications sections or requested by A-E shall consist  
2 of four (4) copies of certificates, schedules, catalog cuts, manufacturer's specifications and installation instructions for  
3 each type of product or material. Include maintenance recommendations, fire ratings and other reports when  
4 applicable to show compliance with the Specifications. When catalog cuts are submitted, the specific item to be  
5 considered shall be identified. Items that are not so identified will be returned to the Contractor without action.  
6

7 Firestop Systems: Submit data on products. Provide manufacturer's certification of UL classification(s)  
8 required, including copies of UL systems listings and schedule defining each UL system proposed and the  
9 applicable type of penetration.

10 Access Units: Submit manufacturer's technical data and installation instructions for each type of access  
11 door assembly, including setting drawings, templates, instructions and directions for installation of  
12 anchorage devices.  
13  
14

15 Contractor shall submit for review any samples required by the technical specification sections or that may be  
16 requested by the A-E.  
17

18 With each electrical testing and compliance submittal, Contractor shall submit evidence of compliance that each  
19 manufactured item or component of electrically-operated equipment and that each fabricated assembly of electrically  
20 operated equipment furnished complies with the testing requirements.  
21  
22

**FIRE RATINGS**

23 Fire rating of walls and floors, as indicated on the Drawings, are for reference only. Refer to Architectural Drawings  
24 for exact construction and fire ratings.  
25  
26  
27

28 Where fire resistive insulation or other coverings have been applied to a structural element to obtain a fire rating and  
29 this insulation or covering is removed or otherwise disturbed, the Contractor shall be responsible for restoring the  
30 material to a condition that matches the original fire protective ability.  
31  
32

**USE OF BRAND NAMES**

33 Brand names, where scheduled as "basis of design," are to be considered for information purposes and are not  
34 intended to be a product specification.  
35  
36  
37

38 Where the Contractor proposes to use an item of equipment other than that indicated as basis of design that  
39 may require redesign of the structure, partitions, foundations, piping, wiring, or any other part of the  
40 mechanical, electrical, or architectural layout, all such redesign and all new drawings and detailing required  
41 shall be prepared by the Contractor at his own expense and submitted for review by the A-E.  
42

43 Where such deviation requires a different quantity and arrangement of ductwork, piping, wiring, raceway, or  
44 equipment from that specified or indicated on the Drawings, the Contractor shall furnish and install any such  
45 ductwork, piping, structural supports, insulation, controllers, motors, starters, electrical wiring and raceway,  
46 and any other additional equipment required by the system, at no additional cost.  
47

48 Brand names, where used as a product specification, are intended to denote the standard of quality required for the  
49 particular material or product.  
50

51 Where the term "equal" or "equivalent" is present, such specification does not restrict the Contractor to a  
52 specific brand and equivalent products by other manufacturers may be acceptable. The term "equal" or  
53 "equivalent" shall be interpreted to mean a material or product that is similar and equal in type, quality, size,  
54 capacity, composition, finish, color, and other performance characteristics to the material or product  
55 specified by brand name, and that, **in the opinion of the A-E**, is suitable for the same use and capable of  
56 performing the same function as the material or product specified. **Proposed equivalent items must be**  
57 **reviewed by the A-E before they are purchased or incorporated into the work.**  
58  
59

**EQUIPMENT SUBSTITUTIONS AND CHANGES/EXTRA COSTS FOR CHANGES IN BUILDING SERVICES**

Where the Contractor proposes to use an item of equipment other than that specified or detailed on the Drawings, requiring any redesign of the structure, partitions, foundations, piping, wiring, or any other part of the mechanical, electrical, or architectural layout, all such redesign and all new drawings and detailing required shall be prepared by the Contractor at his own expense and submitted for review by the A-E.

Where such approved deviation requires a different quantity and arrangement of ductwork, piping, wiring, raceway, or equipment from that specified or indicated on the Drawings, the Contractor shall furnish and install any such ductwork, piping, structural supports, insulation, controllers, motors, starters, electrical wiring and raceway, and any other additional equipment required by the system, at no additional cost.

It is the responsibility of the Contractor to notify the A-E in all cases where the requirements of proposed equipment differ from the requirements specified, shown, or implied on the Drawings or within the Specifications. **Failure of the Contractor to notify the A-E shall not relieve the Contractor of the responsibility of providing compatible equipment at no additional cost as described above.**

**OPERATION AND MAINTENANCE DATA**

For each Division of the Work, provide four (4) copies of Operating Manuals, Maintenance Manuals, and Test Reports, bound in suitable covers, to the A-E at least two (2) weeks **prior** to the final inspection of the project.

Each manual shall include a cover sheet listing the following:

Project name and location.

Division of Work covered by the manual.

Contractor data, including name, address, phone and fax numbers, and service contact information (24-hour number, email address, etc.)

Date of project completion.

Each manual shall include a table of contents.

Operating manual: Provide all relevant information needed for day-to-day operation and management of the building systems. Include the following for each system:

**System Description:** Identify the areas of the building the system serves, the locations of performance checkpoints, the expected performance readings at the design load conditions and, where applicable, at part-load conditions. The system's operation during the day, night, and weekend, as well as seasonal start-up and shutdown, safety devices and their function, control devices and their function, pollution control devices, etc., also shall be described. The function of the controls for individual systems shall be described alongside the description of the system function.

**Operating Routines and Procedures:** Identify activities associated with the normal operation of systems and equipment. Operating checklists and operating logs shall be provided for each system and all performance standards shall be identified.

**Seasonal Start-Up and Shutdown:** List seasonal start-up and shutdown procedures, including any "mothballing" procedures required.

**Special Procedures:** Special procedures related to environmental control, health and safety, productive work environment, etc., shall be codified.

**Troubleshooting Procedures:** This section shall include questionnaires and diagnostics to allow users to isolate probable causes of operating problems in an efficient manner.

**State Bureau of Investigation****General Requirements**

1 Maintenance manual: The maintenance manual shall be divided into two parts:

2  
3 Part I shall contain information related to the equipment data sheets, nameplate data, operating data, etc.  
4 Include the original purchase order number; date of purchase; name, address, and phone number of vendor;  
5 and warranty information.  
6

7 Part II shall support a maintenance program. The manual shall contain information prepared by the  
8 equipment manufacturers, but shall be supplemented by information provided by the Contractor. Each item  
9 of equipment shall be identified and an individual "Equipment Maintenance Sheet" shall be prepared for  
10 each, with the following information:

11  
12 Description each system and system component, consisting of easily read schematic drawings  
13 showing all components, identified to match Part I data, that requires maintenance.  
14

15 Recommended preventative and predictive maintenance procedures and their recommended  
16 frequency of application for each system component.  
17

18 Recommended list of spare parts with part numbers and place(s) they can be obtained.  
19

20 Copy of manufacturer's Installation instructions for each component.  
21

22 Any other information requested by the A/E to support the operation and maintenance of the  
23 equipment.  
24

25 Test reports: Provide copies of the test protocols used in the construction and commissioning of the systems.  
26 Arrange data so as to allow the results of ensuing tests to be easily added.  
27

28  
29 **PART 2 - PRODUCTS – Not Used**

30  
31  
32 **PART 3 – EXECUTION**

33  
34  
35 **GENERAL**

36  
37 Comply with NFPA 241, *Standard for Safeguarding Construction, Alterations, and Demolition Operations*; ANSI A10  
38 Series standards for *Safety Requirements for Construction and Demolition*; and Chapter 14 of the *North Carolina*  
39 *State Building Code: Fire Code*.  
40

41  
42 **FIRE PROTECTION DURING CONSTRUCTION**

43  
44 Building contents and all elements of new and/or existing construction must be thoroughly protected from  
45 construction procedures that produce sparks, flames, or excessive heat. Such procedures include, but are not limited  
46 to, welding, soldering, flame-cutting, using grinders or metal cutting saws, and heating of work spaces. Contractor  
47 shall maintain fire watch and/or portable fire-suppression devices, as required, during these operations.  
48

49 The Contractor shall develop, provide, and post a written plan in compliance with NFPA 241 and Chapter 14 of the  
50 *North Carolina State Building Code: Fire Code*.  
51

52 Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs  
53 with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures  
54 required to prevent fires and how to deal with them if they occur.  
55

56 Provide and maintain portable, UL rated fire extinguishers with class and extinguishing agent as required by locations  
57 and classes of fire exposures. Comply with NFPA 10 *Standard for Portable Fire Extinguishers*. Locate fire  
58 extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each  
59 floor or area at or near each usable stairwell.  
60  
61

State Bureau of InvestigationGeneral RequirementsSECURITY AND SAFETY DURING CONSTRUCTION

Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.

DUST AND CONTAMINATION CONTROL DURING CONSTRUCTION

Prevent dust, fumes, and odors from entering occupied areas or areas in which construction work is more advanced

Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise. Construct dustproof partitions with two layers of 6-mil polyethylene sheet on each side. Cover floor with two layers of 6-mil polyethylene sheet, extending sheets 18 inches up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant-treated plywood.

Maintain negative air pressure within the work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.

Use vacuum collection attachments on dust-producing equipment. Isolate limited work areas using portable dust-containment devices.

Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.

Coordinate general construction activities with the work of Divisions 21-28 to avoid contamination and/or degradation of building engineered systems by dust, over-spray of insulation or paint, etc. **Costs for the cleaning and/or component replacement of engineered systems required by contamination and/or degradation by general construction activities shall be assigned to the General Contractor.**

COOPERATION WITH OTHER TRADES

The Contractor shall give full cooperation to other trades and shall furnish any and all information necessary to permit the work of other trades. Information to be provided by the Contractor includes, but is not limited to templates, patterns, setting plans, and shop details as may be necessary for the proper installation of work and for the purpose of coordinating adjacent work. Information required by other trades shall be provided in a timely manner and shall be sufficient to allow the work of such other trades to proceed with the least possible interference or delay.

Where the work of the Contractor will be installed in close proximity to, or may interfere with work of other trades, the Contractor shall assist in working out space conditions to make a satisfactory adjustment. **If the Contractor installs his work before coordination with other trades, he shall make the necessary changes in his work to correct the condition without extra charge.**

FIRESTOPPING

Installer should be experienced in installing or applying similar systems, plus: be acceptable to or licensed by manufacturer, state or local authority where applicable; have at least five years experience; and have successfully completed at least five comparable projects using this system.

Firestop systems or devices installation must meet requirements of ASTM E-814, UL 1479 or UL 2079 tested assemblies that provide a fire rating equal to that of construction being penetrated.

**State Bureau of Investigation****General Requirements**

1 Install only after substrate penetrations and supporting brackets have been installed. Do not install firestopping when  
2 ambient or substrate temperatures are outside limits permitted by manufacturers or when substrates are wet. Where  
3 floor openings without penetrating items are more than 4 inches wide and subject to traffic or loading, install  
4 firestopping materials capable of supporting same loading as floor. Protect materials on surfaces subject to traffic.  
5  
6

**PATCHING**

7  
8  
9 Repair, patching, and finishing of walls, floors, and/or ceilings affected by demolition, cutting after installation of new  
10 work, etc. shall be done by technicians skilled in the applicable trades and shall match surrounding or adjoining  
11 materials in composition, texture, color, and finish.  
12

**CONTRACTOR AS-BUILT DRAWINGS**

13  
14  
15  
16 Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and  
17 revised drawings as modifications are issued.  
18

19 Mark record prints to show the actual installation where installation varies from that shown originally. Require  
20 individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity,  
21 to provide information for preparation of corresponding marked-up record prints.  
22

23 Give particular attention to information on concealed elements that would be difficult to identify or measure  
24 and record later.  
25

26 Accurately record information in an acceptable drawing technique.  
27

28 Record data as soon as possible after obtaining it.  
29

30 Record and check the markup before enclosing concealed installations.  
31

32 Cross-reference record prints to corresponding archive photographic documentation.  
33

34 Types of items requiring marking include, but are not limited to, the following:  
35

36 Dimensional changes.  
37

38 Revisions to details.  
39

40 Locations and depths of underground utilities.  
41

42 Revisions to routing of piping and conduits.  
43

44 Revisions to electrical circuitry.  
45

46 Actual equipment locations.  
47

48 Duct size and routing.  
49

50 Locations of concealed internal utilities.  
51

52 Additional information that was either shown schematically or omitted from original Drawings.  
53

54 Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar  
55 identification, where applicable.  
56

57 Submit Contractor As-built Drawings to A/E for review **at least two (2) weeks prior to Project final inspection.**  
58

59 **END SECTION 019913**

State Bureau of Investigation

General Requirements

**SUBMITTAL COVER FORM**

**PROJECT:** NCSBI Campus Fire Alarm Conversion  
State Bureau of Investigation

**PROJECT NO.:** SO# 2572-00061

**TO:** SALAS O'BRIEN NORTH CAROLINA, INC.  
702 Oberlin Road, Suite 300  
Raleigh, NC 27605

**FROM:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_ CONTRACTOR      \_\_\_\_\_ SUBCONTRACTOR

We submit for your consideration the following product for the above project:

<b>SPECIFICATION SECTION</b>	<b>SPECIFICATION PARAGRAPH</b>	<b>DESCRIPTION</b>
_____	_____	_____

**TYPE OF SUBMITTAL:**

- \_\_\_\_\_ Specified Brand Product
- \_\_\_\_\_ Proposed Equivalent Product to Specified Brand
- \_\_\_\_\_ Product Meeting Performance Specification (No Brand Specified)

We warrant the following:

- a. We have personally investigated the proposed product, and determined that it is equal in all respects to that specified and/or performance specification requirements;
- b. We will provide the specified guarantee for this product;
- c. We will coordinate installation of this product into the work, making such changes as may be required for the work to be complete in all respects;
- d. We have clearly indicated by marking as "Non-Complying Feature" each and every requirement of the Specifications that this product does not meet;
- e. And, we waive all claims for additional costs related to this product which subsequently become apparent.

Attached hereto are complete technical data, including applicable laboratory reports, to demonstrate compliance with project requirements.

**SUBMITTED BY:**

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
DATE

**SUBMITTAL REVIEW**

(SAMPLE FORM - ORIGINAL WITH COMMENTS WILL BE ATTACHED TO  
SUBMITTAL BY A/E)

PROJECT: \_\_\_\_\_

PROJECT #: \_\_\_\_\_

SUBMITTAL ID#: \_\_\_\_\_

SPECIFICATION PARAGRAPH: \_\_\_\_\_

DESCRIPTION: \_\_\_\_\_

Submittal has been reviewed only for conformance with design intent of the contract documents. See Section 019913 "GENERAL REQUIREMENTS FOR ENGINEERED WORK" for complete definition of Submittal Review.

- Reviewed
- Exceptions Noted - Revise & Proceed
- Exceptions Noted - Revise & Resubmit
- Rejected

DATE: \_\_\_\_\_

BY: \_\_\_\_\_

REVIEW COMMENTS:

**THESE COMMENTS SHALL NOT BE REMOVED FROM THIS DOCUMENT**



**SECTION 019916 - WORK IN EXISTING BUILDINGS****PART 1 - GENERAL****RELATED DOCUMENTS**

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

**SUMMARY**

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

**The requirements specified herein shall govern all Sections, whether stated therein or not.**

Where items specified in the other sections of this Division conflict with requirements of this Section, the former shall govern.

**SUBMITTALS**

Submittals shall demonstrate compliance with technical requirements by reference to each subsection of this specification. Where a submitted item does not **comply fully** with each and every requirement of the Specifications, the submittal shall clearly indicate such deviations. Identification requirements for non-complying features of items are very specific. See Section 019913 for exact requirements.

