

PROJECT MANUAL



CMS GARINGER HS - SECURITY GATE MODIFICATIONS

1100 EASTWAY DRIVE
CHARLOTTE, NC 28205

FOR CONSTRUCTION

OCTOBER 28, 2022

ARCHITECT



227 W. TRADE STREET
SUITE 700
CHARLOTTE, NC 28202
PHONE: 704.333.6686

LS3P COMMISSION NUMBER: 9202-202550

DOCUMENT 000007 – SEALS PAGES

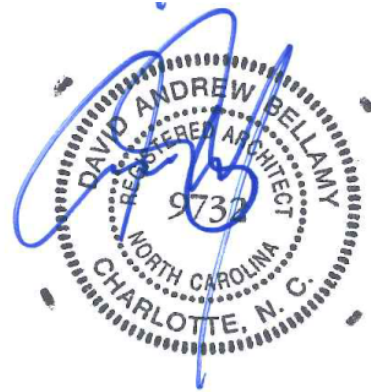
ARCHITECTURAL FIRM

LS3P ASSOCIATES LTD.
Corporate License #50417



ARCHITECT

David A Bellamy, R.A.
License #9732



ELECTRICAL
ENGINEER

CMTA Consulting
Engineers
Zachary P. Schneider, P.E.
License No. 049037



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DOCUMENT 00 31 13
PRELIMINARY SCHEDULE

Pre-Construction	Start	Finish
Construction Bid Advertisement	March 12, 2023	
Pre-Bid Meeting	March 16, 2023	
Receive Bids	March 27, 2023	
CMS Board Approval	April 25, 2023	
♦ Issue Notice to Proceed	June 5, 2023	
Construction Period	June 12, 2023	August 15, 2023
♦ Substantial Completion	August 15, 2023	
♦ = Contractor milestone completion dates.		

DOCUMENT 00 61 13
PERFORMANCE BOND

Date of Execution of
this bond

Name and Address of
Principal (Bidder)

Name and Address
of Surety

Name and Address of
Contracting Body

THE CHARLOTTE MECKLENBURG COUNTY BOARD OF EDUCATION
a body corporate of the State of North Carolina
PO Box 30035, Charlotte, North Carolina, 28230-0035

Amount of Bond

Contract
named dated

That certain contract by and between the Principal and the Contracting Body above

_____ for _____

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 successor, 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 of the Surety, and during the life of any guarantee required under the contract, and shall also well and truly perform and fulfil all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of the 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.

THIS PERFORMANCE BOND is made and given pursuant to the requirements and provisions of Section 129 of Chapter 143 of the General Statutes of North Carolina and pursuant to Article 3 of Chapter 44-A of the General Statutes of North Carolina, and each and every provision set forth and contained in Article 3 of Chapter 44-A of the General Statutes of North Carolina is incorporated herein, made a part hereof, and deemed to be conclusively written into this Bond.

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

WITNESS:

Principal (Name of individual, and trade
Name, partnership, corporation, or joint
venture)

(Proprietorship or Partnership)

BY _____ (Seal)

TITLE _____
(Owner, Partner, Office held in
corporation, joint venture)

(Corporate Seal)

ATTEST (Corporation)

BY _____

TITLE _____
(Corporation Secretary or Assistant Secretary Only)

Surety (Name of Surety Co.)

BY _____

TITLE _____ Attorney in Fact

(Corporate Seal of Surety)

WITNESS:

(Address of Attorney in Fact)

COUNTERSIGNED:

N.C. Licensed Resident Agent

DOCUMENT 00 61 15
PAYMENT BOND

Date of Execution of
this bond

Name and Address of
Principal (Bidder)

Name and Address
of Surety

Name and Address of
Contracting Body

THE CHARLOTTE-MECKLENBURG COUNTY BOARD OF EDUCATION

a body corporate of the State of North Carolina,

PO Box 30035, Charlotte, North Carolina, 28230-0035

Amount of Bond

Contract

That certain contract by and between the Principal and the Contracting Body above
named dated

_____ for _____

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 successor, 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 and material in the prosecution of the work provided for in said contract, and any and all duly authorized modifications and extensions of time of said contract may be here-after be made, notice of which modification and extension of time to the Surety being hereby waived, then this obligation to be void; otherwise, to remain in full force and virtue.

THIS PAYMENT BOND is made and given pursuant to the requirements and provisions of Section 129 of Chapter 143 of the General Statutes of North Carolina and pursuant to Article 3 of Chapter 44-A of the General Statutes of North Carolina, and each and every provision set forth and contained in Article 3 of Chapter 44-A of the General Statutes of North Carolina is incorporated herein, made a part hereof, and deemed to be conclusively written into this Bond.

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

WITNESS:

Principal (Name of individual, and trade
Name, partnership, corporation, or joint
venture)

(Proprietorship or Partnership)

BY _____(Seal)

TITLE _____
(Owner, Partner, Office held in
corporation, joint venture)

(Corporate Seal)

ATTEST (Corporation)

BY _____

TITLE _____
(Corporation Secretary or Assistant Secretary Only)

Surety (Name of Surety Co.)

WITNESS:

BY _____

TITLE _____ Attorney in Fact

(Corporate Seal of Surety)

(Address of Attorney in Fact)

COUNTERSIGNED:

N.C. Licensed Resident Agent

DOCUMENT 00 62 76.13
STATE AND COUNTY SALES/USE TAX STATEMENT AND CERTIFICATION

Contractor: _____

Sheet # _____

Project Name: Garinger High School Security Gate Modifications

For Sales Taxes Paid from: _____ to _____

Payment Application Number: _____

Invoice #	Invoice Date	Vendor	Type of Materials	Total Amount of Invoice (w/o Taxes)	NC Tax	Meck. County Tax	Other NC County Tax	Total Taxes
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								
TOTALS								

We certify that the above listing includes all materials purchased by us and incorporated into the above referenced project for the period stated, became a permanent part of the project, and that the sales tax shown has been paid. The above represents a complete listing of these sales taxes paid for the pay application number.

SWORN AND SUBSCRIBED BEFORE ME THIS ____ DAY OF _____ 20____

NOTARY PUBLIC

MY COMMISSION EXPIRES _____

By: _____

Title: _____

END OF DOCUMENT

**DOCUMENT 00 63 63
CHANGE ORDER FORM**

PROJECT NAME: Garinger High School Security Gate Modifications

DATE: _____

CONTRACTOR NAME: _____

- | | |
|--|--------------|
| 1. Products (itemized breakdown attached): | \$ _____ |
| 2. Rent of Equipment (listed separately): | \$ _____ |
| 3. TOTAL of 1 + 2 | \$ _____ |
| 4. Labor (itemized breakdown attached): | \$ _____ |
| 5. TOTAL of 3 + 4 | \$ _____ |
| 6. Overhead and Profit 15% of total | \$ _____ |
| 7. TOTAL of 5 + 6 | \$ _____ |
| 8. Subcontract Work: | \$ _____ |
| 9. Overhead and Profit on Subcontract Work 7 1/2% | \$ _____ |
| 10. TOTAL of 8 + 9 | \$ _____ |
|
TOTAL QUOTATION 7 + 10 |
\$ _____ |

NOTE

**FOR CHANGE ORDERS CONTAINING SUBCONTRACT WORK, THE SUBCONTRACTOR MUST
SUBMIT HIS COST BREAKDOWN IN THE SAME FORMAT AS LISTED ABOVE.**

END OF DOCUMENT

SECTION 00 65 14
CERTIFICATION OF ASBESTOS-FREE COMPLIANCE

SCHOOL NAME: Garinger High School

PROJECT DESCRIPTION: Garinger High School Security Gate Modifications

MECKLENBURG COUNTY, NORTH CAROLINA

The undersigned Contractor hereby certifies that no asbestos-containing materials of any kind were used in the construction of

_____, at _____ North
Carolina.

Signed: _____

Name: _____

Title: _____

Date: _____

(Corporate Seal)

Subscribed and sworn before me this

_____ day of _____, 20____

(Notary Public)

END OF DOCUMENT

DOCUMENT 00 65 36

WARRANTY FORM

SCHOOL NAME: Garinger High School

PROJECT DESCRIPTION: Garinger High School Security Gate Modifications

MECKLENBURG COUNTY, NORTH CAROLINA

The undersigned Contractor hereby warrants, in accordance with the applicable provisions and terms set forth in the Contract Documents, all materials and workmanship incorporated in the _____ contract of the _____ School, _____, Mecklenburg County, North Carolina, against any and all defects due to faulty materials or workmanship or negligence for a period of twelve (12) months, or such longer periods as set forth in the Contract Documents, from the effective date **of this warranty**(_____) **as defined by the date of substantial completion** . This warranty supercedes any and all dates listed in the enclosed subcontractor warranties thus honoring warranty work one year from the date of substantial completion listed here. This contractor further warrants all work incorporated in this project to remain leak proof and watertight at all points for a period of twenty-four (24) months from the effective date of this Warranty.

This Warranty shall be binding where defects occur due to normal usage conditions and does not cover willful or malicious damage, damage caused by acts of God or other casualties beyond the control of the Contractor.

This Warranty shall be in accordance to other warranties and guarantees set forth in the Contract Documents, and shall not act to constitute a waiver of additional protection of the Owner afforded, where applicable, by consumer protection and product liability provisions of law, and these stipulations shall not constitute waiver of any additional rights or remedies available to the Owner under the law.

Date of Substantial Completion: _____

Signed: _____

Name: _____

Title: _____

Date: _____

(Corporate Seal)

Subscribed and sworn before me this

_____ day of _____, 20____

(Notary Public)

**SECTION 00 72 13
GENERAL CONDITIONS**

NOTICE OF DISCLAIMER

TAKE NOTICE, that these General Conditions may contain language and Article, Section or Paragraph headings or names which appear similar to or the same as the provisions of the "General Conditions of the Contract for Construction", published by the American Institute of Architects, AIA Document A-201.

TAKE NOTICE, however, that these General Conditions are substantially and materially different in many respects from the AIA Document A-201 and that certain additions, deletions or other modifications have been made to provisions similar to those contained in the AIA Document. This document, further, contains provisions, which do not appear in the AIA document.

The use of any language or Article or Paragraph format similar to or the same as AIA Document A-201 does not constitute an endorsement by the American Institute of Architects of this document.

**GENERAL CONDITIONS OF THE
CONTRACT FOR CONSTRUCTION**

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ARTICLE 1

CONTRACT DOCUMENTS

- 1.1 DEFINITIONS
 - 1.1.1 AS SHOWN, AS INDICATED, AS DETAILED: These words, and words of like implication, refer to information contained in Drawings and Specifications describing the Work, unless explicitly stated otherwise in the Contract Documents.
 - 1.1.2 CLAIM: A Claim as used in the Contract is a demand or assertion by one of the parties seeking, as a matter of right, adjustment or interpretation of contract terms, payment of money, a credit against the payment of money, extension of time or other relief with respect to the terms of the Contract. The term Claim also includes other disputes and matters in question between the parties to a contract involved in the Owner's construction and repair projects arising out of or relating to the Contract or the construction process.
 - 1.1.3 CONTRACT: The Contract is the sum of all the Contract Documents. The Contract represents the entire

and integrated agreement between the Owner and the Contractor and supersedes all prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification as defined in Paragraph 1.1.4. The Contract may also be referred to in the Contract Documents as “this Contract”, “this Agreement” or “the Agreement”.

- 1.1.4 **CONTRACT DOCUMENTS:** The Contract Documents consist of the Owner-Contractor Agreement, the Conditions of the Contract (General and Supplemental Conditions), the Plans, Drawings, and Specifications, and all Addenda thereto issued prior to and all Modifications thereto issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties; (2) a Change Order or a Construction Change Directive issued pursuant to the provisions of Article 12; (3) a written interpretation issued by the Design Consultant pursuant to Paragraph 2.2.7; or (4) a written order for a minor Change in the Work issued pursuant to Section 12.4. The Contract Documents do not include any other documents including but not limited to soils, geotechnical or other reports, surveys and analysis, which may be printed, bound or assembled with the Contract Documents, or otherwise made available to the Contractor for review or information under this Contract, unless specifically enumerated and directly incorporated by reference in the Contract Documents.
- 1.1.5 **HE/HIS:** The term He or His is not intended to be gender specific.
- 1.1.6 **MANUFACTURER:** An individual, company, or corporation who manufactures, fabricates, or assembles a standard product. A standard product is one that is not made to special design, and if furnished by either direct sale or by contract to the Contractor, Subcontractor or Vendor.
- 1.1.7 **MATERIAL SUPPLIER OR VENDOR:** A person or organization who supplies, but who is not responsible for the installation of, materials, products and equipment.
- 1.1.8 **NOTICE:** The term Notice as used herein shall mean and include written notice. Notice shall be deemed to have been given when delivered to the address of the person, firm or corporation for whom intended, or to his, their or its duly authorized agent, representative or officer; or when enclosed in a postage prepaid wrapper or envelope addressed to such person, firm or corporation at his, their or its Notice Address and deposited in a United States mailbox by registered or certified mail. To “Notify” means to give Notice. The Notice Addresses for the Owner and Contractor are stated in the Owner-Contractor Agreement and may be changed by a party by giving Notice to the other of such change.
- 1.1.9 **PLANS OR DRAWINGS:** All drawings or reproduction of drawings pertaining to the Work.
- 1.1.10 **PRODUCT:** The term Product includes materials, systems and equipment.
- 1.1.11 **PROJECT:** The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part.
- 1.1.12 **PROPOSAL:** A complete and properly signed document whereby the Contractor proposes to provide additional or a reduced scope of construction work on the Project for the sums stipulated therein, supported by data required by the Design Consultant or Owner.
- 1.1.13 **PROVIDE:** As a directive to the Contractor, and as pertaining to labor, materials or equipment, "provide" means "furnish and install completely".
- 1.1.14 **SPECIFICATIONS:** Descriptions, provisions and requirements, pertaining to method and manner of performing the Work, or to quantities and qualities of materials or equipment to be furnished under terms of the Contract.
- 1.1.15 **WORK:** The Work comprises the construction and services required of the Contractor by the Contract Documents and includes all labor, supplies and other facilities or things necessary to produce such construction, and all materials, equipment, and supplies incorporated or to be incorporated in such

construction.

1.2 EXECUTION, CORRELATION AND INTENT

- 1.2.1 The Contractor and Owner acknowledge that neither these General Conditions, nor any other Contract Document shall be construed against the Owner due to the fact that they may have been drafted by the Owner or the Owner's agent. For the purposes of construing these General Conditions, and any other Contract Document, both the Contractor and the Owner shall be considered to have jointly drafted them.
- 1.2.2 The Owner-Contractor Agreement shall be signed in not less than three (3) copies by the Owner and Contractor, and each of which shall be deemed an original, but all of which shall constitute one and the same instrument.
- 1.2.3 By executing the Contract, the Contractor represents that he has visited the site, familiarized himself with the local conditions under which the Work is to be performed, and correlated his observations with the requirements of the Contract Documents.
- 1.2.4 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work. The Contract Documents are complementary, and what is required by any one shall be as binding as if required by all. Performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the intended results. Words and abbreviations which have well-known technical or trade meanings are used in the Contract Documents in accordance with such recognized meanings unless otherwise specifically defined herein. The table of contents, titles, headings, running headlines and marginal notes contained herein and in said documents are solely to facilitate reference to various provisions of the Contract Documents and in no way affect, limit or cast light upon the interpretation of the provisions to which they refer.
- 1.2.5 The organization of the Specifications into divisions, sections and articles, and the arrangement of Drawings are for convenience only. The Contractor may subcontract the Work in such divisions as he sees fit consistent with applicable law and he is ultimately responsible for furnishing all of the Work.
- 1.2.6 Anything shown on the Drawings and not mentioned in the Specifications or mentioned in the Specifications and not shown on the Drawings shall have the same effect as if shown or mentioned respectively in both. Detailed specifications take priority over general specifications and detailed drawings take precedence over general drawings. Any Work shown on one drawing shall be construed to be shown in all drawings. If any portion of the Contract Documents shall be in conflict with any other portion, the various documents comprising the Contract Documents shall govern in the following order of precedence: The Owner-Contractor Agreement; the Supplemental Conditions; the General Conditions; the Specifications; the Drawings. The Contractor shall notify the Design Consultant and the Owner of all such inconsistencies promptly. Any such conflict or inconsistency between or in the Drawings or Specifications shall be submitted by the Contractor promptly to the Owner and Design Consultant and the Design Consultant's decision thereon shall be final and conclusive.
- 1.2.7 The Contractor agrees that nothing contained in the Contract Documents or any contract between the Owner and the Design Consultant shall create any contractual relationship between the Design Consultant and the Contractor, or between the Design Consultant and any Subcontractor or Sub-subcontractors. The Contractor acknowledges and agrees that this Contract is not intended to create, nor shall any provision be interpreted as creating, any contractual relationship between the Owner or Contractor and any third parties.
- 1.2.8 The provisions of this Contract cannot be amended, modified, varied or waived in any respect except by a Modification. The Contractor is hereby given notice that no person has authority to orally waive, or to release the Contractor from any of the Contractor's duties or obligations under or arising out of this Contract. Any waiver, approval or consent granted by Modification to the Contractor shall be limited to

those matters specifically and expressly stated thereby to be waived, approved or consented to and shall not relieve the Contractor of the obligation to obtain any future waiver, approval or consent.

1.2.9 Any material or operation specified by reference to published specifications of a Manufacturer, a society, an association, a code, or other published standard, shall comply with requirements of the listed document which is current on date the Owner received bids for the construction of the Project. In case of a conflict between referenced document and the Specifications, Specifications shall govern. In case of a conflict between such listed documents, the one having more stringent requirements shall govern.

1.2.10 The Contractor, if requested, shall furnish an affidavit from each or any Manufacturer certifying that materials or products delivered to the job meets requirements specified.

1.3 OWNERSHIP AND USE OF DOCUMENTS

1.3.1 All Drawings, Specifications and copies thereof furnished by the Design Consultant are and shall remain the property of the Owner. They are to be used by Contractor only with respect to the Project and are not to be used by Contractor on any other project. With the exception of one contract set for each party to the Contract, such documents are to be returned or suitably accounted for to the Owner on request at the completion of the Work. Submission or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of Owner's rights or the Design Consultant's common law copyright or other reserved rights.

ARTICLE 2

THE DESIGN CONSULTANT

2.1 DEFINITIONS

- 2.1.1 The term "Design Consultant" or "A/E" or "Architect" or "Engineer" as used or set forth in the Contract Documents, shall mean the entity and its consultants or agents, or their duly authorized representatives, that is responsible for designing or engineering the Work, and performing the activities specified herein, and in the Agreement for Design Consultant Services, including any consultants to said entity or firm acting within the scope of their agreements with the Design Consultant. Such firm or agency and its representatives shall act severally within the scope of particular duties entrusted to them, unless otherwise provided for in the Contract Documents or in the Agreement for Design Consultant Services.
- 2.1.2 The Design Consultant may be identified in the Owner-Contractor Agreement and is referred to throughout the Contract Documents as if singular in number and masculine in gender. The Design Consultant is further described as and, throughout this document, shall mean one or both of the following:
- 2.1.2.1 ARCHITECT, a person or other legal entity lawfully licensed to practice architecture in the State wherein the Project is located; or
- 2.1.2.2 ENGINEER, a person or other legal entity lawfully licensed to practice engineering in the State wherein the Project is located.

2.2 SERVICES OF THE DESIGN CONSULTANT

- 2.2.1 The Design Consultant will provide certain services as hereinafter described and further described in the Agreement for Design Consultant Services.
- 2.2.2 Should errors, omissions, or conflicts in the Drawings, Specifications, or other Contract Documents prepared by or on behalf of the Design Consultant be discovered, the Design Consultant will prepare such amendments or supplementary documents and provide consultation as may be required.
- 2.2.3 The Design Consultant will visit the site at intervals appropriate to the stage of construction to familiarize itself generally with the progress and quality of the Work and to determine in general if the Work is proceeding in accordance with the Contract Documents. The Design Consultant will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work, but it shall make as many inspections as may reasonably be required to fulfill its obligations to the Owner. On the basis of such on-site observations, the Design Consultant and his consultants shall endeavour to guard the Owner against defects and deficiencies in the Work. The Design Consultant will conduct the construction meeting and shall be responsible for preparing accurate and complete minutes of all such meetings and other Project meetings and distributing same to all participants.
- 2.2.4 The Design Consultant will render written field reports to the Owner in the form required by the Owner relating to the periodic visits and inspections of the Project required by Paragraph 2.2.3.
- 2.2.5 The Design Consultant will not be responsible for and will not have control or charge of construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, and he will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Design Consultant will not be responsible for or have control or charge over the acts or omissions of the Contractor, Subcontractors, or any of their agents or employees, or any other persons performing any portion of the Work.
- 2.2.6 The Design Consultant shall at all times have access to the Work wherever it is in preparation or progress.

The Contractor shall provide safe facilities for such access so the Design Consultant may perform his functions under the Contract Documents.

- 2.2.7 As required, the Design Consultant will render to the Owner, within a reasonable time, interpretations concerning the design and other technical aspects of the Work and the Contract Documents.
- 2.2.8 All communications, correspondence, submittals, and documents exchanged between the Design Consultant and the Contractor in connection with the Project shall be in the manner prescribed by the Owner. Further, all communications, correspondence, submittals and documents transmitted from the Owner or Design Consultant will be directed to the Contractor and copied to the Owner or Design Consultant.
- 2.2.9 All interpretations and decisions of the Design Consultant shall be consistent with the intent of and reasonably inferable from the Contract Documents.
- 2.2.10 The Design Consultant's decisions in matters relating to artistic effect will be final if consistent with the intent of the Contract Documents.
- 2.2.11 If the Design Consultant observes any Work that does not conform to the Contract Documents, the Design Consultant shall report this observation to the Owner. The Design Consultant will prepare and submit to the Owner and Contractor a list of the Contractor's work which is not in conformance with the Contract Documents.
- 2.2.12 The Design Consultant has the authority to condemn or reject any or all of the Work on behalf of the Owner when, in its opinion, the Work does not conform to the Contract Documents. Whenever, in the Design Consultant's reasonable opinion, it is considered necessary or advisable for the implementation of the intent of the Contract Documents, the Design Consultant will have the authority to require special inspection or testing of any portion of the Work in accordance with the provisions of the Contract Documents whether or not such portion of the Work be then fabricated, installed or completed.
- 2.2.13 The Design Consultant will review the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for conformance with the design concept of the Work and for general compliance with the Contract Documents. Such action shall be taken within fourteen (14) days of receipt unless otherwise authorized by the Owner.
- 2.2.14 The Owner will establish with the Design Consultant procedures to be followed for review and processing of all Shop Drawings, catalogue submittals, project reports, test reports, maintenance manuals, and other necessary documentation, as well as requests for changes and applications for extensions of time.
- 2.2.15 The Design Consultant will prepare Change Orders and Construction Change Directives when requested by the Owner.
- 2.2.16 The Design Consultant and the Owner will conduct inspections to determine the dates of Substantial Completion and Final Completion. The Design Consultant will provide a final Certification of Payment.
- 2.2.17 The Design Consultant will prepare record documents showing significant Changes in the Work made during the construction process, based on neatly and clearly marked-up Drawings, prints, and other data furnished by the Contractor(s) and the applicable Addenda, clarifications and Change Orders which occurred during the Project.
- 2.2.18 In case of the termination of the employment of the Design Consultant, the Owner may appoint a Design Consultant whose status under the Contract Documents shall be that of the former Design Consultant.

ARTICLE 3

OWNER

3.1 DEFINITION

- 3.1.1 The Owner is the person or entity identified as such in the Owner-Contractor Agreement and may be referred to throughout the Contract Documents as if singular in number and masculine in gender. The term Owner means the Owner or his authorized representative or agent. The phrase "Owner or its agent" as used in this Agreement, does not include the Separate Contractors or their Subcontractors.

- 3.1.2 Owner: Charlotte-Mecklenburg Board of Education
Post Office Box 30035
Charlotte, North Carolina, 28230

3.2 INFORMATION, SERVICES AND RIGHTS OF THE OWNER

- 3.2.1 The Owner will provide administration of the Contract as herein described. The Design Consultant shall also provide aspects of administration of the Contract as herein described or as specified in the Agreement for Design Consultant Services.
- 3.2.2 The Owner shall at all times have access to the Work whenever it is in preparation or progress. The Contractor shall provide safe facilities for such access.
- 3.2.3 The Owner shall not be responsible for or have control or charge of the construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the Work, and will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents.
- 3.2.4 The Owner will have authority to require special inspection or testing of portions of the Work to the same extent as the Design Consultant in accordance with Paragraph 2.2.12 whether or not such portion of the Work be then fabricated, installed, or completed. However, neither the Owner's authority to act under Paragraph 3.2.4, nor any decision made by the Owner in good faith either to exercise or not to exercise such authority shall give rise to any duty or responsibility of the Owner to the Contractor, any Subcontractor, any of their agents or employees, or any other person performing any of the Work.
- 3.2.5 The Owner shall have the authority and discretion to call, schedule, and conduct job meetings to be attended by the Contractor, representatives of his Subcontractors, and the Design Consultant, to discuss such matters as procedures, progress, problems, and scheduling.
- 3.2.5.1 The Contractor is requested and required to attend job site progress conferences as called by the Design Consultant. The Contractor shall be represented at these job progress conferences by project personnel authorized by the Contractor to make schedule and financial decisions and by project personnel representatives. These meetings shall be open to Subcontractors, Material Suppliers, and any others who can contribute shall be encouraged by the Contractor to attend. It shall be the principal purpose of these meetings, or conferences, to affect coordination, cooperation and assistance in every practical way toward the end of maintaining progress of the Project on schedule and to complete the Project within the specified Contract Time. The Contractor shall be prepared to assist progress of the Work as required in his particular contract and to recommend remedial measures for the correction of progress as may be appropriate. The Design Consultant shall be the coordinator of the conferences and shall preside as chairman.
- 3.2.5.2 If the Project is awarded as a single prime construction contract, the Design Consultant shall determine which, if any, Subcontractors and/or Material Suppliers shall be required to attend job site progress conferences. The Contractor shall comply with this request and the meeting shall be conducted as described in Subparagraph 3.2.5.1.

- 3.2.6 The Owner will establish procedures to be followed for processing all Shop Drawings, catalogues, and other project reports, and other documentation, test reports, and close-out manuals.
- 3.2.7 The Owner and Design Consultant will review all requests for changes and shall implement the processing of Change Orders, including applications for extension of the Contract Time.
- 3.2.8 The Owner, will not be responsible for the failure of the Contractor to plan, schedule, and execute the Work in accordance with the approved schedule or the failure of the Contractor to meet scheduled Completion Dates or the failure of the Contractor to schedule and coordinate the Work of his own trades and Subcontractors or to coordinate and cooperate with any Separate Contractors.
- 3.2.9 The Owner, in consultation with the Design Consultant, will review and process all Applications for Payment by the Contractor, including the final Application for Payment.
- 3.2.10 The Owner and Design Consultant shall not be responsible or liable to Contractor for the acts, errors or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons performing any of the Work or working on the Project.
- 3.2.11 The Owner shall furnish surveys describing the physical characteristics and legal limitations for the site of the Project, which are in its possession and are relevant to the Work.
- 3.2.12 The Owner shall secure and pay for necessary easements, required for permanent structures or for permanent changes in existing facilities.
- 3.2.13 The Owner shall furnish information or services under the Owner's control with reasonable promptness to avoid unreasonable delay in the orderly progress of the Work.
- 3.2.14 The Owner will make reasonable efforts to make available for the Contractor's reasonable review, at the Owner's offices or together with the Contract Documents, certain boring logs, geotechnical, soils and other reports, surveys and analyses pertaining to the Project site of which the Owner is aware, has in its possession and are relevant to the Work. Any boring logs that are provided to the Contractor are only intended to reflect conditions at the locations of the borings and do not necessarily reflect site conditions at other locations. Any reports, surveys and analyses provided by Owner are for the Contractor's information only, and their accuracy and completeness are not guaranteed or warranted by the Owner or the Design Consultant, and such reports are not adopted by reference into, nor are they part of the Contract Documents. Notwithstanding any factual statement, conclusion, or any language or recommendations contained in such reports, the Contractor shall not rely upon the accuracy or completeness of any reports, surveys and analyses.
- 3.2.15 The foregoing rights are in addition to other rights of the Owner enumerated herein and those provided by law.
- 3.3 OWNER'S RIGHT TO STOP OR TO SUSPEND THE WORK
- 3.3.1 If the Contractor fails to correct defective Work as required by Section 13.2 or fails to carry out the Work or supply labor and materials in accordance with the Contract Documents, the Owner by a written Notice may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the Owner to stop the Work shall not give rise to any duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.
- 3.3.2 The Owner may order the Contractor in writing to suspend, delay, or interrupt all or any part of the Work for such period of time as he may determine to be appropriate for the convenience of the Owner.
- 3.3.3 If the performance of all or any part of the Work (including the work of the Contractor and its

Subcontractors) is, for an unreasonable period of time, suspended, delayed, or interrupted by an act of the Owner or the Design Consultant, or by failure of any one of them to act within the time specified in this Contract (or if no time is specified, within a reasonable time), an adjustment shall be made for an increase in the actual time required for performance of the Work by the Contractor, due solely to such unreasonable suspension, delay, or interruption and the Contract modified in writing accordingly. However, no Claim shall be made under this Paragraph for any suspension, delay, or interruption pursuant to Paragraph 3.4.1, or for which Claim is provided or excluded under any other provision of this Contract. No Claim under this Paragraph shall be allowed on behalf of the Contractor or its Subcontractors, unless within twenty (20) days after the act or failure to act involved, and for continuing or ongoing acts or failures to act within twenty (20) days of the first day of the act or failure to act, the Contractor submits to the Owner a written statement setting forth, as fully as then practicable, the extent of such Claim, and unless the Claim is asserted in writing within thirty (30) days after the termination of such suspension, delay, or interruption. For continuing or ongoing acts or failures to act, the Contractor shall update its written statement every twenty (20) days until the suspension, delay or interruption is terminated. The Contractor shall waive any and all Claims under this Paragraph 3.3.3 which are not filed in strict conformance with Paragraph 3.3.3. The Contractor shall indemnify, defend and hold the Owner harmless from any Claim by a Subcontractor that is waived because it is not filed in strict conformance with this Paragraph 3.3.3 or any other provision of the Contract regarding Claims.

3.3.4 In the event of a suspension of the Work or delay or interruption of the Work per Paragraph 3.3.3, the Contractor will and will cause his Subcontractors to protect carefully his, and their, materials and Work against damage, loss or injury from the weather and maintain completed and uncompleted portions of the Work as required by the Contract Documents. If, in the opinion of the Owner, any Work or material shall have been damaged or injured by reason of failure on the part of the Contractor or any of his Subcontractors to so protect same, such Work and materials shall be removed and replaced at the expense of the Contractor.

3.3.5 No Claim by the Contractor under Paragraph 3.3.3 shall be allowed if asserted after final payment under this Contract or if it is not asserted in strict conformance with Paragraph 3.3.3.

3.4 OWNER'S RIGHT TO CARRY OUT THE WORK

3.4.1 If the Contractor defaults or otherwise neglects to carry out the Work in accordance with the Contract Documents and fails within ten (10) days after the date written Notice is given by the Owner, with a copy of such Notice sent to the Contractor's Surety, to commence and continue remedy of such default or neglect with diligence and promptness, the Owner may, without prejudice to any other remedy he may have, make good such deficiencies and may further elect to complete all Work thereafter through such means as the Owner may select, including the use of a new contractor pursuant to Paragraph 3.4.2. In such case, the Owner shall provide Notice to the Contractor's Surety and an appropriate Change Order shall be issued deducting from the payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Design Consultant's additional services made necessary by such default, neglect or failure and any other damages suffered by Owner as a result of Contractor's breach, including but not limited to Owner's reasonable attorney's fees and litigation costs and expenses. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor or its Surety shall pay the difference to the Owner. Notwithstanding the Owner's right to carry out a portion of the Work, warranty, maintenance and protection of the Work remains the Contractor's and Surety's responsibility. Further, the provisions of this Paragraph do not affect the Owner's right to require the correction of defective or non-conforming Work in accordance with Section 13.2.

3.4.2 Whenever the Contractor shall be, and declared by the Owner to be in default under the Contract, the Owner having substantially performed Owner's obligations thereunder, the Surety shall promptly remedy the default, or shall be liable to Owner for damages pursuant to the Performance Bond and as provided by law. Any action by Surety or by Owner against the Surety shall not relieve Contractor of its duties, responsibilities and liabilities to Owner pursuant to the Contract or as allowed by law.

ARTICLE 4

CONTRACTOR

4.1 DEFINITION

- 4.1.1 The Contractor is the person or organization identified as such in the Owner-Contractor Agreement and may be referred to throughout the Contract Documents as if singular in number and masculine in gender. The term Contractor means the Contractor or his authorized representative, who shall have authority to bind the Contractor in all matters pertinent to the Contract.
- 4.1.2 The Contract is not one of agency by the Contractor for Owner but one in which Contractor is engaged independently in the business of providing the services and performing the Work herein described as an independent contractor.