**DEFINITIONS**

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

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

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

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

**MATERIALS OWNERSHIP**

Unless otherwise indicated, demolition waste becomes property of Contractor. Materials removed during demolition shall be accumulated in the demolition area for examination by the Owner. The Owner may choose to retain selected items. Items not selected to be retained by the Owner become the property of the Contractor and shall be removed from the site in a timely manner. All disposal fees and/or permits shall be the responsibility of the Contractor.

**QUALITY ASSURANCE**

**Refrigerant Recovery Technician Qualifications:** Certified by an EPA-approved Section 608 certification program.

## State Bureau of Investigation

## Work in Existing Buildings

**FIELD CONDITIONS**

Existing facilities shall remain in use during all phases of construction under this Contract. **All and any of existing building safeties such as exit signage, exit lights, fire alarm, fire sprinkler etc., must remain operational CONTINUOUSLY in order to retain building occupancy status. All required exits and exit signs must be kept available and free of obstruction at all times.** The Contractor shall cooperate with the Owner in every way possible to keep interruption of, and interference with, normal functions, activities, and operations to a minimum.

Where construction or attendant work interrupts normal functions in any area, a schedule of work shall be submitted for approval of the Owner and after approval, strictly followed. Modification to existing work shall be done as required. All work shall be performed in such a manner as to prevent any interruption of any service or utility. Where it is necessary to interrupt service for demolition, cut-in, or changeover, the work shall be scheduled well in advance of the interruption and the interruption approved by the Owner. As required by the Owner, such work shall be done during night, weekends, holidays, or other off peak period as approved.

Existing piping, ductwork, raceway and wiring, etc., shall be modified as indicated on the Drawings and/or as required by new and modified construction. Existing piping, ductwork, raceway and wiring, etc., shall be modified as required and put in first class operating condition. No equipment shall be disconnected without approval of the Owner's Representative. Temporary relocation of equipment and temporary piping, ductwork, wiring and raceway, etc., required for continued operation of the facility shall be provided as required.

**ASBESTOS WARNING**

Asbestos and asbestos containing materials are often encountered during the process of renovations or in the performance of site work in or in the vicinity of existing structures. Under no circumstances will the Contractor disturb asbestos or asbestos containing material.

Asbestos Survey: Prior to the beginning of construction activities, the Owner or the Owner's agent shall furnish to the Contractor a copy of an asbestos survey which shall be the results of a thorough inspection by the Owner or the Owner's agent, of all construction areas. The survey shall identify materials which have been determined to be asbestos or to contain asbestos.

**While the asbestos survey is provided in good faith and is believed to be accurate, the Contractor is hereby advised that other unknown asbestos containing materials may be present in the construction area.**

Suspect Materials - Contractor to Notify: It is the Contractor's responsibility to notify the Owner and the A/E immediately should suspect materials, not identified in the asbestos survey, be encountered during construction activities. In the event suspect asbestos or asbestos containing materials are encountered, the Contractor shall immediately cease all work in the area and secure the involved area to prevent inadvertent contamination or exposure. The Owner or the Owner's agent will conduct testing of suspect materials and notify the Contractor in writing when work in the affected area may resume.

**LEAD BASED PAINT WARNING**

Lead based paint and/or other lead containing materials are often encountered during the process of renovations or in the performance of site work in or in the vicinity of existing structures. The Contractor may be required to work with these materials during the normal course of the construction process.

OSHA Compliance is Contractor's Responsibility: It is the Contractor's responsibility to comply with all OSHA requirements during the construction process. Specific attention is drawn to OSHA Standard 1926.62, Subpart D, titled "LEAD" (29 CFR 1910) during work with all lead-containing materials.

Lead Based Paint Survey: Prior to the beginning of construction activities, the Owner or the Owner's agent shall furnish to the Contractor a copy of a lead based paint survey which shall be the results of a thorough inspection by the Owner or the Owner's agent, of all construction areas. The survey shall identify areas which have been determined to contain lead based paint.

**While the lead based paint survey is provided in good faith and is believed to be accurate, the Contractor is hereby advised that other unknown lead based paint may be present in the construction area.**

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**State Bureau of Investigation****Work in Existing Buildings**

1 Additional testing by Contractor: The Contractor is hereby notified that the lead based paint survey provided by the  
2 Owner is not intended to relieve the Contractor of the responsibility for additional testing as may be required to  
3 comply with OSHA requirements.  
4

5 **The determination of the need for additional testing and the cost associated with such testing as necessary**  
6 **to comply with OSHA requirements is a construction activity and shall be provided by the Contactor at no**  
7 **additional cost to the Owner.**  
8

9 Contractor Responsible for Contamination: The Contractor is enjoined to **use extreme caution** in the performance of  
10 construction activities in the vicinity of lead-based paint, lead-containing paint, or lead-containing materials. The  
11 Contractor shall bear the total and complete expense, including expenses incurred for decontamination, fines,  
12 penalties and incidental expense due to loss of use of the facility resulting from any improper work involving lead or  
13 lead containing materials.  
14

15  
16 **PART 2 - PRODUCTS – NOT USED**  
17

18  
19 **PART 3 - EXECUTION**  
20

21  
22 **PERFORMANCE REQUIREMENTS**  
23

24 Comply with governing EPA notification regulations before beginning selective demolition.  
25

26 Comply with hauling and disposal regulations of authorities having jurisdiction.  
27

28  
29 **EXISTING FACILITY ACCESS**  
30

31 Existing Elevator Use: Use of Owner's existing elevators will be permitted, provided elevators are cleaned and  
32 maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing  
33 before initial use, including replacing worn cables, guide shoes, and similar items of limited life.  
34

35 Do not load elevators beyond their rated weight capacity.  
36

37 Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and  
38 entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator  
39 Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be  
40 refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as  
41 required.  
42

43 Existing Stair Use: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a  
44 condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.  
45

46 Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain  
47 means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction  
48 work.  
49

50  
51 **EXAMINATION AND PREPARATION**  
52

53 Verify that utilities have been disconnected and capped, valved off, or otherwise secured before starting demolition.  
54

55 Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition  
56 required.  
57

58 When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are  
59 encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to the A/E.  
60

**State Bureau of Investigation****Work in Existing Buildings**

1 Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent  
2 buildings and facilities to remain. As necessary, provide dust barriers, noise control, etc. to minimize impact of  
3 demolition on adjacent occupied areas.

4  
5 Provide protection to ensure safe passage of people around demolition area and to and from occupied portions of  
6 building.

7  
8 Provide temporary weather protection, during interval between demolition of existing construction on exterior surfaces  
9 and new construction, to prevent water leakage and damage to structure and interior areas.

10  
11 Provide heating, cooling, dehumidification, and ventilation as necessary to protect the existing building materials and  
12 finishes during the demolition period.

13  
14 Where existing plumbing, fire protection, HVAC, or electrical services in demolition areas must be shutdown,  
15 temporary plumbing, fire protection, heating, cooling, dehumidification, ventilation, lighting, and electrical power shall  
16 be provided as needed to maintain use of adjacent occupied areas that are negatively impacted by the shutdown.

17  
18 Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective  
19 demolition operations.

20  
21 Cover and protect furniture, furnishings, and equipment that have not been removed.

22  
23 Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent  
24 movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled  
25 movement or collapse of construction being demolished.

**ELECTRICAL DEMOLITION**

26  
27  
28  
29  
30 Coordinate all electrical outages with the Owner to facilitate reworking of existing system. No service, feeder, or  
31 branch circuit may be de-energized unless specific approval has been obtained from the Owner's representative.

32  
33 Dispose of Removed Equipment and Material: Materials removed and not indicated by Drawings to be reinstalled,  
34 stored, or retained by the Owner, shall be removed from the site in a timely manner at the Contractor's expense.

35  
36 The Owner may choose to retain selected items or equipment. The Contractor shall remove and deliver  
37 such items and/or equipment to a location on site as requested by the Owner.

38  
39 Thoroughly inspect electrical systems in reworked areas and bring to the attention of the A-E all defective or  
40 unserviceable material not scheduled for removal or replacement.

41  
42 Remove all abandoned wiring, both exposed and concealed.

43  
44 Remove all abandoned raceway and any related items, both exposed and concealed. Where existing raceway is  
45 concealed in concrete or masonry, remove wiring as required above and abandon in place. Cut abandoned raceway  
46 off ½" into wall, ceiling, or floor to allow patching to completely cover cut off end of raceway.

47  
48 Repair surfaces and finishes to match existing surrounding surfaces or finish in all areas where items are removed.  
49 After repairs are made no evidence of previous use of surfaces shall be visible.

50  
51 Provide touch-up painting as required where new items are installed adjacent to existing items to remain.

52  
53 Clean new, damaged, and/or disturbed areas and apply primer, intermediate, and finish coats at each  
54 location.

55  
56 Surface preparation and timing of application of successive coats of paint shall be in accordance with paint  
57 manufacturer's instructions.

58  
59 Use zinc-rich paint to repair damage to galvanized finishes. Follow written instructions of paint  
60 manufacturer.

61

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**State Bureau of Investigation****Work in Existing Buildings**

- 1           Repair paint finishes for other items, surfaces, or equipment as necessary. Follow written instructions of  
2           paint manufacturer.  
3
- 4           Provide blank cover plates to match device plates used in the adjoining areas where outlet, device, junction, or other  
5           boxes are to remain,  
6
- 7           Perform the electrical demolition as described below:  
8
- 9           Remove all electrical raceway, cable, wiring, devices, junction boxes, fittings, and related items from all  
10          locations indicated on the Drawings as being renovated. Existing raceway, junction boxes, fittings, and  
11          similar items may only be reused for the present project where explicitly indicated on the Drawings,  
12          provided:  
13
- 14                    The existing item is in good condition and is suitable for reuse.  
15
- 16                    The existing items meets the requirements of the Specifications for similar items which might be  
17                    provided new in other locations on the project. Additional support and/or fire stopping may be  
18                    required to meet this condition.  
19
- 20                    The existing item is located in the same position as required in the new configuration as shown on  
21                    the Drawings.  
22
- 23           Extend or relocate all existing circuits and related items serving existing utilization or other equipment where  
24           such circuits or items are disrupted due to demolition activities of any division of the Contract Documents.  
25           Relocate all existing junction boxes or similar items that will be rendered inaccessible by new construction  
26           furnished under any division of the Contract Documents. Provide any and all temporary electrical supply  
27           (supplies) as needed to meet this requirement.  
28
- 29           Remove all abandoned circuits back to the point of supply or back to the point where other remaining loads  
30           are connected. Label any unused overcurrent devices as "SPARE". Circuits supplying equipment which is  
31           removed or demolished by any division of the Contract Documents is considered as "abandoned" for  
32           purposes of this requirement.  
33
- 34           Revise existing panel directories to reflect modifications made as a part of the project. All directory revisions  
35           shall be typed.  
36  
37
- 38           **END OF SECTION 019916**



**SECTION 019926 - OWNER INSTRUCTION AND TRAINING****PART 1 - GENERAL****RELATED DOCUMENTS**

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

**The requirements specified herein shall govern all Sections, whether stated therein or not.**

Where items specified in the other sections of this Division conflict with requirements of this Section, the former shall govern.

**QUALITY ASSURANCE**

The Owner instruction and training program shall be developed and coordinated by a firm or individual experienced in training or educating maintenance personnel.

Contractor personnel experienced in the systems and components incorporated in this Project, along with factory-authorized service representatives, shall perform the instruction.

**COORDINATION**

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

Coordinate content of training modules with content of manufacturers' recommended emergency, operation, and maintenance procedures.

**SUBMITTALS**

General: Submittals shall demonstrate compliance with technical requirements by reference to each subsection of this specification. Where a submitted item does not **comply fully** with each and every requirement of the Specifications, the submittal shall clearly indicate such deviations. Identification requirements for non-complying features of items are very specific. See Section 019913 for exact requirements.

Instructional Program and Instructional Materials: Submit detailed description of instructional program structure, training modules, and instructional materials.

Instructor Qualifications: Submit curriculum vitae for each instructor, specifically defining the experience of each instructor and the training modules for which he or she shall be responsible.

**PART 2 - PRODUCTS****INSTRUCTION PROGRAM**

General: **The Contractor(s) for each of Division, as applicable, is responsible for instructing Owner's personnel relative to each Division's work**, including the following:

Instruction in the operation of systems, subsystems, and equipment.

Training in maintenance of systems, subsystems, and equipment.

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**State Bureau of Investigation****Owner Instruction & Training**

1 Program Structure: Develop an instruction and training program that includes individual training modules for each  
2 Division 26-28 system, subsystem, and equipment item, including both classroom instruction and "hands-on" demon-  
3 strations.

4  
5 Training Modules: Develop a learning objective and teaching outline for each instruction and training module, taking  
6 into consideration the level of proficiency of Owner's maintenance staff. Include a description of specific skills and  
7 knowledge that each participant is expected to master.

8  
9 For each instruction and training module, include instruction for the following, as applicable to the system, subsystem,  
10 equipment, or component:

11  
12 **Documentation:** Review the following items in detail:

13  
14 Operations manuals.

15  
16 Maintenance manuals.

17  
18 Project record documents.

19  
20 Warranties, bonds, and guarantees.

21  
22 Maintenance service agreements and similar continuing commitments.

23  
24 **Emergencies:** Include the following, as applicable:

25  
26 Instructions on meaning of warnings, trouble indications, and error messages.

27  
28 Shutdown instructions for each type of emergency.

29  
30 Operating instructions for conditions outside of normal operating limits.

31  
32 Sequences for electric or electronic control systems.

33  
34 Special operating instructions and procedures.

35  
36 **Operations:** Include the following, as applicable:

37  
38 Startup procedures.

39  
40 Equipment or system break-in procedures.

41  
42 Routine and normal operating instructions.

43  
44 Regulation and control procedures.

45  
46 **Control sequences.**

47  
48 Safety procedures.

49  
50 Normal start-up and shutdown instructions.

51  
52 Operating procedures for emergencies.

53  
54 Operating procedures for system, subsystem, or equipment failure.

55  
56 Required sequences for electric or electronic control systems.

57  
58 Special operating instructions and procedures.

59  
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State Bureau of Investigation

## Owner Instruction &amp; Training

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**Adjustments:** Include the following:

- Alignments.
- Routine adjustments, tightening, etc.
- Noise and vibration adjustments.
- Economy and efficiency adjustments.

**Maintenance:** Demonstrate the following:

- Inspection procedures.
- Preventative maintenance requirements, consisting of the following:
  - Routine maintenance, which consists of specific procedures that are performed on a regular schedule and are designed to detect, preclude, or mitigate degradation of a system or its components.
  - Predictive maintenance, which uses routine inspection and evaluation, testing, and analysis to augment routine maintenance procedures by detecting the onset of component degradation and to address problems as they are identified.
- Instruction on use of special tools.

**Repairs:** Include the following:

- Troubleshooting and diagnostic instructions.
- Test and inspection procedures.
- Repair instructions.
- Disassembly; component removal, repair, and replacement; and reassembly instructions.
- Review of spare parts needed for operation and maintenance.

**PART 3 - EXECUTION**

Owner will furnish an instructor to describe Owner's operational philosophy.

Owner will furnish Contractor with names and positions of participants to attend instruction and training, not to exceed 10 individuals.

**Confirm Topics and Agenda with owner prior to scheduling.**

Provide instruction at mutually agreed on times scheduled at least four (4) weeks in advance through the A/E. For systems, subsystem, and/or equipment that requires seasonal operation, provide required instruction at start of each season.

Conduct training on-site in the completed and fully operational facility in classroom/conference space provided by the Owner and using the actual systems, subsystems, and equipment installed.

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State Bureau of Investigation

Owner Instruction & Training

1 Conduct training using final operation and maintenance data submittals as the training reference material. If addition-  
2 al training materials are utilized, they shall be incorporated as an appendix to the operation and maintenance data  
3 submittals.

4

5

6 **END OF SECTION 019926**

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**SECTION 260000 - SUMMARY OF ELECTRICAL WORK**

Engineer of Record for Electrical work is Matthew J. Johnson, PE, Salas O'Brien North Carolina, Inc., 702 Oberlin Road, Suite 300, Raleigh, NC 27605. Electrical work shall be defined by drawings numbered with the prefix "E", the general provisions of the Contract including General Conditions and Supplementary Conditions, Division 1 Specifications sections, and Division 26-28 Technical Specifications listed below. In addition, Electrical work may be defined by reference to other documents from any of the above-named sources as well as by project addenda.

**DIVISION 26 - ELECTRICAL**

<b>Section</b>	<b>Title</b>
260000	Summary of Electrical Work
260500	Basic Electrical Requirements
260519	Secondary Voltage Wires and Cables
260526	Grounding
260529	Supporting Devices
260533	Electrical Identification
260534	Raceways
260535	Electrical Boxes and Fittings

10  
11

**DIVISION 28 – ELECTRONIC SAFETY AND SECURITY**

<b>Section</b>	<b>Title</b>
283110	Fire Alarm System Modifications

12  
13  
14

**END OF SECTION 260000**



SECTION 260500 - BASIC ELECTRICAL REQUIREMENTSPART 1 - GENERALRELATED DOCUMENTS

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

SCOPE

The electrical design for this project is based on the requirements of the *National Electrical Code* (NEC), NFPA-70, 2020 Edition. Where not restricted to more stringent requirements by the Drawings and Specifications, the minimum requirements of the NEC shall prevail.

Contractor shall coordinate the work and equipment of this Division with the work and equipment specified elsewhere in order to assure a complete and satisfactory installation.

It is the intention of these Specifications and Drawings to call for finished work, tested and ready for operation. Whenever the words "supply," "provide," or "furnish" are used, it shall mean "furnish and install complete and ready for use at no additional cost."

Minor details not usually shown or specified, but necessary for the proper installation and operation, shall be included in the Work the same as if herein specified or shown.

Some items of equipment are specified in the singular; however, the Contractor shall provide and install the number of items of equipment as indicated on the Drawings, and as required for complete systems. The words "and" and "or" shall be interpreted in both the singular and plural sense (and/or) as appropriate to the use.

Electrical service entrance equipment arrangements for temporary and permanent connections to the Owner's system shall conform to the Owner's requirements. Coordinate circuit breakers with the existing system.

All ampacities or other conductor references where indicated or otherwise specified in the Drawings or Specifications are based on copper conductors. **Aluminum conductors are not acceptable and will not be permitted.**

DEFINITIONS

Definitions for "Concealed" and "Exposed" are provided for the purpose of specifying wiring methods or for defining the appearance of finished work and are not the same as definitions used in the National Electrical Code.

Concealed: Work within or behind various construction elements or in crawl spaces or trenches that is not exposed to view when the project is complete.

Exposed: Not "concealed" as defined above, or anything exposed to view when the project is complete.

Labeled: Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization accredited by NCBCC (North Carolina Building Code Council) to label electrical equipment and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

Listed: Equipment or materials included in a list published by an organization accredited by NCBCC (North Carolina Building Code Council) to label electrical equipment and concerned with product evaluation, that maintains periodic inspection of production of listed equipment or materials, and whose listing states either that the equipment or material meets appropriate designated standards or has been tested and found suitable for use in a specified manner.

---

**State Bureau of Investigation****Basic Electrical Requirements**

1 Wiring: Cable, raceways, fittings, mechanical supports, wire, junction boxes, device boxes, outlet boxes, switches,  
2 cutouts, and related items.

3  
4 **PART 2 – PRODUCTS (NOT USED)**

5  
6  
7 **PART 3 - EXECUTION**

8  
9  
10 **ENERGIZED SYSTEM WARNING**

11  
12 Extreme caution is enjoined with regard to work with and around energized electrical equipment. The Contractor is  
13 urged to coordinate all such activities with the Owner or the local electric utility so that electrical equipment may be  
14 de-energized as required to safely perform necessary construction activities as defined in the Drawings and  
15 Specifications. Suitable OSHA approved lockout-tagout procedures shall be used when circuits or equipment have  
16 been de-energized for the purpose of performing construction activities. All work practices related to worker safety  
17 are the complete responsibility of the Contractor.

18  
19  
20 **DUTIES OF CONTRACTOR**

21  
22 The Drawings are generally diagrammatic in nature and are neither intended to show each fitting, box, elbow, offset,  
23 hanger, *etc.*, nor a complete detail of all work to be done. The Drawings are for the purpose of illustrating the type of  
24 system, showing raceway sizes, *etc.*, and special conditions considered necessary for the experienced mechanic to  
25 take off materials and lay out work. This Contractor shall be responsible for taking such measurement as may be  
26 necessary at the job and adapting his work to local conditions.

27  
28 Contractor shall furnish and install all materials called for or reasonably implied in these Specifications and  
29 accompanying Drawings. Apparatus must be furnished complete and ready for operation in every respect. Materials  
30 and equipment called for in the Specifications and not indicated on the Drawings, or indicated on the Drawings and  
31 not called for in the Specifications, shall be furnished by the Contractor.

32  
33 Contractor is responsible for familiarizing himself with the project area and details of the construction of building.  
34 Work performed under these Specifications that is installed improperly or which requires modification due to improper  
35 reading or interpretation of building plans shall be corrected or otherwise modified as directed by the A-E without  
36 additional cost to the Owner.

37  
38 Contractor shall follow Drawings in laying out work and shall refer to drawings of other trades to verify exact spaces in  
39 which work will be installed. Arrange installed items in such a manner as to maintain maximum headroom and space  
40 conditions at all points. Where headroom or space conditions appear inadequate, A-E shall be notified before  
41 proceeding with installation.

42  
43  
44 **INSPECTIONS**

45  
46 The contractor shall schedule inspections with the State Electrical Inspector through the State Construction  
47 Office (SCO), Consulting Services section. This shall include all inspections of concealed work, interior and  
48 exterior, as well as intermediate and final reviews. All scheduling of electrical inspections with the SCO  
49 electrical inspector shall be Monday thru Friday unless specifically exempted and approved by SCO.

50  
51  
52 **COOPERATION WITH OTHER TRADES**

53  
54 The Contractor shall give full cooperation to other trades and shall furnish any and all information necessary to permit  
55 the work of other trades. Information to be provided by the Contractor includes, but is not limited to templates,  
56 patterns, setting plans, and shop details as may be necessary for the proper installation of work and for the purpose  
57 of coordinating adjacent work. Information required by other trades shall be provided in a timely manner and shall be  
58 sufficient to allow the work of such other trades to proceed with the least possible interference or delay.

59

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**State Bureau of Investigation****Basic Electrical Requirements**

1 Where the work of the Contractor will be installed in close proximity to, or may interfere with work of other trades, the  
2 Contractor shall assist in working out space conditions to make a satisfactory adjustment. **If the Contractor installs  
3 his work before coordination with other trades, he shall make the necessary changes in his work to correct  
4 the condition without extra charge.**

5  
6 Scaled Shop Drawings: If so directed by the A-E, the Contractor shall prepare composite working drawings  
7 and sections at a suitable scale not less than 3/8"=1'-0", clearly showing how his work is to be installed in  
8 relation to the work of other trades.  
9

**SAFETY REQUIREMENTS**

10  
11  
12  
13 All systems shall be installed so as to operate in a safe manner; all moving parts shall be covered where there is any  
14 possibility of danger from such moving parts. All rough edges of equipment and materials shall be made smooth.

15  
16 All safety controls shall be checked under the supervision of the Owner's representative and two (2) copies of test  
17 data showing setting and performance of safety controls shall be submitted to the A-E by the Contractor.

18  
19 During the construction the Contractor shall keep the site reasonably clean of debris and upon completion of  
20 construction he shall clean up the premises to remove all evidence of his work. The Contractor shall provide, at no  
21 additional cost to the Owner, additional cleaning of the site as directed by the Owner. In addition, upon completion of  
22 construction, he shall clean, wash and/or polish all fixtures, equipment and exposed material and leave each item  
23 clean, bright, and without blemish. Damaged items shall be replaced or repaired in a manner satisfactory to the  
24 Owner by the Contractor at no additional cost to the Owner.

25  
26 It shall be the responsibility of the Contractor to maintain a safe working environment at all times and to comply with  
27 all OSHA regulations for the duration of the project.  
28

**SUBMITTALS**

29  
30  
31  
32 Submittals shall be made in strict accordance with the requirements of Section 019913. Specific submittal  
33 requirements are defined in each section of this Division.  
34

35  
36 Manufacturer's Data: Submit manufacturer's technical product data.  
37  
38

**NAMEPLATE DATA**

39  
40  
41 Each item of electrical utilization equipment shall be provided with a permanent operational data nameplate that shall,  
42 as a minimum, indicate the following: equipment manufacturer, product name, model number, serial number,  
43 capacity, voltage requirements, and either full load current or full load volt-amperes. Labels of tested compliances  
44 and similar essential data shall be a part of this label or located nearby. All equipment nameplates shall be in an  
45 accessible location.  
46

47 In the event that the installation of equipment renders the manufacturer's nameplate inaccessible, the above  
48 information shall be etched onto a laminated plastic nameplate securely fastened to the equipment by no less than  
49 two machine screws or by other fastening methods approved by the A-E.  
50

**FLASH PROTECTION WARNING**

51  
52  
53  
54 Each piece of new electrical equipment, such as switchboards, parallel switchgear, panelboards, circuit breaker  
55 enclosures, control panels, motor control centers, transfer switches, etc. that are likely to require examination,  
56 adjustment, servicing or maintenance while energized, shall be field marked in a clearly visible location on the  
57 equipment enclosure to warn qualified persons of potential electric arc flash hazards, in accordance with NEC  
58 110.16.  
59  
60

**ACCESSIBILITY**

Contractor shall be responsible for the sufficiency of the size of shafts and chases and the adequate clearance in double partitions and hung ceilings for the proper installation of his work. He shall cooperate with all other trades whose work is in the same place and shall advise the General Contractor of his requirements. Such spaces and clearances shall be kept to the minimum size required for such installations.

Contractor shall locate all equipment that must be serviced, operated, or maintained in fully accessible positions and shall coordinate with other trades as necessary to meet the workspace requirements of the National Electrical Code. Equipment where such space is required includes switchboards, motor control centers, panelboards, fire alarm control panels, telephone and data terminal panels and cabinets, and similar items.

Minor deviations from Drawings may be made to allow improved accessibility. Submit requests for all changes to the A-E for approval. Relocation of equipment, should such be required to meet NEC workspace requirements, shall be made by the Contractor at no additional cost.

**CONCEALED RACEWAY**

In general, all raceway or cable wiring methods in finished spaces shall be run concealed in walls, partitions, structural concrete panels, or above ceilings.

Exterior Raceway: Raceway may not be routed on exterior surfaces of the building or across a building roof (either above, below, or within roof insulation) unless specifically indicated on the Drawings.

Raceway Below Concrete Floor Slabs: Raceway may not be routed below concrete floor slabs unless such is specifically shown on the Drawings.

Concealment of raceway and covering of same shall not be done until authorized by the Authority Having Jurisdiction (AHJ). This applies to all interior work and exterior work.

**SLEEVES AND PLATES**

Contractor shall provide and locate all sleeves and inserts required, or shall be responsible for the cost of cutting and patching required where sleeves and/or inserts were not installed, or where incorrectly located. The Contractor shall be responsible for all drilling required for the installation of his hangers.

Sleeves shall be provided for all raceway passing through concrete, masonry, or tile wall, floor, or overhead deck construction. Sleeves shall be constructed of Schedule 40 black steel pipe unless otherwise indicated on Drawings. Sleeves through concrete beams shall be constructed as indicated on Drawings.

Fasten sleeves securely in walls so that they will not become displaced when other construction is built around them. Take precautions to prevent concrete, plaster, or other materials being forced into the space between raceway and sleeve during construction.

Escutcheon plates shall be provided for all exposed (where permitted) raceway passing through walls and ceilings. Plates shall be nickel plated, of the split ring type, of size to match the raceway. Where plates are provided for pipes passing through sleeves that extend above the floor surface, provide deep recessed plates to conceal the pipe sleeves.

**SUPPORTS, ATTACHMENTS**

Contractor shall furnish and install all necessary supports required for all electrical equipment, lighting fixtures, raceway, outlet boxes, panelboards, generators, and for all other equipment furnished under this contract, and shall submit drawings to the A-E for approval before purchase, fabrication, or construction of same.

**State Bureau of Investigation****Basic Electrical Requirements**

1 All equipment, unless otherwise shown, shall be securely attached to the building structure in an approved manner.  
2 Attachments shall be of a strong and durable nature; any attachments that are deemed by the A-E to be insufficient  
3 due to reasons of strength, location, quality, or appearance shall be replaced as directed at no additional cost to the  
4 Owner.

5  
6 Framing members shall be standard rolled steel shapes, ASTM A36 steel, except that members welded to main  
7 structural member shall be of the same specification as the main structural member.

8  
9 Framing shall be "simple beam" type with end connections welded or bolted for shear loads. Cantilevers may be  
10 used when detailed or specifically approved. Location of supplementary framing shall be subject to approval.  
11 Welding, where required, shall be performed by certified welders.

12  
13 Framing members shall be designed for their actual loads with allowable stresses set forth in the AISC Specifications  
14 and the AISC Code, without excessive deflection and with consideration for rigidity under vibration, in accordance  
15 with standard structural practices. Supplementary framing, including design loads, member size and location shall be  
16 clearly shown on shop drawings.

17  
18 When supplementary framing is indicated, verify that dimensions are suitable and that framing is structurally  
19 adequate for the equipment furnished.

**FIRE RATED CONSTRUCTION**

20  
21  
22  
23  
24 The fire rating of all floors, ceilings, and partitions shall be maintained. It is the responsibility of this Contractor  
25 provide and install any necessary fire resistive components so that the fire integrity of all fire rated structures  
26 supporting or containing items required under Divisions 26-28 will not be diminished by the installation of such items.  
27 Where device or junction boxes penetrate any fire rated structure, the boxes shall be located in such a manner as not  
28 to reduce the fire rating of the structure. Where the Drawings indicate adjacent boxes or devices in rated partitions  
29 that would reduce the fire rating of the partition if unprotected, suitable Listed protection methods shall be used to  
30 insure the fire rating of the partition will not be decreased by the proximity of other boxes or penetrations.

31  
32 Where recessed fixtures are used in fire rated ceilings, suitable construction shall be installed above and around the  
33 fixture so that the fire rating of the ceiling is maintained. Refer to Architectural Drawings for fire ratings of ceilings.

34  
35 Where recessed panelboards, recessed cabinets, or other items are located in a fire rated partition, suitable  
36 construction behind and around the item shall be used to maintain the fire rating of the partition.

37  
38 Where fire resistive insulation or other coverings have been applied to a structure or to structural elements to obtain a  
39 fire rating and this insulation or covering is removed or otherwise disturbed by the installation of Division 26-28  
40 components or other related items, this Contractor shall be responsible for restoring the material to a condition that  
41 matches the original fire protective ability.

42  
43 Approval must be obtained from the A-E before any boxes, devices, or other components are relocated for the  
44 purpose of maintaining fire ratings.