4.2 REVIEW OF CONTRACT DOCUMENTS

- 4.2.1 The Contractor represents that prior to executing this Contract, the Contractor carefully reviewed and studied the Contract Documents and notified the Owner and Design Consultant of any errors, inconsistencies or omissions of which the Contractor is aware. The Contractor agrees to continuously and carefully study and compare the Contract Documents after the execution of this Contract and shall at once report to the Owner and Design Consultant any error, inconsistency or omission he may discover, including, but not limited to, any requirement which may be contrary to any law, ordinance, rule, regulation, building code, or order of any public authority bearing on the Work. If the Contractor has reported in writing an error, inconsistency or omission, has promptly stopped the affected Work until otherwise instructed, and has otherwise followed the instructions of the Owner, the Contractor shall not be liable to the Owner or the Design Consultant for any damage resulting from any such errors, inconsistencies or omissions in the Contract Documents. The Contractor shall perform no portion of the Work at any time without it being specified in Contract Documents and, where required, approved Shop Drawings, Product Data or Samples for such portion of the Work.
- 4.2.2 The Contractor and his Subcontractors shall keep at the site of the Work at least one copy of the Drawings and Specifications and shall at all times give the Owner, the Design Consultant, inspectors, as well as other representatives of the Owner access thereto.

4.3 SUPERVISION AND CONSTRUCTION PROCEDURES

- 4.3.1 The Contractor shall supervise and direct the Work, using his best skill and attention. He shall be solely responsible for and have control over all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract.
- 4.3.1.1 It shall be the Contractor's responsibility to schedule the Work; to maintain a progress schedule for the Project; and to notify the Design Consultant and the Owner of any changes in the progress schedule. He shall be responsible for providing adequate notice to all Subcontractors to insure efficient continuity of all phases of the Project. The Contractor is responsible for keeping the Owner and Design Consultant fully informed as to the work progress, including immediate notification of any work progress changes.
- 4.3.2 The Contractor shall be responsible to the Owner for the acts and omissions of his employees, Subcontractors and Sub-subcontractors, Suppliers, their agents and employees, and other persons performing any of the Work and for their compliance with each and every requirement of the Contract Documents, in the same manner as if they were directly contracted by the Contractor.
- 4.3.3 The Contractor shall not be relieved from his obligations to perform the Work in accordance with the Contract Documents either by the acts, failures to act or duties of the Owner or the Design Consultant in

their administration of the Contract, or by inspections, tests or approvals (or the lack thereof) required or performed under Section 7.6 by persons other than the Contractor.

- 4.3.4 Before starting a section of the Work, the Contractor shall carefully examine all preparatory work that has been executed to receive his work to see that it has been completed in accordance with the Contract Documents. He shall check carefully, by whatever means are required, to ensure that his work and adjacent, related work will finish to proper and required standards for quality, contours, planes, and levels.
- 4.3.5 The Contractor understands and agrees that the Owner and Design Consultant will not be responsible for and will not have control or charge of construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, and they will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Owner and the Design Consultant will not be responsible for or have control or charge over the acts or omissions of the Contractor, Subcontractors, or any of their agents or employees, or any other persons performing any of the Work.
- 4.3.6 The Contractor shall not use or provide Subcontractor equipment, materials, methods or persons to which Owner and Design Consultant have a reasonable objection and shall remove no portion of the Work or stored materials from the site of the Work, except for defective Work the Contractor may be required to replace or repair as set forth herein.
- 4.3.7 The Contractor shall verify all grades, lines, levels and dimensions as indicated and shown on the Drawings and in the Specifications prior to beginning any portion of the Work and shall immediately report in writing any errors or inconsistencies to the Design Consultant before commencing that portion of the Work.

4.4. CONTRACTOR'S REPRESENTATIONS

- 4.4.1 By entering into this Contract with the Owner, the Contractor represents and warrants the following, together with all other representations and warranties in the Contract Documents:
 - .1 That he is experienced in and competent to perform the type of work required and to furnish the Subcontractors, materials, supplies, equipment and services to be performed or furnished by him;
 - .2 That he is financially solvent, able to pay his debts as they mature, and possessed of sufficient working capital to initiate and complete the Work required under the Contract;
 - .3 That he is familiar with all Federal, State, County, municipal and department laws, ordinances, permits, regulations, building codes and resolutions which may in any way affect the Work or those employed therein, including but not limited to any special laws or regulations relating to the Work or any part thereof;
 - .4 That such temporary and permanent Work required by the Contract Documents will be satisfactorily constructed and fit for use for its intended purpose and that such construction will not injure any person, or damage any property;
 - .5 That he has carefully examined the Contract Documents and the site of the Work and that from his own investigations, he has satisfied himself and made himself familiar with: (1) the nature and location of the Work; (2) the character, quality and quantity of surface and subsurface materials likely to be encountered, including, but not limited to, all structures and obstructions on or at the Project site, both natural and man-made; (3) the character of equipment and other facilities needed for the performance of the Work; (4) the general and local conditions including without limitation its climatic conditions, the availability and cost of labor and the availability and cost of materials, tools and equipment; (5) the quality and quantity of all materials, supplies, tools, equipment, labor and professional services necessary to complete the Work in the manner required by the Contract

Documents; and (6) all other matters or things which could in any manner affect the performance of the Work;

- .6 That he will fully comply with all requirements of the Contract Documents;
- .7 That he will perform the Work consistent with good workmanship, sound business practice, and in the most expeditious and economical manner consistent with the best interests of the Owner;
- .8 That he will furnish efficient business administration and experienced project management and supervision, and an adequate supply of workers, equipment, tools and materials at all times;
- .9 That he has carefully reviewed the Work required and that the Work can be planned and executed in a normal and orderly sequence of Work and reasonably scheduled so as to ensure completion of the Work in accordance with the Contract Documents, allowing for normal and reasonably foreseeable weather, labor and other delays, interruptions and disruptions of the Work;
- .10 That he will complete the Work within the Contract Time and all portions thereof within any required Completion Dates;
- .11 That his Contract Sum is based upon the labor, materials, systems and equipment required by the Contract Documents, without exception; and
- .12 That he and all subcontractors acting on his behalf have obtained and shall retain throughout the duration of this Agreement all required licenses and certifications required in order to perform the work identified in the Contract Documents, that he will not permit any such licenses or certifications to lapse at any time during the course of his work on this Project, and that he and all subcontractors acting on his behalf are fully licensed and certified to perform all work required by the Contract Documents and this Agreement.

4.5 LABOR AND MATERIALS

- 4.5.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for all labor, materials, equipment, supplies, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary or proper for or incidental to the execution and completion of the Work required by and in accordance with the Contract Documents and any applicable code or statute, whether specifically required by the Contract Documents or whether their provision may reasonably be inferred as necessary to produce the intended results, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work. Final payment will not be made until the Work is so completed and Contractor has otherwise complied with the Contract Documents in full.
- 4.5.2 The Contractor shall at all times enforce strict discipline and good order among his employees and Subcontractors performing any of the Work and shall not employ or contract with on the Work any unfit person or entity or anyone not skilled in the task assigned to him. The Owner may, by Notice, require the Contractor to remove from the Work any employee or employee of a Subcontractor performing any of the Work, that the Owner deems incompetent, careless or otherwise objectionable.
- 4.5.3 The Contractor shall be responsible for ensuring that the Work is completed in a skillful and workmanlike manner.
- 4.5.4 All equipment, apparatus and/or devices of any kind to be incorporated into the Work that are shown or indicated on the Drawings or called for in the Specifications or required for the completion of the Work shall be entirely satisfactory to the Owner and the Design Consultant as regards operations, capacity and/or performance. No approval, either written or verbal, of any drawings, descriptive data or samples of such equipment, apparatus and/or device shall relieve the Contractor of his responsibility to turn over the same in good working order for its intended purpose at the completion of the Work in complete

accordance with the Contract Documents. Any equipment, apparatus and/or device not fulfilling these requirements shall be removed and replaced by proper and acceptable equipment, etc. or put in good working order satisfactory to the Owner and Design Consultant without additional cost to the Owner.

4.6 WARRANTY

4.6.1 The Contractor warrants to the Owner and the Design Consultant that all materials and equipment furnished under this Contract will be new unless otherwise specified, and that all workmanship will be in accordance with generally accepted industry standards, free from faults and defects and in conformance with the Contract Documents and all other warranties and guaranties specified therein. Where no standard is specified for such workmanship or materials, they shall be the best of their respective kinds. All Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. If required by the Owner or the Design Consultant, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. This warranty is not limited by the provisions of Article 13.

4.6.2 The Contractor will be required to complete the Work specified and to provide all items needed for construction of the Project, complete and in good order.

4.6.3 The warranties set forth in this Section 4.6 and elsewhere in the Contract Documents shall survive Final Completion of the Work under Section 9.9.

4.6.4 The Contractor guarantees and warrants to the Owner all Work as follows:

- .1 That all materials and equipment furnished under this Contract will be new and the best of its respective kind unless otherwise specified;
- .2 That all Work will be in accordance with generally accepted industry standards and free of omissions and faulty, poor quality, imperfect and defective material or workmanship;
- .3 That the Work shall be entirely watertight and leak proof in accordance with all applicable industry customs and practices, and shall be free of shrinkage and settlement;
- .4 That the Work, including but not limited to, mechanical and electrical machines, devices and equipment, shall be fit and fully usable for its intended and specified purpose and shall operate satisfactorily with ordinary care;
- .5 That consistent with requirements of the Contract Documents, the Work shall be installed and oriented in such a manner as to facilitate unrestricted access for the operation and maintenance of fixed equipment;
- .6 That the Work will be free of abnormal or unusual deterioration which occurs because of poor quality materials, workmanship or unsuitable storage; and
- .7 That the products or materials incorporated in the Work will not contain asbestos.

4.6.5 All Work not conforming to guarantees and warranties specified in the Contract Documents, including substitutions not properly approved and authorized, may be considered defective. If required by the Design Consultant or Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

4.6.5.1 The Contractor will submit a written affidavit certifying that none of the materials incorporated in the Project contain asbestos.

4.6.6 If, within one (1) year after the date of Substantial Completion of the Work or designated portion thereof

as defined in Paragraph 8.1.3 or within such longer period of time as may be prescribed by law or by the terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be defective, not in accordance with the Contract Documents, or not in accordance with the guarantees and warranties specified in the Contract Documents, the Contractor shall correct it within five (5) working days or such other period as mutually agreed, after receipt of Notice from the Owner to do so. The Owner shall give such Notice with reasonable promptness after discovery of the condition. For items that remain incomplete or uncorrected on the date of Substantial Completion, the one (1) year warranty shall begin on the date of Final Completion of the Work or upon correction of the defective Work.

4.6.7 If at any time deficiencies in the Work are discovered which are found to have resulted from fraud or misrepresentation, or an intent or attempt to or conspiracy to defraud the Owner by the Contractor, any Subcontractor or Supplier, the Contractor will be liable for replacement or correction of such Work and any damages which Owner has incurred related thereto, regardless of the time limit of any guarantee or warranty.

4.6.8 Any materials or other portions of the Work, installed, furnished or stored on site which are not of the character or quality required by the Specifications, or are otherwise not acceptable to the Design Consultant or the Owner, shall be immediately removed and replaced by the Contractor to the satisfaction of the Design Consultant and Owner, when notified to do so by the Design Consultant or Owner.

4.6.9 If the Contractor fails to correct defective or non-conforming Work as required by Paragraph 4.6.6, or if the Contractor fails to remove defective or non-conforming Work from the site, as required by Paragraph 4.6.8, the Owner may elect to either correct such Work in accordance with Section 3.4 or remove and store materials and equipment at the expense of the Contractor. If the Contractor does not pay the cost of such removal and storage within ten (10) days thereafter, the Owner may upon ten (10) additional days written Notice sell such Work at auction or at private sale and shall account for the net proceeds thereof, after deducting all the costs that should have been borne by the Contractor, including compensation for the Design Consultant's additional services and Owner's reasonable attorney's fees made necessary thereby. If such proceeds of sale do not cover all costs, which the Contractor should have borne, the difference shall be charged to the Contractor and an appropriate Change Order shall be issued. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

4.6.10 The Contractor shall bear the cost of making good all of the Work of the Owner, Separate Contractors or others, destroyed or damaged by such correction or removal required under this Article 4, Article 13 or elsewhere in the Contract Documents.

4.7 TAXES

4.7.1 The Contractor shall pay all sales, consumer, use and other similar taxes for the Work or portions thereof provided by the Contractor which are legally enacted at the time the Owner received bids for the construction of the Project, whether or not yet effective.

4.7.2 Sales and Use Tax. Contractor shall be responsible for complying with any applicable sales and use tax obligations imposed by Chapter 105, Article 5 of the North Carolina General Statutes. Where Contractor has been contracted with to oversee "new construction" or "reconstruction" as defined in G.S. 105-164.4H, Contractor shall be responsible for issuing and maintaining an Affidavit of Capital Improvement.

4.8 PERMITS, FEES AND NOTICES

4.8.1 Unless otherwise provided in the Contract Documents, The initial building permit fees required by the Charlotte Mecklenburg Building Standards (CMBS) to commence the work will be paid by the Owner. The Contractor shall, immediately following award of the Contract apply for and secure the building permit and shall secure and pay for all other permits, fees, so as not to delay the progress of the Work. The Contractor shall furnish the Owner with copies of all permits, certificates, licenses, and inspections

- necessary for the proper execution and completion of the Work, including, without limitation, all building permits and other similar items. All utility company connection charges (including water & sewer tap, and associated impact fees), assessments or CMBS re-inspection fees as may be imposed by CMBS or inspections fees of any other governmental agency or utility company are included in the Contract Sum and shall be the Contractor's responsibility.
- 4.8.2 The Contractor is responsible for all fees, permits and other costs associated with temporary utilities, including but not limited to installation, use, disconnection, removal and/or relocation.
- 4.8.3 The Contractor will pay for his own license, inspection and re-inspection fees for the proper execution and completion of the Work.
- 4.8.4 The Contractor shall give all notices and comply with all laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the performance of the Work, including but not limited to all applicable building codes. If Contractor believes that any part of the Drawings or Specifications are inconsistent with applicable laws, rules, regulations, lawful orders of public authorities or building codes, Contractor shall Notify the Owner and Design Consultant of such inconsistencies immediately.
- 4.9 ALLOWANCES
- 4.9.1 The Contractor shall include in the Contract Sum all Allowances stated in the Contract Documents. Items covered by these Allowances shall be supplied for such amount and by such persons as the Owner may direct, but the Contractor will not be required to employ persons against whom he makes a reasonable objection.
- 4.9.2 Unless otherwise provided in the Contract Documents:
- .1 Allowances for Work: These allowances shall cover the cost to the Contractor for the materials and equipment required by the allowance delivered at the site, all applicable taxes, unloading, uncrating and storage, protection from elements, labor, installation and finishing and other expenses required to complete the installation, time, and a fixed percentage for overhead and profit as defined in Article 12.
 - .2 Allowances for Products/Materials: Allowance includes the cost of the product, delivery to the site and applicable taxes. The Contractor's costs for unloading and handling on the site, labor, installation, time, overhead, profit and other expenses contemplated for the material allowance shall be included in the Contract Sum and not in the allowance;
 - .3 Whenever the cost is more than or less than the Allowance, the Contract Sum shall be adjusted accordingly by Change Order, the amount of which will recognize changes, if any, in handling costs on the site, labor, installation costs, overhead, profit and other expense.
- 4.9 SUPERINTENDENT
- 4.10.1 The Contractor shall employ, and have approved by the Owner, a competent superintendent and necessary assistants who shall be in attendance at the Project site during the progress of the Work. The superintendent shall represent the Contractor and all communications given to the superintendent shall be as binding as if given to the Contractor. If the Contractor employs more than a single individual in this role, the Owner shall be provided an organizational chart and personnel listing for the staff performing the functions of a superintendent. In such event, all references to the superintendent elsewhere in the Contract Documents shall mean the staff performing the functions of a superintendent.
- 4.10.2 It is understood that such superintendent shall be acceptable to the Owner and shall be the one who will be continued in that capacity for the duration of the Project, unless he ceases to be on the Contractor's payroll or the Owner otherwise agrees. The superintendent shall not be employed on any other project for or by Contractor or any other entity during the course of the Work. The Contractor, as soon as

practicable after award of the Contract but not more than 14 days after the award of the Contract, shall furnish in writing to the Owner through the Architect the name and qualifications of the proposed project manager and superintendent. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to the proposed project manager or superintendent or (2) that the Architect requires additional time to review. Notwithstanding the above, the Owner and Architect reserve the right to notify the Contractor of their reasonable objection to the project manager and/or superintendent based upon their performance or failure to perform their duties and responsibilities.

4.11 PROGRESS SCHEDULE

- 4.11.1 The Contractor shall prepare and submit to the Owner for the Owner's review and approval an estimated progress schedule for the Work pursuant to the Specifications.

4.12 RESPONSIBILITY FOR COMPLETION

- 4.12.1 The Contractor shall furnish such manpower, materials, facilities and equipment and shall work the required hours to ensure the performance of the Work within the Completion Dates specified in the Owner-Contractor Agreement.

- 4.12.2 If it becomes apparent to the Design Consultant or Owner that the Work will not be completed within required Completion Dates, the Contractor agrees to undertake some or all of the following actions, at no additional cost to the Owner, in order to ensure, in the opinion of the Design Consultant and Owner, that the Contractor will comply with all Completion Date requirements:

- .1 Increase manpower, materials, crafts, equipment and facilities;
- .2 Increase the number of working hours per shift, shifts per working day, working days per week, or any combination of the foregoing, including but not limited to night shifts, overtime operations and Sundays and holidays;
- .3 Reschedule activities to achieve maximum practical concurrence of accomplishment of activities;
- .4 Require that his superintendent be at the Project site not less than ten (10) hours per day, six (6) days per week; and

- 4.12.3 In undertaking the actions required under Paragraph 4.12.1, Contractor shall provide and comply with a recovery schedule as set forth in the Specifications.

- 4.12.4 If the actions taken by the Contractor are not satisfactory, the Design Consultant or Owner may direct the Contractor to take any and all actions necessary to ensure completion within the required Completion Dates, without additional cost to the Owner. In such event, the Contractor shall continue to assume responsibility for his performance and for completion within the required dates.

- 4.12.5 If, in the opinion of the Design Consultant or Owner, the actions taken by the Contractor pursuant to this Article or the progress or sequence of the Work are not accurately reflected on the construction schedule, the Contractor shall revise such schedule to accurately reflect the actual progress and sequence of the Work.

- 4.12.6 Failure of the Contractor to substantially comply with the requirements of this Article and the Specifications, may be considered grounds for a determination by the Owner, pursuant to Article 14, that the Contractor is failing to prosecute the Work with such diligence as will ensure its completion within the time specified.

- 4.12.7 The Owner may, at its sole discretion and for any reason, other than due to the fault of Contractor require

the Contractor to accelerate the Work by providing overtime, Saturday, Sunday and/or holiday work and/or by having all or any Subcontractors designated by the Owner provide overtime, Saturday, Sunday, and/or holiday work. In the event that the Owner requires such acceleration a Change Order shall be issued in accordance with Article 12.

- 4.12.8 This Section 4.12 does not eliminate the Contractor's responsibility to comply with the local noise ordinances, all highway permit requirements and all other applicable laws, regulations, rules, ordinances, resolutions, and permit requirements.

4.13 DOCUMENTS AND SAMPLES AT THE SITE

- 4.13.1 The Contractor shall maintain at the site for the Owner one record copy of all Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to record all changes made during construction, and approved Shop Drawings, Product Data and Samples. These shall be delivered to the Design Consultant upon completion of the Work.

4.14 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

- 4.14.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or any Subcontractor, Manufacturer, Supplier or distributor to illustrate some portion of the Work.
- 4.14.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate a material, product or system for some portion of the Work.
- 4.14.3 Samples are physical examples, which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.
- 4.14.4 Manuals are manufacturer's installation, start-up, operating, and maintenance and repair instructions together with parts lists, pictures, sketches and diagrams, which set forth the manufacturer's requirements for the benefit of the Contractor and the Owner.
- 4.14.5 The Contractor shall prepare or have prepared at its expense and shall review, indicate approval thereupon, and submit, with reasonable promptness and in such sequence as to cause no delay in the Work or in the other work of the Owner or any Separate Contractor, all Shop Drawings, Product Data, Manuals and Samples required by the Contract Documents.
 - 4.14.5.1 Where the Contract calls for the submittal of manufacturer's data to the Design Consultant for information only, such submittals shall be made before the commencement of any portion of the Work requiring such submission. Work performed without benefit of approved Shop Drawings for any portion of the Work is subject to removal and replacement at no cost to the Owner.
 - 4.14.5.2 When the Shop Drawings are checked "revise and resubmit", the Contractor shall make corrections and submit new copies for review. The Shop Drawings shall contain the Contractor's "approval" and corrections.
 - 4.14.5.3 Contractor shall submit names of proposed Manufacturers, Material Suppliers, dealers, who are to furnish materials, fixtures, appliances or other fittings for approval as early as possible, to afford proper investigation and checking.
 - 4.14.5.4 Whenever item or class of material is specified exclusively by trade name, manufacturer's name, or by catalogue reference, Contractor shall use only such item, unless written approval for substitution is secured. Contractor shall not order materials until receipt of written approval. Contractor shall furnish materials equal in every respect to approved samples.

- 4.14.6 By approving and submitting Shop Drawings, Product Data, Manuals and Samples, the Contractor represents that he has determined and verified all materials, field measurements, and field construction criteria related thereto, and that he has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents. The Contractor shall adhere to any supplementary processing and scheduling instructions pertaining to Shop Drawings, which may be issued by the Design Consultant.
- 4.14.6.1 Parts and details not fully indicated on the Drawings shall be detailed by the Contractor in accordance with standard engineering practice. Dimensions on the Drawings, as well as detailed drawings themselves are subject in every case to measurements of existing, adjacent, incorporated and completed, which shall be taken by the Contractor before undertaking any Work dependent on such data.
- 4.14.7 The Contractor shall not be relieved of responsibility for any deviation from the requirements of the Contract Documents by the Design Consultant's review of Shop Drawings, Product Data, Samples or Manuals unless the Contractor has specifically informed the Design Consultant in writing of such deviation at the time of submission and the Design Consultant has given written approval to the specific deviation. The Contractor shall not be relieved from responsibility to Owner for errors or omissions in the Shop Drawings, Product Data, Samples, or Manuals by virtue of the Design Consultant's review or approval thereof.
- 4.14.8 The Contractor shall make corrections required by the Design Consultant and shall resubmit the required number of corrected copies of Shop Drawings or new Product Data or Samples. The Contractor shall direct specific attention, in writing on resubmitted Shop Drawings, Product Data or Samples or Manuals, to revisions other than those requested by the Design Consultant on previous submittals. Re-submittals necessitated by required corrections due to Contractor's errors or omissions shall not be cause for extension of Contract Time or an increase in the Contract Sum.
- 4.14.8.1 No portion of the Work requiring submission of Shop Drawings, Product Data, Samples or Manuals shall be commenced until the submittal has been approved by the Design Consultant as provided in Article 2. All such portions of the Work shall be in accordance with approved submittals.
- 4.14.9 Shop Drawings, Product Data and Samples shall be dated and shall bear the name of the Project; a description of the names of equipment, materials and items; and complete identification of locations at which materials or equipment are to be installed. Shop Drawings shall be stamped and signed stating that the Contractor has determined and verified all materials, field measurements, and field construction criteria related thereto and that he has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.
- 4.15 EQUAL PRODUCTS AND SUBSTITUTIONS
- 4.15.1 All materials, supplies and articles furnished under the Contract shall, whenever specified and otherwise practicable, be the standard products of recognized, reputable manufacturers. Unless otherwise specifically provided in the Contract Documents, the naming of a certain brand, make, manufacturer or article, device, product, material, fixture or type of construction shall convey the general style, type, character and standard of quality of the article desired and shall not be construed as limiting competition. The Contractor, in such cases, may with Owner's written approval, use any brand, make, manufacturer, article, device, product, material, fixture, form or type of construction which in the judgment of the Design Consultant is equal to that specified. An item may be considered equal to the item so named or described if, in the opinion of the Owner and Design Consultant (1) it is at least equal in quality, durability, appearance, strength, and design; (2) it will perform at least equally the specific function imposed by the general design for the Work being contracted for or the material being purchased; and (3) it conforms substantially, even with deviations, to the detailed requirements for the item in the Specifications. Approval by the Owner and Design Consultant will be granted based upon considerations of quality, workmanship, economy of operation, suitability for the purpose intended, warranty and

acceptability for use on the Project.

4.15.2 To obtain such approval on makes or brands of material other than those specified in Contract Documents, and not previously approved at the time the Owner received bids for the construction of the Project, the Contractor's request for approval of any substitution shall include:

- .1 Complete data substantiating compliance of the proposed substitution with the Contract Documents;
- .2 Product identification including manufacturers' name, address, and phone number;
- .3 Manufacturer's literature showing complete product description, performance and test data, and all reference standards;
- .4 Samples and colors in the case of articles or products;
- .5 Names and addresses of similar projects on which the product was used and date of installation;
- .6 For construction methods, include a detailed description for the proposed method and drawings illustrating same;
- .7 Itemized comparison of proposed substitution with product or method specified and any cost reduction, which shall benefit the Owner;
- .8 Accurate cost data on proposed substitution in comparison with product or method specified;
- .9 All directions, specifications, and recommendations by manufacturers for installation, handling, storing, adjustment, and operation; and
- .10 Item by item comparison of characteristics of substitution item with those items specified.

4.15.3 The Contractor shall also submit with his request for approval a sworn and notarized statement which shall include all of the following representations by the Contractor, namely that:

- .1 He has investigated the proposed product or method and determined that it is equal or better in all respects to that specified and that it fully complies with all requirements of the Contract Documents;
- .2 He will meet all contract obligations with regard to this substitution;
- .3 He will coordinate installation of accepted substitutions into the Work, making all such changes and any required schedule adjustments, at no additional cost to the Owner, as may be required for the Work to be complete in all respects;
- .4 He waives all Claims for additional costs and additional time related to substitutions, which consequently become apparent. He also agrees to hold the Owner harmless from Claims for extra costs and time incurred by other Subcontractors and suppliers, or additional services which may have to be performed by the Design Consultant, for changes for extra work that may, at some later date, be determined to be necessary in order for the Work to function in the manner intended in the Contract Documents;
- .5 He will provide the same warranty and guarantee, and perform any work required in accordance therewith, for the substitution that is applicable to the specified item for which the substitution is requested;
- .6 Material will be installed, handled, stored, adjusted, tested, and operated in accordance with the manufacturers' recommendation and as specified in the Contract Documents.

- .7 In all cases new materials will be used unless this provision is waived by Notice from the Owner or his Design Consultant, or unless otherwise specified in the Contract Documents;
 - .8 All material and workmanship will be in every respect in accordance with that which, in the opinion of the Owner or Design Consultant, is in conformity with approved modern practice; and
 - .9 He has provided accurate cost data on the proposed substitution in comparison with the product or method specified.
- 4.15.4 Subject to the provisions of any applicable laws, approval for substitutions or equal products shall be at the sole discretion of the Owner, shall be in writing to be effective, and the decision of the Owner shall be final. The Owner or Design Consultant may require tests of all materials proposed for substitution so submitted to establish quality standards, at the Contractor's expense. After approval of a substitution, if it is determined that the Contractor submitted defective information or data regarding the substitution upon which Owner's approval was based, and that unexpected or unanticipated extensive redesign or rework of the Project will be required in order to accommodate the substitution, or that the substituted item will not perform or function as well as the specified item for which substitution was requested, the Contractor will be required to furnish the original specified item or obtain approval to use another substitution; the Contractor shall pay all costs, expenses or damages associated with or related to the unacceptability of such a substitution and the resultant utilization of another item and no time extension shall be granted for any delays associated with or related to such substitution.
- 4.15.5 If a substitution is approved, no further change in brand or make will be permitted unless satisfactory, written evidence is presented to and approved by the Owner that the manufacturer cannot make scheduled delivery of the approved substituted item. The Owner will not consider substitutions for approval if:
- .1 The proposed substitution is indicated or implied on the Contractor's Shop Drawing or product data submittal and has not been formally submitted for approval by the Contractor in accordance with the above-stated requirements, or
 - .2 Acceptance of the proposed substitution will require substantial design revisions to the Contract Documents or is otherwise not acceptable to the Owner and Design Consultant.
- 4.15.6 Except as otherwise provided for by the provisions of any applicable laws, the Contractor shall not have any right of appeal from the decision of the Owner rejecting any materials submitted if the Contractor fails to obtain the approval for substitution under this Article.
- 4.16 USE OF SITE
- 4.16.1 The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits, easements, right-of-way agreements and within the limits of construction as shown on the Contract Documents. The Contractor shall not unreasonably encumber the site, in the opinion of the Owner, with any materials, equipment or trailers nor shall he block the entrances or otherwise prevent reasonable access to the site, other working and parking areas, completed portions of the Work and/or properties, storage areas, areas of other facilities that are adjacent to the worksite. If the Contractor fails or refuses to move said material, equipment or trailers within twenty four (24) hours of notification by the Owner, to so do, the Owner shall have the right, without further notice, to remove, at the Contractor's expense, any material, equipment and/or trailers which the Owner deems are in violation of this Paragraph.
- 4.17 CUTTING AND PATCHING OF WORK
- 4.17.1 The Contractor shall be responsible for all cutting, fitting or patching that may be required to complete the Work or to make its several parts fit together properly and in accordance with the Contract Documents.

- 4.17.2 The Contractor shall not damage or endanger any portion of the Work or the work of the Owner or any Separate Contractors by cutting, patching or otherwise altering any work, or by excavation. The Contractor shall not cut or otherwise alter the work of the Owner or any Separate Contractor except with the written consent of the Owner and of such Separate Contractor. The Contractor shall not unreasonably withhold from the Owner or any Separate Contractor his consent to cutting or otherwise altering the Work. The Owner shall not be required to accept work with a cut, splice, or patch when such cut, splice or patch is not generally accepted practice for the particular work involved or is otherwise unworkmanlike in the opinion of the Design Consultant or the Owner.
- 4.17.3 Existing structures and facilities including but not limited to building, utilities, topography, streets, curbs, walks, etc., that are damaged or removed due to required excavations or other construction work, shall be patched, repaired or replaced by the Contractor to satisfaction of the Design Consultant and the Owner of such structures and facilities and authorities having jurisdiction. In event the local jurisdictional authorities require that such repairing and patching be done with their own labor and materials, the Contractor shall abide by such regulations and pay for such work with no increase in the Contract Sum.
- 4.18 CLEANING UP
- 4.18.1 The Contractor at all times shall keep the premises free from accumulation of waste materials or rubbish caused by his operations. At the completion of the Work and before final payment is made, he shall remove all his waste materials and rubbish from and about the Project as well as all his tools, construction equipment, machinery and surplus materials.
- 4.18.2 If the Contractor fails to clean up during or at the completion of the Work, the Owner may do so as provided in Section 6.3 and the cost thereof shall be charged to the Contractor.
- 4.19 COMMUNICATIONS
- 4.19.1 All communications from the Contractor relating to the Contract Documents or the construction schedule will be directed to the Design Consultant and copied to the Owner. Similarly, all correspondence from the Owner or Design Consultant will be directed to the Contractor and copied to the Owner or Design Consultant.
- 4.20 ROYALTIES AND PATENTS
- 4.20.1 The Contractor shall pay all royalties and license fees. He shall defend all suits or claims for infringement of any patent rights arising out of the Work and shall save the Owner harmless from loss on account thereof.
- 4.21 INDEMNIFICATION
- 4.21.1 To the fullest extent permitted by law, the Contractor shall, at its sole cost and expense, indemnify, defend, and hold harmless the Owner and its agents, representatives, and employees from and against all claims, actions, judgments, costs, liabilities, penalties, damages, losses and expenses, including but not limited to attorneys' fees, arising out of and/or resulting from the performance of the Work, provided that any such claim, action, judgment, cost, liability, penalty, damage, loss or expense is caused by any negligent act, error or omission of the Contractor, any Subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be legally liable. The above obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this Section 4.21.1. The parties agree that this indemnification clause is an "evidence of indebtedness" for purpose of N.C. Gen. Stat. § 6-21.2. The parties also specifically acknowledge that the Owner is a public body and it is the intent of the parties that the Owner not incur any expenses when the Contractor is solely responsible for the claims.
- 4.21.2 In any and all claims against the Owner or the Design Consultant or any of their agents, representatives,

or employees by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this Section 4.21 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

- 4.21.3 No provision of this Section 4.21 shall give rise to any duties on the part of the Design Consultant or the Owner, or any of their agents, representatives, or employees.