**TESTING LABORATORY APPROVAL**

45  
46  
47  
48  
49 All equipment shall be approved for the intended use and shall be Labeled or Listed. In any case where the suitability  
50 for a particular application is in question by the A-E or inspection authorities the Contractor shall furnish appropriate  
51 standards covering the specific piece of equipment in question. Such standards, if required, shall be requested by  
52 the A-E in writing and shall be furnished by the Contractor at no additional cost.

**ELECTRICAL CIRCUITS**

53  
54  
55  
56  
57 Circuit designations and connections are shown on the Drawings. Indicated circuit numbers and circuit breaker  
58 positions are mandatory unless changes are specifically approved by the A-E in writing.

59

---

**State Bureau of Investigation****Basic Electrical Requirements**

1 Electrical neutral connections are indicated on the Drawings. Neutrals may not be reconfigured or otherwise changed  
2 without specific approval in writing from the A-E.

3

4 Request for circuit or neutral changes **can not be a part of the equipment submittal process.**

5

6

7

**EQUIPMENT CONNECTIONS**

8

9 In general, provide complete electrical power supply system connections to all equipment shown on Drawings. In  
10 addition, provide disconnection and re-connection to the power system of any items that are indicated on the  
11 Drawings as being moved or relocated.

12

13 Control wiring shall be installed in raceways and box system separate from power wiring, unless otherwise indicated  
14 on Drawings. Wiring within equipment enclosures shall be in raceways provided under this section of the  
15 Specifications unless approved raceway is provided by the manufacturer of the equipment or unless the equipment is  
16 listed for use as a raceway.

17

18

19

**END OF SECTION 260500**

State Bureau of Investigation

Secondary Voltage Wires and Cables

**SECTION 260519 - SECONDARY VOLTAGE WIRES AND CABLES****PART 1 - GENERAL****RELATED DOCUMENTS**

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

**QUALITY ASSURANCE**

**Manufacturers:** Firms regularly engaged in manufacture of electrical products, of types and ratings required in this Section, whose products are Listed and Labeled for the purpose intended. Subject to compliance with requirements provide devices equivalent to one of the following:

Encore Wire Corporation  
General Cable Corporation  
Southwire Company  
Cerro Wire

**Codes and Standards:**

**NEC Compliance:** Comply with NEC requirements as applicable to construction, installation and color coding of electrical wires and cables.

**Testing Laboratory Compliance:** Provide wiring/cablings and connector products that are Listed and Labeled.

**SUBMITTALS**

Submittals shall be made in strict accordance with the requirements of Section 019913. Specific submittal requirements are defined in each section of this Division.

**Product Data:** Submit manufacturer's data on electrical wires, cables and connectors.

**PART 2 - PRODUCTS****SECONDARY VOLTAGE WIRES, CABLES, AND CONNECTORS**

**General:** Provide electrical wires, cables, and connectors of manufacturer's standard materials, as indicated by published product information. Connections shall be designed and constructed using connectors as recommended by manufacturer for a complete installation for the application indicated. Provide copper conductors with conductivity of not less than 98% at 68° F.

**Building Wires:** Provide factory-fabricated wires of sizes, ampacity ratings, and materials for applications and services indicated. Where not indicated, provide proper wire selection as determined by Contractor to comply with project's installation requirements, NEC and NEMA standards. Select from the following Listed types those wires with construction features that fulfill project requirements:

**Type THWN/THHN:** For general use as interior branch circuits and feeders; maximum operating temperature 90° C (194° F). Insulation, flame-retardant, moisture- and heat-resistant, thermoplastic; outer covering, nylon jacket; conductor, annealed copper.



## State Bureau of Investigation

## Secondary Voltage Wires and Cables

1 Increase Drawing indicated size of conductors for ampacity and temperature rating as described below:

2

3

4

5

6

7

8

9

9 Increase Drawing indicated size of conductors for voltage drop as follows:

10

11

12

13

Use #10 AWG conductor for 20 Ampere, 120 Volt branch circuit home runs longer than 50 feet, unless otherwise noted on Drawings.

14

15

16

17

18

14 Conduit runs shall contain the number of phase conductors shown on the plans. A dedicated neutral shall be installed for each phase conductor served by single pole, 120 and 277 Volt, 20 Amp circuit breakers. Multi-pole circuit breakers serving 120 and 277 Volt, 20 Amp multi-wire branch circuits with a common neutral shall not be permitted. Conduits runs shall contain related grounding and/or isolated grounding conductors.

19

20

21

22

23

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25

19 Conduit runs that contain more than one neutral shall have each neutral conductor uniquely identified at each termination, splice and where routed through junction or pull boxes. Neutral conductors containing a factory applied, trace line along the length that matches the color of the associated phase conductor shall be used to meet this requirement. Machine printed labels with the panel and associated circuit number shall also be permitted for identifying neutral conductors. Colored tape and pre-printed tags shall not be acceptable.

26

27

28

29

26 Feeders and/or branch circuits shall not be combined either with each other or one with another into junction boxes, pull boxes, device boxes, manholes, or other common routing unless such routing is specifically indicated on the Drawings.

30

31

32

30 Neatly train wiring inside boxes, equipment and panelboards; Avoid bundling conductors with lacing or cable ties so that generated heat may be more easily dissipated.

33

34

35

33 Conduit runs indicated on the Drawings as composed of parallel runs of conductors shall be made identical with respect to length, conduit size, wire type, insulation type, routing, and terminations at each end.

36

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36 Conductors Shall Be Color Coded as Follows:

38 Grounding Conductors: Green

40 Isolated Grounding Conductors: Green with yellow tracer

42 Grounded Neutral Conductors: White for 120 V systems, gray for 277 V systems

44 Ungrounded Phase Conductors for 208Y/120V Systems: Black (phase A), red (phase B), and blue (phase C)

47 Provide other wire colors as indicated on the Drawings.

49

50

49 Remarking of insulation colors by use of colored marker tape shall be permitted only as allowed by the NEC.

51

52

53

51 Install exposed cables (where permitted) parallel and perpendicular to surfaces, or exposed structural members. Cables shall follow surface contours, where possible.

54

55

54 Completely and thoroughly swab raceway system before installing conductors.

56

57

58

59

56 Branch circuit wiring shall not loop through receptacle terminals, but shall be connected by means of conductor taps joined to branch circuit conductors. At end of run, branch circuit conductors may terminate on receptacle screw terminals. Quick make, clamp, or push-in type terminations may not be used to make connections to devices.

**State Bureau of Investigation****Secondary Voltage Wires and Cables**

1 Position all splices in pull boxes and junction boxes of adequate volume so they are accessible from the removable  
2 cover side of the box.

3  
4 Conductors for signal systems shall be continuous (without splice) and shall be terminated on terminal strips or  
5 terminate in a manner approved by the system's manufacturer.

6  
7 All neutrals and ground wires in panels shall be labeled with cloth wire markers to indicate the circuits being served.

8  
9 Pull conductors simultaneously where more than one is being installed in same raceway.

10  
11 Use pulling compound or lubricant, where necessary; compound used must not deteriorate conductor or insulation.  
12 After conductors have been pulled, clean exposed conductors and surrounding area to remove all evidence of the  
13 use of pulling compound.

14  
15 Use pulling means including fish tape, cable, rope and basket weave wire/cable grips that will not damage cables or  
16 raceway.

17  
18 Keep conductor splices to a minimum.

19  
20 Install splices and taps that possess equivalent or better mechanical strength and insulation ratings than conductors  
21 being spliced.

22  
23 Use splice and tap connectors that are compatible with conductor material.

24  
25 Tighten electrical connectors and terminals, including screws and bolts, in accordance with manufacturer's published  
26 torque tightening values. Where manufacturer's torque requirements are not indicated, tighten connectors and  
27 terminals to comply with tightening torques specified in UL Standard 486A and B.

**WIRING CONNECTIONS AND TERMINATIONS**

28  
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31  
32 Splices shall be permitted on conductors up to #4 AWG. No splices shall be permitted on conductor #3 AWG and  
33 larger without specific approval in writing by the A-E. Splices shall be made in accessible junction boxes; no splices  
34 shall be made in conduit bodies.

35  
36 Splices, taps, and attachments of fittings and lugs shall be electrically and mechanically secure. Connectors and lugs  
37 shall be proper size and labeled as suitable for the number and type of conductors joined.

38  
39 Solid conductors, namely those sized #10 and #12 AWG copper shall be spliced or tapped only by the use of Ideal  
40 "Wing-Nuts" or "Wire Nuts", Buchanan's "B-Cap" or 3M Co.'s "Scotchlox" connectors. "Sta-Kon" or other permanent  
41 type crimp connectors shall not be used.

42  
43 Self-stripping electrical pigtail and tap connectors shall not be used.

44  
45 Stranded conductors, namely #8 AWG to #4 AWG, shall be spliced or tapped by approved mechanical connectors.  
46 Insulation for splices or taps shall be obtained by the use of Listed insulating covers designed for use with the  
47 particular connector. Quality of insulation at splices shall equal that of the conductor insulation in terms of  
48 temperature resistance, covering ability and durability.

49  
50 Conductors, in all cases, shall be continuous from outlet to outlet, and no splicing shall be made except within outlet  
51 or junction boxes, troughs, and gutters. No splices shall be permitted in panel enclosures, disconnects or utilization  
52 equipment.

53  
54 Lugs for conductors #8 through #4 AWG shall be copper, with a direct acting screw. Where permitted, lugs for  
55 conductors #3 AWG and larger shall be copper, applied directly to the cable by hydraulic pressure. Lugs shall not be  
56 split bolt or screw types.

57  
58 Tape, where used, shall be made using special oil resistant vinyl plastic tape that is Listed, rated 105° C.

59

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**State Bureau of Investigation****Secondary Voltage Wires and Cables**

1 Splices or taps in grounding conductors (where permitted) in sizes #8 AWG and larger shall be by means of  
2 exothermic welding and termination shall be by means of approved grounding connectors. As an alternate,  
3 connectors using hydraulic compression tools may be used as a contractor selection option. Solder shall not be used  
4 as a means of joining grounding conductors.

5  
6 Thoroughly clean wires before installing lugs and connectors.

7  
8 Make splices, taps and terminations to carry full ampacity of conductors without perceptible temperature rise.

9  
10 Terminate spare conductors with electrical tape.

11

12

**FIELD QUALITY CONTROL**

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**END OF SECTION 260519**

Prior to energizing circuitry, check installed wires and cables with megohm meter to determine insulation resistance levels to insure requirements are fulfilled. Provide additional testing as directed by the A-E in accordance with Section 260800, *TESTING AND PLACING IN SERVICE*.

Prior to energizing circuitry, test wires and cables for electrical continuity and for short circuits. Verify proper phasing connections.

Subsequent to wire and cable hook-ups, energize circuitry and demonstrate functioning in accordance with requirements. Where necessary, correct malfunctioning units, and then retest to demonstrate compliance.



**SECTION 260526 - GROUNDING****PART 1 - GENERAL****RELATED DOCUMENTS**

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

**QUALITY ASSURANCE**

**Manufacturer's Qualifications:** Firms regularly engaged in manufacture of grounding and bonding products, of types, and ratings required, and ancillary grounding materials, including stranded cable, grounding rods, and bonding jumpers whose products are Listed and Labeled for their intended usage.

**Codes and Standards:**

**Electrical Code Compliance:** Comply with applicable State electrical code requirements and the authority having jurisdiction, and NEC as applicable to electrical grounding and bonding, pertaining to systems, circuits and equipment.

**Testing Laboratory Compliance:** Comply with applicable requirements of UL Standards No.'s 467, "Electrical Grounding and Bonding Equipment," and 869, "Electrical Service Equipment," pertaining to grounding and bonding of systems, circuits and equipment. In addition, comply with UL Std. 486A, "Wire Connectors and Soldering Lugs for Use with Copper Conductors." Provide grounding and bonding products that are Listed and Labeled for their intended usage.

**IEEE Compliance:** Comply with applicable requirements of IEEE Standard 142 and 241 pertaining to electrical grounding.

**SUBMITTALS**

Submittals shall be made in strict accordance with the requirements of Section 019913. Specific submittal requirements are defined in each section of this Division.

**Product Data:** Submit manufacturer's data on grounding and bonding products and associated accessories.

**PART 2 - PRODUCTS****GROUNDING AND BONDING SYSTEMS****Materials and Components:**

**General:** Except as otherwise indicated, provide electrical grounding and bonding systems indicated, assemble materials, including, but not limited to, cables/wires, connectors, solderless lug terminals, grounding rods, bonding jumpers, service arresters, and additional accessories as needed for a complete installation. Where more than one type component product meets indicated requirements, selection is Contractor's option. Where materials or components are not indicated, provide products that comply with NEC and UL requirements and with established industry standards for those applications indicated.

**Conductors:** Unless otherwise indicated, provide equipment grounding conductors in all conduit and wiring systems. Grounding conductors shall be insulated by the same type insulation as the ungrounded conductors and sized in accordance with NEC Table 250.122 unless otherwise specified.

## State Bureau of Investigation

## Grounding

1            Bonding Connectors, Terminals and Clamps: Provide electrical bonding connectors, terminals, lugs and  
2 clamps as recommended by bonding connector, terminal and clamp manufacturers for indicated  
3 applications.

4            Ground Rods: Provide rods made of steel with copper welded exterior, 3/4" diameter by 10 feet.

5            Ground Bus Bars: Provide copper bus bars mounted on standoff insulating bushings.

6            Hardware: Provide hardware for all grounding and bonding applications that consist of Type 300 series  
7 stainless steel, silicon bronze or brass. Hardware used for connections to enclosures shall include flat  
8 washers and split lock washers.

9            Electrical Grounding Connection Accessories: Provide electrical insulating tape, bonding straps, as  
10 recommended by accessories manufacturers for type service indicated.

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12  
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17            **PART 3 - EXECUTION**

18  
19  
20            **EXAMINATION**

21  
22            Examine areas and conditions under which electrical grounding and bonding connections are to be made and notify  
23 A-E in writing of conditions detrimental to proper completion of work. Do not proceed with work until unsatisfactory  
24 conditions have been corrected.

25  
26  
27            **INSTALLATION OF ELECTRICAL GROUNDING AND BONDING SYSTEMS**

28  
29            General: Install electrical grounding and bonding systems as indicated, in accordance with manufacturer's  
30 instructions and applicable portions of NEC, NECA's "Standard of Installation," and in accordance with recognized  
31 industry practices to ensure that products comply with requirements.

32  
33            Install grounding systems as designed and submit certified test report on grounding system.

34  
35            Coordinate with other electrical work as necessary to interface installation of electrical grounding and bonding system  
36 work with other work.

37  
38            Ground electrical service system neutral at service entrance equipment to grounding rod(s), grounded copper water  
39 pipe, and building steel where effectively grounded. All ground connections shall be accessible. Provide additional  
40 bonding connections to miscellaneous metallic piping systems entering the building such as fire protection and gas  
41 piping.

42  
43            Provide an intersystem ground bus bar adjacent service equipment as shown on the drawings.

44  
45            Ground each separately-derived system neutral to:

46  
47                    Effectively grounded copper water pipe

48  
49                    Building structural steel

50  
51            Connect together system neutral, service equipment enclosures, exposed noncurrent carrying metal parts of  
52 electrical equipment, metal raceway systems, grounding conductor in raceways and cables, receptacle ground  
53 connectors, and cold water systems.

54  
55            Install direct burial type ground clamps for grounding electrode conductors to underground grounding rods.

56  
57            Provide a separate, insulated equipment grounding conductor from each device to ground buses in panelboards.  
58 Terminate each end on a grounding lug, bus, or insulated grounding bushing.

59  
60

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**State Bureau of Investigation****Grounding**

1 Provide separate insulated equipment grounding conductor, size to be determined from NEC Table 250.122, for each  
2 circuit and in each conduit run. The grounding conductor shall be attached by means of a dedicated green screw to a  
3 common point in each junction box, cabinet, device box, enclosure, or utilization equipment to which it runs or  
4 through which it passes. Grounding methods depending on the continuity of electrical raceway, clips, or mounting  
5 screws are not acceptable. This grounding requirement will be rigidly enforced.  
6

7 Connect grounding electrode conductors to copper water pipe using a suitable grounding clamp as indicated on  
8 drawings. Provide conduit grounding hubs and water pipe ground clamps as required.  
9

10 Provide copper grounding conductor from supplemental ground bus bar adjacent service equipment to  
11 communications (telephone/data or cable TV) backboards where shown on drawings. Terminate conductor on  
12 insulated ground bus bar for use by others.  
13

14 Provide an insulated bonding bushing on all panelboard feeders. Terminate feeder equipment grounding conductor  
15 by passing the conductor through the terminal of the insulated bonding bushing and then onward to terminate at the  
16 panel ground bus.  
17

18 Provide an insulated bonding bushing at boxes, enclosures or cabinets with concentric, eccentric or over-sized  
19 knockouts. Terminate equipment grounding conductor by passing the conductor through the terminal of the insulated  
20 bonding bushing and then onward to terminate at ground bus or lug.  
21

22 Connect grounding electrode conductors to 1-inch diameter, or greater, metallic cold water pipe using a suitably sized  
23 ground clamp.  
24

25 Tighten grounding and bonding connectors and terminals, including screws and bolts, in accordance with  
26 manufacturer's published torque tightening values for connectors and bolts. Where manufacturer's torquing  
27 requirements are not indicated, tighten connections to comply with tightening torque values specified in UL 486A to  
28 assure permanent and effective grounding.  
29

30 Apply corrosion-resistant finish to field-connections, buried metallic grounding and bonding products, and places  
31 where factory applied protective coatings have been destroyed.  
32

33 Install clamp-on connectors on clean metal contact surfaces to ensure electrical conductivity and circuit integrity.  
34

35 Sectionalizing switchgear housing, cable shielding and primary grounding conductors shall be connected to a driven  
36 copper ground rod having a maximum resistance of 25 Ohms by means of # 3/0 AWG bare copper stranded  
37 conductor.  
38

39 Service transformer housing, cable shields, primary and secondary neutrals shall be connected to a driven copper  
40 ground having a maximum resistance of 25 Ohms using # 3/0 AWG bare stranded copper conductor. Primary neutral  
41 conductor shall be unbroken to transformer primary neutral bushing, and thereafter grounded as indicated on the  
42 Drawings.  
43

**FIELD QUALITY CONTROL**

44  
45  
46  
47 Upon completion of installation of electrical grounding and bonding systems, test ground resistance with ground  
48 resistance tester. Where tests show resistance-to-ground is over 25 Ohms, take appropriate action to reduce  
49 resistance to 25 Ohms, or less, by driving additional ground rods; then retest to demonstrate compliance.  
50

51 Provide written certified testing report indicating resistance-to-ground value.  
52  
53

54 **END OF SECTION 260526**



**SECTION 260529 - SUPPORTING DEVICES****PART 1 - GENERAL****RELATED DOCUMENTS**

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

**QUALITY ASSURANCE**

Manufacturers: Firms regularly engaged in manufacture of supporting devices, of types, sizes, and ratings required.

**Codes and Standards:**

NEC Compliance: Comply with NEC requirements as applicable to construction and installation of electrical supporting devices.

Testing Laboratory Compliance: Provide electrical components that are Listed and Labeled.

ANSI Compliance: Comply with ANSI/MSS SP-69, Hangers and Supports – Selection and Application for selecting electrical supporting devices.

**SUBMITTALS**

Submittals shall be made in strict accordance with the requirements of Section 019913. Specific submittal requirements are defined in each section of this Division.

Product Data: Submit manufacturer's data on supporting devices including catalog cuts, specifications, and installation instructions, for each type of support, anchor, sleeve and seal.

**PART 2 - PRODUCTS****MANUFACTURED SUPPORTING DEVICES**

General: Provide supporting devices as herein specified which comply with manufacturer's standard materials, design and constructed in accordance with published product information and as required for complete installation. Where more than one type of supporting device meets indicated requirements, selection is Installer's option.

Supports: Provide supporting devices of types, sizes and materials indicated that have the following construction features:

Clevis Hangers: For supporting large rigid metal conduit hangers shall be steel with finish appropriate for application and 1/2" diameter hole for round steel rod. Approximate weight is 54 pounds per 100 units.

Reducing Couplings: Steel rod reducing coupling shall be 1/2", 3/8" or 1/4" x 5/8" steel, with finish appropriate for application.

C-Clamps: C-clamps shall be ductile iron, with finish appropriate for application and 1/2", 3/8" or 1/4" rod size. Approximate weight is 50 pounds per 100 units.

I-Beam Clamps: I-beam clamps shall be steel, with finish appropriate for application. 1-1/4" x 3/16" stock with 3/8" cross bolt. Flange width shall be 2". Approximate weight is 52 pounds per 100 units.

---

**State Bureau of Investigation****Supporting Devices**

1            Conduit Hangers: Hangers shall be galvanized steel used for supporting conduit up to 2". Weight varies with  
2 conduit size, up to 25 pounds per 100 units for 2" trade size.

3  
4            One-Hole Conduit Straps: One hole conduit straps used for supporting 1/2" conduit (where such is  
5 permitted) and 3/4" conduit, shall be galvanized steel. Approximate weight is 7 pounds per 100 units.

6  
7            Two-Hole Conduit Straps: Two hole conduit straps, used for supporting conduit larger than 3/4", shall be  
8 galvanized steel. Weight varies with conduit size.

9  
10           Hexagon Nuts: For 1/2", 3/8" or 1/4" rod sizes, nuts shall be galvanized steel.

11  
12           Round Steel Rod: Use black steel for 1/2", 3/8" or 1/4" diameter rod.

13  
14           Anchors: Provide anchors of types, sizes and materials indicated, with the following construction features:

15  
16                Lead Expansion Anchors: 1/2", approximately 38 pounds per 100 units.

17  
18                Toggle Bolts: Springhead type, 3/16" x 4", approximately 5 pounds per 100 units.

19  
20           Powder actuated anchors and fasteners are not permitted.

21  
22           Watertight Wall and Floor Seals: Provide factory-assembled watertight wall and floor seals of types and sizes  
23 indicated. Wall and floor seals shall be suitable for sealing around conduit, pipe, or tubing passing through concrete  
24 walls. Construct seals with steel sleeves, malleable iron body, neoprene sealing grommets and rings, metal pressure  
25 rings, pressure clamps, and cap screws.

26  
27           U-Channel Strut Systems: Provide U-channel strut system for supporting electrical equipment and conduit where  
28 runs of more than two conduit must be supported from overhead structure. System shall be 12-gage minimum  
29 hot-dip galvanized steel of types and sizes indicated. Use 1 1/2" deep channel to support conduit larger than 1 1/2"  
30 trade diameter. Furnish with the following fittings that mate and match with U-channel:

31  
32                Channel hangers

33  
34                End caps

35  
36                Beam clamps

37  
38                Wiring studs

39  
40                Thinwall conduit clamps

41  
42                Rigid conduit clamps

43  
44                Conduit hangers

45  
46                U-bolts

47  
48  
49           **FABRICATED SUPPORTING DEVICES**

50  
51           Pipe Sleeves: Provide pipe sleeves as follows:

52  
53                Steel Pipe: Fabricate from Schedule 40 galvanized steel pipe; remove burrs.

54  
55           Sleeve Seals: Provide sleeves for piping which penetrates foundation walls below grade, or exterior walls. Caulk  
56 between sleeve and pipe with non-toxic, UL classified caulking material to ensure watertight seal.

57  
58  
59

**PART 3 - EXECUTION****INSTALLATION OF SUPPORTING DEVICES**

Install hangers, anchors, sleeves and seals as indicated, in accordance with manufacturer's written instructions and with recognized industry practices to insure supporting devices comply with requirements. Comply with requirements of NECA and NEC for installation of supporting devices.

Coordinate with other electrical work, including raceway and wiring work, as necessary to interface installation of supporting devices with other work.

Install hangers, supports, clamps and attachments to support conduit properly from building structure. Arrange for grouping of parallel runs of horizontal conduits to be supported together on trapeze type hangers where possible. Install supports with spacings indicated and in compliance with NEC requirements.

Torque sleeve seal nuts, complying with manufacturer's recommended values. Ensure that sealing grommets expand to form water tight seal.

**END OF SECTION 260529**



**SECTION 260533 - ELECTRICAL IDENTIFICATION****PART 1 - GENERAL****RELATED DOCUMENTS**

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

**QUALITY ASSURANCE**

Manufacturers: Firms regularly engaged in manufacture of electrical identification products, of types required.

**Codes and Standards:**

NEC Compliance: Comply with NEC as applicable to installation of identifying labels and markers for wiring and equipment.

UL Compliance: Comply with applicable requirements of UL Std. 969, "Marking and Labeling Systems," pertaining to electrical identification systems.

NEMA Compliance: Comply with applicable requirements of NEMA Std. No's. WC-1 and WC-2 pertaining to identification of power and control conductors.

**SUBMITTALS**

Submittals shall be made in strict accordance with the requirements of Section 019913. Specific submittal requirements are defined in each section of this Division.

Product Data: Submit manufacturer's data on electrical identification materials and products.

Label Wording: Submit exact wording for approval prior to the construction of laminated nameplates or specialized signs. Submittal shall show both proposed wording and physical layout of each label, including mounting holes.

**PART 2 - PRODUCTS****ELECTRICAL IDENTIFICATION MATERIALS**

General: Except as otherwise indicated, provide manufacturer's standard products of categories and types required for each application. Where more than single type is specified for an application, selection is Installer's option, but provide single selection for each application.

**Engraved Plastic-Laminate Signs:**

General: Provide engraving stock melamine plastic laminate, in sizes and thicknesses indicated, engraved with engraver's standard letter style of sizes and wording indicated or as required to properly identify items installed under this division.

Color scheme shall be as indicated herein or on the Drawings. Signs shall be punched for mechanical fastening.

Thickness: 1/16", for units up to 20 sq. in. or 8" length; 1/8" for larger units.

Fasteners: Self-threading, blunt end, stainless steel machine screws.

**State Bureau of Investigation****Electrical Identification**Color-Coded Plastic Tape:

General: Provide manufacturer's standard self-adhesive vinyl tape not less than 3 mils. thick by 1-1/2" wide. Tape shall be listed for use at 105°C. or the temperature rating of the conductors to be marked, whichever is higher.

Cable/Conductor Identification Bands:

General: Provide pre-numbered or pre-lettered manufacturer's standard cloth self-adhesive cable/conductor markers of wrap-around type. Printing shall show circuit identification by indicating panel designation and circuit number.

Code-Colored Conduit Markers:

General: Provide manufacturer's standard pre-printed, flexible or semi-rigid, permanent, plastic-sheet conduit markers, for feeders extending 360 degrees around conduits. Markers shall be designed for attachment to conduit by adhesive, adhesive lap joint of marker, matching adhesive plastic tape at each end of marker, or pre-tensioned snap-on. Except as otherwise indicated, provide lettering that indicates voltage of conductor(s) in conduit. Provide 8" minimum length for 2" and smaller conduit, 12" length for larger conduit.

Colors: Unless otherwise indicated on the Drawings or required by governing regulations, provide white markers with black letters.

**LETTERING AND GRAPHICS**

General: Coordinate names, abbreviations and other designations used in electrical identification work, with corresponding designations shown, specified or scheduled. Provide numbers, lettering and wording as indicated or, if not otherwise indicated, as recommended by manufacturer or as required for proper identification and operation/maintenance of electrical systems and equipment.

**PART 3 - EXECUTION****APPLICATION AND INSTALLATION**General Installation Requirements:

Install electrical identification products as indicated, in accordance with manufacturer's written instructions, and requirements of NEC.

Coordination: Where identification is to be applied to surfaces that require finish, install identification after completion of painting.

Regulations: Comply with governing regulations and requests of governing authorities for identification of electrical work.

Conduit and Box Identification:

General: Apply color-coded identification to match system color code on electrical conduit and junction boxes in accordance with the following:

All empty conduit runs and conduit with conductors for future use shall be identified for such use; identification shall indicate where such conductors or empty conduct terminate. Identification shall be by tags attached to the pull cord or spare conductors. Each end of the pull cord shall be identified.

---

**State Bureau of Investigation****Electrical Identification**

1            All outlet boxes, junction boxes and pull boxes, either exposed or concealed, shall have their covers and  
2 exterior visible surfaces painted with the field colors described in this section. Boxes shall also be marked to  
3 indicate the panelboard and circuit number(s) of the circuits contained within. Lettering may be by hand for  
4 concealed or non-public locations only. Machine printed labels are to be used to identify boxes where such  
5 are permitted to appear in areas accessible by the public; embossed type plastic labels are not acceptable  
6 for use on this project. Where hand produced marking is permitted, the lettering shall be made with  
7 waterproof ink.  
8

9            Equipment/System Identification:

10  
11            General: Install an engraved plastic laminate sign on each major unit of electrical equipment on project.  
12 Such equipment includes central or master unit of each electrical system including communication, control,  
13 and signal systems, unless unit is specified with its own self-explanatory identification. Except as otherwise  
14 indicated, provide single line of text, 1/2" high lettering, on 1-1/2" high sign (2" high where 2 lines are  
15 required), white lettering in field color as indicated below. Provide text matching terminology and numbering  
16 of the Contract Documents and shop drawings.  
17

18            Field Colors shall be the following:

19  
20                    Blue surface with white core for 120/208 Volt equipment.  
21                    Black surface with white core for 277/480 Volt equipment.  
22                    Bright red surface with white core for all equipment related to fire alarm system.  
23                    Dark red (burgundy) surface with white core for all equipment related to security.  
24                    Green surface with white core for all equipment related to emergency systems.  
25                    Yellow surface with black core for all equipment related to optional stand-by systems.  
26                    Yellow surface with red core for all equipment related to legally required stand-by systems.  
27                    Orange surface with white core for all equipment related to telephone systems.  
28                    Brown surface with white core for all equipment related to data systems.  
29                    White surface with black core for all equipment related to paging systems.  
30                    Purple surface with white core for all equipment related to TV systems.  
31

32            Cable/Conductor Identification (Low Voltage):

33  
34            General: Apply cable/conductor identification, including feeder number, on each cable/conductor in each  
35 box/enclosure/cabinet where wires of more than one circuit or communication/signal system are present,  
36 except where another form of identification (such as color-coded conductors) is provided. Match  
37 identification with marking system used in panelboards, shop drawings, contract documents, and similar  
38 previously established identification for project's electrical work.  
39

40            Optional Identification and Warnings:

41  
42            General: Install self adhesive plastic signs or similar equivalent identification wherever reasonably required  
43 to prevent misuse by unauthorized personnel or to ensure safe and efficient operation and maintenance of  
44 electrical systems, electrically connected mechanical systems, and general systems and equipment. Install  
45 self-adhesive plastic signs or similar equivalent identification giving instruction or warnings on switches,  
46 outlets, controls, or devices where instructions or explanations are needed. Provide plasticized tags with  
47 clearly written messages adequate for intended purposes.  
48  
49

50            **END OF SECTION 260533**



**SECTION 260534 - RACEWAYS****PART 1 - GENERAL****RELATED DOCUMENTS**

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 specification sections, apply to work of this section.

**QUALITY ASSURANCE**

**Manufacturers:** Firms regularly engaged in manufacture of raceway systems of types and sizes required, whose products are Listed and Labeled.