4.22 PERSONS AUTHORIZED TO SIGN DOCUMENTS

- 4.22.1 The Contractor, within five (5) days after the earlier of the date of a Notice to Proceed or the date of the Owner-Contractor Agreement, shall file with the Owner a list of all persons who are authorized to sign documents such as contracts, certificates, and affidavits on behalf of the Contractor and to fully bind the Contractor to all the conditions and provisions of such documents, except that in the case of a corporation he shall file with the Owner a certified copy of a resolution of the Board of Directors of the corporation in which are listed the names and titles of corporation personnel who are authorized to sign documents on behalf of the corporation and to fully bind the corporation to all the conditions and provisions of such documents.

4.23 CONDITIONS AFFECTING THE WORK

- 4.23.1 The Contractor shall be responsible for taking all steps necessary to ascertain the nature and location of the Work and the general and local conditions that can affect the Work or the cost thereof. Failure by the Contractor to fully acquaint himself with conditions which may affect the Work, including, but not limited to conditions relating to transportation, handling, storage of materials, availability of labor, water, roads, weather, topographic and subsurface conditions, Multi-Prime Contract conditions, applicable provisions of law, and the character and availability of equipment and facilities needed prior to and during the execution of the Work, shall not relieve the Contractor of his responsibilities under the Contract Documents and shall not constitute a basis for an adjustment in the Contract Sum or the Contract Time under any circumstances. The Owner assumes no responsibility for any understanding or representation about conditions affecting the Work made by any of his officers, employees, representatives, or agents prior to the execution of the Contract, unless such understandings or representations are expressly stated in the Contract Documents.

- 4.23.2 If in the execution of the Work any valuable items or materials of any kind are discovered buried or hidden within the Work, such items or materials shall be the property of the Owner. The Contractor shall take reasonable precautions to prevent any persons from removing or damaging such items or materials and shall immediately upon discovery thereof and before removal, acquaint the Owner or the Design Consultant with such discovery and carry out, at the expense of the Owner, the Owner's or the Design Consultant's orders as to disposal of the same.

4.24 COMPLIANCE WITH BOARD POLICIES AND PROCEEDURES

The Contractor acknowledges that Board policies are available for review at www.cms.k12.nc.us and agrees to comply with the policies. The Contractor also agrees to comply with the following provisions:

- 4.24.1 The Contractor, its Subcontractors and employees shall not possess or carry, whether openly or concealed, any gun, rifle, pistol, or explosive on any property owned by the Owner. This includes firearms locked in containers, vehicles or firearm racks within vehicles. The Contractor, its Subcontractors and employees shall not cause, encourage or aid a minor, who is less than 18 years old to possess or carry, whether openly or concealed, any weapons on any property owned by the Owner.

- 4.24.2 The Contractor, its Subcontractors and employees, are prohibited from profane, lewd, obscene or offensive conduct or language, including engaging in sexual harassment.
- 4.24.3 The Contractor and its Subcontractors shall not manufacture, transmit, conspire to transmit, possess, use or be under the influence of any alcoholic or other intoxicating beverage, narcotic drug, hallucinogenic drug, amphetamine, barbiturate, marijuana or anabolic steroids, or possess, use, transmit or conspire to transmit drug paraphernalia on any property owned by the Owner.
- 4.24.4 The Contractor and its Subcontractors may not at any time use or display tobacco or nicotine-containing products, including but not limited to electronic cigarettes (e-cigarettes), on school premises, both indoor and outdoor. The prohibition of the display of tobacco or nicotine products shall not extend to a display that has a legitimate instructional or pedagogical purpose. For purposes of this Contract, "tobacco product" is defined to include cigarettes, cigars, blunts, bidis, pipes, chewing tobacco, snuff, and any other items containing or reasonably resembling tobacco, tobacco products, or any facsimile thereof. "Tobacco use" includes smoking, chewing, dipping, or any other use of tobacco products.
- 4.24.5 The Contractor, its Subcontractors and employees shall not solicit from or sell to students or staff within the Owner's facilities or campuses, and shall not give gifts of any value to school system employees.
- 4.24.6 Operators of all commercial vehicles on any property owned by the Owner shall be subject to post-accident, random, reasonable suspicion and follow-up testing for drugs and alcohol.
- 4.24.7 The Contractor, its Subcontractors and employees are prohibited from using access to the site pursuant to this Agreement as a means to date, court, or enter into a romantic or sexual relationship with any student enrolled in the Charlotte-Mecklenburg Schools. The Contractor agrees to indemnify the Owner for claims against the Owner resulting from relationships which have occurred or may occur between a student and an employee of the Contractor or Subcontractor.
- 4.24.8 Lunsford Act/Criminal Background Checks. The Contractor shall conduct at its own expense sexual offender registry checks on each of its owners, employees, agents, or Subcontractors ("contractual personnel") who will engage in any service on or delivery of goods to school system property or at a school-system sponsored event, except checks shall not be required for individuals who are solely delivering or picking up equipment, materials, or supplies at: (1) the administrative office or loading dock of a school; (2) non-school sites; (3) schools closed for renovation; or (4) school construction sites.. The checks shall include at a minimum checks of the State Sex Offender and Public Protection Registration Program, the State Sexually Violent Predator Registration Program, and the National Sex Offender Registry ("the Registries"). For the Contractor's convenience only, all of the required registry checks may be completed at no cost by accessing the United States Department of Justice Sex Offender Public Website at [http:// www. nsopw.gov/](http://www.nsopw.gov/). The Contractor shall provide certification that the registry checks were conducted on each of its contractual personnel providing services or delivering goods under this Agreement prior to the commencement of such services or the delivery of such goods. The Contractor shall conduct a current initial check of the registries (a check done more than 30 days prior to the date of this Agreement shall not satisfy this contractual obligation). In addition, Contractor agrees to conduct the registry checks and provide a supplemental certification before any additional contractual personnel are used to deliver goods or provide services pursuant to this Agreement. Contractor further agrees to conduct annual registry checks of all contractual personnel and provide annual certifications at each anniversary date of this Agreement. Contractor shall not assign any individual to deliver goods or provide services pursuant to this Agreement if said individual appears on any of the listed registries. Contractor agrees that it will maintain all records and documents necessary to demonstrate that it has conducted a thorough check of the registries as to each contractual personnel, and agrees to provide such records and documents to the school system upon request. Contractor specifically acknowledges that the school system retains the right to audit these records to ensure compliance with this Section at any time in the school system's sole discretion. Failure to comply with the terms of this provision shall be grounds for immediate termination of the Agreement. In addition, the Owner may conduct additional criminal records checks at the Owner's expense. If the school system exercises this right to conduct additional criminal records checks, Contractor agrees to provide within seven (7) days of request the full

- name, date of birth, state of residency for the past ten years, and any additional information requested by the school system for all contractual personnel who may deliver goods or perform services under this Agreement. Contractor further agrees that it has an ongoing obligation to provide the school system with the name of any new contractual personnel who may deliver goods or provide services under the Agreement. The Owner reserves the right to prohibit any contractual personnel of Contractor from delivering goods or providing services under this Agreement if the Owner determines, in its sole discretion, that such contractual personnel may pose a threat to the safety or well-being of students, school personnel or others.
- 4.24.9 Contractor shall not employ any individuals to provide services to the Owner who are not authorized by federal law to work in the United States. Contractor represents and warrants that it is aware of and in compliance with the Immigration Reform and Control Act and North Carolina law (Article 2 of Chapter 64 of the North Carolina General Statutes) requiring use of the E-Verify system for employers who employ twenty-five (25) or more employees and that it is and will remain in compliance with these laws at all times while providing services pursuant to this Agreement. Contractor shall also ensure that any of its Subcontractors (of any tier) will remain in compliance with these laws at all times while providing subcontracted services in connection with this Agreement. Contractor is responsible for providing affordable health care coverage to all of its full-time employees providing services to the School System. The definitions of “affordable coverage” and “full-time employee” are governed by the Affordable Care Act and accompanying IRS and Treasury Department regulations.
- 4.24.10 The Contractor, its Subcontractors and employees shall not interact with any students. Nothing in Paragraph 4.24 shall be construed to prevent the Contractor, its Subcontractors and employees from taking necessary measures to protect students, staff or other employees.
- 4.24.11 The Contractor shall at all times enforce strict discipline and good order among its employees and shall not employ any unfit person or anyone not skilled in the task assigned to it. The Owner may require the Contractor to remove any employee the Owner deems incompetent, careless or otherwise objectionable.
- 4.24.12 All agents and workers of the Contractor and its Subcontractors shall wear identification badges provided by the Contractor at all times they are on the Owner’s property. The identification badges shall at a minimum display the company name, telephone number, employee name and a picture of the employee.
- 4.24.13 The Contractor shall comply with the Owner’s site or school building access procedures when working on any existing school campus.
- 4.24.14 Anti-Nepotism. The Contractor warrants that, to the best of its knowledge and in the exercise of due diligence, none of its corporate officers, directors, or trustees and none of its employees who will directly provide services under this Agreement are immediate family members of any member of the Owner’s Board of Education or of any principal or central office staff administrator employed by the Owner. For purposes of this provision, “immediate family” means spouse, parent, child, brother, sister, grandparent, or grandchild, and includes step, half, and in-law relationships. Should Contractor become aware of any family relationship covered by this provision or should such a family relationship arise at any time during the term of this Agreement, Contractor shall immediately disclose the family relationship in writing to the Superintendent. Unless formally waived by the Owner, the existence of a family relationship covered by this Agreement is grounds for immediate termination by Owner without further financial liability to Contractor.
- 4.24.15 Restricted Companies Lists. Contractor represents that as of the date of this Agreement, Contractor is not included on the Final Divestment List created by the North Carolina State Treasurer pursuant to N.C. Gen. Stat. § 147-86.58. Contractor also represents that as of the date of this Agreement, Contractor is not included on the list of restricted companies determined to be engaged in a boycott of Israel created by the North Carolina State Treasurer pursuant to N.C. Gen. Stat. § 147-86.81.

ARTICLE 5

SUBCONTRACTORS

5.1 DEFINITION

- 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform any of the Work at the site. The term Subcontractor may be referred to throughout the Contract Documents as if singular in number and masculine in gender and means a Subcontractor or his authorized representative. The term Subcontractor does not include any Separate Contractor or his subcontractors.
- 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform any of the Work at the site or who contracts to perform or supply any of the Work under the scope of a Subcontractor's subcontract. The term Sub-subcontractor may be referred to throughout the Contract Documents as if singular in number and masculine in gender and means a Sub-subcontractor or an authorized representative thereof.
- 5.1.3 Nothing contained in the Contract Documents is intended to, nor shall it create, any contractual relationship between the Owner, the Design Consultant, or any of their agents, consultants, employees, independent contractors, or representatives and any Subcontractor, Sub-subcontractor, Supplier or Vendor of the Contractor, except the relationship between Owner and Contractor, but the Owner shall be entitled to performance of all obligations intended for his benefit, and to enforcement thereof.
- 5.1.4 The Owner and Design Consultant will not deal directly with any Subcontractor, Sub-subcontractor or Material Supplier. Communication will be made only through the Contractor. Subcontractor, Sub-subcontractors or Material Suppliers shall route requests for information or clarification through the Contractor to the Design Consultant.

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

- 5.2.1 The Contractor, in compliance with the requirements of the Contract Documents and within ten (10) days after the Notice to Proceed, shall furnish in writing to the Owner the names of the persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each of the principal portions of the Work. The Owner will promptly reply to the Contractor in writing stating whether or not the Owner, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Owner to reply within a reasonable time shall constitute notice of no reasonable objection. The Contractor understands and agrees that no contractual agreement exists for any part of the Work under this Contract between the Owner and any of the Contractor's Subcontractors or Sub-subcontractors. Further, the Contractor understands and agrees that he alone is responsible to the Owner for the Work under this Contract and that any review of Subcontractors or Sub-subcontractors by the Owner will not in any way make the Owner responsible to any Subcontractor, nor responsible for the actions or failures of any Subcontractor or Sub-subcontractor.
- 5.2.1.1 The Contractor shall identify in the list of names of the Subcontractors proposed, those Subcontractors that are MWSBE Businesses and indicate the portion of the Work that each Subcontractor will perform.
- 5.2.2 The Contractor shall not contract with any such proposed person or entity to whom the Owner has made reasonable objection under the provisions of Paragraph 5.2.1. The Contractor shall not be required to contract with anyone to whom he has a reasonable objection.
- 5.2.3 If the Owner has reasonable objection to any proposed person or entity under Paragraph 5.2.1, the Contractor shall name a substitute to whom the Owner has no reasonable objection. The Contract Sum shall be increased or decreased by the difference in cost occasioned by such substitution and an appropriate Change Order shall be issued, subject to an audit of said difference by the Owner; provided,

however, that no increase in the Contract Sum shall be allowed for any such substitution unless the Contractor has acted promptly and responsively in submitting names as required by Paragraph 5.2.1 and the original proposed Subcontractor was: (i) able to carry out his work under his proposed subcontract, (ii) able to comply with all applicable laws, (iii) was an ongoing business in the field of his proposed subcontract, and (iv) had a labor force, capital and a means of supply compatible with the scope of his proposed subcontract.

5.2.4 If the Owner requires a change of any proposed Subcontractor or person or organization previously accepted by him on the Project, the Contract Sum shall be increased or decreased by the difference in cost occasioned by such change and an appropriate Change Order shall be issued, subject to an audit by Owner.

5.2.5 The Contractor shall notify the Owner and the Design Consultant of any substitution for any Subcontractor identified in accordance with Subparagraph 5.2.1.1. The Contractor shall make no substitution for any Subcontractor, person or entity previously selected if the Owner or the Design Consultant makes reasonable objection to such substitution. Also, Contractor may make no substitution of Subcontractors in violation of applicable law.

5.2.6 If during the duration of the Project, the Contractor effects a substitution for any Subcontractor per Paragraph 5.2.5, or if additional subcontract opportunities become available, the Contractor shall make a good faith effort to utilize MWSBE Businesses.

5.3 SUBCONTRACTUAL RELATIONS

5.3.1 By an appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by the terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these Contract Documents, assumes toward the Owner. Said agreement shall preserve and protect the rights of the Owner under the Contract Documents with respect to the Work to be performed by the Subcontractor so that the subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the agreement between the Contractor and Subcontractor, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by these Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with his Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract, copies of the Contract Documents to which the Subcontractor will be bound by this Section 5.3, and identify to the Subcontractor any terms and conditions of the proposed Subcontract which may be at variance with the Contract Documents. Each Subcontractor shall similarly make copies of such Contract Documents available to his Sub-subcontractors.

5.3.2 The provisions herein regarding Subcontractor approvals shall in no way affect the liability of the Contractor to the Owner regarding performance of all obligations by or payment of Subcontractors. Approval to subcontract with any given Subcontractor shall not to any degree relieve the Contractor of his obligation to perform or have performed to the full satisfaction of the Owner the Work required by this Contract.

5.3.3 The Contractor shall submit Notice to the Owner of any Claims by Subcontractors for which the Owner is believed to be responsible, in strict conformance with the same time requirements and other procedures established for the submission of the Contractor's Claims to the Owner.

5.4 QUALIFICATION SUBMITTALS

5.4.1 Specific qualification submittals may be required of Subcontractors, installers and suppliers for certain critical items of the Work. Required qualification submittals are set forth in detail in the Specifications and shall be collected and submitted by the Contractor for review and approval by the Design Consultant.

All information required of a single Subcontractor, installer or supplier shall be contained in a single, complete submittal.

- 5.4.2 The Owner and Design Consultant shall reject any proposed Subcontractor, installer or supplier, or any qualification submittals related thereto, for the following reasons:

.1 The Contractor's failure to submit requested information within the specified time; or

.2 The Contractor's failure to provide all of the requested information; or

.3 The Contractor's submission of a Subcontractor, installer or supplier, or qualifications thereof, which are unacceptable in the judgment of the Owner or Design Consultant.

- 5.4.3 Should the Owner or Design Consultant have reasonable objection to any proposed Subcontractor, installer or supplier, the Contractor shall submit another person or firm who are reasonably acceptable to the Owner and Design Consultant.

5.5 PREPARATORY WORK

- 5.5.1 Before starting a portion of the Work, the Contractor and the responsible Subcontractor shall carefully examine all preparatory work that has been executed to receive his work. The Subcontractor shall check carefully, by whatever means are required, to ensure that his work and adjacent related work will finish to proper contours, planes and levels. He shall promptly notify the Contractor and the Design Consultant of any defects or imperfections in preparatory work, which will, in any way, affect satisfactory completion of his work. Absence of such notification will be construed as an acceptance of preparatory work and later Claims of defects therein will not be recognized.

- 5.5.2 Under no conditions shall a portion of the Work proceed prior to preparatory work having been completed, cured, dried, and otherwise made satisfactory to receive such related work. Responsibility for timely installation of all materials rests solely with the Contractor, who shall maintain coordination control at all times.

ARTICLE 6

WORK BY OWNER OR BY SEPARATE CONTRACTORS

6.1 OWNER'S RIGHT TO PERFORM WORK AND TO AWARD SEPARATE CONTRACTS

- 6.1.1 The Owner reserves the right to perform work related to the Project with his own forces, and to award separate contracts in connection with other portions of the Project or other work on the site under these or similar conditions of the Contract.

- 6.1.2 When separate contracts are awarded for different portions of the Project or other work on the site, the term Contractor in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

6.2 MUTUAL RESPONSIBILITY

- 6.2.1 The Contractor shall afford Separate Contractors and the Owner reasonable opportunity for the introduction and storage of their materials and equipment and the execution of their work and shall properly connect and coordinate the Work with that of the Owner and other contractors to store his apparatus, materials, supplies and equipment in such orderly fashion at the site of the Work as will not unduly or unreasonably interfere with the progress of the Work or the work of any other contractors.

- 6.2.1.1 If the execution or result of any part of the Work depends upon any work of the Owner or of any Separate Contractor, the Contractor shall, prior to proceeding with the Work, inspect and promptly report to the Owner in writing any apparent discrepancies or defects in such work of the Owner or of any Separate Contractor that render it unsuitable for such proper execution or result of any part of the Work.
- 6.2.1.2 Failure of the Contractor to so inspect and report shall constitute an acceptance of the Owner's or Separate Contractor's work as fit and proper to receive the Work, except as to defects which may develop in the Owner's or Separate Contractor's work after completion of the Work and which the Contractor could not have discovered by its inspection prior to completion of the Work.
- 6.2.2 Should the Contractor cause damage to the Work or property of the Owner or of any Separate Contractor on the Project, or to other work on the site, or delay or interfere with the Owner's work on ongoing operations or facilities or adjacent facilities or said Separate Contractor's work, the Contractor shall be liable for the same; and, in the case of another contractor, the Contractor shall attempt to settle said Claim with such other contractor prior to such other contractor's institution of litigation or other proceedings against the other contractor.
- 6.2.2.1 Should a Separate Contractor be declared in default by the Owner, the Owner shall not be obligated to hire a contractor to perform the work of the Separate Contractor during the time the Separate Contractor's surety is remedying the default pursuant to Paragraph 3.4.2.
- 6.2.2.2 If such Separate Contractor sues the Owner or Design Consultant on account of any damage, delay or interference cause or alleged to have been caused by the Contractor, the Owner shall notify the Contractor, who shall defend the Owner and Design Consultant in such proceedings at the Contractor's expense. If any judgment or award is entered against the Owner or Design Consultant in such proceedings, the Contractor shall satisfy the same and shall reimburse the Owner and Design Consultant for all damages, expenses, attorney's fees and other costs which the Owner or Design Consultant incurs as a result thereof.
- 6.2.3 Should a Separate Contractor cause damage to the Work or to the property of the Contractor or cause delay or interference with the Contractor's performance of the Work, the Contractor shall present directly to said Separate Contractor any Claims it may have as a result of such damage, delay or interference (with an information copied to the Owner) and shall attempt to settle its Claim against said Separate Contractor prior to the institution of litigation or other proceedings against said Separate Contractor.
- 6.2.3.1 In no event shall the Contractor seek to recover from the Owner or the Design Consultant, and the Contractor hereby waives any Claims against the Owner and Design Consultant relating to any costs, expenses (including, but not limited to, attorney's fees) or damages or other losses incurred by the Contractor as a result of any damage to the Work or property of the Contractor or any delay or interference caused by any Separate Contractor.
- 6.2.4 Whenever Contractor receives items from another contractor or from Owner for storage, erection or installation, the Contractor receiving such items shall give receipt for items delivered, and thereafter will be held responsible for care, storage and any necessary replacing of item or items received.
- 6.2.5 When certain items of equipment and other work are indicated as "NIC" (not in contract), or to be furnished and installed under other contracts, any requirements set forth in the Contract Documents for preparation of openings, provision of backing, etc., for receipt of such "NIC" work will be furnished upon written request of the Contractor who shall properly form and otherwise prepare his work in a satisfactory manner to receive such "NIC" work.
- 6.3 OWNER'S RIGHT TO PERFORM DISPUTED WORK
- 6.3.1 If a dispute arises between the Contractor and Separate Contractors as to their responsibility for cleaning up as required by Section 4.18 or for accomplishing coordination or doing required cutting, filling, excavating or patching as required by Section 4.17, the Owner may carry out such work and charge the

cost thereof to the responsible party as the Owner shall determine to be just.

6.4 COORDINATION OF THE WORK

- 6.4.1 By entering into this Contract, Contractor acknowledges that there may be other contractors on the site whose work will be coordinated with that of his own. Contractor expresses, warrants and guarantees that he will cooperate with other contractors and will do nothing to delay, hinder or interfere with the work of other Separate Contractors, the Owner or Design Consultant. Contractor also expressly agrees that, in the event his work is hindered, delayed, interfered with or otherwise affected by a Separate Contractor, his sole remedy will be a direct action against the Separate Contractor as described in this Article 6. Contractor will have no remedy, and hereby expressly waives any remedy, against the Owner and/or the Design Consultant on account of delay, hindrance, interference or other event caused by a Separate Contractor.

ARTICLE 7

MISCELLANEOUS PROVISIONS

7.1 GOVERNING LAW

- 7.1.1 This Contract shall be governed by the laws of the State of North Carolina. The Contractor and Owner agree that Mecklenburg County, North Carolina shall be the proper venue for any litigation arising out of this Agreement.
- 7.1.2 Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein. If through mistake or otherwise, any such provision is not inserted or is not correctly or fully inserted, then upon the application of either party, the Contract shall forthwith be physically amended to make such insertion.

7.2 SUCCESSORS AND ASSIGNS

- 7.2.1 The Owner and the Contractor each binds himself, his partners, successors, assigns and legal representatives to the other party hereto and to the partners, successors, assigns and legal representatives of such other party in respect to all covenants, agreements and obligations contained in the Contract Documents. The Contractor shall not assign the Contract or sublet it as a whole without the written consent of the Owner, nor shall the Contractor assign any moneys due or to become due to him hereunder, without the previous written consent of the Owner and the Contractor's Surety.

7.3 CLAIMS AND DAMAGES

- 7.3.1 Should the Contractor, Subcontractor or any Sub-subcontractor suffer injury or damage to person or property because of any act or omission of the Owner or Design Consultant, or of any of their employees, agents or others for whose acts either is legally liable, the Claim on behalf of the Contractor its Subcontractors or Sub-subcontractors shall be made by giving Notice to the Owner, as provided in Article 15 ; otherwise, the Contractor, Subcontractors and Sub-subcontractors shall have waived any and all rights he may have against the Owner or the Design Consultant, or their employees, representatives and agents. The Contractor shall indemnify, defend and hold the Owner harmless from any Claim by a Subcontractor that is waived because it is not filed in strict conformance with this Paragraph or any other provision of the Contract regarding Claims.

7.4 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

- 7.4.1 The Contractor shall furnish bonds covering the faithful performance of the Contract and the payment of

all obligations arising thereunder in a form and with a Surety satisfactory to the Owner.

- 7.4.2 The Contractor is required to furnish in duplicate a Performance Bond and a Labor and Material Payment Bond, each in the amount of one hundred percent (100%) of the Contract Sum, written by a surety company licensed to do business in North Carolina and with a minimum AM Best "A" rating or comparable rating from another service reasonably acceptable to Owner.

7.5 RIGHTS AND REMEDIES

- 7.5.1 The duties and obligations of the Contractor imposed by the Contract Documents and the rights and remedies of the Owner available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law.

- 7.5.2 Except as may be specifically agreed in writing, the failure of the Owner or the Design Consultant to insist in any one or more instances upon the strict performance of any one or more of the provisions of the Contract, or to exercise any right herein contained or provided by law, shall not be construed as a waiver or relinquishment of the performance of such provisions or right(s) or of the right to subsequently demand such strict performance or exercise such right(s), and the rights shall continue unchanged and remain in full force and effect.

- 7.5.3 The Contractor agrees that he can be adequately compensated by money damages for any breach of the Contract which may be committed by the Owner and hereby agrees that no default, act, or omission of the Owner or the Design Consultant, except for failure to make progress payments as required by the Contract Documents, shall constitute a material breach of the Contract entitling the Contractor to cancel or rescind the provisions of the Contract or (unless the Owner shall so consent or direct in writing) to suspend or abandon performance of all or any part of the Work. The Contractor hereby waives any and all rights and remedies to which he might otherwise be or become entitled, save only his right to money damages.

7.6 TESTS AND INSPECTIONS

- 7.6.1 If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any portion of the Work to be inspected, tested, or approved, the Contractor shall give the Owner and Design Consultant timely Notice of its readiness so the Design Consultant and the Owner may observe such inspection, testing or approval. Unless otherwise specifically provided in the Contract Documents, the Contractor shall bear all costs of such inspections, tests or approvals, except that Owner shall pay for "special inspections" as defined and required in Section 1704, the North Carolina State Building Code, or successor section. In the event that such "special inspections" reveal a failure of the Work to comply with the Contract Documents or applicable laws, ordinances, regulations or orders of public authorities having jurisdiction, Contractor shall reimburse the Owner for the costs of such "special inspections".

- 7.6.1.1 Unless otherwise stipulated in the Contract Documents, the Contractor shall pay for all utilities required for testing of installed equipment of all of his work and work of each Subcontractor. Boiler fuel other than gas shall be provided by Subcontractor furnishing boilers. Labor and supervision required for making such tests shall be provided at no additional cost to the Owner.

- 7.6.2 If the Design Consultant or the Owner determines that any portion of the Work requires additional inspection, testing, or approval which Paragraph 7.6.1 does not include, the Owner will instruct the Contractor to order such additional inspection, testing or approval, and the Contractor shall give Notice as provided in Paragraph 7.6.1. If such additional inspection or testing reveals a failure of any portion of the Work to comply (1) with the requirements of the Contract Documents, or (2) with respect to the performance of the Work, with laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction, the Contractor shall bear all costs thereof, including compensation for the Design Consultant's and Owner's additional construction management expenses made necessary by such failure.

- 7.6.3 With regard to inspections and tests, the costs of which the Owner is responsible for paying, they will be made by a pre-qualified, independent testing agency selected by the Owner. The cost of the initial services of such agency will be paid by the Owner. When the initial tests indicate non-compliance with the Contract Documents, any subsequent testing occasioned by non-compliance shall be performed by the same agency and the cost thereof shall be borne by the Contractor. Representatives of the testing agency shall have access to the Work at all times. The Contractor shall provide facilities for such access in order that the agency may properly perform its functions.
- 7.6.4 The independent testing agency, contracted by the Owner, shall prepare the test reports, logs, and certificates applicable to the specific inspections and tests and promptly deliver the specified number of copies to the designated parties. Certificates of inspection, testing or approval required by public authorities shall be secured by the Contractor and promptly delivered by him to the Owner, in adequate time to avoid delays in the Work or final payment therefore.
- 7.6.5 If the Design Consultant or the Owner is to observe the inspections, tests or approvals required by the Contract Documents, laws, ordinances, rules, regulations, or order of any public authority having jurisdiction or that are required to establish compliance with the Contract Documents, he will do so promptly and, where practicable, at the normal place of testing.
- 7.6.6 The Contractor shall pay for and have sole responsibility for inspections or testing performed exclusively for his own convenience.
- 7.7 UNENFORCEABILITY OF ANY PROVISION
- 7.7.1 If any provision of this Contract is held as a matter of law to be unenforceable or unconscionable, the remainder of the Contract shall be enforceable without such provision.
- 7.8 ATTORNEYS' FEES AND OTHER EXPENSES
- 7.8.1 The Contractor hereby agrees that he will not submit, assert, litigate or otherwise pursue any frivolous or unsubstantiated Claims or Claims he has specifically waived under the terms of the Contract Documents. In the event that the Contractor's or its Subcontractor's or Sub-subcontractor's Claims, or any separate item of a Claim, is without substantial justification, the Contractor shall reimburse the Owner or Design Consultant for all costs and expenses associated with defending such Claim or separate item, including but not limited to, attorneys' fees, audit costs, accountants' fees, expert witness' fees, additional Design Consultant expenses, additional construction management expenses, or services and any other consultant costs.
- 7.8.2 If the Contractor breaches any obligation under the Contract Documents, the Contractor shall reimburse the Owner and Design Consultant for all costs and expenses incurred by the Owner relating to such breach, including but not limited to attorneys' fees, audit costs, accountants' fees, expert witness' fees, additional Design Consultant expenses, additional construction management expenses, and any other consultant costs.
- 7.8.3 If the Owner or Design Consultant substantially prevails in a Claim brought against the Contractor, or in defending a Claim brought by the Contractor, including but not limited to, Claims for fraud or misrepresentation, overpayment, defective work, delay damages, and recovery of termination expenses, the Contractor shall reimburse the Owner and/or Design Consultant for all costs and expenses incurred by them relating to such Claim, including but not limited to attorneys' fees, audit costs, accountants' fees, expert witness' fees, additional Design Consultant expenses, additional construction management expenses, and any other consultant costs.

ARTICLE 8

TIME

8.1 DEFINITIONS

- 8.1.1 Unless otherwise provided, the Contract Time is the period of time allotted in the Contract Documents for Final Completion of the Work as defined in Paragraph 8.1.4, including authorized adjustments thereto. The Contractor shall achieve Final Completion within the Contract Time.
- 8.1.2 The date of commencement of the Work is the date established in the Notice to Proceed. If there is no Notice to Proceed, it shall be the date of the Owner-Contractor Agreement or such other date as may be established therein. The Contractor shall not commence work or store materials or equipment on site until written Notice to Proceed is issued or until the Contractor otherwise receives the Owner's written consent.
- 8.1.3 The date of Substantial Completion of the Work or designated portion thereof is the date certified by the Design Consultant and the Owner when the Work or a designated portion thereof is sufficiently complete, in accordance with the Contract Documents, so the Owner can fully and legally occupy and utilize the Work or designated portion thereof for the use for which it is intended, with all of the parts and systems operable as required by the Contract Documents, including a test and balance report for the mechanical system. Only incidental corrective work and any final cleaning beyond that needed for the Owner's full use may remain for Final Completion. The Contractor acknowledges and agrees that the intercom, telephone, data security, building automation system (including functional graphics at the site), MATV, and other educational operational systems are required for the Owner's use of the building for its intended purpose. The Contractor shall provide operation and maintenance manuals to the Owner as required by the Contract Documents prior to Substantial Completion and shall provide the required training on the operation of the equipment and systems within two weeks of Substantial Completion or later date as approved by the Owner. The Contractor shall achieve Substantial Completion by the date specified in the Supplemental Conditions including authorized adjustments thereto. The Owner's occupancy of incomplete work shall not alter the Contractor's responsibilities pursuant to this paragraph. Only incidental corrective work and any final cleaning beyond that needed for the Owner's full use may remain for Final Completion. The issuance of a temporary or final certificate of occupancy shall not, in itself, constitute Substantial Completion.
- 8.1.4 Final Completion of the Work occurs on the date certified by the Design Consultant and the Owner when the Work is totally complete, to include punch list work, in accordance with the Contract Documents and the Owner may fully occupy and utilize the Work for the use for which it is intended. The issuance of a temporary or final certificate of occupancy shall not, in itself, constitute Final Completion.
- 8.1.5 The term Day as used in the Contract Documents shall mean calendar day unless otherwise specifically designated. All dates shall mean midnight of the indicated day unless otherwise stipulated.
- 8.1.6 Completion Dates shall mean the dates set forth in the Supplemental Conditions for Substantial Completion and Final Completion.

8.2 PROGRESS AND COMPLETION

- 8.2.1 All time limits stated in the Contract Documents are of the essence of the Contract with respect to the Contractor's performance.
- 8.2.2 The Contractor shall begin the Work on the date of commencement as defined in Paragraph 8.1.2. He shall carry the Work forward expeditiously with adequate forces and shall achieve Substantial Completion and Final Completion within the time frames stated in the Contract Documents.
- 8.2.3 Attention is directed to the fact that the Work is urgently needed by the Owner; for this reason, it shall be

agreed that the Contractor and its Subcontractors will achieve Substantial Completion of the Work under the Contract within the time established under Paragraph 8.2.4 of the Supplemental Conditions after award of Contract, or Notice to Proceed, and that he will achieve Final Completion of the Work in all its details for final acceptance within the time established under Paragraph 8.2.4 of the Supplemental Conditions.