**Codes and Standards:**

**NEMA Compliance:** Comply with applicable requirements of NEMA Standards Publications pertaining to raceways.

**Testing Laboratory Compliance and Labeling:** Comply with applicable requirements of UL safety standards pertaining to electrical raceway systems. Provide raceway products and components that have been Listed and Labeled.

**NEC Compliance:** Comply with applicable requirements of the latest edition of the NEC pertaining to construction and installation of raceway systems.

**SUBMITTALS**

Submittals shall be made in strict accordance with the requirements of Section 019913. Specific submittal requirements are defined in each section of this Division.

**Product Data:** Submit manufacturer's technical product data, including specifications and installation instructions, for each type of raceway system required. Include data substantiating that materials comply with requirements.

**PART 2 - PRODUCTS****METAL CONDUIT AND TUBING**

**General:** Provide metal conduit, tubing and fittings of types, grades, sizes and weights (wall thicknesses) for each use indicated. Where types and grades are not indicated, provide proper selection determined by Installer to fulfill wiring requirements as stated herein while complying with applicable portions of NEC for raceways.

**Electrical Metallic Tubing (EMT):** Provide electrical metallic conduit conforming to ANSI C80.3 and UL 797.

**Conduit Bushings:**

**Insulated:** Provide Listed and Labeled, threaded, thermosetting plastic bushings at each end of all threaded raceway. Provide grounding type if same is indicated elsewhere.

**Grounding (bonding type):** Provide Listed and Labeled, threaded, insulated throat, bonding type bushings. Provide steel frame bushings for use on ferrous raceway. Provide bushings with tin-plated copper grounding saddle sized to accept grounding conductor size as indicated on the Drawings. Where grounding conductors are oversized, provide separate copper grounding lugs that are appropriately sized.

**State Bureau of Investigation****Raceways**

1 Flexible Metal Conduit Fittings: Provide steel conduit fittings for use with flexible steel conduit of threadless hinged  
2 clamp type. All flexible metal conduit fittings shall be Listed as suitable for grounding.

3  
4 Straight Terminal Connectors: Provide insulated throat type, one piece body, female end with clamp and  
5 deep slotted machine screw for securing conduit, and male threaded end provided with steel locknut.

6  
7 45° or 90° Terminal Angle Connectors: Provide steel insulated throat type, two-piece body construction with  
8 removable upper section, female end with clamp and deep slotted machine screw for securing conduit, and  
9 male threaded end provided with steel locknut.

10  
11 Liquid-Tight Flexible Metal Conduit Fittings: Type 1, Class 3, Style G. Provide cadmium plated, malleable iron  
12 fittings with compression type steel ferrule and neoprene gasket sealing rings, with insulated throat and steel locknut.  
13 All liquid tight flexible metal conduit fittings shall be Listed as suitable for grounding.

14  
15 EMT Fittings:

16  
17 EMT Conduit Couplings: Cadmium plated steel, dual compression type with two (2) hexagon compression  
18 fittings. Fittings that can not be tightened with an open-end wrench of the appropriate size are not  
19 acceptable.

20  
21 EMT Conduit Connectors: Cadmium plated steel, insulated throat, compression type with hexagon  
22 compression fitting and steel locknut. Fittings that can not be tightened with an open-end wrench of the  
23 appropriate size are not acceptable.

24  
25 Unacceptable fitting types: Pot metal, set screw, and indenter type fittings, or connectors that do not have  
26 insulated throats, are not acceptable for use on this project.

27  
28 Conduit Bodies: Provide galvanized steel conduit bodies of types, shapes and sizes as required to fulfill job and NEC  
29 requirements. Conduit bodies shall be constructed with threaded conduit entrance ends, removable covers, either  
30 cast or of galvanized steel, and corrosion-resistant screws.

31  
32 Metallic Conduit, and Tubing Accessories: Provide metallic conduit and tubing accessories of types, sizes, and  
33 materials, complying with manufacturer's published product information, which mate and match conduit and tubing.

34  
35  
36 **PART 3 - EXECUTION**

37  
38  
39 **INSPECTION**

40  
41 Examine areas and conditions under which raceways are to be installed, and substrate that will support raceways.  
42 Notify A-E in writing of conditions detrimental to proper completion of the Work. Do not proceed with work until  
43 unsatisfactory conditions have been corrected.

44  
45  
46 **SELECTION OF RACEWAY AND SIZE OF RACEWAY SYSTEM**

47  
48 General: Install concealed raceway system in new construction work, either in walls or above hung ceilings.

49  
50 Do not route raceway below slabs unless such routing is specifically indicated on the Drawings.

51  
52 Do not use surface metal raceway unless such use is specifically indicated on the Drawings.

53  
54 Avoid use of dissimilar metals throughout system to reduce the possibility of galvanic action. Where dissimilar metals  
55 must be in contact, coat surfaces with corrosion inhibiting compound before assembling.

56  
57 Use liquid-tight flexible metal conduit (LFMC) only where specifically indicated on the Drawings or where subjected to  
58 one or more of the following conditions:

- 59  
60  
61
- Flexible connection in an exterior location.
  - Final 18" connection to motors.

---

**State Bureau of Investigation****Raceways**

- 1           • Equipment subject to movement or vibration.

2  
3 Do not use PVC raceway unless such use is specifically indicated on the Drawings.

4  
5 Use Flexible Metal Conduit (FMC) only for final connections to light fixtures and utilization equipment. Any other use  
6 shall be limited to applications where specifically indicated on the Drawings

7  
8           Flexible Metal Conduit may not be used to interconnect device or junction boxes, utilization equipment,  
9 fixtures.

10  
11           Flexible Metal Conduit length shall not exceed six feet.

12  
13 Size raceway and raceway systems as follows:

14  
15           Size raceway to meet NEC requirements, or as indicated on the Drawings, whichever size is larger, except  
16 no conduit smaller than 3/4 inch trade size shall be installed.

17  
18  
19 **INSTALLATION OF RACEWAY SYSTEMS**

20  
21 General: Install raceways as indicated, in accordance with manufacturer's written installation instructions, and in  
22 compliance with the NEC and NECA's "Standards of Installation." Install raceway and related boxes and fittings  
23 plumb and level,  $\pm 2^\circ$ . Maintain manufacturer's recommended clearances.

24  
25 Fasten heavy wall conduit terminations in sheet metal enclosures by two locknuts, one inside and one outside of  
26 enclosure, and terminate with insulated bushing; terminate other conduit systems with connectors listed for the  
27 purpose and as described above.

28  
29 Conduit couplers shall be steel threaded type in all locations where such use is possible. Otherwise use 3-piece  
30 union.

31  
32 Conduits are not to cross pipe shafts or ventilating duct openings. Conduit is not to be routed in elevator shafts  
33 unless necessary to serve items within the shaft.

34  
35 Keep conduits a minimum distance of 6" from parallel runs of hot water pipes or other sources of heat. Wherever  
36 possible, install horizontal raceway runs above water piping.

37  
38 Support riser conduit at each floor level with clamp hangers.

39  
40 Use of running threads at conduit joints and terminations is prohibited. Where required, use threaded nipples and  
41 3-piece unions.

42  
43 Support exposed conduit by use of hangers, clamps or clips Listed for the purpose. Support conduit on each side of  
44 bends and on spacing not to exceed following:

- 45  
46           • Rigid Metal Conduits Up to 1": 8'-0".  
47           • Rigid Metal Conduits 1-1/4" and Over: 10'-0".  
48           • EMT Up to 1": 8'-0".  
49           • EMT 1-1/4" and Over: 10'-0".

50  
51 Arrange conduit supports to prevent distortion of alignment by wire pulling operations. Fasten conduit using  
52 galvanized straps, lay-in adjustable hangers, clevis hangers, or bolted split stamped galvanized hangers Listed for  
53 the purpose. Requirements for exposed conduits also apply to conduits installed in space above hung ceilings.

54  
55 Concealed Conduits:

- 56  
57           • Metallic raceways installed underground, in floors below grade (where permitted), or outside are to  
58 have conduit threads painted with corrosion inhibiting compound before couplings are assembled.  
59 Draw up coupling and conduit sufficiently tight to ensure a water tight joint.  
60           • For floors-on-grade (where permitted), install conduits under crushed rock and concrete slabs.  
61

---

**State Bureau of Investigation****Raceways**

- 1           • Install underground conduits 24" below finished grade (24" cover) as a minimum or as otherwise  
2 indicated on the Drawings if a greater depth is shown.  
3

4 Exposed Conduits:  
5

- 6           • Install conduits in a manner so as not to damage or run through structural members. Avoid  
7 horizontal or cross runs in building partitions or side walls.  
8           • Install exposed conduits and extensions from concealed conduit systems neatly, parallel with, or at  
9 right angles to walls of building.  
10          • Install exposed conduit work as not to interfere with ceiling inserts, lights or ventilation ducts or  
11 outlets. Coordinate conduit installation with other trades as required.  
12          • Install exposed conduit directly on structure using two hole straps. Provide offsets at all boxes and  
13 as required to avoid exiting utilities.  
14          • Conduits installed on interior of exterior walls shall be spaced off the wall surface a minimum of ¼  
15 inch with appropriate straps.  
16

17 Run conduits for outlets on waterproof walls exposed where indicated on the Drawings. Set anchors for  
18 supporting conduit on waterproof wall in waterproof cement. Requirements for exposed conduit also apply to  
19 conduits installed in space above hung ceilings.  
20

21 Raceway Fittings: Install connectors, couplers, and related fittings as required for a complete raceway system.  
22

23 Install insulated bushings for terminating all types of raceway where termination is not made with an  
24 insulated throat connector.  
25

26 Where concentric, eccentric or over-sized knockouts are encountered, a grounding-type insulated bushing  
27 shall be provided. Bushing shall be connected to the equipment grounding conductor.  
28

29 Miscellaneous fittings such as reducers, chase nipples, 3-piece unions, and plugs are to be constructed from  
30 steel and specifically designed and Listed for their particular application.  
31

32 Coordinate with other work including wires/cables, boxes, and panel work, as necessary to interface installation of  
33 electrical raceways and components with other work.  
34

35 Mechanically fasten together metal conduits, enclosures, and other components comprising raceway system to form  
36 a continuous electrical conductor. Connect to electrical boxes, fittings and cabinets to provide electrical continuity  
37 and firm mechanical assembly.  
38

39 Raceway must be installed as a complete system prior to the installation of cables, conductors, or pull wires  
40 into any part of the systems.  
41

42 Install miscellaneous fittings such as reducers, chase nipples, 3-piece unions, and plugs that have been specifically  
43 designed and manufactured for their particular application. Install expansion fittings in raceways every 200' linear run  
44 maximum and wherever structural expansion joints are crossed.  
45

46 Use roughing-in dimensions of electrically supplied utilization equipment furnished by supplier or by other divisions as  
47 appropriate. Set conduit and boxes for connection to units only after receiving review of dimensions and after  
48 verification of location with other trades.  
49

50 Do not set final connections for fixtures and/or utilization equipment until connection points and requirements  
51 are accurately known. The Contractor is responsible for the relocation of mis-located connection points as  
52 required to match equipment at no additional cost.  
53

54 Cut conduits straight, properly ream. Threads shall be cut into heavy wall conduit using equipment designed for the  
55 purpose.  
56

57 Make changes in direction of raceway run by means of proper field bends or with proper fittings, supplied by raceway  
58 manufacturer.  
59

60 Field-bend conduit with benders designed for purpose so as not to distort nor vary internal diameter.  
61

## State Bureau of Investigation

## Raceways

1 Properly support and anchor raceways for their entire length by structural materials. Raceways are not to span any  
2 space unsupported for lengths in excess of the maximum support distance as previously specified. Raceways may  
3 not be used to support other raceways or other items of equipment.

4  
5 Arrange conduit to maintain headroom and present a neat appearance.

6  
7 Route exposed conduit and conduit above accessible ceilings parallel and perpendicular to walls and adjacent piping.

8  
9 Group raceway in parallel runs where three (3) or more raceway are routed together. Use conduit rack constructed of  
10 steel channel with conduit straps or clamps. Provide space for 25% additional conduit.

11  
12 Do not fasten and/or hang conduit with wire or perforated pipe straps. Before conductors are pulled, remove all wire  
13 used during construction for temporary conduit support.

14  
15 Bring conduit to the shoulder of fittings and couplings and fasten securely. All raceway shall be cut to proper length  
16 so ends fit accurately in connectors or couplers.

17  
18 Use conduit hubs for fastening conduit to cast boxes and for fastening conduit to sheet metal boxes in damp or wet  
19 locations.

20  
21 Use conduit bodies to make sharp changes in direction, as around beams.

22  
23 Use hydraulic one-shot conduit bender for all field bends in conduit. All field made conduit bends shall meet  
24 minimum bending radius requirements of the NEC. Bends in metallic conduit shall be made while "cold". Factory  
25 made conduit sections may be used in lieu of field made bends for conduit larger than 2".

26  
27 Avoid moisture traps where possible; where unavoidable, provide junction box with drain fitting at conduit low point.

28  
29 Use suitable conduit caps to protect installed conduit against entrance of dirt and moisture.

30  
31 Where raceways penetrate walls or partitions separating spaces with differing environmental conditions, such as  
32 freezers, coolers and exterior walls, provide an internal seal to prevent condensation within the raceway as it enters  
33 the conditioned space.

34  
35 Where conduit penetrates fire rated partitions, provide penetration protection in accordance with the UL through-  
36 penetration detail indicated on the Drawings for the type of partition and conduit involved. All instructions furnished  
37 with firestopping materials shall be followed explicitly.

38  
39 Route conduit through roof openings for piping and ductwork where possible; otherwise, route through roof jack with  
40 pitch pocket. All pitch pockets shall be absolutely water tight; once conduit has been routed through a pitch pocket  
41 the water integrity of the pitch pocket is the responsibility of the Division 26-28 Contractor.

42  
43 Combining of circuits into raceway systems other than indicated on Drawings shall not be permitted.

44  
45 Bolts, clamps, screws and expansion bolts shall be used in securing conduit, equipment, etc. Holes for lead shields  
46 or other anchors shall be the size recommended by the fastener manufacturer and shall be completely covered by  
47 the mounted item. Holes used for support of conduit on brick or block walls shall be located in mortar joints where  
48 such location is possible.

49  
50 Provide nylon pull string in empty conduits where indicated, including conduit placed for telephone and data use.  
51 Conduit installed but left empty (with pull string) shall be tested with a ball mandrel. Clear any conduit that rejects ball  
52 mandrel. Any costs involved for restoration of conduit and surrounding surfaces to original condition are the  
53 responsibility of the Contractor.

54  
55  
56 **END OF SECTION 260534**



**SECTION 260535 - ELECTRICAL BOXES AND FITTINGS****PART 1 - GENERAL****RELATED DOCUMENTS**

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

**QUALITY ASSURANCE**

**Manufacturers:** Firms regularly engaged in manufacture of electrical boxes and fittings, of types, sizes, and capacities required, whose products are Listed and Labeled.

**Codes and Standards:**

**NEC Compliance:** Comply with NEC as applicable to construction and installation of electrical wiring boxes and fittings.

**Testing Laboratory Compliance:** Comply with applicable requirements of UL 50, UL 514-Series, and UL 886 pertaining to electrical boxes and fittings. Provide electrical boxes and fittings that are Listed and Labeled.

**SUBMITTALS**

Submittals shall be made in strict accordance with the requirements of Section 019913. Specific submittal requirements are defined in each section of this Division.

**Product Data:** Submit manufacturer's data on electrical boxes and fittings.

**PART 2 - PRODUCTS****FABRICATED MATERIALS**

**Aluminum products** are not acceptable for use on the project.

**Outlet Boxes:** Provide galvanized coated flat rolled sheet-steel outlet wiring boxes, of shapes, cubic inch capacities, and sizes, including box depths as indicated, suitable for installation at respective locations. Construct outlet boxes with mounting holes, and with cable or conduit-size knockout openings in bottom and sides. Provide boxes with threaded screw holes for attachment of grounding conductor and cover plate or device attachment fittings.

Provide waterproof outlet boxes where box is installed in an outdoor location or in a wet location as defined by the NEC.

**Outlet Box Accessories:** Provide outlet box accessories as required for each installation, including box supports, mounting ears and brackets, wallboard hangers, box extension rings, fixture studs, cable clamps and metal straps for supporting outlet boxes. Supplied items shall be compatible with outlet boxes being used to fulfill installation requirements for individual wiring situations. Choice of accessories is Contractor's code-compliance option.

## State Bureau of Investigation

## Electrical Boxes and Fittings

1 Device Boxes: Provide galvanized coated flat rolled sheet-steel device boxes, of shapes, cubic inch capacities, and  
2 sizes, including box depths as indicated, suitable for installation at respective locations. Unless otherwise specified  
3 device boxes shall be 4" square by 2 1/8" deep, flush mounted, and furnished with suitable plaster ring for the type  
4 devices to be used and of a depth to match the type of construction involved. Device boxes shall have 3/4" knockout  
5 openings in bottom and ends, and with threaded screw holes in the rear for attachment of a grounding conductor. All  
6 fasteners shall have a corrosion resistant finish.

7  
8 Where more than two devices are ganged together at a single location provide gangable device boxes with suitable  
9 partitions, conduit knockouts and attachment hardware.

10  
11 Device Box Accessories: Provide device box accessories as required for each installation, including mounting  
12 brackets, device box extensions, switch box supports, plaster ears, and plaster board expandable grip fasteners,  
13 which are compatible with device boxes being utilized to fulfill installation requirements for individual wiring  
14 situations. Choice of accessories is Contractor's code-compliance option.

15  
16 Where device boxes are surface mounted (as may permitted elsewhere) use cast steel type 'FS' boxes. Raintight  
17 device boxes shall have threaded conduit holes for the attachment of electrical conduit, cast-metal face plates with  
18 spring-hinged watertight caps suitable configured for each application, including face plate gaskets and  
19 corrosion-resistant plugs and fasteners. Boxes provided under this section shall have a threaded internal grounding  
20 conductor attachment point.

21  
22 Device boxes exposed to outdoor or wet locations shall be flush mounted and shall be equipped with cast steel  
23 covers that are designed to exclude water when closed.

24  
25 Provide covers that are suitable for use in wet location with device attached if such use is indicated on the  
26 Drawings.

27  
28 Where flush mounting is not possible or not practicable due to the location of the device, provide surface  
29 mounted cast steel type 'FS' boxes as described elsewhere.

30  
31 Junction boxes with no more than 4 entries of 3/4" conduit containing conductors no larger than #12 may be 4" square  
32 by 2 1/8" deep with 3/4" knockouts, threaded hole for connection of grounding conductor and threaded holes for the  
33 attachment of a blank cover plate. Provide suitable blank cover plate. Box extensions shall not be used to obtain  
34 more volume in 4" square junction boxes.

35  
36 If box volume is not sufficient, the contractor may, as a code compliance option, may use 4 11/16" square by  
37 2 1/8" deep boxes with 3/4" knockouts, threaded hole for connection of grounding conductor and threaded  
38 hoses for the attachment of a blank cover plate. Provide suitable blank cover plate. Box extensions shall  
39 not be used to obtain more volume in 4 11/16" square junction boxes.

40  
41 Use fabricated junction boxes as described below if box volumes that can be obtained by the use of 4"  
42 square or 4 11/16" square boxes are not sufficient to meet NEC minimum volume requirements.

43  
44 Junction and Pull Boxes: Provide as required galvanized code-gage sheet steel junction and pull boxes, no  
45 knockouts, Listed, with screw-on covers. Types, shapes, and sizes of junction and pull boxes shall be suitable for  
46 each respective location and installation. Boxes shall have welded seams and shall be equipped with stainless  
47 fastening hardware. Provide steel barriers in boxes with multiple feeder circuits.

48  
49 Auxiliary Wireways: Construct as required in accordance with UL 870, with Listed and Labeled components.

50  
51 Construction: 16-gage galvanized sheet metal parts for 4" x 4" to 6" x 6" sections, and 14-gage parts for 8"  
52 x 8" and larger sections. Provide wireways with no knockouts.

53  
54 Finish: Provide 14-gage and 16-gage galvanized sheet metal parts. Plate hardware to prevent corrosion.

55  
56 In outdoor or wet locations provide wireways that are NEMA 3R. Do not use gaskets that can rip or tear  
57 during installation, or would otherwise compromise raintight capability of the wireway.

58  
59 Do not use cover screws that will protrude into the trough area and damage wire insulation.  
60  
61

## State Bureau of Investigation

## Electrical Boxes and Fittings

1 Size of device, outlet, junction, pull boxes, gutters, and similar components shall be as required to match the number  
2 of devices and/or conductors contained within as based on the requirements of NEC Article 314.16.

3  
4 Bushings, Knockout Closures and Locknuts: Provide corrosion-resistant box knockout closures, conduit locknuts and  
5 malleable iron conduit insulated bushings, offset connectors, of types and sizes, to suit respective installation  
6 requirements and applications.

7  
8  
9 **PART 3 - EXECUTION**

10  
11 **INSTALLATION OF ELECTRICAL BOXES AND FITTINGS**

12  
13  
14 General: Install electrical boxes and fittings as indicated, in accordance with manufacturer's written instructions,  
15 applicable requirements of NEC and NECA's "Standard of Installation," and in accordance with recognized industry  
16 practices to fulfill project requirements.

17  
18 Coordinate installation of electrical boxes and fittings with wire/cable, wiring devices, and raceway installation work.

19  
20 Provide weatherproof boxes and fittings for interior and exterior locations that are exposed to weather or moisture.  
21 Weatherproof boxes must be Listed and Labeled and identified as "extra duty" for use in wet locations.

22  
23 Provide knockout closures to cap unused knockout holes where blanks have been removed.

24  
25 Install electrical boxes and similar items only in those locations that ensure accessibility to enclosed electrical wiring.

26  
27 Avoid installing boxes back-to-back in walls. Provide not less than 6" separation in non-rated partitions. Provide 24"  
28 minimum horizontal separation in fire-rated partitions or in acoustic rated walls.

29  
30 Position recessed outlet or device boxes in walls or ceilings accurately to allow for surface finish thickness. Where  
31 the surface material or covering is combustible the front edge of the plaster ring (or box) shall be flush (- 0", +1/32")  
32 with the finished surface. Where the wall or ceiling material is non-combustible, the front edge of the plaster ring (or  
33 box) may be recessed into the wall no further than 3/16". The maximum gap between the edge of an installed  
34 box/plaster ring combination shall not exceed 1/8". **These requirements will be rigidly enforced.**

35  
36 Fasten electrical boxes firmly and rigidly to substrates, or structural surfaces to which attached, or solidly embed  
37 electrical boxes in concrete or masonry. All boxes shall be supported independently of conduit.

38  
39 Provide electrical connections for installed boxes.

40  
41 Electrical box locations indicated on Drawings are approximate unless dimensioned. Verify location of outlets prior to  
42 rough-in. Coordinate exact locations with the work of other Divisions. Mis-located outlets and/or devices shall be  
43 relocated upon instruction from Owner's representative at no additional cost.

44  
45 Locate and install to maintain headroom and to present a neat appearance.

46  
47 Use multiple gang boxes where more than one device is mounted together; do not use sectional boxes. Provide  
48 barriers to separate wiring of different voltage systems. Provide barriers to separate adjacent devices where the  
49 voltage is greater than 150 Volts between the devices.

50  
51 Install boxes in walls without damaging wall insulation or fire proofing.

52  
53 Position outlets to locate lighting fixtures and/or luminaries as indicated on Drawings. Boxes are to be positioned  
54 plum and vertical,  $\pm 2^\circ$ .

55  
56 Align wall mounted outlet boxes for switches, thermostats, and similar devices.

57  
58 Subsequent to installation of boxes, protect boxes from construction debris and damage.

59  
60

1 **GROUNDING**

2

3 Upon completion of installation work, properly ground electrical boxes and demonstrate compliance with  
4 requirements.

5

6

7 **END OF SECTION 260535**

**SECTION 283110 - FIRE ALARM SYSTEM MODIFICATIONS****PART 1 - GENERAL****RELATED DOCUMENTS**

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

**SCOPE**

This section of the specifications includes the furnishing, installation, and connection of new initiation devices, alarm appliances, and related items to an existing fire alarm system. The final product shall be a complete coordinated system ready for operation. It shall include, but not be limited to, alarm initiating devices, alarm notification appliances, auxiliary control devices, annunciators, power supplies, and wiring as shown on the Drawings and specified herein.

The design provided is based on the NC Department of Administration 2020 Fire Alarm Guidelines and Policies and includes the relevant criteria from that document.

**QUALITY ASSURANCE**

**Manufacturer's Qualifications:** Firms regularly engaged in manufacture of fire alarm systems of types, sizes, and electrical characteristics required, and whose products are Listed and Labeled. Products of firms that do not maintain factory authorized service organization and spare parts stock are not acceptable for use on this project.

**Installer's Qualifications:** Installer shall be a company specializing in performing the work of this section, with a minimum of 5 years documented experience installing fire detection and alarm systems similar in size and scope to this project. Installer shall be certified by the manufacturer to install, program and service the system. Installer shall directly provide the final connections between the equipment and the wiring system and the addressing of all system devices.

Installer shall directly provide the installation of all wiring and devices required in the system, or provide supervision over this work when provided by the electrical contractor. Installer shall not sub-contract any portion of the required work to a third party. All work shall be performed in accordance with the Installer's submitted and approve fire alarm shop drawings and calculations.

System programming shall be done only by a manufacturer, or by an authorized Installer. The Installer's technicians who perform this work shall be trained and individually certified by the manufacturer, for the model and series of equipment being installed. The technicians' training and certification must have occurred in the most recent 24 months. Qualifications of installer, including technician certifications, shall be provided with equipment submittal.

Installer shall be present on site for the 100% test, Designer's pre-final review and Owner inspections.

**Codes and Standards:**

**NFPA Compliance:** Comply with applicable requirements of NFPA-72, 2013 National Fire Alarm Code.

**NEC Compliance:** Comply with applicable requirements of NFPA-70, National Electrical Code (NEC) standards pertaining to fire alarm systems.

**Testing Laboratory Compliance:** Comply with provisions of UL safety standards pertaining to fire alarm systems. Provide products and components which are Listed and Labeled.

**UL Compliance:** Provide fire alarm notification appliances consistent with requirements in UL 1971, Signaling Devices for the Hearing Impaired, for determining device operating currents and device ratings.

**NCBC Compliance:** Fire Alarm notification appliances shall comply with NC Building Code and NC

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**State Bureau of Investigation****Fire Alarm System Modifications**

1 Accessibility Code criteria for intensity and placement.

2  
3 FM Compliance: Provide fire alarm systems and accessories which are FM approved.

**SUBMITTALS**

7  
8 Submittals shall be made in strict accordance with the requirements of Section 019913. Specific submittal  
9 requirements are defined in each section of this Division.

10  
11 Product Data: Submit Manufacturer's technical product data, including specifications and installation  
12 instructions, for each type of fire alarm system equipment. Submit technical product data on the fire alarm  
13 service equipment. Submittals shall provide mA draw for each device submitted and UL listed minimum  
14 voltage required to operate. Panel submittal shall list voltage drop allowed for panel and for individual NAC  
15 circuits.

16  
17 Shop Drawings: Submit shop drawings showing equipment, device identification numbers and locations,  
18 and connecting wiring of entire fire alarm system. Include wiring and riser diagrams. Wiring diagrams shall  
19 be based on the project floor plans, with devices and proposed conduit routing shown. Provide conductor  
20 composition for each conduit section. Provide distance and route for each NAC (Notification Appliance  
21 Circuit). Riser diagrams shall show consecutive connections for all devices with addresses and ratings.  
22 Copies of Project Construction Documents or details therefrom may not be a part of the shop drawing  
23 submittal. Shop drawings shall be prepared in an electronic format that is convertible to DXF files. The fire  
24 alarm contractor shall submit complete shop drawings to the engineer for review prior to installation.

25  
26 Wiring and Cabling: Submit wire and cable for signal circuits and notification circuits.

27  
28 Installation Instructions: Submit Manufacturer's detailed installation instruction for all duct mounted smoke  
29 detectors, flow switches, tamper switches, supervisory switches, and similar items which require mechanical  
30 installation.

31  
32 Battery Calculations: Provide battery calculations used to size secondary power source. Calculations must  
33 be submitted prior to installation of equipment. Battery calculations shall utilize the UL 1971 RMS DC or full  
34 wave rectified (FWR) current values of notification appliances, as appropriate for the power supply used,  
35 provided by the product manufacturer. These values shall be highlighted in the submittal for each appliance  
36 used in the project. Identify notification appliance circuit (NAC) current draws and calculate voltage drops  
37 for each circuit in the submittal package. Identify EOL voltage for each proposed NAC, based on a source  
38 voltage of 20.4 volts. In no case shall the calculated EOL for any NAC be below the minimum listed  
39 operating voltage for the devices used.

40  
41 Device List: Submit a listing for each addressable device that indicates the device address, function and  
42 location. This information shall be the basis for the device descriptions to be programmed into the system,  
43 contingent upon approval of Designer and Owner. Information shall be included in device identification that  
44 is observed at the FACP and FAAP. Device addresses shall exactly match the information provided on the  
45 shop drawings.

46  
47 Maintenance Data: Submit maintenance data and parts lists for each type of fire alarm equipment installed,  
48 including furnished specialties and accessories. Include this data, product data, and shop drawings in  
49 maintenance manual.

50  
51 Certifications: Submit a certification from the major equipment manufacturer indicating that the proposed  
52 supervisor of installation and the proposed performer of contract maintenance is an authorized  
53 representative of the major equipment manufacturer. Include names and addresses, and telephone  
54 numbers in the certification.

**PART 2 - PRODUCTS**

55  
56  
57  
58  
59  
60

**PART 3 - EXECUTION**

Fire and smoke detection and alarm systems shall comply with the following system requirements with regard to operation and installation.

All equipment and components shall be installed in strict compliance with manufacturers' recommendations. All equipment supplied must be specifically listed for its intended use and shall be installed in accordance with any instructions including in its listing. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation. Refer to the Riser/Connection diagram for all specific system installation/termination/wiring data.

All system components shall be attached to walls and ceiling/floor assemblies and shall be held firmly in place (e.g., detectors shall not be supported solely by suspended ceilings). Fasteners and supports shall be adequate to support the required load. Adhesives are not permitted to mount fire alarm system components to building surfaces or structure.

The system shall be new and furnished with a warranty (parts & labor) of at least one year from the date of final inspection and acceptance by the Owner. Equipment, initiating devices, and alarm appliances shall be arranged as described in the Drawings; annunciator zones shall be configured as described in the Drawings.

The system shall be equipped with the following protective devices to prevent damage or nuisance alarms by nearby lightning strikes, stray currents, or voltage transients. The devices are to be provided by the fire alarm equipment supplier:

On AC Input: Provide a 120 volt, 20 amp feed through branch circuit series connected surge protective device (SPD) in dedicated enclosure. Install at panelboard and trim excess lead lengths. Wind small coil in branch circuit phase conductor, within SPD enclosure, downstream of the SPD connection. Coil is to be about 1" diameter, 5 to 10 turns, and tie-wrapped. Ditek DTK-DF120S1 series, 20 Amp is a product meeting this performance specification. Equivalent units with UL 1449 listing by other suppliers are acceptable.