8.3 DELAYS AND EXTENSIONS OF TIME

- 8.3.1 The time during which the Contractor or any of the Subcontractors is delayed in the performance of the Work by the issuance of any required permits, acts of god, excessive inclement weather, fires, floods, epidemics, quarantine restrictions, strikes, riots, civil commotions or freight embargoes, or other conditions beyond the Contractor's or the Subcontractors' control and which the Contractor or the Subcontractors could not reasonably have foreseen and provided against, except for delays caused solely by the Owner, Design Consultant or their consultants, shall be added to the time for completion of the Work stated in the Contract. Neither the Owner nor the Design Consultant shall be obligated or liable to the Contractor or the Subcontractors for indirect or direct damages, costs or expenses of any nature which the Contractor, the Subcontractors, or any other person may incur as a result of any of the delays, interferences, changes in sequence in the Work included in this Section 8.3.1. The Contractor hereby expressly waives any Claims against the Owner and the Design Consultant on account of any indirect or direct damages, lost profits, costs or expenses of any nature which the Contractor, the Subcontractors or any other person may incur as a result of any delays, interferences, changes in sequence or the like, and it is understood and agreed that the Contractor's sole and exclusive remedy in any such events shall be an extension of the Contract time in accordance with the Contract Documents.
- 8.3.2 In the event Project delays arise from or out of any act or omission of the Owner, Design Consultant or their consultants, the time during which the Project is delayed shall be added to the Contract and the Contractor may be reimbursed for its direct Project damages, excluding general overhead expenses and indirect costs, if the Contractor strictly complies with this Article 8.3. Notwithstanding the previous sentence, if the Contractor or Subcontractor in any way shares in responsibility for the delay, neither the Owner nor the Design Consultant shall be obligated or liable to the Contractor or the Subcontractors for indirect or direct damages, costs or expenses of any nature which the Contractor, the Subcontractors, or any other person may incur as a result of any of the delays, interferences, changes in sequence of the Work, and the Contractor's sole remedy, if any, shall be an extension of the Contract time.
- 8.3.3 In the event Project delays arise solely from or out of any act or omission of the Contractor, Subcontractors or their agents, the Contractor shall not be entitled to extension of the Contract time and shall be subject to the payment of Liquidated Damages as provided in this Contract.
- 8.3.4 The Contract time shall be adjusted only for changes pursuant to section 12.1, suspension of the Work pursuant to paragraph 3.3.2 or paragraph 3.3.3, and excusable delays pursuant to paragraph 8.3.4. In the event the Contractor requests an extension of the Contract time or files a Claim related to any form of delay, it shall furnish such justification and supporting evidence as the Owner may deem necessary for a determination of whether or not the Contractor is entitled to an extension of time under the provisions of the Contract, and shall further conform to all of the requirements of the specifications. The burden of proof to substantiate a Claim shall rest with the Contractor, including evidence that the cause was beyond its control. The Owner shall base its findings of fact and decision on such justification and supporting evidence, including a finding that the alleged delay impacted the Project's critical path, and shall advise the Contractor in writing thereof. If the Owner finds that the Contractor is entitled to any extension of the Contract time, the Owner's determination of the total number of days of extension shall be based upon the currently approved progress schedule and on all data relevant to the extension. Such data will be incorporated into the schedule in the form of a revision thereto, accomplished in a timely manner. The Contractor acknowledges and agrees that actual delays (due to said changes, suspension of Work or excusable delays) in activities which, according to the schedule, do not affect the Contract time, do not have any effect upon the Contract time and therefore will not be the basis for a change therein. The Contractor acknowledges and agrees that time extensions will be granted only to the extent that excusable delays exceed the available float in the critical path activities in the Contractor's currently approved schedule.

- 8.3.4.1 Extensions in the Contract time by Change Orders are subject to extension-in-time audit by the Owner as follows:
- 8.3.4.1.1 The Contractor agrees that, even though the Owner, Contractor and Design Consultant have previously signed a Change Order containing an extension-in-time resulting from a change in or addition to the Work that said extension in the Contract time may be adjusted by an audit after the fact by the Owner. If such an audit is to be made, the Owner must undertake the audit and make a ruling within thirty (30) days after the completion of the Work under the Change Order.
- 8.3.4.1.2 The Contractor agrees that any extension of the Contract time to which it is entitled arising out of a Change Order undertaken on a force accounting (labor and materials) basis, shall be determined by an extension-in-time audit by the Owner after the Work of the Change Order is completed. Such rulings shall be made by the Owner within thirty (30) days after a request for same is made by the Contractor or Design Consultant, except said thirty (30) days will not start until the Work under the Change Order is completed.
- 8.3.4.1.3 Should a time extension be granted for Substantial Completion, the date for Final Completion shall be appropriately adjusted unless specifically stated otherwise.
- 8.3.4.2 Subject to other provisions of the Contract, the Contractor may be entitled to an extension of the Contract time (but no increase in the Contract sum) for delays arising from unforeseeable causes beyond the control and without the fault or negligence of the Contractor, the Subcontractors or suppliers as follows:
- 8.3.4.2.1 Labor disputes and strikes (including strikes affecting transportation), that do, in fact, directly delay the progress of the Work on the critical path; however, an extension of Contract time on account of an individual labor strike shall not exceed the number of days of said strike;
- 8.3.4.2.2 Acts of nature: tornado, fire, hurricane, blizzard, earthquake, or flood that damage Work in place or stored materials or adversely impact the schedule's critical path;
- 8.3.4.2.3 Excessive inclement weather; however, the Contract time will not be extended due to reasonably anticipated inclement weather or for delays in the aftermath of inclement weather, reasonably anticipated or excessive. The time for performance of this Contract, as stated in the Contract Documents, includes an allowance for calendar days which may not be available for construction out-of-doors; for the purposes of this Contract, the Contractor agrees that the number of calendar days per month stated below are to be considered reasonably anticipated inclement weather and planned for in the construction schedule per the specifications, , construction schedules and reports. Unless the Contractor can substantiate to the satisfaction of the Owner that there was greater than the reasonably anticipated inclement weather considering the time from the notice-to-proceed until the building is enclosed using data from the national weather service station at Charlotte Airport (CLT), North Carolina, or a weather station acceptable to the Owner and that such alleged greater than reasonably anticipated inclement weather actually delayed the Work or portions thereof which had an effect upon the Contract time, the Contractor shall not be entitled to an extension of time.

For the purpose of this Contract, the Contractor agrees to anticipate and plan for inclement weather for the number of calendar days in accordance with the following table:

Planned days/month

Jan	7
Feb	6
Mar	7
Apr	6
May	7
Jun	6
Jul	8
Aug	6

Sep	5
Oct	5
Nov	5
Dec	6

Also the Contractor agrees that the calculation of the number of excessive inclement weather days shall be the number of days in excess of those shown for each month in the table above, in which precipitation exceeded one tenth (.10) inch, or in which the highest temperature was 32 degrees F or less as recorded at the approved weather station. Rain days from hurricanes not causing damage in Mecklenburg County shall be deemed inclement weather days.

If the total accumulated number of calendar days lost to excessive inclement weather, from the notice-to-proceed until the building is enclosed, exceeds the total accumulated number to be reasonably anticipated for the same period from the table above, time for completion will be extended by the number of calendar days needed to include the excess number of calendar days lost. No extension of time will be made for days due to excessive inclement weather occurring after the building is enclosed. For the purpose of this Contract, the term "enclosed" is defined to mean when the building is sufficiently roofed and sealed, either temporarily or permanently, to permit the structure to be heated and the plastering and dry-wall trades to work. The Design Consultant shall determine when the structure is "enclosed". Upon the request of either party, the Design Consultant shall issue a letter certifying to the Owner, with a copy to the Contractor, stating the date the building became enclosed. No change in Contract sum will be authorized because of adjustment of Contract time due to excessive inclement weather; and

- 8.3.4.2.4 Delays in the issuance of the building permit required for construction of the Project, acts of the public enemy, acts of the State, Federal or local government in its sovereign capacity, and acts of another Contractor in the performance of a Contract with the Owner relating to the Project.
- 8.3.5 If the Contractor shall neglect, fail or refuse to complete the Work within the time herein specified, or any proper extension thereof granted by the Owner, then the Contractor does hereby agree, as a part consideration for the awarding of this Contract, to pay the Owner the amount specified in the Contract, not as a penalty but as Liquidated Damages for such breach of Contract as hereinafter set forth, for each and every calendar day that the Contractor shall be in default after the time stipulated in the Contract for completing the Work. The said amount is fixed and agreed upon by and between the Contractor and the Owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain, and said amount is agreed to be the amount of damages which the Owner would sustain and said amount shall be retained from time to time by the Owner from current periodical estimates.
- 8.3.6 The Contractor and the Subcontractors shall not be entitled to and hereby expressly waive any extension of time resulting from any condition or cause unless said Claim for extensions of time is made in writing to the Owner within ten (10) days of the first instance of delay for all delays, except excessive inclement weather which shall be made in writing to the Owner within forty-five (45) days after the date the structure is enclosed. Circumstances and activities leading to such Claim shall be indicated or referenced in a daily field inspection report for the day(s) affected. In every such written Claim, the Contractor shall provide the following information:
 - 8.3.6.1 Nature of the delay;
 - 8.3.6.2 Date (or anticipated date) of commencement of delay;
 - 8.3.6.3 Activities on the progress schedule affected by the delay, and/or new activities created by the delay and their relationship with existing activities;
 - 8.3.6.4 Identification of person(s) or organization(s) or event(s) responsible for the delay;
 - 8.3.6.5 Anticipated extent of the delay; and

- 8.3.6.6 Recommended action to avoid or minimize the delay.
- 8.3.7 If no schedule or agreement is made stating the dates upon which written interpretations as set forth in Section 2.2 shall be furnished, then no Claim for delay shall be allowed on account of failure to furnish such interpretations until twenty (20) days after request is made for them, and not then unless such Claim is reasonable.
- 8.3.8 No Claim by the Contractor for an extension of time for delays will be considered unless made in strict compliance with the requirements of this Article. All Claims not filed in accordance with this Article shall be waived by the Contractor.
- 8.4 RESPONSIBILITY FOR COMPLETION
- 8.4.1 The Contractor shall be responsible for completion in accordance with Paragraph 4.12.1.
- 8.4.2 The Owner may require the Contractor to submit a recovery schedule in accordance with Specifications, Construction Schedules and Reports demonstrating his program and proposed plan to make up the lag in scheduled progress and to ensure completion of the Work within the Contract Time. If the Owner finds the proposed plan not acceptable, he may require the Contractor to submit a new plan. If the actions taken by the Contractor or the second plan proposed are not satisfactory, the Owner may require the Contractor to take any of the actions set forth in Paragraph 4.12.2 without additional cost to the Owner, to make up the lag in scheduled progress.
- 8.4.3 Failure of the Contractor to substantially comply with the requirements of this Section 8.4 may be considered grounds for a determination by the Owner, pursuant to Section 14.3, that the Contractor is failing to prosecute the Work with sufficient diligence to ensure its completion within the Contract Time.
- 8.5 LIQUIDATED DAMAGES FOR DELAY
- 8.5.1 Owner and Contractor agree that the damages incurred by the Owner due to the Contractor's failure to achieve Substantial Completion by the date specified in the Supplemental Conditions for Substantial Completion, including any extensions thereof, shall be in the amounts set forth in the Supplemental Conditions, for each consecutive day beyond the date of Substantial Completion that Contractor achieves Substantial Completion, and that the damages incurred by the Owner due to the Contractor's failure to achieve Final Completion by the date specified in the Supplemental Conditions for Final Completion, including any extensions thereof, shall be in the amount set forth in the Supplemental Conditions for each consecutive day beyond the date of Final Completion that Contractor achieves Final Completion. The Liquidated Damages are a reasonable estimate by Contractor and Owner of the damages to be suffered by Owner and are not to be construed as a penalty, it being recognized by the Owner and the Contractor that the injury to the Owner which could result from a failure of the Contractor to complete on schedule is uncertain and cannot be computed exactly or that it would be unreasonably expensive for Owner to calculate its damages exactly.
- 8.5.2 The amount specified for Substantial Completion is the minimum measure of damages the Owner will sustain due to delay in the completion of the Work, which shall include, but not be limited to the loss of use of the facilities, the relocation of students and services, the cost of the Owner's time and resources, damage to the Owner's reputation, and storage of furniture and other materials. The amount specified for Final Completion is a reasonable and proper measure of the damages the Owner will sustain due to the delay in the completion of remedial work. This amount includes the disruption to the school and the learning environment, the cost of the Owner's time and resources, damage to the Owner's reputation, and the inability to fully use the facilities. The inability of the Owner to quantify actual damages shall not prevent the recovery of Liquidated Damages.
- 8.5.3 Notwithstanding any other provisions of these General Conditions, if there is concurrent delay in the completion of the Work, the Contractor shall be liable for Liquidated Damages as specified in the General

Conditions and Supplemental Conditions during such period of concurrent delay. For the purpose of this Paragraph, concurrent delay means (a) a delay event caused in part by the Owner or its agent and in part by the Contractor or its agents, Subcontractors or Sub-subcontractors, or (b) one or more delay event caused solely by the Owner, its agents, or the Design Consultant, and one or more delay event caused in part by the Contractor, its agents, Subcontractors or Sub-subcontractors, each of which would have resulted in a delay without the other and which delays run concurrently, or at the same time. In the event that the foregoing provision making the Contractor liable for Liquidated Damages during a period of concurrent delay is found to be unenforceable, then the parties agree that in the event of a concurrent delay, the extent of the delay will be apportioned between the Owner and the Contractor, and the Contractor will be responsible for Liquidated Damages as set forth in the General Conditions and Supplemental Conditions for those portions of the delay which are apportioned to the Contractor, its agent, Subcontractors, Sub-subcontractors, or Material Suppliers.

- 8.5.4 The provisions for Liquidated Damages do not bar or limit Owner's other rights and remedies against Contractor, for damages other than for failure to achieve the Substantial Completion date or the Final Completion date as required. The amount of Liquidated Damages set forth in Section 8.5 shall not include additional legal or design professional costs that may result from the Contractor's default. If such legal or design professional costs are incurred by the Owner, the Contractor shall be liable to the Owner for those costs in addition to the Liquidated Damages amount set forth in Section 8.5.
- 8.5.5 The Liquidated Damages assessed for failure to meet Substantial Completion by the specified date and the Liquidated Damages assessed for failure to meet Final Completion by the specified date shall be assessed cumulatively.

ARTICLE 9

PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

- 9.1.1 The Contract Sum is stated in the Owner-Contractor Agreement and, including authorized adjustments thereto, is the total amount payable by the Owner to the Contractor for the performance of the Work under the Contract Documents.

9.2 SCHEDULE OF VALUES

- 9.2.1 Before the first Application for Payment, the Contractor shall submit to the Owner a schedule of values allocated to the various portions of the Work, as set forth in the Specifications, Construction Schedules and Reports, and supported by such data to substantiate its accuracy as the Owner may require. This schedule, unless objected to by the Owner, shall be used as a basis for the Contractor's Applications for Payment and only for this purpose. If approved by the Owner, the Contractor may include in his schedule of values a line item for mobilization which shall include a reasonable amount of mobilization for the Contractor and his Subcontractors. The Contractor shall not front-end load his schedule of values.

9.3 APPLICATIONS FOR PAYMENT

- 9.3.1 Prior to the date for each progress payment established in the Owner-Contractor Agreement, the Contractor, in accordance with the Specifications, Construction Schedules and Reports, shall submit to the Design Consultant an itemized Application for Payment, notarized if required, supported by such data substantiating the Contractor's right to payment as the Design Consultant and the Owner may require, including but not limited to the Contractor's certification that all work for which payment is requested has been completed in full in accordance with the Contract Documents, and reflecting retainage, if any, as provided elsewhere in the Contract Documents. If requested by the Owner, the Contractor shall also

certify that he has paid all due and payable amounts for which previous Applications for Payment were issued and payments received from the Owner, by providing waivers of liens for said payments.

- 9.3.1.1 The Contractor shall submit with the Application for Payment a list of those MWSBE Subcontractors whose work is included in the application and the amount due each. In addition, the MWSBE Business must itself perform satisfactory work or services or provide supplies under the Contract and not act as a mere conduit.
- 9.3.2 The Owner will withhold retainage from Contractor on all Applications for Payment to the maximum extent and in the maximum amount allowed by law (currently codified at N.C.G.S. 143-134.1) and in accordance with that statute or applicable successor statute. In the event that N.C.G.S 143-134.1 or applicable successor statute are not in effect or do not apply at the time the Contract is executed, Owner will retain ten percent (10%) of the amount of each Application for Payment from the Contractor as retainage, until Contractor achieves Final Completion, whether or not the Owner has occupied any or all of the Project before such time. However, if the Owner, at any time after fifty percent (50%) of the Work has been completed, finds that satisfactory progress is being made, he may authorize payment to the Contractor in full of each Progress Payment for work performed beyond the fifty percent (50%) stage of completion. If a reduction in retainage has been made, the Owner may increase the retainage back to original percentage at any time if the Owner concludes that the Contractor is not progressing with the Work in a timely or satisfactory manner.
- 9.3.3 Payments may be made by the Owner, at its sole discretion, on account of materials or equipment not incorporated in the work but delivered and suitably stored at the site or in a bonded warehouse by the Contractor. Payments for materials or equipment stored shall only be considered upon submission by the Contractor of satisfactory evidence (for example, releases or paid invoices from the seller) that the Contractor has acquired title to such material, that it will be utilized on the work under this Contract and that it is satisfactorily stored, protected, and insured or that other procedures satisfactory to the Owner that will protect the Owner's interests have been taken. In the event the materials are stored in a bonded warehouse that is not located in the county of the project, the Contractor shall reimburse the travel cost and hourly billing expenses incurred by the Design Consultant for travel to view and assess whether the materials meet the requirements of the Contract Documents. Materials once paid for by the Owner become the property of the Owner and may not be removed from the work site or bonded warehouse, other than to be delivered from the warehouse to the site, without the Owner's written permission. Responsibility for such stored materials and equipment shall remain with the Contractor regardless of ownership.
 - 9.3.3.1 Owner will not make payment to the Contractor on account of materials or equipment not incorporated in the Work but delivered and stored at the site if the Contractor, in his schedule of values, does not include line items for such delivered and stored materials or equipment.
 - 9.3.3.2 It is specifically understood and agreed that an inspection and approval of the materials by the Owner, the Design Consultant or any agency retained by any of them shall not in any way subject the Owner to pay for the said materials or any portion thereof, even though incorporated in the Work, if said materials shall in fact turn out to be unfit to be used in the Work, nor shall such inspection be considered as any waiver of objection to the Work on account of the unsoundness or imperfection of the material used.
- 9.3.4 The Contractor warrants that title to all work, materials and equipment covered by an Application for Payment will pass to the Owner either by incorporation in the construction or upon the receipt of payment by the Contractor, whichever occurs first, free and clear of all liens, claims, security interests or encumbrances, hereinafter referred to in this Article 9 as "liens"; and that no work, materials or equipment covered by an Application for Payment will have been acquired by the Contractor, or by any other person performing work at the site or furnishing materials and equipment for the Project, subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or otherwise imposed by the Contractor or such other person.

9.3.5 The Contractor shall submit with the Application for Payment a notarized Contractor's Sales Tax Report of N.C. State and County sales taxes paid during the payment period with respect to building materials, supplies, fixtures, and equipment that have become a part of, or annexed to, a building or structure erected, altered or repaired for the Owner. The Sales Tax Report shall include the vendor from whom the property was purchased, the dates and number of invoices covering the purchase, the total amount of the invoices of each vendor, the North Carolina State and County sales and use tax paid thereof, and the cost of the property withdrawn from the warehouse stock and North Carolina sales or use taxes paid thereof. Items that should not be included are: scaffolding, forms for concrete, fuel for operation of machinery and equipment, tools, equipment, equipment repair parts and equipment rentals.

9.3.6 Unless an interest rate is required by law, Owner shall not pay any interest on an amount owed to Contractor. No interest shall accrue on amounts Owner is authorized by law or by the Contract to withhold or backcharge to Contractor.

9.4 CERTIFICATION OF PAYMENT

9.4.1 The Design Consultant will, after receipt of the Contractor's Application for Payment either issue a Certification of Payment to the Owner, with a copy to the Contractor, for such amount as the Design Consultant determines is properly due, or notify the Contractor in writing of their reasons for withholding a Certification as provided in Paragraph 9.6.1.

9.4.2 The submission and approval of the progress schedule and monthly updates thereof as required by the Specifications, Construction Schedules and Reports, shall be an integral part and basic element of the application upon which progress payment shall be made. The Contractor shall be entitled to progress payments only as determined from the currently approved and updated schedule.

9.4.3 The signing of a Certification of Payment will constitute a representation by the Design Consultant to the Owner, based on their observations at the site pursuant to their agreements with the Owner, and the data comprising the Application for Payment, that the Work has progressed to the point indicated; that, to the best of their knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to the results of any subsequent tests required by or performed under the Contract Documents, to minor deviations from the Contract Documents correctable prior to completion, and to any specific qualifications stated in their Certification); and that the Contractor is entitled to payment in the amount certified. However, by signing a Certification of Payment, the Design Consultant shall not thereby be deemed to represent that it has made exhaustive or continuous on-site inspections to check the quality or quantity of the Work or that it has reviewed the construction means, methods, techniques, sequences, or procedures, or that it has made any examination to ascertain how or for what purpose the Contractor has used the moneys previously paid on account of the Contract Sum.

9.5 PROGRESS PAYMENTS

9.5.1 After a Certification of Payment has been issued, the Owner shall make payment in the manner and within the time provided in the Contract Documents, unless Contractor is in breach of the Contract or otherwise owes the Owner, in which case Owner may withhold an appropriate amount.

9.5.2 The Contractor shall promptly pay each Subcontractor (including suppliers, laborers, and material-men) performing labor or furnishing material or equipment for the Work, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's work, the amount to which said Subcontractor is entitled, reflecting the percentage actually retained, if any, from payments to the Contractor on account of such Subcontractor's work. The Contractor shall, by an appropriate agreement with each Subcontractor, also require each Subcontractor to make payments to his Sub-subcontractors in similar manner. The Owner may at any time require proof of payment to a Subcontractor or Sub-subcontractor for work paid by the Owner. Notwithstanding any other provision of the General Conditions, no Contractor, Subcontractor, Sub-subcontractor or Material Supplier shall have

any Claim against the Owner, by virtue of the Contract, under any theory, including breach of contract, or third party beneficiary. The Owner shall not be in privity of any contract with any Subcontractor, Sub-subcontractor or Material Supplier pertaining to the Work, the Project and these General Conditions. Also, neither the Contractor, or any Subcontractor or Sub-subcontractor shall have any right to assert a lien on Owner's real property or on any funds held by Owner.

- 9.5.3 The Owner may, on request and at his discretion, furnish to any Subcontractor, if practicable, information regarding the percentages of completion or the amounts applied for by the Contractor and the action taken thereon by the Design Consultant on account of work done by such Subcontractor.
- 9.5.4 Neither the Owner nor the Design Consultant shall have any obligation to pay or to see to the payment of any moneys to any Subcontractor except as may otherwise be required by law.
- 9.5.5 No Certification for a progress payment, nor any progress payment or final payment, nor any partial or entire use or occupancy of the Project by the Owner, shall constitute an acceptance of any Work not in accordance with the Contract Documents.
- 9.5.6 The Contractor agrees to keep the Work and the site of the Project free and clear of all liens related to labor and materials furnished in connection with the Work. Furthermore, pursuant to and in compliance with requirements of Paragraph 9.3.4, the Contractor waives any right he may have to file any type of lien in connection with the Work. Notwithstanding anything to the contrary contained in the Contract Documents, if any such lien is filed or there is evidence to believe that any lien may be filed at any time during the progress of the Work or within the duration of this Contract, the Owner may refuse to make any payment otherwise due the Contractor or may withhold from any payment due the Contractor a sum sufficient in the opinion of the Owner to pay all obligations and expenses necessary to satisfy such lien or the underlying claim represented by such lien. The Owner may withhold such payment unless or until the Contractor, within ten (10) days after demand thereof by the Owner, shall furnish satisfactory evidence that the indebtedness and any lien in respect thereof has been satisfied, discharged and released of record, or that the Contractor has legally caused such lien to be released of record pending the resolution of any dispute between the Contractor and the person or persons filing such lien. If the Contractor shall fail to furnish such satisfactory evidence within ten (10) days of the demand thereof, the Owner may discharge such indebtedness and deduct the amount thereof, together with any and all losses, costs, damages and attorney's fees suffered or incurred by the Owner from any sum payable to the Contractor under the Contract Documents, including but not limited to final payment and retained percentage. This Paragraph 9.5.6 shall be specifically included in all Subcontracts and purchase orders entered into by the Contractor. Notwithstanding any other provision of the Contract, nothing in the Contract shall affect the rights of Subcontractors, Sub-subcontractors, Material Suppliers and Vendors from enforcing any lien rights they have against parties other than the Owner.

9.6 PAYMENTS WITHHELD

- 9.6.1 The Design Consultant may decline to certify payment and may withhold their Certification of Payment in whole or in part, to the extent necessary to reasonably protect the Owner, if in the Design Consultant's opinion it is unable to make representations to the Owner as provided in Paragraph 9.4.3. If the Design Consultant is unable to make representations to the Owner as provided in Paragraph 9.4.3 and to certify payment in the amount of the Application for Payment, it will notify the Contractor as provided in Paragraph 9.4.1. If the Contractor and the Design Consultant cannot agree on a revised amount, the Design Consultant will promptly issue a Certification of Payment for the amount for which it is able to make such representations to the Owner. The Design Consultant may also decline to certify payment because of subsequently discovered evidence or subsequent observations that may nullify the whole or any part of any Certification of Payment previously issued to such extent as may be necessary in its opinion to protect the Owner from loss, because of:

- .1 Defective Work not remedied,

- .2 Third party claims filed, whether in court, in arbitration or otherwise, or reasonable evidence indicating probable filing of such claims,
- .3 Failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment,
- .4 Reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum,
- .5 Damage to the Owner or another contractor,
- .6 Reasonable evidence that Contractor will not achieve Substantial Completion and/or Final Completion by the dates specified in the Supplemental Conditions.
- .7 Failure or refusal of the Contractor to carry out the Work in accordance with or to otherwise substantially or materially comply with the Contract Documents,
- .8 Liens filed or reasonable evidence that a lien may be filed for any portion of the Work,
- .9 Failure or refusal of the Contractor to properly schedule and coordinate the Work, to provide progress schedules, reports and updates, or to otherwise fully comply with the Specifications, Construction Schedules and Reports,
- .10 Failure or refusal of the Contractor to fully comply with the provisions of Section 6.2 requiring the Contractor to direct certain Claims to Separate Contractors and to defend and indemnify the Owner and/or the Design Consultant in the event Separate Contractors file certain Claims, or
- .11 Failure or refusal of the Contractor to submit the required information on MWSBE Businesses.
- .12 Failure or refusal of the Contractor to submit a notarized North Carolina State and County Sales Tax Report.
- .13 Any other breach of the Contract by Contractor which has or is likely to cause monetary damages or loss to Owner.
- .14 Any other reason authorized by the Contract Documents or by law.

9.6.2 When the above grounds in Paragraph 9.6.1 are removed to the Design Consultant's and Owner's satisfaction, payment shall be made for amounts withheld because of them.

9.6.3 In addition to the reasons outlined in section 9.6.1 payment may be withheld for the following reasons: The Contractor shall reimburse the Owner or the Owner will retain from the compensation otherwise to be paid to the Contractor funds sufficient to cover the payment of the following additional services performed by the Architect: (1) services required pursuant to the Owner's dispute resolution policy; (2) expense of overtime work requiring higher than regular rates when such work is required due to the failure of the Contractor to perform in accordance with the Contract Documents; (3) review of the Contractor's submittal or shop drawing out of sequence of the submittal schedule agreed to by the Contractor and Architect; (4) responses to the Contractor's requests for information where such information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor-prepared coordination drawings, or prior project correspondence or documentation; (5) evaluation of an extensive number of substitutions proposed by the Contractor and making subsequent revisions to instruments of service resulting therefrom; (6) design services related to the default of the contractor; (7) contract administration services provided 60 days after the date of substantial completion of the work if required due to the Contractor's failure to complete its punchlist work in a timely fashion; (8) more than two inspections or reviews of the same area or areas for

the purpose of determining substantial completion; (9) more than two inspections or reviews of the same area or areas for the purpose of determining final completion; and (10) multiple reviews of incomplete or deficient submittal or shop drawings from the Contractor.

9.7 FAILURE OF PAYMENT

- 9.7.1 If the Owner does not make payment to the Contractor within the forty-five (45) calendar days after receipt of the Contractor's approved Application for Payment from the Design Consultant through no fault of the Contractor, and the Owner otherwise not being entitled under the Contract Documents or applicable law to withhold payment, then the Contractor may, upon seven (7) additional days' Notice to the Owner, stop the Work until payment of the amount owed according to the Contract Documents has been received. In such event, the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, which shall be effected by appropriate Change Order as provided herein.

9.8 SUBSTANTIAL COMPLETION

- 9.8.1 When the Contractor considers that the Work, or a designated portion thereof which is acceptable to the Owner, is substantially complete as defined in Paragraph 8.1.3, the Contractor shall prepare for submission to the Owner a comprehensive list of items which in his opinion are to be completed or corrected and shall request in writing that the Design Consultant and the Owner perform a Substantial Completion inspection. The Design Consultant and the Owner shall review the Contractor's list and shall compile a punch list of items to be corrected and completed. The failure to include any items on such list does not alter the responsibility of the Contractor to complete the Work in accordance with the Contract Documents. When the Design Consultant and the Owner on the basis of an inspection jointly determine that the Work or designated portion thereof is substantially complete, they will then prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall state the responsibilities of the Owner and the Contractor for security, maintenance, heat, utilities, damage to the Work, and insurance, and shall fix the time within which the Contractor shall complete the items listed therein. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and the Contractor for their written acceptance of the responsibilities assigned to them in such Certificate.
- 9.8.2 Upon Substantial Completion of the Work or designated portion thereof and upon application by the Contractor and certification by the Design Consultant, the Owner shall make payment, except retainage held pursuant to Paragraph 9.3.2, for such work or portion thereof, as provided in the Contract Documents unless Contractor is in breach of the Contract in which case Owner may withhold an appropriate amount.
- 9.8.3 The acceptance of Substantial Completion payment shall constitute a waiver of all Claims by the Contractor and its Subcontractors and Sub-subcontractors except those previously made in writing and identified by the Contractor as unsettled at the time the Contractor submits the Application for Payment for Substantial Completion, and except for the retainage sums due at Final Completion. The Contractor shall indemnify and hold the Owner harmless against any Claims by its Subcontractors and Sub-subcontractors that are waived because they were not made in writing and identified by the Contractor as unsettled when the Contractor submitted the Application for Payment for Substantial Completion.
- 9.8.4 The Owner shall have the option to correct or conclude any and all punch list items not completed by the Contractor to the satisfaction of the Design Consultant and the Owner within thirty (30) days from the actual date of Substantial Completion by utilizing its own forces or by hiring others. The cost of such correction of remaining punch list items by the Owner or others shall be deducted from the final payment to the Contractor. If Contractor does not complete certain punch list items within this time period, specified in Paragraph 9.8.4, all warranties and guarantees for such incomplete punch list items shall become effective upon issuance of final payment for the Project. Paragraph 9.8.4 does not limit the Liquidated Damages provisions related to failure to reach Final Completion by the date stipulated in the

Contract Documents.