On DC Circuits Extending Outside Building: Near the point of entry to or exit from each building, provide a hybrid technology surge protection device on each leg. The filter shall consist of gas discharge tube (GDT) technology paired with silicon avalanche diode (SAD) technology, clamping voltage between 30 and 40 Volts. Ditek DTK – 2MHLP24BWB series is a product meeting this performance specification. Equivalent units with UL 497B listing by other suppliers are acceptable. Devices shall not use only MOV active elements for protection.

Both audible and visible alarm signals shall be provided. Visible signals must be the strobe (flash discharge) type, with white or clear lens, and shall comply with current ADA requirements for intensity and placement.

Systems are to be provided with a separate and independent source of emergency power. Switching to emergency power during alarm shall not cause signal drop-out. Batteries must meet the appropriate NFPA capacity requirements, with a 25% safety factor. This requirement is in effect even if generator power is supplied to the Fire Alarm Control Panel.

Style 6 Circuits Required: Systems with one or more addressable sub-panels that (1) have an integral addressable loop controller, or (2) monitor multiple non-addressable initiation zones, shall comply with the NFPA 72 requirements for Style 6 circuits.

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:

Signal Line Circuit cable	Red jacket with Red(+)/Black(-)
Alarm Indicating Appliance Circuits	Blue (+)/Black (-)
AHU Shutdown Circuits	Yellow (+)/Brown (-)
Initiation Circuits from Monitor Modules	Violet (+)/Gray (-)
Door Control Circuits	Orange
Elevator Capture Circuits	Brown

## State Bureau of Investigation

## Fire Alarm System Modifications

1 There shall be NO splices in the system other than at terminals in panels, fire alarm terminal cabinets (FATC) and  
2 devices. "Wire nuts," crimp splices, or insulation piercing type connectors are not acceptable. All terminal blocks  
3 shall be mounted in enclosures. All terminal screws shall have pressure wire connectors of the self-lifting or box lug  
4 type.

5  
6 Permanent wire markers shall be used to identify all splices and terminations for each circuit. For splices within  
7 FATC's, use markers or other means to indicate which conductors leads to the FACP.

8  
9 All fire alarm system cables and conductors shall be installed in raceway, couplers, and connectors meeting the  
10 performance of installation requirements of Section 260534, RACEWAYS. The minimum size for fire alarm system  
11 raceway shall be 3/4" trade size.

12  
13 The exterior of all junction boxes containing fire alarm conductors shall be painted red; box interiors shall not  
14 be painted. Box covers for junction boxes containing fire alarm conductors shall be painted red on both  
15 sides. All painting of junction boxes and junction box covers shall be accomplished prior to installation of the  
16 boxes to avoid possible problems with overspray. Those boxes in finished areas are permitted to be painted  
17 to match the finish color.

18  
19 Box covers shall be labeled to indicate the circuit(s) or function of the conductors contained therein. Labels  
20 shall be neatly applied black lettering on a clear background. Handwritten labels or labels made from  
21 embossed tape are not acceptable.

22  
23 Raceways that penetrate outside walls from conditioned space shall have an internal seal to prevent condensation  
24 within the raceway as it enters the conditioned space.

25  
26 Provide metal backboxes or plastic skirts as manufactured by the fire alarm manufacturer for devices installed in a  
27 surface mounted application. Such boxes shall match device in size and color.

28  
29 Wire shall be new AWG #12 minimum stranded copper, type THHN/THWN for Notification Appliance Circuits.  
30 Addressable loop (signaling line) circuits shall be wired with type FPL/FPLR/FPLP fire alarm cable, AWG 18  
31 minimum, low capacitance, twisted shielded copper pair. Cable shield drain wires are to be connected at each device  
32 on the loop to maintain continuity, taped to insulate from ground, and terminated at the FACP. Acceptable cables  
33 include Atlas 22-18-1-1STP, BSCC S1802s19 (same as EEC 7806LC), West Penn D975, D991 (AWG 16), D995  
34 (AWG 14), or equal wire having capacitance of 30pf/ft maximum between conductors. The cable jacket color shall be  
35 red, with red (+) and black (-) conductor insulation.

36  
37 EXCEPTION #1: Unshielded cable, otherwise equal to the above, is permitted to be used where the manufacturer's  
38 installation instructions unequivocally require, or state a preference for, the use of unshielded cable for all systems,  
39 AWG #16 minimum.

40  
41 EXCEPTION #2: In underground conduit, use Type TC or PLTC cable (PE insulated) to avoid problems from  
42 moisture.

43  
44 Detection or alarm circuits must not be included in raceways containing AC power or AC control wiring. Within the  
45 FACP, any 120 VAC control wiring or other circuits with an externally supplied AC/DC voltage above the nominal 24  
46 VDC system power must be properly separated from other circuits and the enclosure must have an appropriate  
47 warning label to alert service personnel to the potential hazard.

48  
49 Provide an engraved label in FACP identifying its 120 VAC power source. This label shall include panelboard  
50 location, identification, and circuit number.

51  
52 Branch circuit breakers serving fire alarm systems shall be physically protected from inadvertent contact using a  
53 breaker handle lock. Load designation shall be clearly identified (typed) in the panel directory. Breakers shall be  
54 further identified with a permanent red dot applied to the handle or other visible portion of the breaker. Do not cover  
55 operable portions of the breaker or written information on the case in meeting this requirement.

56  
57 All wiring shall be checked for grounds, opens, and shorts, prior to termination at panels and installation of detector  
58 heads. The minimum resistance to ground or between any two conductors shall be ten megohms (10 MW), as  
59 verified with a megger. Provide advance notice to the A-E of these tests.

60

**State Bureau of Investigation**

**Fire Alarm System Modifications**

1 All connections at the FACP must be made by the Manufacturer's authorized, factory trained representative (rather  
 2 than by the electrical contractor).  
 3

4 The system shall be electrically supervised for open or (+/-) ground fault conditions in SLC, alarm circuits, and control  
 5 circuits. Removal of any detection device, alarm appliance, plug-in relay, system module, or standby battery  
 6 connection shall also result in a trouble signal. Fire alarm signal shall override trouble signals, but any pre-alarm  
 7 trouble signal shall reappear when the panel is reset.  
 8

9 Spare Parts: Provide the following spare parts with the system, each individually packaged and labeled. For multi-  
 10 building projects, calculate separately for each building:  
 11

12	Fuses	2 of each size used in the system
13	Manual Stations	2% of installed quantity
14	Addressble Control Modules	4% of installed quantity
15	Indoor Horns/Strobes	4% of installed quantity
16	Indoor Strobe-only Notification Appliances	4% of installed quantity
17	Monitor Modules (Addressable interface)	4% of installed quantity
18	Isolation Modules /Isolation Bases	4% of installed quantity
19	Addressable Heat Detectors, Bases	4% of installed quantity
20	Spot Smoke Detectors, Bases	6% of installed quantity

21  
 22 Increase decimal quantities of spare parts to the next higher whole number. For example, if a system has  
 23 20 spot-type smoke detectors provide 2 spare detectors with bases.  
 24  
 25

26 **REMOTE ALARM TRANSMISSION REQUIREMENTS**  
 27

28 Each system with automatic fire detection, or which monitors a sprinkler system shall be equipped with a NFPA 72  
 29 type, dual line, four channel minimum, Digital Alarm Communicator Transmitter (DACT) for transmission of its fire  
 30 alarm, supervisory, and trouble signals to a Listed central station. As a minimum, where applicable, the following  
 31 signals shall be transmitted.  
 32

- 33 Fire alarm
- 34 Sprinkler waterflow alarm
- 35 Fire pump running alarm (if pump provided)
- 36 Fire pump abnormal status supervisory signal
- 37 Sprinkler valve tamper (closed) supervisory signal
- 38 Sprinkler low temperature / Air pressure supervisory signal
- 39 Burglary / Intrusion / Duress / Other security or emergency alarms
- 40 Fire alarm system AC power trouble (only if 120 VAC is interrupted for 8 hours)

41  
 42 The precedence of DACT / Proprietary alarm system transmission shall be as follows:  
 43

- 44 1. Fire
- 45 2. Security
- 46 3. Supervisory
- 47 4. Trouble

48  
 49 The "trouble" signal must not be sent unless maintained for 60 seconds or more to avoid nuisance  
 50 transmissions due to alarm verification cycles. Do not report ac power fail unless outage exceeds 8 hours.  
 51

52 Provide a cellular DACT which is compatible with the Owner's alarm receiving equipment or the Listed central station  
 53 as indicated on the Drawings. Provide programming of any electronic memories (PROM "burn-in") and connect each  
 54 cellular DACT to the appropriate telephone or communications lines. Verify proper signal receipt of each channel by  
 55 the supervising station.  
 56  
 57

---

**State Bureau of Investigation****Fire Alarm System Modifications****SPRINKLER SYSTEM MONITORING**

The following sprinkler system alarm and supervisory functions shall be provided as a part of the fire alarm system:

1. Waterflow alarm, by sprinkler zone (not to exceed one floor).
2. Supervision of each control valve.
3. Supervision of air pressure, if used (both high and low).
4. Supervision of fire pump.

Sprinkler supervisory monitoring of flow switches, tamper switches, and similar functions shall be accomplished with a separate system address for each activity monitored.

**SYSTEM DOCUMENTATION**

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. Electronic circuit diagrams of all control panels, modules, annunciators, communications panels, etc.
3. Technical literature on all major parts of the system, including control panels, batteries, detectors, manual stations, alarm indicating appliances, power supplies, and remote alarm transmission means.
4. Detailed maintenance requirements as recommended by the fire alarm manufacturer.

The contractor shall provide the A-E with one copy of the following:

1. All software required, both for the installed fire alarm system and for any personal computer (PC) necessary to access the fire alarm system for trouble shooting, programming, modifications, monitoring, de-bugging, or similar functions.
2. Complete documentation for all software for both the installed fire alarm system and for any interface PC software necessary for system functions as described in (1) above.

**SYSTEM TESTING & CERTIFICATION**

Upon completion of the installation the Division 28 Contractor and the Manufacturer's authorized installer together shall conduct a 100% performance test of each alarm initiating device that is added and/or modified as part of the construction activity for proper response. In addition, a 10% test as defined in NFPA 72 shall be conducted for system devices and circuits in the building that were not directly impacted by the specified work. The system shall operate for 48 hours prior to start of test. The Division 28 Contractor shall be present for the full 100% test.

The Contractor's 100% Performance test shall consist of the following. Upon activation of each alarm initiating device, verify effective operation of every alarm notification appliance and all other functions such as elevator capture, control smoke doors/dampers, proper operations of HVAC systems, and pressurization fans. In addition, verify proper annunciation of each activated device, including device identification number, type and location, at the FACP and each remote annunciator. The FACP shall reset after testing of each alarm initiating device. The digital communicator shall be on-line and tested for proper communication to the receiving station. Equivalent methods of demonstrating proper operation of HVAC shutdown are acceptable for this test. All supervised circuits must also be tested to verify proper supervision. (Control circuits and remote annunciation lines are among those required to be supervised.)

All testing described above shall be repeated in the event that subsequent software or wiring modifications are determined necessary to meet the requirements of the contract documents. Such re-testing shall be included as part of the base bid and provided at no additional cost to the Owner.

The A-E must be given 7 days advance notice of the tests.

**State Bureau of Investigation****Fire Alarm System Modifications**

1 The contractor must submit the following test documentation:

- 2
- 3 1. Written verification that this system test (100% and 10%) was done with copy of print out generated
- 4 during test.
- 5 3. NFPA 72-2013 "Record of Completion" form: Use this form to detail the system installation and to
- 6 certify that it was installed per code requirements.
- 7 4. Voltage table indicating voltage at battery and at the last device on each NAC circuit. Take
- 8 readings at the start of test and every 15 minutes during NAC test. Test shall be 30 minutes
- 9 minimum.

10

11 After completion of the Contractor's 100% performance test and submission of the above documentation, the

12 contractor will request in writing that the A-E set up a pre-final review.

13

14 If the initial inspection determines that the required 100% system test was not reasonably done, or if a reinspection of

15 the project is requested without the punch list being nearly completed, the Contractor *may* be required to reimburse

16 the Designer for inspection costs.

17

18 System Report: In addition to the shop drawing submittal the fire alarm system contractor shall provide the engineer

19 two bound copies of the following technical information, for transmittal to the owner:

- 20 1) As-Built wiring diagram showing all loop numbers and device addresses, plus terminal numbers where
- 21 they connect to control equipment.
- 22 2) Manufacturer's detailed maintenance requirements
- 23 3) Technical literature on all control equipment, isolation modules, power supplies, alarm/ supervisory
- 24 signal initiating devices, alarm notification appliances, relays, etc...
- 25 4) The as-built "calculations" sheet referenced elsewhere in this specification.
- 26

27 Electronic archive: Complete configuration data (site-specific programming) for the system must be stored on

28 electronic media and archived by the fire alarm system manufacturer or authorized distributor. A USB drive or

29 compact disc (CD) copy of this data shall be submitted to the engineer for transmission to the owner.

30

**INSPECTIONS**

31

32

33

34 Fire Alarm System Designer Pre-final Review: Upon completing the fire alarm system installation, and prior to

35 scheduling the Designer Pre-final review, the installation contractor must successfully conduct and complete a 100%

36 performance test of the entire fully functional system. All audio visual device tests shall be scheduled with the owner.

37

38 As part of the Designer Pre-final review the system will be inspected and functionally tested on a comprehensive

39 basis. Equipment intended for open area protection or releasing device service may be subjected to simulated or

40 actual test fires in accordance with ANSI/UL guideline and sound engineering practice, to verify proper response.

41

42 The Contractor shall provide two-way radios, equipment keys, as-built drawings, ladders, smoke products, meter and

43 other materials required to test the system. The test will be conducted entirely by the Contractor. Any deficiencies

44 shall be recorded and corrected. After the items have been corrected, the system shall be tested again in the

45 presence of the Engineer.

46

47 In the event of malfunctions or excessive nuisance alarms, the Contractor must take prompt corrective action. The

48 Owner may require a repeat of the Contractor's 100% system test, or other inspections. Continued improper

49 performance during the warranty period shall be cause to require the Contractor to remove and replace the system.

50

51 Test Report: Upon successful completion of the Performance Inspection and correction of all deficiencies, the

52 manufacturer's authorized representative shall issue a test report to the Engineer, detailing and certifying the test.

53

54 Final Inspection: At the Owner's request and after passing the pre-final review, the Division 28 Contractor and

55 Manufacturer's authorized installer will conduct a full system test in the presence of the Owner and the Designer.

56 Upon request, a copy of the final database software must be presented to the Owner on USB drive before this test.

57 The software shall be loaded from the drive into the system in the presence of the Owner and Engineer. See

58 requirements for pre-final test and conduct similarly.

59

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**State Bureau of Investigation****Fire Alarm System Modifications**

1 System Acceptance: After successful completion of the Final Inspection and recommendation of the Engineer, the  
2 system will be accepted by the Owner. At this time the warranty period begins. In the event of malfunctions or  
3 excessive nuisance alarms, the Contractor must take prompt corrective action. The Owner may require a repeat of  
4 the Contractor's 100% system test, or other inspections. Continued improper performance during the warranty period  
5 shall be cause to require the Contractor to remove the system.  
6

7

8 **END OF SECTION 283110**