- 9.8.5 The issuance of the Certificate of Substantial Completion does not indicate final acceptance of the Project by the Owner, and the Contractor is not relieved of any responsibility for the Project except as specifically stated in the Certificate of Substantial Completion.
- 9.8.6 Should the Design Consultant and the Owner determine that the Work or a designated portion thereof is not substantially complete, they shall inform the Contractor in writing stating why the Project or designated portion is not substantially complete. The Contractor shall expeditiously complete the Work and shall re-request in writing that the Design Consultant and the Owner perform a Substantial Completion inspection. Costs (if any), associated with such inspection shall be assessed to the Contractor.
- 9.8.7 The date of Substantial Completion will not be established until the following is completed by Contractor:
- .1 Submit Contractor's punch list of work not yet complete with proposed time for completion signed by Contractor's project superintendent;
 - .2 Submit Certificate of Occupancy;
 - .3 Submit maintenance manuals as required by the contract documents;
 - .4 Complete start-up testing of all systems;
 - .5 Discontinue and remove temporary facilities from the site;
 - .6 Compliance with the requirements of Section 8.1.3 and Section 9.8.
- 9.9 FINAL COMPLETION AND FINAL PAYMENT
- 9.9.1 Upon receipt of the documentation required by Section 9.8, and of written Notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Design Consultant and the Owner will promptly make such inspection and, when they find the Work acceptable under the Contract Documents and the Contract fully performed, the Design Consultant shall issue a final Certification of Payment stating that to the best of their knowledge, information and belief, and on the basis of their observations and inspections, the Work has been completed in accordance with the terms and conditions of the Contract Documents. The final Certification of Payment will constitute that the conditions precedent to the Contractor's being entitled to final payment as set forth in Section 9.8 have been fulfilled. Payment shall be made in full to the Contractor within forty five (45) calendar days after receipt by the Owner of the final Certification of Payment except for any Work for which the Owner is entitled a credit under the Contract Documents.
- 9.9.1.1 Final Completion will not be met until the following:
- .1 Coordinate and complete changeover of security, telephone, cable and other services;
 - .2 Instruction of the Owner's personnel;
 - .3 Coordinate and complete final changeover of permanent locks and transmit keys to Owner;
 - .4 Deliver tools, spare parts, extra stock and similar items;
 - .5 Submit warranties, bonds, maintenance agreements and final certifications;

- .6 Submit record drawings, final project photos, property surveys;
 - .7 Complete final cleaning;
- 9.9.2 Neither the final payment nor the remaining retained percentage shall become due until the Work is free and clear of any and all liens and the Contractor submits to the Owner:
- .1 An affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or his property might in any way be responsible, have been paid or otherwise satisfied;
 - .2 Consent of Surety to final payment;
 - .3 If required by the Owner, other data establishing payment or satisfaction of all such obligations, such as receipts, releases and waivers of liens arising out of the Contract, to the extent and in such form as may be designated by the Owner; and
 - .4 A written certification that:
 - .1 The Contractor has reviewed the requirements of the Contract Documents,
 - .2 The Work has been inspected by the Contractor for compliance with all requirements of the Contract Documents,
 - .3 Pursuant to this inspection, the Contractor certifies and represents that the Work complies in all respects with the requirements of the Contract Documents,
 - .4 The Contractor further certifies and represents that all equipment and systems have been installed in accordance with the Contract Documents and have been tested in accordance with the Specification requirements and are operational, and
 - .5 The Contractor hereby certifies and represents that the Work is complete in all respects and ready for final inspection.
- 9.9.3 If any Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify him against any loss. If any such lien or claim remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all moneys that the latter may be compelled to pay in discharging such lien or claims, including all costs and reasonable attorney's fees. The Owner may withhold from the final payment any sum that the Owner has reason to believe may be needed to satisfy any lien, claim or threat of lien arising from the Work. The Owner may deduct from the final payment an amount equal to any costs, expenses and attorney's fees incurred by the Owner in removing or discharging any liens or claim arising from the Work.
- 9.9.4 If, after Substantial Completion of the Work, Final Completion thereof is materially delayed through no fault of the Contractor or by the issuance of Change Orders affecting Final Completion, and the Owner so confirms, the Owner shall, upon application by the Contractor and certification by the Design Consultant, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for the portion of the Work not fully completed or corrected is less than the retainage stipulated in the Contract Documents, and if bonds have been furnished as provided in Section 7.4, the written consent of the Surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Design Consultant prior to certification of such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.
- 9.9.5 The making of final payment shall constitute a waiver of all Claims by the Owner against the Contractor

except those arising from:

- .1 Unsettled liens, and claims against the Owner or the Design Consultant, or their employees, agents, or representatives;
- .2 Faulty, defective or non-conforming Work;
- .3 Failure of the Work to comply with the requirements of the Contract Documents;
- .4 Terms of any warranties contained in or required by the Contract Documents;
- .5 Damages incurred by the Owner resulting from lawsuits brought against the Owner, the Design Consultant, or their agents, employees or representatives because of failures or actions on the part of the Contractor, his Subcontractors, Sub-subcontractors, or any of their employees, agents or representatives;
- .6 Fraud or bad faith committed by the Contractor or any Subcontractor or supplier during performance of the Work but discovered by Owner after final payment; or
- .7 Claims about which Owner did not have actual knowledge or which increase in scope or amount at the time of final payment.

9.9.6 The acceptance of final payment shall constitute a waiver of all Claims by the Contractor except those previously made in writing and identified by the Contractor as unsettled at the time of the final Application for Payment.

9.9.6.1 Notwithstanding any other provision of the Contract, Owner may withhold from Contractor payment otherwise due, as a result of any losses, expenses costs or damages suffered or anticipated to be suffered by Owner as a result of Contractor's breach of any provision of the Contract, including but not limited to Liquidated Damages or backcharges against Contractor.

9.10 OWNER'S RIGHT TO OCCUPY INCOMPLETE WORK

9.10.1 Should the Project, or any portion thereof, be incomplete for Substantial or Final Completion at the scheduled date or dates, the Owner shall have the right to occupy any portion of the Project. In such an event, the Contractor shall not be entitled to any extra compensation on account of said occupancy by the Owner or by the Owner's use of the Project, nor shall the Contractor interfere in any way with said use of the Project. Further, in such an event, the Contractor shall not be entitled to any extra compensation on account of the Owner's occupancy and use of the Project, nor shall the Contractor be relieved of any responsibilities of the Contract including the required times of completion. Such occupancy by the Owner shall not, in itself, constitute Substantial or Final Completion.

9.10.2 If the Owner exercises his rights under the foregoing and occupies the full Project, then there shall be no Liquidated Damages on account of failure on the Contractor's part to reach Substantial Completion from that date forward. This provision does not affect, however, any Liquidated Damages that would be assessed for any period of time between the contractual date of Substantial Completion and the date of any such occupancy. Further, this provision would have no effect on Liquidated Damages assessed on account of late Final Completion.

ARTICLE 10

PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

- 10.1.1 The Owner, the Design Consultant, or their agents, employees or representatives are not responsible for the means, methods, techniques, sequences or procedures utilized by the Contractor, or for safety precautions and programs in connection with the Work. The Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. This requirement applies continuously throughout the Contract performance, until final payment is made and all punch list and warranty work is performed properly, and is not limited to regular working hours.
- 10.2 SAFETY OF PERSONS AND PROPERTY
- 10.2.1 The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury or loss to:
- .1 All employees on the Work and all other persons who may be affected thereby;
 - .2 All the Work and all materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor or any of his Subcontractors or Sub-subcontractors, machinery, equipment and all hazards shall be guarded or eliminated in accordance with all applicable safety regulations; and
 - .3 Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and overhead or underground utilities not designated for removal, relocation or replacement in the course of construction.
- 10.2.2 The Contractor shall give all notices and comply with all applicable laws, ordinances, permits, rules, regulations and lawful orders of any public authority bearing on the safety or persons or property or their protection from damage, injury or loss.
- 10.2.2.1 The Contractor shall at all times safely guard the Owner's property from injury or losses in connection with the Contract. He shall at all times safely guard and protect his own work and adjacent property as provided by law and the Contract Documents, from damage. All passageways, guard fences, lights and other facilities required for protection by applicable safety regulations must be provided and maintained.
- 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and progress of the Work, all reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent utilities.
- 10.2.4 When the use or storage of explosives or other hazardous materials or equipment is necessary for the execution of the Work, the Contractor shall exercise the utmost care and shall carry on such activities under the supervision of properly qualified personnel.
- 10.2.5 The Contractor shall promptly remedy at his own cost and expense all damage or loss to any property referred to in Subparagraphs 10.2.1.2 and 10.2.1.3 caused by the Contractor, any Subcontractor, any Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable and for which the Contractor is responsible under Subparagraphs 10.2.1.2 and 10.2.1.3, except damage or loss attributable solely to the acts or omissions of the Owner or Design Consultant or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to his obligations under Section 4.21. The Contractor shall perform such restoration by underpinning, repairing, rebuilding, replanting, or otherwise restoring as may be required or directed by the Owner, or shall make good such damage in a satisfactory and acceptable manner. In case of failure on the part of the Contractor to promptly restore such property or make good such damage, the Owner may, upon two (2) calendar days Notice, proceed to repair, rebuild or otherwise restore such property as may be necessary and the cost thereof, or a sum sufficient in the judgment of the Owner to reimburse the owners of property so damaged, will be deducted from any monies due or to

become due the Contractor under the Contract.

- 10.2.6 The Contractor is responsible for the proper packing, shipping, handling and storage (including but not limited to shipment or storage at the proper temperature and humidity) of materials to be incorporated in the Work, so as to insure the preservation of the quality and fitness of the material for proper installation and incorporation in the Work, as required by the Contract Documents. For example, but not by way of limitation, Contractor shall, when necessary, place material on wooden platforms or other hard and clean surfaces and not on the ground and/or place such material under cover in any appropriate shelter or facility. Stored materials or equipment shall be located so as to facilitate proper inspection. Material and equipment which is delivered crated shall remain crated until ready for installation. Lawns, grass plots or other private property shall not be used for storage purposes without the written permission of the Owner or lessee unless otherwise within the terms of the easements obtained by the Owner.
- 10.2.6.1 It shall be the responsibility of the Contractor in his preparation of phasing schedule of work operations after consulting with the other Prime Contractors to designate areas in which each Prime Contractor may store materials. Areas designed shall meet with the approval of the Design Consultant.
- 10.2.7 The Contractor shall give notice in writing at least forty eight (48) hours before breaking ground, to all persons, public utility companies, owners of property having structures or improvements in proximity to site of the Work, superintendents, inspectors, or those otherwise in charge of property, streets, water pipes, gas pipes, sewer pipes, telephone cables, electric cables, railroads or otherwise, who may be affected by the Contractor's operation, in order that they may remove any obstruction for which they are responsible and have representative on site to see that their property is properly protected. Such notice does not relieve the Contractor of responsibility for all damages, claims, or defense or indemnification of all actions against Owner resulting from performance of such work in connection with or arising out of Contract.
- 10.2.8 The Contractor shall investigate, locate, mark and protect all utilities encountered or to be encountered while performing the Work, whether indicated on the Drawings or not. The Contractor shall maintain utilities in service until moved or abandoned. The Contractor shall exercise due care when excavating around utilities and shall restore any damaged utilities to the same condition or better as existed prior to starting the Work, at no cost to the Owner. The Contractor shall maintain operating utilities or other services, even if they are shown to be abandoned on the Contract Drawings, in service until new facilities are provided, tested and ready for use.
- 10.2.9 The Contractor shall return all improvements on or about the site and adjacent property which are not shown to be altered, removed or otherwise changed to conditions which existed prior to starting the Work. The Contractor shall video record all areas or otherwise document the conditions existing at the site and in and around existing buildings prior to starting the Work. Submit documentation to the Design Consultant prior to beginning the Work.
- 10.2.10 The Contractor shall protect the Work, including but not limited to, the site, stored materials and equipment, excavations, and excavated or stockpiled soil or other material, intended for use in the Work, and shall take all necessary precautions to prevent or minimize damage to same or detrimental effect upon his performance or that of his Subcontractors, caused by or due to rain, snow, ice, run-off, floods, temperature, wind, dust, sand and flying debris; for example, but not by way of limitation, Contractor shall, when necessary, utilize temporary dikes, channels or pumping to carry-off divert or drain water, and shall as necessary tie-down or otherwise secure the Work and employ appropriate covers and screens.
- 10.2.11 The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents and the protection of material, equipment and property. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner.
- 10.2.12 The Contractor shall not load or permit any part of the Work to be loaded so as to endanger its safety.
- 10.2.13 Notification to the Contractor by the Owner or the Design Consultant of a safety violation will in no way

relieve the Contractor of sole and complete responsibility for the correctness of said violation or of sole liability for the consequences of said violation.

10.3 EMERGENCIES

- 10.3.1 In any emergency affecting the safety of persons or property, the Contractor shall act, at his discretion, to prevent threatened damage, injury or loss. The Contractor shall notify the Owner of the situation and all actions taken immediately thereafter. If, in the opinion of the Contractor, immediate action is not required, the Contractor shall notify the Owner of the emergency situation and proceed in accordance with the Owner's instructions. Provided, however, if any loss, damage, injury or death occurs that could have been prevented by the Contractor's prompt and immediate action, the Contractor shall be fully liable for all costs, damages, claims, actions, suits, attorney's fees and all other expenses arising therefrom or relating thereto.

ARTICLE 11

INSURANCE

11.1 CONTRACTOR'S LIABILITY INSURANCE

- 11.1.1 The Contractor shall purchase and maintain in companies properly licensed by the Insurance Department of the State of North Carolina and acceptable to the Owner such insurance as will protect him, the Owner, and the Owner's agents, representatives, and employees from claims set forth below which may arise out of or result from the Contractor's operations under the Contract, whether such operations be by himself or by any Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- .1 Claims under workers' or workmen's compensation, disability benefit and other similar employee benefit acts (with Workmen's Compensation and Employer's Liability Insurance in amounts not less than those necessary to meet the statutory requirements of the state(s) having jurisdiction over any portion of the Work);
- .2 Claims for damages because of bodily injury, sickness or disease, or death of his employees; the Contractor will require his Subcontractors to similarly provide Workmen's Compensation Insurance for all of the latter's employees;
- .3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees;
- .4 Claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor, or (2) by any other person;
- .5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom; and
- .6 Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

- 11.1.2 The insurance required by Paragraph 11.1.1 shall be primary and non-contributing to any insurance possessed or procured by the Owner, and limits of liability shall be not less than those set forth in these General Conditions of the Contract or required by law, whichever is greater.

- 11.1.3 The insurance required by the Contract shall include contractual liability insurance applicable to the

Contractor's obligations under the Contract

- 11.1.4 Without limiting the above during the term of the Contract, the Contractor and each Subcontractor shall, at their own expense, purchase and maintain the following insurance with companies properly licensed by the Insurance Department of the State of North Carolina and satisfactory to the Owner.
- .1 Worker's Compensation including Occupational Disease and Employer's Liability Insurance.
 - .1 Statutory - Amount and coverage as required by State of North Carolina Worker's Compensation laws.
 - .2 Employer's Liability – see “CMBE Contract Insurance Guidelines” for coverage limits.
 - .2 Commercial General Liability (Occurrence Form) - The Contractor shall provide during the life of the Contract such Commercial General Liability (Occurrence Form) Insurance as shall protect him and any Subcontractor performing work under the Contract from claims for damages for Bodily Injury including accidental death, as well as from claims for Property Damage which may arise from operations under the Contract, whether such operations be by himself or by any Subcontractor or by anyone directly or indirectly employed by either of them. This insurance shall be on the Standard Insurance Services Office, Inc. (ISO) Commercial Liability Occurrence Form or other form reasonable acceptable to Owner. The Contractor shall procure insurance coverage for direct operations, sublet work, elevators, contractual liability and completed operations with limits not less than those stated below:
 - .1 A Combined Single Limit for Bodily Injury, Property Damage, Products and Completed Operations, Personal/Advertising Injury Liability and Contractual Liability – see “CMBE Contract Insurance Guidelines” for coverage limits.
 - .3 Commercial Automobile Insurance, including coverage for owned, non-owned and hired vehicles - with limits not less than those stated below:
 - .1 A Combined Single Limit for Bodily Injury and Property Damage – see “CMBE Contract Insurance Guidelines” for coverage limits.
- 11.1.5 The insurance required by Section 11.1 shall be written for not less than any limits of liability specified in the Contract Documents, or required by law, whichever is greater.
- 11.1.6 Certificates of Insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. These Certificates shall contain a provision that coverages afforded under the policies will not be canceled until at least thirty (30) days' prior written Notice has been given to the Owner. Failure to provide such Notice shall not limit the liability of the Insurer, its agents or representatives.
- .1 Description of operations/locations/vehicles/special items should contain the following statement along with any items particular to your company:
CHARLOTTE MECKLENBURG BOARD OF EDUCATION IS NAMED AS
ADDITIONAL INSURED IN RESPECT TO GENERAL LIABILITY.
 - 2. The certificate holder is:
CHARLOTTE MECKLENBURG BOARD OF EDUCATION
P.O Box 30035
Charlotte, NC 28230
 - 3. The cancellation statement is:
SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE
THE EXPIRATION DATE THEREOF, THE ISSUING COMPANIES WILL MAIL

THIRTY (30) DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT.

- 11.1.7 All insurance policies required in this Article, except Worker's Compensation and Commercial Automobile, shall name the Owner as additional named insured for the insurance.
- 11.1.8 The Contractor shall not commence the Work under the Contract until he has obtained all the insurance required hereunder and such insurance has been approved by the Owner, nor shall the Contractor allow any Subcontractor to commence work on his subcontract until all similar insurance required of the Subcontractor has been so obtained and approved. Approval of the insurance by the Owner shall not relieve or decrease the liability of the Contractor hereunder.
- 11.1.9 The Commercial General Liability and Workers Compensation Policies provided by the Contractor shall have endorsements waiving subrogation against the Owner.
- 11.2 PROPERTY INSURANCE
 - 11.2.1 The Contractor shall purchase and at all times maintain such insurance as will protect the Contractor, the Owner, Subcontractors and Sub-subcontractors from loss or damage to the Work or property in the course of construction, including all machinery, materials and supplies on the premises or in transit thereto and intended to become a part of the finished Work until Final Completion. This insurance shall be in the form of "Builders Risk Covered Cause of Loss Form", or equivalent form, to include but not limited to theft, collapse, earth movement, flood, and portions of the Work stored on site, off site and in transit. Any deductible provision in such insurance shall not exceed ten thousand dollars (\$10,000). Notwithstanding any such deductible provision, the Contractor shall remain solely liable for the full amount of any item covered by such insurance. Such insurance shall be in the initial Contract Sum and shall be increased at Contractor's expense in the amount of all additions to the Contract Sum. Such insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.
 - 11.2.2 Any loss insured under Paragraph 11.2.1 is to be adjusted with the Owner and made payable to the Owner as trustee for the insureds, as their interests may appear, subject to the requirements of Paragraph 11.2.4. The Contractor shall pay each Subcontractor a just share of any insurance moneys received by the Contractor, and by appropriate agreement, written where legally required for validity, shall require each Subcontractor to make payments to his Sub-subcontractors in similar manner.
 - 11.2.3 The Owner and Contractor waive all rights against each other for damages caused by fire or other perils to the extent their Claims are covered by insurance obtained pursuant to this Section 11.2, or any other property insurance applicable to the Work, except such rights as they may have to the proceeds of such insurance. The Contractor shall require, by appropriate agreement, written where legally required for validity, similar waivers in favor of the Owner and the Contractor by Subcontractors and Sub-subcontractors. With respect to the waiver of rights of recovery, the term Owner shall be deemed to include, to the extent covered by property insurance applicable thereto, his consultants, employees, and agents and representatives. The Contractor waives as against any Separate Contractor described in Article 6, all rights for damages caused by fire or other perils in the same manner as is provided above as against the Owner. The Owner shall require, by appropriate agreement, written where legally required for validity, similar waivers in favor of the Contractor by any Separate Contractor and his subcontractors and sub-subcontractors.
 - 11.2.4 The Owner as trustee shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within five (5) days after the occurrence of loss to the Owner's exercise of this power, and if such objection is made, the matter shall be decided by a court of competent jurisdiction or as the parties in interest otherwise agree. The Owner as trustee shall, in that case, make settlement with the insurers in accordance with the orders of the court or as otherwise agreed by the parties in interest.

- 11.2.5 If the Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion thereof, such occupancy or use shall not commence prior to a time mutually agreed to by the Owner and Contractor and to which the insurance company or companies providing the property insurance have consented by endorsement to the policy or policies. This insurance shall not be canceled or lapsed on account of such partial occupancy or use. Consent of the Contractor and of the insurance company or companies to such occupancy or use shall not be unreasonably withheld.
- 11.2.6 The Contractor bears the risk of loss or damage to the Work, the Project, materials stored on site or off site, and Owner's improvements and property under Contractor's control, both during construction and prior to Substantial Completion.
- 11.3 EFFECT OF SUBMISSION OF CERTIFICATES
- 11.3.1 The Owner shall be under no obligation to review any Certificates of Insurance provided by the Contractor or to check or verify the Contractor's compliance with any and all requirements regarding insurance imposed by the Contract Documents. The Contractor is fully liable for the amounts and types of insurance required herein and is not excused should any policy or certificate of insurance provided by the Contractor not comply with any and all requirements regarding insurance imposed by the Contract Documents.
- 11.4 FAILURE OF COMPLIANCE
- 11.4.1 Should the Contractor fail to provide and maintain in force any and all insurance, or insurance coverage required by the Contract Documents or by law, or should a dispute arise between Owner and any insurance company of Contractor over policy coverage or limits of liability as required herein, the Owner shall be entitled to recover from the Contractor all amounts payable, as a matter of law, to Owner or any other parties, had the required insurance or insurance coverage been in force. Said recovery shall include, but is not limited to interest for the loss of use of such amounts of money, plus all attorney's fees, costs and expenses incurred in securing such determination and any other consequential damages arising out of the failure of the Contractor or insurance company to comply with the provisions of the Contract Documents, or any policy required hereby, or any other requirements regarding insurance imposed by law. Nothing herein shall limit any damages for which Contractor is responsible as a matter of law.
- 11.5 OWNER'S INSURANCE
- 11.5.1 Property Insurance: The Owner, at his option, may purchase and maintain such insurance as will insure him against loss of use of his property due to fire or other hazards, however caused.
- 11.5.2 Commercial Public Liability Insurance: The Owner, at his option, may purchase and maintain insurance which will insure and protect him against claims involving bodily injury and property damage to the public. The Owner does not request his insurer to waive any right of subrogation against the Contractor from claims under this coverage.
- 11.6 LICENSED INSURANCE COMPANIES
- 11.6.1 All insurance companies providing the above insurance shall be licensed by the Insurance Department of the State of North Carolina and have a minimum AM Best "A" rating or similar rating from another rating agency reasonably acceptable to Owner.

ARTICLE 12

CHANGES IN THE WORK

12.1 GENERAL PROVISIONS RELATED TO CHANGES

- 12.1.1 A Construction Change Directive is a document issued pursuant to this Paragraph 12.1.1. The Owner may, at any time, without the agreement of the Contractor, by written order signed by the Owner and Design Consultant designated or indicated to be a Construction Change Directive, make any Changes in the Work or add to or subtract from the Work within the general scope of the Contract. A Change in the Work is defined as changes within the general scope of the Contract, including, but not limited to changes:
- .1 In the Specifications or Drawings;
 - .2 In the sequence, method or manner of performance of the Work;
 - .3 In the Owner-furnished facilities, equipment, materials, services or site; or
 - .4 Directing acceleration in the performance of the Work.
- 12.1.2 A Change Order is a document executed pursuant to this Paragraph 12.1.2. The Owner and Contractor may agree to Changes in the Work, the Contract Sum, the Contract Time and any other change in the Contract by written agreement signed by Owner, Contractor and Design Consultant designated or indicated to be a Change Order. If the Contractor, subsequent to the issuance of a Construction Change Directive, agrees to its terms including any applicable adjustment to the Contract Sum and Contract Time, Contractor shall sign it and it shall become a Change Order.
- 12.1.3 The Contractor shall not be entitled to any amount for indirect costs, damages or expenses of any nature, including, but not limited to, so-called "impact" costs, labor inefficiency, wage, material or other escalations beyond the prices upon which the Proposal is based and to which the parties have agreed pursuant to the provisions of Article 12, and which the Contractor, its Subcontractors or Sub-subcontractors or any other person may incur as a result of delays, interferences, suspensions, changes in sequence or the like, for whatever cause, whether reasonable or unreasonable, foreseeable or unforeseeable, or avoidable or unavoidable, arising from the performance of any and all Changes in the Work performed pursuant to this Article 12, unless the delay is caused solely by the Owner or its agent. It is understood and agreed that the Contractor's sole and exclusive remedy in the event the delay is caused solely by the Owner or its agent shall be recovery of his direct costs as compensable hereunder and an extension of the Contract Time, but only in accordance with the provisions of the Contract Documents. The phrase "Owner or its agent" as used in the Contract, does not include the Prime Contractors or their Subcontractors.
- 12.1.4 No Claim by the Contractor shall be allowed if asserted after final payment under this Contract. No Claim relating to or flowing from a particular change shall be allowed after execution of the Change Order relating to that change or commencement of the change by the Contractor except as specifically provided in Paragraph 12.2.4.
- 12.1.5 If any dispute should arise between the parties with respect to an increase or decrease in the Contract Sum or an expansion or contraction in the Contract Time as a result of a Change in the Work, the Contractor shall not suspend performance of a Change in the Work or the Work itself unless otherwise so ordered by the Owner in writing. The Owner shall, however, pay to the Contractor up to the Owner's reasonable estimated value of the Change in the Work, regardless of the dispute, if said Change in the Work will result in an increase in the Contract Sum; and the Owner shall have the right to withhold payment from the Contractor in an amount up to the Owner's reasonable estimated value of the Change in the Work, regardless of the dispute, if said Change in the Work will result in a decrease in the Contract Sum.
- 12.1.6 No Change in the Work shall be performed without a fully executed Change Order to the Contract, a fully executed Construction Change Directive or other Modification to the Contract.

12.1.7 If the Contractor intends to assert a Claim under this Article, he must, within ten (10) days after receipt of a Construction Change Directive, Notify the Owner by written statement setting forth the specific nature and cost of such Claim, unless this period is extended by the Owner. The statement of Claim shall include all direct, indirect and impact costs associated with the change, as well as the Contractor's estimate of the schedule impact of the change, if any. The Contractor and its Subcontractors shall not be entitled to reimbursement for any Claims that are not submitted in strict conformance with the Contract. The Contractor shall indemnify and hold the Owner harmless against any Claims by Subcontractors that are waived because they are not submitted in strict conformance with the Contract.

12.2 OWNER DIRECTED CHANGES REQUIRING AN INCREASE IN CONTRACT SUM.
(For decreases in Contract Sum, refer to Section 12.6)

12.2.1 If the Change in the Work will result in an increase in the Contract Sum, the Owner shall have the right to require the performance thereof on a lump sum basis, a unit price basis or a time and material basis, all as hereinafter more particularly described (the right of the Owner as aforesaid shall apply with respect to each such Change in the Work).

If the Owner elects to have the Change in the Work performed on a lump sum basis, its election shall be based on a lump sum Proposal which shall be submitted by the Contractor to the Owner within ten (10) days of the Contractor's receipt of a request therefore (but the Owner's request for a lump sum Proposal shall not be deemed an election by the Owner to have the Change in the Work performed on a lump sum basis). The Contractor's Proposal shall be itemized and segregated by labor and materials for the various components of the Change in the Work (no aggregate labor total will be acceptable) and shall be accompanied by signed Proposals of any Subcontractors who will perform any portion of the Change in the Work and of any persons who will furnish materials or equipment for incorporation therein. The Proposal shall also include the Contractor's estimate of the time required to perform said changes. The Contractor shall provide any documentation that may be requested by the Owner or Architect to support the change proposal, including but not limited to payroll records, insurance rates, material quotes, and rental quotes.

The portion of the Proposal relating to labor, whether by the Contractor's forces or the forces of any of its Subcontractors, may include reasonably anticipated gross wages of job site labor, including foremen, who will be directly involved in the Change in the Work (for such time as they will be so involved), plus payroll costs (including premium costs of overtime time, if overtime is anticipated, Social Security, Federal or State unemployment insurance taxes and fringe benefits required by collective bargaining agreements entered into by the Contractor or any such Subcontractor in connection with such labor) and up to fifteen percent (15%) of such anticipated gross wages, but not payroll costs, as overhead and profit for the Contractor or any such Subcontractor, as applicable (said overhead and profit to include all supervision except foremen). Payroll costs are limited to 39% of the net pay of the worker.

The portion of the Proposal relating to materials may include the reasonably anticipated direct costs to the Contractor or to any of its Subcontractors of materials to be purchased for incorporation in the Change in the Work, plus transportation and applicable sales and use taxes and up to fifteen percent (15%) of said direct material costs as overhead and profit for the Contractor or any such Subcontractor (said overhead and profit to include all small tools), and may further include the Contractor's and any of its Subcontractor's reasonably anticipated rental costs in connection with the Change in the Work (either actual or discounted local published rates), plus up to seven and 1/2 percent (7.5%) thereof as overhead and profit for the Contractor or any such Subcontractors, as applicable. The Contractor shall provide an itemized breakdown of all transportation and shipping costs, including receipts documenting the expenses. If any of the items included in the lump sum Proposal are covered by unit prices contained in the Contract Documents, the Owner may, if it requires the Change in the Work to be performed on a lump sum basis, elect to use these unit prices in lieu of the similar items included in the lump sum Proposal, in which event an appropriate deduction will be made in the lump sum amount prior to the application of any allowed overhead and profit percentages. No overhead and profit shall be applied to any unit prices.

The lump sum Proposal may include up to seven and 1/2 percent (7.5%) of the amount which the Contractor will pay to any of its Subcontractors for Changes in the Work as overhead and profit for the Contractor. The Contractor shall not be reimbursed for the costs of the Subcontractors' Payment and Performance Bonds, as such bonding is not required by the Owner.

- 12.2.2 In the event that the Contractor fails to submit his Proposal within the designated period, the Owner may order the Contractor to proceed with the Change to the Work and the Contractor shall so proceed. The Owner shall unilaterally determine the reasonable cost and time to perform the Work in question, which determination shall be final and binding upon the Contractor. The Contractor may dispute such action in accordance with the Article 15.
- 12.2.3 In the event that the parties are unable to agree as to the reasonable cost and time to perform the Change in the Work based upon the Contractor's Proposal and the Owner does not elect to have the Change in the Work performed on a time and material basis, the Owner may choose to make a determination of the reasonable cost and time to perform the Change in the Work, based upon its own estimates, the Contractor's submission or a combination thereof. A Construction Change Directive shall be issued in this case for the amounts of cost and time determined by the Owner and shall become final and binding upon the Contractor, subject to Contractor's right to dispute such action in accordance with Article 15. Owner has the right to direct by Construction Change Directive a Change in the Work, which is the subject of such Change Order. Failure of the parties to reach agreement regarding the cost and time of the performing the Construction Change Directive, shall not relieve the Contractor from performing the Change in the Work promptly and expeditiously.
- 12.2.3.1 The Owner reserves the right to reject the Contractor's Proposal for a Change in the Work and to elect to perform said Work using a Separate Contractor. Under such circumstances, all provisions of Article 6 shall be in force.
- 12.2.4 If the Owner elects to have the Change in the Work performed on a time and material basis, the same shall be performed, whether by the Contractor's forces or the forces of any of its Subcontractors or Sub-subcontractors, at actual cost to the entity performing the Change in the Work (without any charge for administration clerical expense, supervision or superintendence of any nature whatsoever, including foremen, or the cost, use or rental of tools or plant), plus fifteen percent (15%) thereof as the total overhead and profit (except that said fifteen percent (15%) shall not be applied against any payroll costs, as set forth in Paragraph 12.2.1.) The Contractor shall submit to the Owner daily time and material tickets, on a daily basis to include the identification number assigned to the Change in the Work, the location and description of the Change in the Work, the classification of labor employed, the materials used, the equipment rented (not tools) and such other evidence of cost as the Owner may require. The Owner may require authentication of all time and material tickets and invoices by persons designated by the Owner for such purpose. The failure of the Contractor to secure any required authentication shall, if the Owner elects to treat it as such, constitute a waiver by the Contractor of any Claim for the cost of that portion of the Change in the Work covered by a non-authenticated ticket or invoice; provided, however, that the authentication of any such ticket or invoice by the Owner shall not constitute an acknowledgment by the Owner that the items thereon were reasonably required for the Change in the Work.
- 12.2.5 No overhead and profit will be paid by the Owner on account of a Change in the Work except as specifically provided in Section 12.2. Overhead and profit, as allowed under Section 12.2, shall be deemed to include all costs and expenses which the Contractor or any of its Subcontractors may incur in the performance of a Change in the Work and which are not otherwise specifically recoverable by them pursuant to Section 12.2.
- 12.3 CONTRACTOR NOTICE OF CHANGE
- 12.3.1 If the Contractor or any of its Subcontractors asserts that any event or occurrence has caused a Change in the Work which change causes an increase or decrease in the Contractor's or its Subcontractors cost or

the time required for the performance of any part of the Work under the Contract, including Work not affected directly by the change, the Contractor shall, within ten (10) days of such event, give the Owner written Notice as herein required. Said Notice shall include the instructions or circumstances that are the basis of the Claim and the Contractor's best estimate of the cost and time involved.

12.4 MINOR CHANGES IN THE WORK

12.4.1 The Owner shall have authority to order minor Changes in the Work not involving an adjustment in the Contract Sum or an extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order, and shall be binding on the Owner and the Contractor. The Contractor shall carry out such written orders promptly.

12.4.2 The Contractor shall not perform any Changes in the Work unless authorized in writing by the Design Consultant or Owner.

12.5 DIFFERING SITE CONDITIONS

12.5.1 Should the Contractor encounter subsurface and/or latent conditions at the site materially differing from those shown on the Drawings or indicated in the Specifications or differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this Contract, or different from that shown on surveys or tests provided in the bid materials at the time the Owner solicited bids from the construction of the Project, he shall immediately give Notice to the Owner of such conditions before they are disturbed. The Owner and the Design Consultant shall thereupon promptly investigate the conditions and if they find that they materially differ from those shown on the Drawings or indicated in the Specifications, they shall at once make such changes in the Drawings and/or Specifications as they may find necessary. Any increase or decrease of cost resulting from such changes shall be adjusted in the manner provided herein for adjustments as to extra and/or additional work and changes.

12.6 OWNER DIRECTED CHANGES REQUIRING A DECREASE IN CONTRACT SUM.

12.6.1 If the Change in the Work will result in a decrease in the Contract Sum, the Owner may request a quotation by the Contractor of the amount of such decrease. The following provisions shall apply:

The portion of the Proposal relating to labor, whether by the Contractor's forces or the forces of any of its Subcontractors, shall include reasonably anticipated gross wages of job site labor, including foremen, who would have been directly involved in the Work that has been deleted from the Contract, (for such time as they would have been so involved), plus payroll costs (including premium costs of overtime time, if overtime was anticipated, Social Security, Federal or State unemployment insurance taxes and fringe benefits required by collective bargaining agreements entered into by the Contractor or any such Subcontractor in connection with such labor) and fifteen percent (15%) of such anticipated gross wages, but not payroll costs, as overhead and profit not incurred or earned by the Contractor or any such Subcontractor, as applicable (said overhead and profit to include all supervision except foremen).

The portion of the Proposal relating to materials shall include the reasonably anticipated direct costs which would have been incurred by the Contractor or to any of its Subcontractors of materials which would have been purchased for incorporation in the Work but which has been deleted from the Contract, plus transportation and applicable sales and use taxes which will be avoided and fifteen percent (15%) of said direct material costs as overhead and profit not incurred or earned by the Contractor or any such Subcontractor (said overhead and profit to include all small tools), and shall further include the Contractor's and any of its Subcontractor's reasonably anticipated rental costs which will be avoided (either actual or discounted local published rates). If any of the items included in the lump sum Proposal are covered by unit prices contained in the Contract Documents, the Owner may elect to use these unit prices in determining the amount of reduction to the Contract Sum as a result of a deletion of Work from the Contract. No overhead and profit shall be applied to any unit prices for purposes of calculation such

reduction in the Contract Sum.

The lump sum Proposal for Work which would have been performed by any Subcontractors shall include seven and 1/2 percent (7.5%) of that amount as an estimate of the Contractor's overhead and profit that will not be earned by Contractor due to the decrease in the Contract Sum.

The Contractor's quotation shall be forwarded to the Owner within ten (10) days of the Owner's request and, if acceptable to the Owner, shall be incorporated in the Change Order. If not acceptable, the parties shall make every reasonable effort to agree as to the amount of such decrease, which may be based on a lump sum properly itemized, on unit prices stated in the Contract Documents and/or on such other basis as the parties may mutually determine. If the parties are unable to so agree, the amount of such decrease shall be the total of the estimated reduction in actual cost of the Work, as determined by the Owner in its reasonable judgment, plus overhead and profits stated above. This shall become final and binding upon the Contractor, subject to Contractor's right to dispute such action in accordance with the Article 15.

ARTICLE 13

UNCOVERING AND CORRECTION OF WORK

13.1 UNCOVERING OF WORK

13.1.1 If any portion of the Work is covered contrary to the request of the Owner or the Design Consultant or to requirements specifically expressed in the Contract Documents or to requirements of applicable construction permits, it must, if required in writing by the Design Consultant or Owner, be uncovered for his observation and shall be replaced at the Contractor's expense.

13.1.2 If any other portion of the Work has been covered which the Design Consultant or the Owner has not specifically requested to observe prior to being covered, either may request to see such portion of the Work and it shall be uncovered by the Contractor. If such Work be found in accordance with the Contract Documents, the cost of uncovering and replacement shall, by appropriate Change Order, be charged to the Owner. If such Work be found not in accordance with the Contract Documents, the Contractor shall pay such costs unless it is found that this condition was caused by the Owner, in which event the Owner shall be responsible for the payment of such costs. If such condition was caused by a Separate Contractor, Contractor may proceed against and only against, said Separate Contractor as provided in Article 6. Any costs to the Owner pursuant to this Paragraph shall be determined in accordance with the provisions of Article 12.

13.2 CORRECTION OF WORK

13.2.1 The Contractor shall promptly reconstruct, replace or correct portions of the Work rejected by the Design Consultant or Owner as defective or as failing to conform to the Contract Documents or as not in accordance with the guarantees and warranties specified in the Contract Documents whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear all costs of correcting such rejected portions of the Work, including compensation for the Design Consultant's and the Owner's additional construction management services made necessary thereby.

13.2.2 The Contractor, unless removal is waived by the Owner, shall remove from the site all portions of the Work which are defective or non-conforming, or if permitted or required, he shall correct such portions of the Work in place at his own expense promptly after receipt of Notice, and such rejected Work shall not thereafter be tendered for acceptance unless the former rejection or requirement for correction is disclosed.

13.2.3 If the Contractor does not proceed with the correction of such defective or non-conforming portions of

the Work within a reasonable time fixed by written Notice from the Owner or Design Consultant, the Owner may either (1) by separate contract or otherwise replace or correct such portions of the Work and charge the Contractor the cost incurred by the Owner thereby and remove and store the materials or equipment at the expense of the Contractor, or (2) terminate this Contract for default as provided in Section 14.3, or both, or take any other measure allowed by law.

13.2.4 The Contractor shall bear the cost of making good all work of the Owner or Separate Contractors destroyed or damaged by such correction or removal.

13.2.5 Nothing contained in this Section 13.2 shall be construed to establish a period of limitation with respect to any other obligation which the Contractor might have under the Contract Documents, including Section 4.6 hereof. The establishment of the time period of one year after the date of Substantial Completion or such longer period of time as may be prescribed by law or by the terms of any warranty required by the Contract Documents relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which his obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to his obligations.

13.3 ACCEPTANCE OF DEFECTIVE OR NON-CONFORMING WORK

13.3.1 If the Owner prefers to accept defective or non-conforming Work, he may do so instead of requiring its removal and correction, in which case a Change Order will be issued to reflect a reduction in the Contract Sum where appropriate and equitable, or the Owner may elect to accept payment in materials or services, in lieu of a reduction in the Contract Sum. If the amount of a reduction is determined after final payment, it shall be paid to the Owner by the Contractor.

ARTICLE 14

TERMINATION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR

14.1.1 If the Work is stopped for a period of one hundred twenty (120) days by the Owner or under an order of any court or other public authority having jurisdiction, or as a result of an act of government, such as a declaration of a national emergency making materials unavailable, and through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing any of the Work under a contract with the Contractor, then the Contractor may, upon fourteen (14) additional days' written Notice to the Owner and the Design Consultant, terminate the Contract and recover from the Owner payment on a quantum merit basis, for all Work executed for which Contractor has not previously been paid, less any amounts Contractor may owe Owner under the Contract Documents and less any amounts Owner is entitled to withhold from Contractor or backcharge to the Contractor under the Contract Documents or pursuant to law. The Contractor shall not be entitled to collect and hereby expressly waives any overhead or profit on Work not performed and any damages related to that portion of the Contract which has been terminated.

14.2 TERMINATION FOR CONVENIENCE OF THE OWNER

14.2.1 The Owner may, at any time upon ten (10) days written Notice to the Contractor and to the Contractor's Surety, which Notice shall specify that portion of the Work to be terminated and the date said termination is to take effect, terminate (without prejudice to any right or remedy of the Owner) the whole or any portion of the Work for the convenience of the Owner. The Contractor's sole remedy, in the event of such termination, will be the allowable termination costs permitted by Section 14.4. Contractor shall include termination clauses identical to Article 14 in each of his subcontracts.

14.3 DEFAULT TERMINATION

- 14.3.1 Ten (10) days after written Notice is mailed to the Contractor and to the Contractor's Surety, the Owner may terminate (without prejudice to any right or remedy of the Owner or any subsequent buyer of any portion of the Work) the employment of the Contractor and his right to proceed either as to the whole or any portion of the Work required by the Contract Documents and may take possession of the Work and complete the Work by contract or otherwise in any one of the following circumstances:
- .1 If the Contractor or its Surety refuses or fails to prosecute the Work or any separable part thereof with such diligence as will ensure the Substantial and Final Completion of the Work by the dates specified in the Supplemental Conditions for Substantial and Final Completion or fails to complete the Work or remedy a default within said period;
 - .2 If the Contractor is in material default in carrying out any provisions of the Contract;
 - .3 If the Contractor fails to supply a sufficient number of properly skilled workers or proper equipment or materials;
 - .4 If the Contractor fails to make prompt payment to Subcontractors or for materials or labor, unless he otherwise provides the Owner satisfactory evidence that payment is not legally due;
 - .5 If the Contractor disregards laws, permits, ordinances, rules, regulations or orders of any public authority having jurisdiction, or fails to follow the instructions of the Owner;
 - .6 If the Contractor substantially violates any provisions of the Contract Documents; or
 - .7 If the Contractor refuses or fails to properly schedule, plan, coordinate and execute the Work, as specified herein, so as to perform the Work within the specified Completion Dates, or to provide scheduling or related information, revisions and updates as required by the Contract Documents.
- 14.3.2 The right of the Contractor to proceed shall not be so terminated under this Section 14.3 if the delays in the completion of the Work are due to unforeseeable causes beyond the control and without the fault or negligence of the Contractor or his Subcontractors as specifically set forth in Section 8.3 hereof.
- 14.3.3 If, after the Contractor has been terminated for default pursuant to Section 14.3, it is determined that none of the circumstances set forth in Paragraph 14.3.1 exist, then such termination shall be considered a termination for convenience pursuant to Section 14.2. In such case, the Contractor's sole remedy will be the costs permitted by Section 14.4.
- 14.3.4 If the Owner so terminates the employment of the Contractor due to the Contractor's default, the Contractor shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the compensation to be paid to the Contractor hereunder shall exceed the expense of so completing the Work (including compensation for additional managerial, administrative, consultant and inspection services, attorney's fees and any damages for delay) such excess shall be paid to the Contractor.
- 14.3.5 If such expenses referenced in Paragraph 14.3.1, shall exceed the unpaid balance, the Contractor and his sureties shall be liable to the Owner for such excess. If the right of the Contractor to proceed with the Work is partially or fully terminated, the Owner may take possession of and utilize in completing the Work such materials, appliances, supplies, plant and equipment as may be on the site of the terminated portion of the Work and necessary for the completion of the Work. If the Owner does not fully terminate the right of the Contractor to proceed, the Contractor shall continue to perform the part of the Work that is not terminated.
- 14.3.6 If the Owner terminates the whole or any part of the Work pursuant to Section 14.3, the Owner may

procure, upon such terms and in such manner as the Owner may deem appropriate, supplies or services similar to those so terminated, and the Contractor shall be liable to the Owner for any excess costs for such similar supplies or services. The Contractor shall continue the performance of the Contract to the extent not terminated hereunder.

14.4 ALLOWABLE TERMINATION COSTS

14.4.1 If the Owner terminates the whole or any portion of the Work pursuant to Section 14.2, then the Owner shall only be liable to the Contractor for those costs reimbursable to the Contractor in accordance with Paragraph 14.4.2, plus a markup of ten percent (10%) for profit and overhead on the actual fully accounted costs specified under Paragraph 14.4.2; provided however, that if there is evidence that the Contractor would have sustained a loss on the entire Contract had it been completed, no profit or overhead shall be included or allowed hereunder for the Work performed and an appropriate adjustment shall be made reducing the amount of the settlement to reflect the indicated rate of loss. Under no circumstances shall the Contractor be entitled to any loss profit on the Work terminated pursuant to Section 14.2.

14.4.1.1 After receipt of a Notice of Termination, the Contractor shall submit to the Owner his termination Claim, in the form and with certification prescribed by the Owner. Such Claim shall be submitted promptly but in no event later than three (3) months from the effective date of termination, unless one or more extensions in writing are granted by the Owner upon request of the Contractor made in writing within such three (3) month period or authorized extension thereof. However, if the Owner determines that the facts justify such action, he may receive and evaluate any such termination Claim at any time after such three (3) month period or any extension thereof. Upon failure of the Contractor to submit his termination Claim within the time allowed, the Owner may determine, on the basis of information available to him, the amount, if any, due to the Contractor by reason of the termination and such termination shall be final and binding on the Contractor.

14.4.2 If the Owner terminates the whole or any portion of the Work pursuant to Section 14.2, the Owner shall pay the Contractor an amount for supplies, services, or property accepted by the Owner, and which is in accordance with the Contract Documents, in an amount as if the Contract had not been terminated. In addition, in such event, the Owner shall pay to Contractor an amount representing Contractor's actual cost, excluding any overhead and profit for the items and things specified in Subparagraph 14.5.1.6 and not heretofore paid for, appropriately adjusted for any saving of freight or other charges. Under no circumstances shall the Contractor be entitled to any loss profit on the Work terminated pursuant to Section 14.2.

14.4.2.1 The Contractor agrees that neither the Owner nor the Design Consultant will be liable for payments to Contractors or Subcontractors pursuant to Section 14.4.2 unless each contract and subcontract contains termination provisions identical to those set forth in this Article 14. The Owner and the Design Consultant will not be liable to the Contractor or any of the Subcontractors for any costs associated with termination if the contract or subcontract of the party involved does not include the required termination language.

14.4.3 In arriving at any amount due the Contractor pursuant to Section 14.4, there shall be deducted the following:

- .1 All unliquidated advance or other payments on account theretofore made to the Contractor applicable to the terminated portion of the Contract;
- .2 Any Claim which the Owner may have against the Contractor;
- .3 Such amount as the Owner determines to be necessary to protect the Owner against loss because of outstanding or potential liens or claims; and
- .4 The agreed price for, or the proceeds of sale of, any materials, supplies or other things acquired by the Contractor sold, pursuant to the provisions of Subparagraph 14.5.1.7, and not otherwise recovered

by or credited to the Owner, or returned for a refund by the Contractor.

- .5 All other amounts the Owner is entitled to withhold from the Contractor or charge to the Contractor pursuant to the Contract or as allowed by applicable law.

14.4.4 The total sum to be paid to the Contractor under Section 14.4 shall not exceed the Contract Sum as reduced by the amount of payments otherwise made or to be made for Work not terminated and as otherwise permitted by the Contract. Except for normal spoilage, and except to the extent that the Owner shall have otherwise expressly assumed the risk of loss, there shall be excluded from the amounts payable to the Contractor, as provided in Paragraph 14.4.2, the fair value, as determined by the Owner, of property which is destroyed, lost, stolen or damaged so as to become undeliverable to the Owner, or to a buyer pursuant to Subparagraph 14.5.1.7.

14.5 GENERAL TERMINATION PROVISIONS

14.5.1 After receipt of a Notice of termination from the Owner, pursuant to Section 14.2 or 14.3, and except as otherwise directed by the Owner, the Contractor shall:

- .1 Stop work under the Contract on the date and to the extent specified in the Notice of termination;
- .2 Place no further orders or subcontracts for materials, services or facilities, except as may be necessary for completion of such portion of the Work under the Contract as is not terminated;
- .3 Terminate all orders and subcontracts to the extent that they relate to the performance of the Work terminated by the Notice of termination;
- .4 At the option of the Owner, and in lieu of terminating such orders and subcontracts, assign to the Owner in the manner, at the times and to the extent directed by the Owner in writing, all of the rights in the such orders and subcontracts,
- .5 Settle all outstanding liabilities and all Claims arising out of such termination or orders and subcontracts, with the approval or ratification of the Owner in writing, to the extent he may require, which approval or ratification shall be final for all the purposes of this Article;
- .6 Transfer title and deliver to the entity or entities designated by the Owner, in the manner, at the times and to the extent directed by the Owner to the extent specifically produced or specifically acquired by the Contractor for the performance of such portion of the Work as had been terminated, the following:
 - (1) The fabricated or unfabricated parts, Work in process, partially completed supplies and equipment, materials, parts, tools, dies, jigs and other fixtures, completed Work, supplies and other material produced as part of, or acquired in connection with the performance of, the Work terminated by the Notice of termination; and
 - (2) The completed or partially completed plans, drawings, information, releases, manuals and other property related to the Work and which, if the Contract had been completed, would have been required to be furnished to the Owner;
- .7 Use his best efforts to return for a refund or sell, in the manner, at the times, to the extent and at the price or prices directed or authorized by the Owner, any property of the types referred to in Subparagraph 14.5.1.6; provided, however, that the Contractor:
 - (1) Shall not be required to extend credit to any buyer, and
 - (2) May acquire any such property under the conditions prescribed by and at a price or prices

approved by the Owner in writing; and provided further that the proceeds of any such transfer or disposition shall be applied in reduction of any payments to be made by the Owner to the Contractor under the Contract or shall otherwise be credited to the Contract Sum covered by the Contract or paid in such other manner as the Owner may direct;

- .8 Complete performance of such part of the Work as shall not have been terminated by the Notice of termination;
 - .9 Take such action as may be necessary, or as the Owner may direct, for the protection and preservation of the property related to the Contract which is in the possession of the Contractor and in which the Owner has or may acquire an interest; and
 - .10 Otherwise mitigate any damages Contractor claims to suffer as a result of a termination.
- 14.5.2 The Contractor shall, from the effective date of termination until the expiration of three (3) years after final settlement under the Contract, preserve and make available to the Owner, at all reasonable times at the office of the Contractor, but without direct charge to the Owner, all his books, records, documents and other evidence bearing on the costs and expenses of the Contractor under the Contract and relating to the Work terminated hereunder, or, to the extent approved by the Owner, photographs, micro-photographs or other authentic reproductions thereof.
- 14.5.3 If the termination, pursuant to Section 14.2, be partial, the Contractor may file with the Owner a Claim for an equitable adjustment of the price or prices specified in the Contract relating to the continued portion of the Contract (the portion not terminated by the Notice of termination), and such equitable adjustment as may be agreed upon shall be made in such price or prices.
Any Claim by the Contractor for an equitable adjustment under this Paragraph must be asserted within thirty (30) days from the effective date of the Notice of termination.
- 14.5.4 The Contractor shall refund to the Owner any amounts paid by the Owner to the Contractor in excess of costs reimbursable under Section 14.4.
- 14.5.5 The Contractor shall be entitled to only those damages and that relief from termination by the Owner as specifically provided in Article 14.

ARTICLE 15

DISPUTE RESOLUTION

15.1 INITIATING CLAIMS

- 15.1.1 Claims must be initiated by written Notice to the Owner and to the party against whom the Claim is made with a copy to the Design Consultant. The responsibility to substantiate Claims shall rest with the party making the Claim.
- 15.1.2 Nothing in the Contract shall be construed as meaning that the Owner's assessment of Liquidated Damages is a Claim as defined herein, or that the Owner has the burden of proof to assess Liquidated Damages. Should the Owner assess Liquidated Damages, the burden of proving that such damages should not have been assessed shall rest upon the Contractor.

15.2 RESOLUTION OF CLAIMS AND DISPUTES BETWEEN CONTRACTOR AND OWNER

- 15.2.1 Claims by Contractor against Owner and by Owner against Contractor, including those alleging an error or omission by the Design Consultant shall be subject to the process set forth in this Section 15.2. Such Claims shall be referred initially to the Design Consultant for a decision. A final decision by the Design Consultant, or the failure of the Design Consultant to issue a final decision shall be required as a condition

precedent to mediation or litigation of all such Claims arising prior to the date final payment is due. The Design Consultant will initially decide disputes between Owner and Contractor.

- 15.2.2 The Design Consultant will review Claims by Contractor and Owner against each other and within twenty (20) days of the receipt of the written Claim and take one or more of the following actions:
- .1 Request additional supporting data from the claimant or a response with supporting data from the other party;
 - .2 Reject the Claim in whole or in part;
 - .3 Approve the Claim;
 - .4 Suggest a compromise; or
 - .5 Advise the parties that the Design Consultant is unable to resolve the Claim if the Design Consultant lacks sufficient information to evaluate the merits of the Claim or if the Design Consultant concludes that it would be inappropriate for the Design Consultant to resolve the Claim.
- 15.2.3 In evaluating Claims made under this Section 15.2, the Design Consultant may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who assist the Design Consultant in rendering a decision.
- 15.2.4 If the Design Consultant requests a party to provide a response to a Claim under this Section 15.2, or to furnish additional supporting data, such party shall respond, within ten (10) days after receipt of such request, and shall within such time period, either provide a response to the requested supporting data, advise the Design Consultant when the response or supporting data will be furnished, or advise the Design Consultant that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Design Consultant will either reject or approve the Claim in whole or in part.
- 15.2.5 The Design Consultant will approve or reject Claims under this Section 15.2 by written decision, which shall state the reason thereof and which shall notify the parties of any change in the Contract Sum or Contract Time or both. The approval or rejection of a Claim by the Design Consultant under this Section 15.2 shall be final and binding on the parties but subject to mediation and litigation.
- 15.2.6 When a written decision of the Design Consultant under this Section 15.2 states that the decision is final but subject to mediation, then a demand for mediation of a Claim covered by such decision must be made within thirty (30) days after the date on which the party making the demand receives the final written decision. Any failure to demand mediation within said thirty (30) days' period shall result in the Design Consultant's decision becoming final and binding to all parties. Claims not resolved in mediation shall be subject to litigation if in accordance with the applicable statutes of limitation and repose.
- 15.2.7 Upon receipt of a Claim under Section 15.2 against the Contractor or at any time thereafter, the Design Consultant or the Owner may, but is not obligated to, notify the Surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Design Consultant or the Owner may, but are not obligated to, notify the Surety and request the Surety's assistance in resolving the controversy.
- 15.2.8 If the Design Consultant deems that a Claim under this Section 15.2 is valid, the Design Consultant shall require all parties to the dispute to share the cost of the Design Consultant's review equitably. If the Design Consultant deems that a Claim under this Section 15.2 is invalid, the Design Consultant shall require the complaining party to bear the cost of the Design Consultant's review. In any event, the Design Consultant may require the complaining party to submit a deposit equivalent to the Design Consultant's hourly rate multiplied by the amount of time the Design Consultant estimates, in the Design Consultant

sole discretion, that will be necessary to review the Claim. The Design Consultant shall return any unused portion of this initial deposit to the complaining party following the Design Consultant's completion of the Design Consultant's review of the Claim. Nothing in these procedures shall entitle the Design Consultant to compensation for additional services from the Owner that is not authorized pursuant to the terms and conditions of the Agreement for Design Consultant Services.

15.3 TIME LIMITS ON CLAIMS

15.3.1 Unless a shorter time is provided in the Contract Documents, Claims by Contractor or any party except Owner must be initiated within twenty (20) days after occurrence of the event giving rise to such Claim or within twenty (20) days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Claims against the Owner shall be initiated in strict conformance with the Contract Documents. Nothing in these procedures shall extend the period within or the manner in which Claims against the Owner must be submitted. Claims must be initiated by written Notice to the Owner and written notice to the other party and to the Design Consultant. Any Claim against the Owner that is not initiated within the applicable time period is waived. Claims by Owner may be made at any time within the applicable statute of limitations and repose.

15.4 CONTINUING CONTRACT PERFORMANCE

15.4.1 Pending final resolution of a Claim, the Contractor shall proceed diligently with the performance of the Contract, unless instructed otherwise in writing by the Owner.

15.5 MEDIATION

15.5.1 As required by N.C.G.S 143-128 (f1), any Claim as defined herein, which exceeds fifteen thousand dollars(\$15,000.00), and which concerns a party involved in the Project, including the Owner, Contractor, Design Consultant, any construction manager, Separate Contractors, or first and lower tier Subcontractors and which arise out of the Contract or the construction process, except those waived Claims shall, be subject to mediation as a condition precedent to the institution of legal proceedings by any party, except that any party may institute legal proceedings or perfect any mechanic's or materialmen's lien in order to meet any applicable statute of limitations or similar deadline prior to engaging in mediation.

15.5.2 The parties shall endeavor to resolve their Claims under this Section 15.5 by mediation which, unless the parties mutually agree otherwise, shall be in accordance with the rules established by the Owner.

15.5.3 The parties shall share cost of the mediation equally except that if the Owner is a party to the dispute, the Owner shall pay at least one third of the cost of the mediation.

15.5.4 The mediation shall be held in a place where the Project is located, unless another location is mutually agreed upon.

15.5.5 Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

END OF GENERAL CONDITIONS

SECTION 01 11 00 SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY

- A. Furnish all materials, labor, tools, supplies, equipment, transportation, superintendence, temporary construction of every nature, insurance, taxes, contributions and all services and facilities, unless specifically excluded, and install materials, items and equipment required to complete the construction of the Project as set forth in the Contract Documents.
- B. Documents:
 - 1. Drawings are listed on the Cover Sheet of the Drawings.
 - 2. Specifications are listed in the Table of Contents of this Project Manual, showing Divisions and the related Sections.
- C. Contract: The work will be constructed under a Contractor at risk contract. The Contractor shall act as project expeditor and coordinator for the Project.
- D. Related Work of Other Contracts: Cooperate and coordinate his work with work provided under other contracts.

1.2 SPECIAL SAFETY CONSIDERATIONS (ASBESTOS)

- A. Restrictions on Asbestos Use: All Contractors shall certify, and furnish manufacturer's certification, that no new materials used in the construction of this work contains any form of asbestos.

1.3 CONTRACTOR'S SCHEDULING RESPONSIBILITIES

- A. Project Expediting: For purposes of expediting the work, construction supervision and administration, the Contractor shall be responsible for publishing, the project schedule and monitoring the schedule progress. Initial approval of the schedule is subject to the Architect and Owner's Representative review. Refer to Section 01 33 00 - Submittal Procedures for additional information.
- B. The Contractor shall have the following responsibilities:
 - 1. Schedule the work of all subcontractors, and any other separate contractors;
 - 2. Maintain a progress schedule for all subcontractors, and any other separate contractors;
 - 3. Provide adequate notice to all subcontractors, and any other separate contractors; to insure efficient continuity of all phases of the work;
 - 4. Notify the Architect of any changes in the Project Schedule
 - 5. Cooperate with and obtain from the subcontractors, and any other separate contractors on the job their respective schedules and to integrate them into a Project Progress Schedule that will show graphically, by a CPM logic generated detailed bar chart, CPM or other acceptable and approved methods, the projected progress of the job from start to finish and within the allotted time frame

1.4 CONTRACTOR'S USE OF PREMISES

- 1. Complete within the limits indicated on the Drawings.
- 2. Upon Notice to Proceed, the Owner will make the areas or the Project site designated to receive the new addition available to the Contractor for the operation under the Contract.
- 3. Confine operations at Project Site to areas permitted by law, ordinances, permits, Contract Documents and Owner.
- 4. Do not unreasonably encumber site with materials and equipment or block the Owner's access.

5. Do not load structure with weight that will endanger structure.
6. Assume full responsibility for protection and safekeeping of products stored on premises.
7. Move stored products, which interfere with operations of Owner and other Contractors.
8. Obtain and pay for use of additional storage, parking and work areas needed for operations.
9. Cooperate and coordinate Contractor's work and subcontractor's work, and any other separate contractors including access to the Work.

A. Partial Owner Occupancy

1. Owner reserves the right to use and occupy in whole or any part of the improvements which have been completed sufficiently to permit use and occupancy without delaying Contractor's work. Use and occupancy by Owner shall not, however, be construed as acceptance of Work or any part, and any claim, which Owner may have against Contractor shall not be deemed to have been waived by occupancy. If prior use of the work delays the scheduled completion, Contractor shall be entitled to extension of time. Claims shall be in writing and shall be substantiated with supporting data.
2. Execute Certificate of Substantial Completion for each specific portion of the Work prior to Owner occupancy.
 - a. After Owner occupancy Contractor shall allow:
 - 1) Access for Owner's personnel
 - 2) Access for the public.
 - 3) Operation of the HVAC, plumbing and electrical systems for occupied areas.
 - 4) Owner's security and protection of occupied areas.
 - 5) Owner's maintenance of occupied areas.
 - 6) Owner's insurance for occupied areas.
 - b. Upon occupancy the Owner will provide:
 - 1) Operation of HVAC, plumbing and electrical systems for occupied areas.
 - 2) Security and protection of occupied areas.
 - 3) Maintenance of occupied areas.
 - 4) Insurance for occupied areas.

- B. Phasing of Work: After receipt of Notice to Proceed, the Contractor shall erect the temporary barricades or fences shown on the drawings.

1.5 CONTRACTOR'S RESPONSIBILITIES

- A. Review and check shop drawings, product data and samples. Submit to Architect/Engineer with notification of any discrepancies or problems anticipated in the use of the product.
- B. Receive, unload and handle products at the site, including uncrating and storage.
- C. Protect products from exposure to the elements and from damage.
- D. Assemble, install, connect, adjust and finish products, as stipulated in the respective sections of the Specifications.
- E. Repair or replace damaged items.
- F. Pay all required sales, consumer and use taxes and report tax paid with each pay application.
- G. Secure, as necessary for the execution of the Work and as applicable, all permits and licenses.
- H. Give all notices required by the Contract Documents or by governing regulations.

- I. Comply with codes ordinances, rules, regulations, orders and other legal requirements of public authorities which pertain to proper performance of the Work, and promptly submit written notice to the Architect of any observed variance of the Contract Documents from legal requirements.
- J. Enforce proper discipline and good order among employees at all times. Employees and subcontractors shall not in any manner interfere with or cause any form of nuisance to the Owner's workers or the building occupants.
- K. Cover, protect and final clean any of the Owner's furnishings and equipment which remain in those spaces where his work will be performed.
- L. Clean work areas after completion of the work and replace or repair any of Owner's furnishings and equipment damaged in the course of the work.
- M. Maintain erosion control measures after every rain. Provide all measures necessary to control run-off.
- N. Keep site clean and tidy at all times.
- O. Contractor is advised that the Owner expects that the time between Notice to Proceed and the release to begin work at the job site to be used productively in preparation for the start of work. Activities which do not require The Contractor's physical presence on the site, such as, subcontractor negotiations, material purchases and deliveries, processing of shop drawings, schedule preparation, and other related functions in support of the field operations should be initiated upon receipt of NTP. No requests for time extensions resulting from The Contractor failure to initiate preparatory work upon Notice to Proceed will be accepted.

1.6 SITE CONDITIONS

- A. Sub-surface Soils Investigations
 - 1. Information concerning a sub-surface soil investigation by an independent testing laboratory is available and may be included in the Project Manual. The data included therein is not a part of the Contract Documents and may be used by the Contractor for his general information only. The Architect and Owner will not be responsible for the accuracy or applicability of the data given therein.
 - 2. Contractor shall make any additional investigations deemed necessary to properly bid or complete any and all work related thereto. No additional amounts will be made available to the Contractor for work arising from failure to examine the Project Site or subsoil conditions unless specifically provided for elsewhere in the Specifications for this project.
- B. Survey of Existing Conditions:
 - 1. Contractor acknowledges by executing the Agreement, that he had visited and inspected the Project Site on which the Work is to be performed, that he has satisfied himself as to the nature and location of the Work, including any obstruction, amount of work, actual levels, the equipment and facilities needed preliminary to and during the prosecution of the Work and all other matters which can in any way affect the Work or the cost thereof under this Contract.
 - 2. Contractor shall locate all public and private drainage or sewer lines, water, gas, and other utility and electrical service lines, piping and conduits in the way of new work. He shall see that services which are to be removed have been capped or plugged and made gas and water tight in conformance with applicable requirements of governing authorities and utility firms.
 - 3. Failure by Contractor to have acquainted himself with available information concerning site conditions, including factors affecting costs and liabilities, shall not relieve Contractor of responsibility for performance of work in accordance with requirements of Contract Documents and for amount of consideration named or otherwise determined.
 - 4. Contractor shall maintain all existing services to existing facilities.

- C. Concealed Utilities: When concealed utilities or services, which are not on the Drawings, are encountered during construction operations, the Contractor shall trace the services and determine which are active and which are abandoned. Abandoned lines shall be removed and capped or plugged as required. Active lines shall be relocated as required. The Contractor shall submit a sketch indicating the proposed relocations of such active lines. Materials to be used shall be those specified in the applicable Sections, where possible and shall match the existing installations where suitable materials are not specified.

1.7 SPECIFICATION FORMAT AND CONTENT EXPLANATION

- A. This Project Manual utilizes industry standard conventions as follows in the use of language and the intended meaning of certain terms, words, and phrases:
 - 1. Abbreviated language: Language used in Specifications and other Contract Documents is the abbreviated type. Implied words and meanings will be appropriately interpreted. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and the full context of the Contract Documents so indicates.
 - 2. Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the text, for clarity, subjective language is used to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.
 - a. The words “shall be” shall be included by inference wherever a colon (:) is used within a sentence or phrase.

END OF SECTION

SECTION 01 21 00 ALLOWANCES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Bidder shall include in their base bid those allowances listed in this Section. Unless otherwise indicated, the allowance shall include all costs as indicated in General Conditions. The unused portion of all allowances shall be credited to the Owner at the completion of the work.
- B. References to allowances (cash or quantity) within Specification Sections that are not in this Section shall not be considered valid.

1.2 SUBMITTALS

- A. Prior to beginning Work on any of the scheduled Allowances, submit complete shop drawings, samples and other requirements indicated in Section 01 33 00 – Submittal Procedures.
- B. At the Owner's request, submit invoices, bills of lading and other documentation substantiating actual cost of the Work, included in the Allowance.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALLOWANCES

- A. The following allowances are to be included in the Contract Sum and include all costs as indicated in the General Condition's paragraph 3.8.2.1 and 3.8.2.2.
 - 1. **Unforeseen Concealed Conditions Allowance:** Include an allowance of **\$20,000** in the base bid for the correction of unforeseen concealed conditions at the discretion and direction of the Owner.

END OF SECTION

SECTION 01 25 00 SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling requests for substitutions proposed by the Contractor after the award of the Contract.
- B. The substitution process is available as a means to promote fair and open procurement by the Charlotte Mecklenburg Board of Education, and not to provide the Contractor the opportunity to substitute products of an inferior quality. To that end, the Owner reserves the right to, reject a product not deemed an equal to the product specified; charge the Contractor for the Additional Services, if required, of the Architect; or require an equitable credit for the substituted product.
- C. This section specifies administrative and procedural requirements for handling requests for substitutions made after award of the Contract.
- D. Procedural requirements governing the Contractors selection of products and product options are included in Section 01 60 00 Product Requirements.

1.2 DEFINITIONS

- A. Definitions used in the Article are not intended to change or modify the meaning of other terms used in the Contract Documents.
- B. Substitutions: Requests for changes in products, materials, equipment and methods of construction required by Contract Documents proposed by the Contractor after award of the Contract are considered requests for “substitutions”. The following are not considered substitutions:
 - 1. Revisions to Contract Documents requested by the Owner or Architect.
 - 2. Specified options of products and construction methods included in Contract Document.
 - 3. The Contractor’s determination of and compliance with governing regulations and orders issued by governing authorities.

1.3 SUBMITTALS

- A. Substitution Request Submittal: Requests for substitution will be considered if received within thirty (30) days after the Notice to Proceed, or Letter of Intent, which ever comes first. Requests received more than thirty (30) days after the commencement of the work may be considered or rejected at the discretion of the Architect. Substitution items submitted without requests will be rejected.
 - 1. Submit three (3) copies of each request for substitution for consideration. Submit requests in the form and in accordance with the procedures required for change order proposals.
 - 2. Clearly indicate on the transmittal that the product being submitted is a substitution. Do not include on the same transmittal, any product that is not a substitution.
 - 3. Provide a credit change order proposal if the substitution is intended to provide the Owner a product of a lesser value than the value of the specified product.
 - 4. Identify the product or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions and the following information as appropriate:
 - a. Product Data, including Drawings and descriptions of products, fabrications and installation procedures.
 - b. Samples, where applicable or requested.
 - c. A detailed comparison of significant qualities of the proposed substitution with those for the Work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.

- d. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors, which will become necessary to accommodate the proposed substitution.
 - e. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
 - f. Certification by the Contractor that the substitution proposed is equal-to or better in every significant respect to that required by the Contract Documents and that it will perform adequately in the application intended. Include the Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.
 - g. Cost information, including a proposal of the net change, if any in the contract sum.
5. Architect's Action: The Architect may request additional information or documentation necessary for evaluation of the request. The Architect will notify the Contractor of acceptance or rejection of the proposed substitution. If a decision on use of a proposed substitute cannot be made, use the product specified by name.

1.4 PROCEDURES

- A. Reference in the project manual or on the drawings to an article device, product, material, fixture, form or type of construction by name, make or catalog number (product or method) whether or not followed by "or equal" establishes a standard of quality, and does not eliminate from competition other products or methods of equal or better quality by other manufacturers, where fully suitable, as approved by the Architect. Applications for approval of substitutions for the specified products or methods will be considered only upon request of the Contractor, not of Subcontractors individual trades or suppliers, and only for a specific purpose; no blanket approvals will be granted. No approval of a substitution will be valid unless it is in written form.
- B. If a proposed substitution affects a correlated function, adjacent construction, or the Work of other Contractors, then the necessary changes and modifications to the affected Work are considered an essential part of the proposed substitution, to be accomplished by the Contractor as a part of the Work, if and when approved. Submit detailed drawings and other information necessary to show and explain the proposed modifications with the request for approval of the substitution. The Contractor agrees to include data to substantiate that the proposed substitution is in compliance with the Contract Documents and that the operation and maintenance costs are equal to or less than those for the named products.
- C. No substitutions will be allowed when the phrase "no substitutions" or "no substitutions will be allowed" or words or similar effect, is specified or indicated with products or methods or when three or more manufacturers, suppliers, or products are specified, without the words "or equal."
- D. The following information is required if, the Contractor desires to submit a substitute product or method in lieu of what has been specified or shown in the Contract Documents:
 - 1. Full explanation of the proposed substitution and submittal of all supporting data including technical information, catalog cuts, warranties, performance and test results, installation instruction, operating procedures, samples where applicable and other like information necessary for a complete evaluation of the substitution and an itemized comparison of the proposal substitution with the product specified relating to such thing as capacities, operation, functions, dimensions, construction details, methods of assembly connections installation, design and artistic effect where applicable and relationship to other Prime separate contracts.
 - 2. Reasons the substitution is advantageous and necessary, including the benefits to the Owner and the Work in the event the substitution is acceptable.

3. The adjustment, if any, the Contract Sum, in the event the substitution is acceptable. Each substitution must be accompanied by accurate cost data on proposed substitution in comparison with specified product whether or not a Contract sum modification is to be a consideration.
 4. The adjustment, if any, in the time of completion of the Contract and the Construction Schedule in the event the substitution is acceptable. Any delays to other Primes must be taken into consideration with any substitution request. Delay damages will be paid by for by the Party requesting a substitution who will hold the Owner and Architect harmless for any delay damages arising out of approval of a substitution.
- E. An affidavit stating that (1) the proposed substitution conforms and meets all the requirements of the pertinent Specifications and the requirements shown on the Drawings and (2) the Contractor accepts the warranty and correction obligations in connection with the proposed substitution as if originally specified by the Architect, (3) represents that he or she personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that which is specified; and will provide the same guarantee for the substitution that would otherwise be provided for the product which is specified: (4) Certifies that the cost data presented is complete and includes all related costs under this Contract, but excludes costs under separate contracts and the Architect's re-design costs, and that he or she waives all claims for additional costs related to the substitution which subsequently became apparent: (5) will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.
- F. Proposals for substitutions shall be submitted in triplicate to the Architect in sufficient time to allow the Architect no less than ten (10) working days for review before a product will be ordered to allow delivery on the date required by the schedule but in no case less than fifteen (15) days after the date of the date of execution of the Contract. No substitutions will be considered or allowed without the Contractor's submittal of complete substantiating data and information as stated hereinbefore.
- G. Substitutions will not be considered without the formal request as required in accordance with the contract terms.
- H. Substitutions and alternates may be considered only if:
1. Required for compliance with building code requirements or insurance regulations then existing.
 2. Specified products are unavailable, through no fault of the Contractor.
 3. Subsequent information discloses that specified products will not perform properly or fit in designated space.
 4. A manufacturer/fabricator refuses to certify or guarantee performance of a specified product as required or;
 5. In the judgment of the Owner or the Architect, a substitution would be substantially in the Owner's best interests, in terms of cost, time, or other considerations.
- I. In the case of Contractor-proposed substitutions which fail to meet the requirements of Contract Documents, the Contractor shall, at the sole election of the Owner, reimburse the Owner for any fees charged by the Architect or other consultants for evaluating each such proposed substitute.
- J. No change in brand or make will be permitted unless (i) satisfactory written evidence is presented to demonstrate that the manufacturer cannot make scheduled delivery of an approved item and that such delivery failure will adversely affect the project's critical path, (ii) the item delivered has been rejected and the substitution of suitable item is required to maintain the project's critical path, or (iii) other conditions have become apparent which indicate that approval of such other material is, in the sole opinion of the Architect, in the best interest of the Owner.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

- A. Conditions: The Contractor's substitution request will be received and considered by the Architect when all of the following conditions are satisfied, as determined by the Architect; otherwise, requests will be returned without action except to record noncompliance with these requirements.
1. Extensive revisions to Contract Documents are not required.
 2. Proposed changes are in keeping with the general intent of Contract Documents.
 3. The request is timely, fully documented and properly submitted.
 4. The request is directly related to an "or-equal" clause or similar language in the Contract Documents.
 5. Where a proposed substitution involves more than one (1) prime Contractor, each Contractor shall cooperate with the other Contractors involved to coordinate the Work, provide uniformity and consistency and to assure compatibility of products.
 6. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
 7. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Architect for re-design and evaluation services, increased cost of other construction by the Owner or separate Contractors and similar considerations.
- B. The Contractor's submittal and Architect's acceptance of Shop Drawings, product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an approval or valid request for substitution.

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01 26 00
CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.
 - 1. Provisions of this Section apply to the Work of each Contractor.
- B. Related Sections: The following sections contain requirements that relate to this section:
 - 1. Section 01 25 00 - Substitution Procedures: for administrative procedures for handling requests for substitutions made after award of the Contract.
 - 3. Section 01 29 00 - Payment Procedures: for administrative procedures governing applications for payment.
 - 4. Section 01 33 00 - Submittal Procedures: for requirements for the Contractor's Construction Schedule.

1.2 MINOR CHANGES IN THE WORK

- A. Supplemental instructions authorizing minor changes in the Work, not involving an adjustment to the Contract Sum or Contract Time, will be issued by the Architect on AIA form G-710, Architect's Supplemental Instructions.
 - 1. Proposal requests issued by the Architect are for information only. Do not consider them an instruction either to stop work in progress, or to execute the proposed change.
 - 2. Unless otherwise indicated in the proposal request, within ten (10) days of receipt of the proposal request, submit to the Architect for the Owner's review an itemized estimate of the cost necessary to execute the proposed change.
 - a. Itemize materials and labor separately. Include a list of quantities of products to be purchased and unit costs, along with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental and amounts of trade discounts and/or mark-ups.
 - c. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time; including a detailed of time necessary to procure and perform the work and which activities on the schedule are effected.
 - 3. The proposal (quotation) if accepted will be binding on the Contractor and shall be the only compensation to the Contractor for the change. A Contractors delay in submitting the proposal by the Contractor will not entitle the Contractor to an extension of time or damages for delay.
- B. Contractor-Initiated Change Order Proposal Requests: When latent or other unforeseen conditions require modifications to the contract, the Contractor may propose changes by submitting a request for a change to the Architect within seven (7) days of the occurrence of the event or item of latent or unforeseen work giving rise to the assumed change.
 - 1. Include a statement outlining the reasons for the change and the affect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and Contract Time. Including a detailed schedule of time necessary to proceed and perform the work and which actions on the schedule are effected.
 - 2. Include a list of quantities of products to be purchased and unit costs along with the total amount of purchases to be made. Where requested, furnish survey date to substantiate quantities.
 - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - 4. Comply with requirements in Section "Product Substitutions: if the proposed change in the work requires the substitution of one product or system for a product or system specified.

- C. Proposal Request Form: Use AIA Document G-709 for Change Order Proposal Requests.
- D. Cost of change Format shall follow that outlined in Document 00 63 63 - Change Order Form
- E. The proposal (quotation) if accepted will be binding on the Contractor and shall be the only compensation to the Contractor for the change. A delay in submitting the proposal by the Contractor will not entitle the Contractor to an extension of time or damages for delay. The Architect will have fourteen (14) days to review the proposal during which time he may request additional information to backup the claim. No delay to the project will be considered until at least twenty-one (21) days after the proposal is submitted and will then only be considered if the net effect on the schedule can be clearly shown.

1.3 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: When the Owner and Contractor are not in total agreement on the terms of a Change Order Proposal Request; the Architect may issue a Construction Change Directive on AIA Form G-714, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. The Construction Change Directive will contain a complete description of the change in the Work and designate the method to be followed to determine change in the Contract Sum or Contract Time.
 - 2. The Contractor will be required to submit unit costs, equipment rates and labor rates as requested by the Architect which shall be agreed upon before the work progresses unless the Contractor is directed to proceed in the absences of an agreement or in an emergency.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive. Provide a copy of those records by daily fax or weekly mail to the Owner and the architect.
 - 1. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.4 CHANGE ORDER PROCEDURES

- A. Upon the Owner's approval of a Change Order Proposal Request, the Architect will issue a Change Order for signatures of the Owner and Contractor on AIA Form G-701, as provided in the Conditions of the Contract.
- B. A fully executed Change Order is the only legal document which can change the Contract Sum or Time.

PART 2 - PRODUCTS
(Not Used)

PART 3 - EXECUTION
(Not Used)

END OF SECTION

**SECTION 01 29 00
PAYMENT PROCEDURES**

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section specifies administrative and procedural requirements governing Contractor's Applications for Payment.
 - 1. Coordinate the Schedule of Values and Applications for payment with the Contractor's Construction Schedule, list of Subcontracts and Submittal Schedule.
- B. The Contractor's construction Schedule and Submittal Schedule are included in Section 01 33 00 - Submittal Procedures.

1.2 SCHEDULE OF VALUES

- A. Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.
- B. Submit the Schedule of Values (including quantities if required by the owner) to the Architect in accordance with the contract. The schedule of values must be received and approved before the first pay application will be processed.
- C. Format and Content: The Schedule of Values will be subdivided on a building-by-building, phase-by-phase or area-by-area basis dependent upon the phasing permitting and/or completion sequence of the project.

Provision of quantity information requested on the schedule of values in no way alters the Contractors responsibility to provide all material and labor necessary to complete the project.

- 1. Identification: Include the following Project identification on the Schedule of Values:
 - a. Project name and location.
 - b. Name of the Architect.
 - c. Project number (as assigned by Owner).
 - d. Contractor's name and address.
 - e. Date of submittal.
- 2. Arrange the Schedule of Values in a tabular form utilizing AIA Document G-703 continuation sheets of the Application for Payment or another format acceptable to the Owner and indicate the following:
 - a. General name of Product/Work.
 - b. Related Specification Section.
 - c. Name of subcontractor.
 - d. Name of manufacturer, fabricator or supplier.
 - e. Change Orders (numbers) that have affected value.
 - f. Separate Dollar values for Material and Labor.
 - g. Percentage of Contract Sum to the nearest percent, adjusted to total 100 percent.
- 3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Break principle subcontract amounts down into several line items.
- 4. Round amounts off to the nearest whole dollar; the total shall equal the Contract Sum.
- 5. The Schedule of Values results in a change in the Contract Sum.

1.3 APPLICATIONS FOR PAYMENT:

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner

- B. Use AIA Document G-702 and Continuation Sheets as the form for Application for Payment.
- C. At the project close-out and prior to final payment the Contractor shall submit a final summary report certifying actual M/WBE firms on the project and contract amounts paid.
- D. Transmittal: Submit five (5) executed copies of each Application for Payment to the Architect at the monthly meeting.
- E. Prior to the initial Application for Payment the following must be submitted:
 - 1. List of subcontractors.
 - 2. List of principal suppliers and fabricators.
 - 3. Schedule of Values.
 - 4. Contractor's Construction Schedule (preliminary if not final. Final with 2nd application).
 - 5. Submittal Schedule (preliminary if not final. Final with 2nd application).
 - 6. List of Contractor's staff assignments.
 - 7. Copies of building permits.
- F. Monthly Applications for payment should be accompanied by the following documents
 - 1. Sales and Use Tax form
 - 2. Surety Statement (On form as agreed to by the Owner)
 - 3. MWSBE participation form
 - 4. Updated Project Progress Schedule (hard copy and electronic format)
 - 5. Supporting backup in the form of prime (plumbing, HVAC, electrical) subcontractor pay applications
 - 6. Construction Waste Report
 - 7. Stored material forms
 - 8. NPDES Storm water Discharge Reports
- G. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment; this application shall reflect any Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work. Administrative actions and submittals that shall proceed or coincide with this application include:
 - 1. Occupancy permits and similar approvals.
 - 2. Warranties (guarantees) and maintenance agreements.
 - 3. Test/adjust/balance records.
 - 4. Maintenance instructions.
 - 5. Meter readings.
 - 6. Change-over information related to Owner's occupancy, use, operation and maintenance.
 - 7. Final cleaning.
 - 8. Application for reduction of retainage and consent of surety.
 - 9. Advise on shifting insurance coverage.
 - 10. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion.
 - 11. Architect's Certificate of Compliance required by NCGS #133-1.1
 - 12. Change of door locks to owner's access and furnish keys to owner's representative.
- H. Final Payment Application: Administrative actions and submittals which must precede or coincide with submittal of the final payment Application for Payment include the following:
 - 1. Completion of Project close-out requirements.
 - 2. Completion of items specified for completion after Substantial Completion.
 - 3. Affidavit of Prime Contractor (AIA Document G-706).
 - 4. Affidavit of Release and Waiver of Claims (AIA Document G-706-A).
 - 5. Consent of Surety to Final Payment.
 - 6. Transmittal of required Project construction records to Owner.
 - 7. Certified property survey.

8. Proof that taxes, fees and similar obligations have been paid.
9. Removal of temporary facilities and services.
10. Removal of surplus materials, rubbish and similar elements.
11. As-built drawings.
12. Certificate of Occupancy.
13. All warranties properly executed.
14. Documentation that all utility turnovers have been made.

- I. Payments shall be made on account of materials delivered and suitably stored at the Project for subsequent incorporation into the Work. Applications for payment which include stored materials must include an itemized list of materials stored, place of storage, location and phone number, itemized attached invoices, receipts, vouchers or other documentation substantiating the value that shall not in an aggregate amount exceed the Schedule of Values amount. Rental equipment such as, but not limited to, mobile equipment, pans, forms, scaffolding, compressors, etc., shall not be considered material stored. With the Owner's prior written permission, the Contractor may be paid for material stored off the Project site if stored in a licensed, bonded, warehouse, available for inspection by the Owner's Representative and Architect. The Application for Payment for any materials approved to be stored offsite shall be accompanied by Insurance Certificate naming the Owner as additional insured and a copy of Owner's written consent to storage offsite. All insurance policies shall be endorsed to include the company's obligation to notify the Owner in writing in the event of cancellation nonrenewable for a period at least 30 days prior to termination. Payment for materials stored on or off site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site. Materials stored off-site shall be marked "Property of Charlotte-Mecklenburg Board of Education".

1. Costs incurred by the Owner and/or Architect to inspect material in off-site storage shall be paid by the Contractor. The Owner and/or Architect's Cost for inspections of off-site stored materials will include his Time (Travel, Site Observation, and Office related duties), the cost of Engineering Consultants if their services are needed, and will also include his/their travel expenses.
2. Subsequent pay requests shall itemize the materials and their cost which were approved on previous pay requests and remain in offsite storage.

PART 2 - PRODUCTS
(Not Used)

PART 3 - EXECUTION
(Not Used)

END OF SECTION

SECTION 01 31 13
PROJECT COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section specifies administrative and supervisory requirements for Project coordination including, but not limited to:
 - 1. Coordination
 - 2. Administrative and supervisory personnel
 - 3. General installation provisions
 - 4. Cleaning and protection
- B. The Contract Documents include, but are not limited to, the Drawings and Project Manual (including the Technical Specifications); each Contractor is expected to review and coordinate the Work of their Contract with that of the other Contractors resulting in the timely construction of the Project, and meeting the quality standards developed by the Contract Documents.
- C. Progress meetings, coordination meetings, and pre-installation meetings are included in Section 01 31 19 - Project Meetings.
- D. Requirements for the Contractor's Construction Schedule are included in Section 01 33 00 - Submittal Procedures.

1.2 COORDINATION

- A. Coordination: Coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection and operation.
 - 1. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
 - 2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
 - 4. Prior to installation, verify that utility requirements and characteristics of equipment are compatible with building utilities. Coordinate Work of various sections having interdependent responsibilities for installing, connecting to and placing in service of such equipment.
- B. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports and meeting attendance.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities include, but are not limited to the following:
 - 1. Preparation of schedules
 - 2. Installation and removal of temporary facilities
 - 3. Delivery and processing of submittals
 - 4. Representation at Project Meetings
 - 5. Project Closeout activities
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water and materials.

- E. The Contractor and affected subcontractors will coordinate their efforts with the Owner's Commissioning Agent. It is the responsibility of the Contractor and the subcontractors to provide all required labor and/or materials to comply with the commissioning plan provided by the Commissioning Agent. A copy of the Commissioning Plan is included in the Project Manual.
- F. The Contractor and affected subcontractors will coordinate their efforts with the Owner's Playground Contractor.
- G. The Contractor and affected subcontractors will coordinate their efforts with the Owner's building and roofing consultant. Selected submittals will be issued to them for review and comment.
- H. RFI's shall be utilized to request design clarifications in accordance with the contract.

1.3 SUBMITTALS

- A. Coordination Drawings: Prepare and submit coordination documents as required by the BIM standard and/or drawings where close and careful coordination is required for installation of products and materials fabricated off-site by separate entities, and where limited space availability necessitates maximum utilization of space for efficient installation of different components.
 - 1. Show the interrelationship of components shown on separate Shop Drawings
 - 2. Indicate required installation sequences
 - 3. Comply with requirements contained in Section 01 33 00 - Submittal Procedures
- B. Staff Names: Within ten (10) days of Notice to Proceed, submit a list of the Contractor's principal staff assignments, including the Superintendent and other personnel, with contact information, in attendance at the site; identify individuals, their duties and responsibilities; list their addresses and telephone numbers and if requested separately provide a list of their past experience on similar work.
 - 1. Post copies of the list in the Project meeting room, the temporary field office and each temporary telephone.

1.4 WORK WEEK AND HOURS

- A. The Owner's standard work week for the Project will be Monday through Friday, 8 hours per day. The project's starting and quitting times will be established at the first job site meeting. If The Contractor is working extended additional hours in a particular week due to his Work being behind schedule, the contractor will be responsible for any overtime costs incurred by the Owner (on occupied campuses) or the Architect, who must also work extended hours to support his Work. If The Contractor is working additional hours on weekends or on holidays he must schedule these with the Owner in writing at least two working days (48 hours) in advance of the work taking place.

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 GENERAL INSTALLATION PROVISIONS

- A. Inspection of Conditions: Require the installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner. Provide notice to the Architect of any condition that will not allow work to proceed.

- B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
- C. Inspect materials or equipment immediately upon delivery, and again prior to installation. Reject damaged and defective items.
- D. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.
- E. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.
- F. Re-check measurements and dimensions before starting each installation.
- G. Install each component in a sequence that will ensure the best possible results. Provide adequate weather protection. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.
- H. Coordinate temporary enclosures with required inspections and tests to minimize the necessity of uncovering completed construction for that purpose.
- I. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Architect for final decision.
- J. Coordinate space requirements and installation of mechanical and electrical work that is indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, maintenance and repairs.
- K. In finished areas, conceal pipes, ducts and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements. If items cannot be concealed the contractor will refer to the Architect for direction.
- L. On any equipment provided, The Contractor, and his subcontractors are responsible for providing equipment with electrical characteristics compatible with electrical services provided for this equipment in the Electrical Drawings and Specifications.
- M. All penetrations made by The Contractor or any subcontractor through walls, ceilings and/or floors shall be sealed by that Contractor to meet the requirements of all City, County, and State building codes, fire codes, etc., applicable to the Project.
- N. All sleeves set in concrete, masonry or other work will be set in a timely manner so as not to delay the concrete, masonry or other Work. The responsibility for the exact location of such items belongs to the individual providing the sleeves.
- O. The Contractor shall provide and maintain primary building layout lines, batter boards and permanent reference points for himself and his subcontractors.

END OF SECTION

SECTION 01 31 19
PROJECT MEETINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section specifies administrative and procedural requirements for project meetings including but not limited to:
1. Pre-Construction Conference.
 2. Pre-Installation and Coordination Meetings.
 3. Progress Meetings.

1.2 PRE-CONSTRUCTION CONFERENCE

- A. The Owner's Representative will schedule a pre-construction conference and organizational meeting at the Project site or other convenient location after execution of the Agreement and prior to commencement of construction activities. The Architect or Engineer will conduct the meeting to review responsibilities and personnel assignments.
- B. Attendees: The Owner, the Owner's Representative, the Architect and their consultants, the Contractor and his superintendent, major subcontractors, manufacturers, suppliers and other concerned parties shall each be represented at the conference by persons familiar with and authorized to conclude matters relating to the Work.
- C. Agenda: Discuss items of significance that could affect progress including such topics as:
1. Introduction of Key Personnel
 - a. Distribution and Discussion of:
 - 1) Project Reference List.
 - 2) List of Major Subcontractors and Suppliers.
 - 3) Roles and responsibilities and coordination methods.
 2. Schedules
 - a. Notice to Proceed Date/Completion Date.
 - b. Construction Schedule.
 - c. Critical Work Sequencing.
 - d. Submittal Schedule.
 - e. Recovery Plans.
 3. Procedures and Processing
 - a. Modifications/Architects Supplemental Instructions.
 - b. Proposal Request.
 - c. Change Orders.
 - d. Field Reports.
 - e. Applications for Payment.
 - f. Submittals.
 - g. Permits.
 4. Contract Close-out Procedures
 - a. Maintaining "Control Sets".
 - b. Record Documents.
 - c. Operational and Maintenance Data.
 - d. Certifications and Warranties.
 - e. Substantial and Final Completion.
 5. Miscellaneous
 - a. Use of Premises.
 - 1) Field Office(s).
 - 2) Storage Area(s).
 - 3) Phasing Plan and Fencing Plan.
 - b. Temporary Utilities.
 - c. Safety and First-aid Procedures.
 - d. Security.

- e. Housekeeping.
 - f. How to coordinate work with school (i.e., Principal, staff, Custodian, Temporary Relocations).
 - g. Hours of Operation.
 - h. Clean-up.
 - i. Signage.
- D. The Architect will record minutes and distribute copies within five (5) days after meeting to all participants.

1.3 PRE-INSTALLATION AND COORDINATION MEETINGS

- A. Conduct a pre-installation conference/meetings at the site before each critical construction activity that requires coordination with other construction. The Installer and representatives of manufacturers and fabricators involved in or affected by the installation, and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise the Architect of scheduled meeting dates.
1. Required meetings which need to be scheduled include but not limited to:
 - a. Site Clearing and Earthwork.
 - b. Roofing.
 - c. Grassing Installation & Maintenance
 2. Suggested meetings which may be scheduled, but are not limited to:
 - a. Landscaping.
 - b. Masonry.
 - c. Hardware.
 - d. Finishes.
 - e. Kitchen Equipment.
 - f. Above Ceiling – HVAC, Plumbing, Electrical, Low Voltage coordination.
 3. Review the progress of other construction activities and preparations for the particular activity under consideration at each pre-installation conference, including requirements for:
 - a. Contract Document requirements, governing regulations and inspection and testing requirements and warranties.
 - b. Time Schedules.
 - c. Submittals, purchases, deliveries and manufacturers recommendations.
 - d. Possible conflicts, compatibility problems and acceptability of substrates.
 - e. Related Change Orders.
 - f. Safety.
 - g. Weather limitations, protection.
 4. The Contractor will record significant discussions and agreements and disagreements of each conference, along with the approved schedule. Distribute the record of the meeting to everyone concerned, promptly, including the Owner, Program Manager, Architect and Engineer Consultant if required.
 5. Do not proceed if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of Work and reconvene the conference at the earliest feasible date.

1.4 PROGRESS MEETINGS

- A. The Architect will schedule and shall conduct in coordination with the Owner's Representative progress meetings at the Project site at bi-weekly intervals and as deemed necessary. The Owner and Architect will coordinate dates of meetings with preparation of the payment request.
- B. Attendees: In addition to representatives of the Owner, the Program Manager, the Architect, the Contractor's Project Superintendent and Project Manager, as well as the superintendents and project managers of the plumbing, mechanical, and electrical subcontractors are mandatory along with suppliers or other entity concerned with current progress or involved in planning, coordination or performance of future activities shall be represented at these meetings by persons familiar with the Project and authorized to conclude matters relating to progress.

- C. Agenda:
1. Review and correct or approve minutes of the previous progress meeting.
 2. Review items of significance that could affect progress. Include topics for discussion as appropriate to the current status of the Project.
 3. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 4. Submittals: Review overall schedule and anticipated near term needs.
 5. Field Observations, Deficiency Lists, Problems and Conflicts.
 6. Change Orders.
 7. Off-site fabrication, deliveries and sequences.
 8. Documentation of information for record documents.
 9. Safety, hazards and risks.
 10. Other Business:
 - a. Access.
 - b. Site utilization and security.
 - c. Quality and Work Standards.
 - d. Housekeeping.
- D. Reporting: After each progress meeting date, the Architect shall prepare and distribute copies of minutes of the meeting to each party present and to other parties who should have been present.
- E. Schedule Updating: The Contractor shall revise the construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting. No logic or original durations shall be changed without the Architect and Owner Representative's approval.
- F. Job Coordination Meetings shall be held each week on a day designated by the Contractor and shall be attended by the representative of the Contractor, the Owner Representative, the subcontractor and other parties involved with the phase of work that is in progress or scheduled for the upcoming weeks.
1. Agenda shall include but not be limited to discussion of the previous week's completed activities and dates of completion, discussion of ongoing incomplete activities and their estimated remaining duration. Discussion of other activities upcoming in the next 2 weeks, detailed coordination problems and changes in work sequence.
 2. The weekly job meeting minutes to be published by the Contractor format shall include:
 - a. Name of project and date.
 - b. Names of persons and firms represented.
 - c. Contractor work scheduled for the week.
 - d. Work to be accomplished by each subcontractor.
 - e. Commitment of each party to their aspect of the work.
 - f. General agreement between parties on coordination.
 - g. Lack of any materials or equipment that might affect the progress.
 - h. Any questions or coordination that could hold up the project.

At the end of the minutes to be distributed by the Contractor, the following statement should be included:

"If anyone in attendance finds that they do not agree with the minutes as written, they should contact the writer prior to the next meeting. Otherwise, all commitments shall be carried out."

PART 2 - PRODUCTS

(Not Used)

PART 2 - EXECUTION

(Not Used)

END OF SECTION

**SECTION 01 33 00
SUBMITTAL PROCEDURES**

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including but not limited to:
 - 1. Contractor's construction schedule.
 - 2. Submittal schedule.
 - 3. Construction reports.
 - 4. Shop Drawings.
 - 5. Product Data.
 - 6. Samples.
- B. Administrative Submittals: Submittals include, but are not limited to:
 - 1. Performance and payment bonds.
 - 2. Insurance certificates.
 - 3. List of Subcontractors.
 - 4. Permits.
 - 5. Applications for Payment.
- C. The Schedule of Values submittal is included in Sections 01 29 00 Payment Procedures.
- D. Inspection and test reports are included in Section 01 45 00 Quality Control.
- E. Close-out documents submittal requirements are included in Section 01 77 00.

1.2 SUBMITTAL PROCEDURES

- A. Coordination: Within fifteen (15) days of Notice to Proceed to the Contractor, a submittal schedule including all shop drawings, samples, and submittal information as outlined in the Specifications must be submitted to the Architect with a copy to the Owner's Representative. Within thirty (30) days of Notice to Proceed, procurement, delivery and installation schedules must be submitted. Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay but not later than sixty (60) days from Notice to Proceed.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - 3. Where an item is part of an assembly and must be fully coordinated with that assembly, submit the entire assembly together in order that proper evaluation of the submittals may be made. Indication that the items have not been coordinated shall show cause for disapproval of the entire group until such coordination has been made. The Architect's approval of a separate item shall not indicate approval of an assembly in which the item functions. Submit each of the following groups of items together after the Contractor has coordinated the work within the assembly:
 - a. Architectural hardware, doors and door frames.
 - b. Roofing system including roof deck, insulation, flashing and sheet metal work, and roofing membrane.
 - c. Noise and vibration control equipment and associated mechanical equipment.
 - d. Exterior window systems and glazing.
 - e. Toilet partitions and toilet accessories.
 - f. Reinforcing
 - g. Concrete design mixes

4. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
 5. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for re-submittals. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.
 - a. Contractor shall allow for a two (2) week submittal turnaround time for the Architect's and Owner's review, typically. The dates for turnaround shall be included in the Contractor's schedule. Time for resubmittal shall be considered when providing time frame for shop drawings. Shop drawings may require review by more than one contractor to coordinate the work, such review shall be coordinated by the Prime Contractor as required to ensure orderly progress of the work. The Architect's review of shop drawings in no way relinquishes the Contractor's responsibility for coordination. All shop drawings, product data, samples, and similar submittals shall be submitted to the Architect, through the Contractor so as not to delay to work but no later than 60 calendar days after the Notice to Proceed. Samples and product data required for substitutions shall be submitted with the request for substitution. Shop drawings will not be considered for review unless they first have been completely checked, approved, and stamped by the Contractor, subcontractor, and fabricator and in addition, shop drawings will not be considered on substituted products unless they have been submitted in accordance with Section 01 25 00 Substitution Procedures.
- B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
1. Provide a space approximately 4" x 5" on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
 2. Include the following information on the label for processing and recording action taken.
 - a. Project name.
 - b. Date.
 - c. Name and address of Architect.
 - d. Name and address of Contractor.
 - e. Name and address of subcontractor.
 - f. Name and address of supplier.
 - g. Name of manufacturer.
 - h. Number and title of appropriate Specification Section.
 - i. Drawing number and detail references, as appropriate.
- C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Architect using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.
1. Submit letter of transmittal in duplicate.
 2. On the transmittal Record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.
- D. Submit an electronic Adobe PDF that is searchable and bookmarked. (or method agreed upon by CMS)
- E. Contractor's submittals shall include the following statement: "I hereby certify that the material(s), equipment, and/or material(s) shown and marked in this submittal and proposed to be incorporated into the Work is (are) in strict conformance with the Contract Documents, can be installed in the allocated spaces, and comprise(s) no variation thereto, unless specifically noted otherwise."

- F. Before submitting a shop drawing or related material to the Architect, the Contractor shall:
1. Review each such submission for conformance with the Contractor's means, methods, techniques, sequences and operations of construction, and safety precautions, and programs incidental thereto, all of which are the sole responsibility of the Contractor:
 2. Review and coordinate each such submission with other related or affected work:
 3. Approve each such submission before submitting same: and
 4. Provide the required Contractor's certification as specified.

By approving a submittal, the Contractor thereby warrants and represents that he has determined and verified applicable field measurements, field construction criteria, materials, catalog numbers and similar data, and has checked and coordinated the submittal with the requirements of the Work and for conformance with the Contract Documents. Submittals submitted without the required certification and coordination will be returned to the Contractor without review. Delays in construction because of late submission or resubmission of required submittals shall be the sole responsibility of the Contractor.

- G. If a submittal deviates from the drawings and project manual because of standard shop practice, substitutions (approved in accordance with contract requirements), or any other reason, the Architect shall be advised in an attached separate written instrument. Deviations shall be acknowledged by Architect in writing. Unless acknowledged by the architect in writing the Contractor will not be relieved of the responsibility for executing the Work in accordance with the Contract Documents even though such submittals may have been approved.
- H. Submit only submittals required by the Contract Documents. The Architect reserves the right to refrain from reviewing other submittals.
1. Do not include items from more than one Specification Section per submittal.
 2. Contractor may require additional documentation from subcontractors or suppliers for his own use and at no additional cost to the Owner. Such documentation shall not be submitted for review without prior written consent from the Owner's Representative.
- I. Color and material chips will be used to select the project's color scheme and, in general, selection will not be completed until necessary chips have been submitted.
- J. The Contractor shall make any corrections required by the Architect, file with the Architect three (3) corrected copies and furnish additional copies as may be required to expedite the Work. The Architect's acceptance of such drawings or schedules shall not relieve the Contractor from responsibility for deviations from the Drawings and Specifications, unless he or she has notified the Architect in writing concerning such deviations at the time of submission. Nor shall it relieve him from responsibility for errors of any sort in shop drawings or schedules.
- K. The Contractor acknowledges that the processing of shop drawings and other submittals is directly impacted by the clarity, completeness, and accuracy of said documents and that is the Contractor's responsibility to (i) review and coordinate each submittal with other related or affected work and (ii) approve each such submittal before submitting same to the Architect for approval. If the Architect is required to (i) review a third or later submission of any submittal due to no fault of the Architect, (ii) review more than the number of copies of each submittal specified in the Construction Documents, (iii) review submittals in addition to those required by the Construction Documents for the benefit of the Contractor or any Subcontractor or Supplier, or (iv) review submittals for Contractor proposed substitutions for previously approved items, the Contractor shall be liable to the Owner for any Architect's fees incurred as a result of any such Additional Services of the Architect. Any funds due under this paragraph shall be deducted by the Owner from the amounts due to the Contractor.

1.3 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Submit, within thirty (30) days after the Notice to Proceed, the Contractor's Construction Schedule \

- B. Phasing: Provide notations on the schedule to show how the sequence of the Work is affected by requirements for phased completion to permit Work by separate Contractors.
- C. Distribution: Following response to the initial submittal by the Architect and Owner's Representative print and distribute copies to the Architect, Owner, subcontractors and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.
 - 1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

1.4 PROJECT SCHEDULES

- A. The Contractor will retain and pay for the services of a scheduling consultant acceptable to the Owner to develop and maintain the construction schedule as required by the Contract Documents. The Contractor will maintain full responsibility for the content of schedule and will work with his scheduling consultant to insure the schedule accurately reflects the methodology to be used. Use of an independent scheduling consultant does not change the Contractor's responsibility to the Owner related to the contracted delivery date and interim milestones required to meet that date. The independent scheduling consultant will be required to provide all scheduling information using P6. No other scheduling software is acceptable to the Owner. The cost of the independent scheduling consultant will be included as a line item on the Contractor's Schedule of Values.
 - 1. The Scheduling Consultant's qualifications shall be submitted to the Owner prior to acceptance for use on the project.
- B. The Contractor's scheduling consultant is responsible to provide an initial and current monthly construction schedule for the purpose of keeping the Owner fully informed as to Work progress, including immediate notification of any changes in the progress of the Work together with a plan of such remedial action as may be required to coordinate with and maintain the pace the work established.
 - 1. In addition to the required monthly scheduled updates the Scheduling Consultant shall be required to provide a hard copy two week look ahead to be reviewed at each bi-weekly Owner – Architect – Contractor meeting.
- C. The Contractor's scheduling consultant shall be responsible for the developmental preparation of the Detailed Construction Schedule and, to notify the Architect and Owner of any changes in the Detailed Construction Schedule and, to maintain a current and updated schedule. Detailed Construction Schedule shall include at a minimum the following items:
 - 1. Detailed activities representative of the work flow, including all major submittal, procurement and delivery activities with potential impact on the work;
 - 2. Duration in work days;
 - 3. Manpower requirements per activity (if requested by the Owner);
 - 4. Early and late start and finish dates, and total float, based on CPM calculations;
 - 5. Predecessor/successor report sorted by early start;
 - 6. In addition, the schedule shall be drawn or plotted with activities grouped (or zoned) by work area or subcontract, as opposed to a random (or scattered) format.
 - 7. Manpower resource loading (if requested by the Owner).
- D. The final Detailed Construction Schedule must be satisfactory to the Owner's Representative. Detailed Construction Schedule shall provide the Owner's Representative with a tool to monitor and follow progress of phases of the work. Detailed Construction Schedule submitted to the Owner's Representative shall comply with (i) limits imposed by scope of work, (ii) contractually specified intermediate milestones and completion dates as requested by the contract documents, and (iii) constraints, restraints or sequences included in the Contract. The degree of detail shall include factors to satisfaction of the Owner's Representative, including but not limited to:
 - 1. Physical breakdown of the project;
 - 2. Type of work to be performed and sequences of construction;

3. Contract milestones and completion date, substantial completion date(s), constraints, restraints, sequences of work shown in the Contract, planned substantial completion date, and the final completion date;
 4. Access to and availability of work areas;
 5. Coordination with other contractors or the Owner's own forces;
 6. Coordination with utilities and regulatory agencies or other third parties;
 7. Preparation, submittal and approval of shop drawings and material samples which constrain any work activity;
 8. Material and Equipment procurement;
 9. Commissioning activities in accordance with commissioning plan;
 10. Testing, balancing, submission of test reports and approval of test results;
 11. All training and assistance required under the Contract;
 12. Substantial Completion;
 13. Punch list work and final cleaning; and
 14. Final Completion.
 15. Manpower loading
 16. Actual and planned cash flow.
- E. The Detailed Construction Schedule must be produced utilizing P6 scheduling software. The Contractor must furnish an electronic version of the Detailed Construction Schedule in P6 format or other as acceptable to the Owner.
- F. In conjunction with the Detailed Schedule, the Contractor upon request of the Owner shall submit manpower loaded and equipment schedules. The manpower schedule shall show the projected average number of workers per week for the project by contractor and by trade. For example:

Contractor	Trade	Week 1	Week 2	Week 3 ...
General	Supervisory	2	2	2
General	Carpenters	4	6	8
General	Masons	0	0	1

This manpower loading schedule may be produced using the scheduling software or manually. The equipment schedule should list all major plant and equipment expected to be utilized during the course of the Work. The manpower and equipment schedules must be satisfactory to the Owner's Representative. Upon approval of the Detailed Construction Schedule, the Owner's Representative will incorporate that schedule as the initial baseline.

- G. The Contractor's independent scheduling consultant will furnish monthly updates of the Detailed Construction Schedule to the Owner's Representative for updating the Master Schedule. The data for these updates should come from and agree with the data gathered during the weekly site progress meetings. Updated schedules must be submitted monthly, in printed and electronic format, with The Contractors monthly payment application.
- H. The Contractor will be responsible for performing to the latest updated and approved Construction Progress Schedule through whatever means necessary (overtime, additional forces, etc.). To accomplish Substantial Completion of the work within the Contract time designated or as amended by change order.
- I. The Contractor will furnish the following printed schedules and electronic reports:
1. Current detailed construction schedule against baseline
 2. Critical path schedule
 3. An activity listing sorted by early start, early finish, and total float;
 4. A listing of all activities started, finished or ongoing during the current month;
 5. A listing of all logic or duration changes;
 6. A listing of the progress updates for the month;
 7. A comparison of actual to planned progress, ("Actual to Target");

8. A recovery plan when actual completion is projected later than the contract completion date.
- J. The Contractor's independent scheduling consultant will prepare and update monthly a "Detailed Construction Schedule". This Detailed Schedule will become the Contract Schedule used by all Contractors to build the project. A full size (minimum 24" x 36") copy of the project schedule will be displayed in the Contractor's job trailer at all times during the construction project. Project schedule will show contractual start and finish dates as well as latest schedule update. Major milestones and contractual completion dates must be maintained. Architect and Owner's Representative must approve major milestones and contractual completion date changes.
- K. The Contractor shall utilize the Detailed Construction Schedule in planning, scheduling, coordinating, and performing the work required under the Contract (including all activities of Subcontractors, equipment Vendors and Suppliers.) The Contractor shall provide the Owner's Representative with written confirmation of the concurrence of each major trade Subcontractor with Detailed Construction Schedule and all revisions and updates.

1.4 SUBMITTAL SCHEDULE

- A. During development and acceptance of the Contractor's construction schedule, prepare a complete schedule of submittals (submittal register). Note: Do not delay making submittals during schedule development if the anticipated result will be a delay to the project.
 1. Include description of submittal, type of submittal, detailed specification and drawing references, transmittal numbers, and approximate dates scheduled for submission.
 2. Clearly label register with the names of the project and the Contractor, and any other necessary information.
 3. Coordinate submittal schedule with the list of subcontracts, schedule of values and the list of products as well as the Contractor's construction schedule.
 4. Prepare the schedule in chronological order. Provide the following information:
- B. Distribution: Following response to the initial submittal by the Architect and Owner's Representative print and distribute copies to the Architect, Owner, subcontractors and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.
 1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.
- C. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting. Show original, actual, and planned time lines on each update.
- D. Within 30 days of the Notice to Proceed each Contractor must submit a procurement, delivery and installation schedule.

1.5 CONSTRUCTION REPORTS

- A. Prepare a periodic construction report, recording the following information concerning events at the site; and submit copies to the Owner's Representative and Architect at weekly intervals:
 1. High and low temperatures, general weather conditions (daily).
 2. Accidents and unusual events (immediately after they occur).
 3. Orders and requests of governing authorities (after they occur).
 4. Stoppages, delays, shortages, losses (as they occur).
 5. List of personnel and subcontractors at the site (monthly).
 6. Services connected, disconnected (as they occur).
 7. Equipment or system tests and start-ups (as they occur).
 8. List of equipment at site and use.
 9. Inspections and tests ,including inspector(as they occur)

1.6 SHOP DRAWINGS

- A. Submit newly prepared information, drawn to accurate scale. Highlight, encircle or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.
- B. Shop Drawings include fabrication and installation drawings, setting diagrams, connections, schedules, patterns, templates and similar drawings, layouts or particular elements. Include the following information:
 - 1. Dimensions.
 - 2. Identification of products and materials included.
 - 3. Compliance with specified standards.
 - 4. Notation of coordination requirements.
 - 5. Notation of dimensions established by field measurement.
 - 6. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8½" x 11" but no larger than 30" x 42".
 - 7. Submittal: Submit one correctable translucent reproducible print and four (4) blue or black-line print for the Owner's Representative / Architect / Owner / Engineer review; the reproducible print will be returned.
 - 8. Do not use Shop Drawings without an appropriate final stamp from the Architect indicating action taken in connection with construction.
- C. Coordination drawings are a special type of Shop Drawing that show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or function as intended.
 - 1. Preparation of coordination Drawings is specified in Section 01 31 13 - Project Coordination and may include components previously shown in detail on Shop Drawings or Product Data.
 - 2. Submit coordination Drawings for integration of different construction elements. Show sequences and relationships of separate components to avoid conflicts in use of space.

1.7 PRODUCT DATA

- A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, calculations, color charts, mix designs, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings".
 - 1. Mark each copy to show applicable choices and options. If Product Data includes information on several products, mark copies to indicate the applicable information. Include the following information:
 - a. Manufacturer's printed recommendations.
 - b. Compliance with recognized trade association standards.
 - c. Compliance with recognized testing agency standards.
 - d. Application of testing agency labels and seals.
 - e. Notation of dimensions verified by field measurement.
 - f. Notation of coordination requirements.
 - 2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
 - 3. Submittals: Submit four (4) copies of each required submittal; one (1) for the Owner's Representative, the Architect/Owner will retain one (1) and will return the others marked with action taken and corrections or modifications required.
 - 4. Distribution: Furnish copies of final submittal (i.e., copies with stamp and/or comments) to installers, subcontractors, suppliers, manufacturers, fabricators and others required for performance of construction activities. Show distribution on transmittal forms.
 - a. Do not proceed with installation until an applicable copy of Product Data is in the installer's possession.

- b. Do not permit use of unmarked copies of Product Data in connection with construction.
- 5. Standard color charts are to be collected and submitted in packages as outlined below.

1.8 SAMPLES

- A. Submit full-size, fully fabricated samples, cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets and swatches showing color, texture and pattern.
 - 1. Mount, display or package Samples in the manner specified to facilitate review of qualities indicated. Prepare Samples to match the Architect's Sample. Include the following:
 - a. Generic description of the Sample.
 - b. Sample source.
 - c. Product name or name of manufacturer.
 - d. Compliance with recognized standards.
 - e. Availability and delivery time.
 - 2. Submit Samples for review of kind, color, pattern and texture for a final check of test characteristics with the other elements and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
 - a. Where variation in color, pattern, texture or other characteristics are inherent in the material or product represented, submit multiple units (not less than three (3)), that show approximate limits of the variations.
 - b. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, detail of assembly, connections, operation and similar construction characteristics.
 - 3. Preliminary submittals: Where Samples are for selection of color, pattern, texture or similar characteristics from a range of standard choices, submit a full set of choices for the material or product.
 - a. Preliminary submittals will be reviewed and returned with the Architect's mark indicating selection and other action.
 - 4. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit two (2) sets; one will be returned marked with the action taken.
 - 5. Maintain sets of Samples, as returned, at the Project site, for quality comparisons throughout the course of construction.
 - 6. Color samples will be submitted in two complete packages:
 - a. Exterior materials
 - b. Interior materials

Submit color chips and material samples duplicating the color, texture and finish to be provided for the installed product. Submit manufacturer's complete range as required by the technical specifications. Submit one set of chips for each product specified. Unused chips will not be returned to the Contractor unless specifically requested. In certain cases, the Owner's Architect may have a complete set of color chips in his office. At the request of the Contractor, the Owner's Architect may waive the requirement for specific color samples.
- B. Field Samples specified in individual Sections are special types of Samples. Field Samples are full-size examples erected on site to illustrate finishes, coatings, or finish materials and to establish the standard by which the Work will be judged.
 - 1. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.
- C. Sample panels: One assembly constructed at the project sites in a location acceptable to the Owner's Representative and using materials and methods to be employed in the work; completely finished: maintained during construction: and removed at the conclusion of the work or when authorized by the Owner's Representative.

1.9 ARCHITECT'S ACTION

- A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Architect will review each submittal, mark to indicate action taken, and return promptly.
 - 1. Compliance with specified characteristics is the Contractor's responsibility
- B. Action Stamp: The Architect will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:
 - 1. Final Unrestricted Release: Where submittals are marked "Approved" "No Exceptions Taken", that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
 - 2. Final-But-Restricted Release: When submittals are marked "Approved as Noted" "Exceptions Indicated", that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
 - 3. Returned for Re-submittal: When submittal is marked "Correct and Resubmit" "Not Approved:", "Revise and Resubmit", do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
 - a. Do not permit submittals marked "Not Approved, Revise and Resubmit" to be used at the Project site, or elsewhere where Work is in progress.
 - 4. "No Action Taken" indicates one of the following:
 - a. Submittal incomplete and a proper review cannot be performed
 - b. Insufficient copies submitted
 - c. Transmittal form incomplete
 - d. Contractor's certificate approving submittal not signed or missing
 - e. Submittal not required and the Contract Documents do not require the Owner's Representative to take action on this item
 - f. Other causes or reason as noted

1.10 RESUBMISSION

Change or correct submittals as required by the Architect and resubmit until approved. Indicate any changes which have been made other than those requested by the Architect.

PART 2 - PRODUCTS
(Not Used)

PART 3 - EXECUTION
(Not Used)

END OF SECTION

SECTION 01 45 00
QUALITY CONTROL

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section specifies administrative and procedural requirements for quality control services.
 - 1. Quality control services include inspections, observations and tests and related actions including reports performed by independent agencies, governing authorities and the Contractor. They do not include Contract enforcement activities performed by the Architect, or observations made by the Owner. Hereinafter the firms providing the services may be referred to as firms, entities, agencies or words of similar meaning.
- B. Inspection, observation and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.
- C. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.
 - 1. Specific quality requirements for individual construction activities are specified in the Sections that specify those activities. Those requirements, including inspections and tests, cover production of standard products as well as customized fabrication and installation procedures.
 - 2. Inspections, tests and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Document requirements.
 - 3. Requirements for the Contractor to provide quality control services required by the Architect, Owner or authorities having jurisdiction are not limited by provisions of this Section.

1.2 RESPONSIBILITIES

- A. Contractor Responsibilities: The Contractor shall provide inspections, tests and similar quality control services specified in individual Specification Sections and when required by governing authorities. These services include those specified to be performed by an independent agency and not by the Contractor.
 - 1. The Contractor shall employ and pay an independent agency to perform specified quality control services which relate to "shop testing".
 - 2. Re-testing: The Contractor is responsible for the cost of re-testing where results of required inspections, field tests or similar services prove unsatisfactory and do not indicate compliance with Contract Document requirements regardless of whether the original test was the Contractor's responsibility. The cost of retesting shall be deducted from the contractor's remaining contract balance as a back charge.
 - 3. The Contractor shall cooperate with all entities performing required inspections, observation, tests and similar services and provide reasonable support as requested. The Contractor shall notify the entity sufficiently in advance of operations to permit assignment of personnel. Support services required include but are not limited to:
 - a. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests.
 - b. Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.
 - c. Providing facilities for storage and curing of test samples.
 - d. Providing the agency with submittals for materials or products proposed for use that requires establishing control data or information.
 - e. Security and protection of samples and test equipment at the Project site.

4. If additional inspection costs are incurred due to the Contractor's failure to optimize the testing activities the cost shall be borne by the Contractor by a back charge.
- B. Duties of the testing agency: The Owner's testing agency is engaged to perform observations, inspections, sampling and testing of materials and construction specified in individual Specification Sections. The firm will require the cooperation of the Architect and Contractor in the performance of its duties, and shall provide qualified / certified personnel to perform required observations, inspections and tests.
1. The testing agency shall notify the Owner, Architect, Engineer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. The contracted testing agency shall not perform any duties of the Contractor.
- C. Coordination: The Contractor shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition, the Contractor and each agency shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
1. The Contractor is responsible for scheduling times for inspections, tests, taking samples and similar activities.
 2. The Contractor shall bear all costs to remove and replace any Work incorporated into the Project prior to obtaining the approval of any required test or inspection.
 3. The Contractor shall coordinate the sequence of Work to optimize the time and number of tests performed by the testing agency.
- D. Testing Services provided by the Owner. The Owner will provide the services of a firm authorized to perform:
1. Special inspections testing as required by the Charlotte-Mecklenburg County Land Use and Environmental Services Agency (LUESA).
 2. Building envelope observations
 3. Building systems commissioning
 4. Construction materials testing and inspections
 5. The cost of all retesting shall be borne by the Contractor.
- E. Testing Services provided by the General Contractor. The General Contractor will subcontract directly with an independent Testing and Balancing firm to perform all mechanical system testing and balancing. The following firms have been approved to perform this work on CMS projects:
1. TABC – Roswell, Georgia phone: 678-393-9401
 2. The Phoenix Agency - Winston-Salem, NC phone 336-744-1998
 3. Palmetto Air and Water Balance – Greer, SC phone 864-877-6832
 4. TAB Services Inc – Norcross, GA phone 404-329-1001
 5. Other consultants based on a review and approval of their qualifications by the Owner.

1.3 SUBMITTALS

- A. The testing agency shall submit a certified written report as indicated in 1704.1.2 of the Building Code for inspection, test or similar service performed.
1. The testing agency will submit additional copies of each written report directly to the governing authority when the authority so directs.
 2. Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to:
 - a. Date of issue.
 - b. Project title and number.
 - c. Name, address and telephone number of testing agency.
 - d. Dates and locations of samples and tests or inspections.
 - e. Ambient conditions at the time of sample-taking and testing.
 - f. Designation of the Work and test method.
 - g. Identification of product and Specification Section.

- h. Names of individuals making the inspection or test and name and signature of laboratory inspector.
 - i. Test results and interpretations of test results; comments or professional opinion as to whether inspected or tested Work complies with Contract Document requirements and recommendations on re-testing if required.
- 3. The testing agency will bring to the attention of the Architect, Contractor, Owner, applicable Engineer, and/or Building Official any discrepancy found that is not corrected by the Contractor.
 - 4. Monitoring and inspections required by the NPDES Stormwater Discharge Permit are the responsibility of the Contractor's superintendent. Contractor shall submit proof of the superintendent's CMCSI (Charlotte Mecklenburg Certified Site Inspector) Certification as issued by the Charlotte Engineering and Property Management Department or indicate their intention to attain certification as defined in the Bidder Qualifications prior to any land disturbing activities.

1.4 QUALITY ASSURANCE

- A. Quality Assurance will be performed in accordance with governing Codes, referenced or established standards, or industry standards.
- B. Qualification for Service Agencies: The Owner will engage firms who meet the professional qualifications, and licensing requirements requisite for the scope of testing services that they are engaged to perform.
- C. CONTROL OF INSTALLATION
 - 1. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
 - 2. Comply with manufacturers' instructions, including each step in sequence
 - 3. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
 - 4. Comply with specified standards as the minimum quality for the Work, except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
 - 5. Only allow Work to be performed by person qualified to produce workmanship of specified quality.
 - 6. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
- D. TOLERANCES
 - 1. Monitor tolerance control of installed products to produce acceptable work. Do not permit tolerances to accumulate.
 - 2. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
 - 3. Adjust products to appropriate dimensions; position before securing products in place.
- E. AIR BARRIER SYSTEM

The airtight components of the building enclosure and the joints, junctures and transitions between materials, products, and assemblies forming the air-tightness of the building enclosure are referred to as the "air barrier system". The Contractor is required to ensure continuity of the "air barrier system" including coordination between the trades, proper scheduling and sequencing of the work, preconstruction meetings, inspections, tests, and related actions, including reports of inspections and observations performed by Contractor, by independent agencies, and by governing authorities. The Contractor shall ensure that the building enclosure is constructed as designed to provide a continuous air barrier system.

The Construction Manager or General Contractor is responsible to inspect and verify the air barrier installations made by their subcontractors are compliant with the design documents, correct deficiencies and non-compliant work, and coordinate with the Designer on issues related to the air barrier system.

Upon completion of the facility or building addition the Owner will solicit, at the Owner's expense, the services of an air barrier testing firm to perform air barrier testing to determine the performance of the building's air barrier system.

If non conformances are identified the CM or General Contractor will make corrections. Upon completion of the corrections and at the discretion of the Owner the building may be retested. All costs related to the retest will be the responsibility of the Construction Manager or General Contractor.

F. CONSTRUCTION PHASE PHOTOGRAPHIC DOCUMENTATION

The scope of services expected to be provided by the CM/General Contractor for the photographic documentation of additions, renovations and new school projects being constructed for CMS will include the following:

1. Monthly ground level photos documenting the progression of the site-work
2. Monthly exterior photos documenting the progression of the building structural framework, and the building envelope from the start of foundations through the completion of building dry-in.
3. Monthly interior photos documenting the progression of interior systems and finishes from the beginning of interior work until substantial completion.
4. Quarterly aerial/drone photos documenting site and building development from the completion of clearing and grading operations until substantial completion.

G. SANITARY SEWER VISUAL OBSERVATION

The Contractor shall ensure that the sanitary sewer system has been installed and is functioning as designed. Contractor responsibilities include but are not limited to video camera observations, recording, documentation, and repair of deficiencies (as required) for all under slab sanitary sewer lines 3" and larger, and all site sanitary sewer lines prior to Owner acceptance. The process for video observations of the sanitary sewer system is as follows:

1. New Construction
 - a. Contractor Requirements: Prior to any sanitary sewer installations, a **pre-installation conference** will be conducted to communicate expectations and requirements. Visual observations including filming shall be included as **two milestones in the construction schedule** 1) **after** the slab is poured and 2) **during** the punch list development activity. If the project has multiple slab phases, filming of the sanitary lines below the slabs shall be done following each phase. The site sewer lines will be inspected as part of this process.
 - b. The process shall be as follows:
 - c. Conduct the sanitary sewer system pre-installation meeting. Participants in the meeting shall include the Contractor's Superintendent, the responsible site utility and/or plumbing subcontractor(s), the engineer, the video equipment operator, and the Owner's Representative. The agenda for this meeting shall cover: piping installation, bedding requirements, backfilling trenches, schedule, identification and labeling of plans, type of camera system to be used, parties that will be performing the observation, introducing water to lines during observation, mitigating water drained from the system, final documents and videos required at project completion, specified testing methods, certifications, closeout and general discussion on expectations.
 - d. Upon completion of the slab installations the Contractor shall clean all lines to be inspected to be free of debris to allow for the engineer to successfully inspect the system.

- e. The Contractor shall notify the CMS Quality Manager and the engineer to schedule required video observations.
- f. During the observation it is the contractor's responsibility to introduce water to the lines to simulate an operating system. This may be prior to having a completed domestic water system and final connection to the site sewer. Contractor is responsible to manage water drained from the system for the observation.
- g. During the first observation, there is no requirement for producing a video. This is a visual observation witnessed by the plumbing engineer.
- h. Contractor will identify/label each cleanout on the plans that will be inspected. These cleanout to cleanout "runs" will be assigned a "run number". Ex: Cleanout 1 to cleanout 2 would be "Run 1". The observation shall progress from clean out to clean out and correlated to the marked up plumbing drawings.
- i. On each run the contractor will reset the camera to "0". This process ensures that if a deficiency is found the exact location of the deficiency can be identified and referenced on the engineer's deficiency list.
- j. Upon completion of the initial under-slab observation the Engineer will mark up the plans and issue a report citing any deficiencies. The deficiencies shall be added to the project Master deficiency list and must be corrected, and verified by the engineer prior to scheduling the final observation.
- k. After engineer verification that all deficiencies noted in the initial observation have been corrected and PRIOR to request for substantial completion the process will be performed again. **This time the observation must be recorded** and will include **all** under slab sanitary sewer lines 3" and larger, and all site sanitary sewer lines installed or affected by construction up to the public tie-in. The under slab work must be inspected before the site lines to ensure all lines will be accepted. This sequence ensures that debris flushed out of the under slab lines will not end up in the site sewer after acceptance.
- l. The final observation and video recording shall illustrate that all lines are installed and functioning per design. A clean video on CD with no interruptions must be produced from "Run1" to the public tie-in or as defined in the pre-installation meeting. The CD and the correlating drawings (Civil and Plumbing) are to be submitted to the engineer for final review/acceptance and transmitted to Owner prior to final completion.

2. Renovation/Addition Projects

Contractor Requirements: For renovation/addition projects, the same process as described for new construction shall be used for all new lines and include any existing under slab and site sanitary sewer lines 3" and larger affected by the work to a point no less than 50' outside the building.

- a. The process for existing under slab and site sanitary piping shall be as follows:
 - b. A separate initial review of existing lines must be performed and recorded prior to commencement of construction. Contractor to ensure existing lines are free of all debris prior to observation. Required jetting or flushing prior to video recording is included. Contractor to coordinate the initial review with the owner's representative.
 - 1. Upon completion of the observation the contractor will forward a set of marked up plans and a CD recording of the observation to the engineer. Contractor shall mark up plans indicating any areas of concern. The engineer of record shall review the CD and issue a report including the CD, plans and recommendations to the Owner to address the existing system.
 - 2. Any existing under slab and site sanitary sewer lines 3" and larger affected by the work to a point no less than 50' outside the building shall be included as part of the final video observation.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

- A. General: Upon completion of inspection, testing, sample-taking and similar activities, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements for "Cutting and Patching".
- B. Protect construction exposed by or for quality control service activities and protect repaired construction.
- C. Repair and protection is the Contractor's responsibility regardless of the assignment of responsibility for inspection, testing or similar services.

3.2. MOCK-UPS

- A. Tests will be performed under provisions identified in this section and identified in the respective product Specification Sections.
- B. Assemble and erect specified items with specified attachment and anchorage devices, flashing, seals, and finishes.
- C. Accepted mock-ups are representative of the quality required for the Work.
- D. Where a mock-up has been accepted by the Architect and is specified in product Specification Sections to be removed, remove mock-up and clear area when directed to do so or as specified in Section 01 77 00 - Closeout Procedures.

3.3 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. When specified in individual Specification Sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions; conditions of surfaces and installation; quality of workmanship; start-up of equipment; testing, adjustment and balancing of equipment; as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Architect thirty (30) days in advance of required observations in accordance with Section 01 33 00 - Submittal Procedures
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- D. Submit report in duplicate within thirty (30) days of observation to Architect for information in accordance with Section 01 33 00 - Submittal Procedures.

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROL

PART 1 – GENERAL

1.1 SUMMARY

- A. This section specifies requirements for Temporary Utilities, Temporary Construction and Support Facilities and other facilities and controls required to construct the project.

The Contractor agrees that protection of the public and prevention of accidents to workers/others engaged upon or in the vicinity of the Work is their responsibility. The Contractor shall establish and implement safety measures, policies and standards conforming to those required or recommended by governmental or quasi-governmental authorities having jurisdiction and by the Owner, including, but not limited to, any requirements imposed by the Contract documents.

Requirements include, but are not limited to the following:

1. Project Planning
2. Protection of the Public
3. Skills, Competency and Training
4. EHS Performance Monitoring
5. Fall Prevention
6. Project Site Logistics
7. Civil / Ground works
8. Use of Cranes, Hoists, Lifting, and Slings
9. Electrical Safety
10. Personal Protective Equipment and Worker Welfare
11. Fire and Emergency Preparedness Planning
12. Protection of the Environment
13. Temporary Construction and Support Facilities
14. Temporary and permanent Utilities

In cases where the contract documents and applicable laws or codes conflict the most stringent means shall apply.

Charlotte-Mecklenburg Schools Capital Program Services (CPS) has coordinated a mentoring program with the North Carolina Department of Labor to promote the importance of safety to the public and workers. The intent of the program is for the contractor to have an open door policy with NCDOL, to actively participate in the mentoring program and comply with NCDOL's recommendations. CPS expects the Contractor to pursue their own partnership as well or work towards becoming an NCDOL Carolina Building STAR company.

1.2 SUBMITTALS
(not used)

1.3 QUALITY ASSURANCE

- A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including but not limited to:
1. Building code requirements
 2. Health and safety regulations, OSHA, ANSI, NFPA, etc.
 3. Utility company regulations
 4. Police, fire department and rescue squad requirements
 5. Environmental protection regulations
 6. Mecklenburg County Health Department
- B. Standards: Comply with NFPA Code 241 – “Building Construction and Demolition Operations: ANSI-A10 Series standards for Safety Requirements for Construction and Demolition” and NECA Electrical Design Library “Temporary Electrical Facilities”.

1. Refer to “Guidelines for Bid Conditions for Temporary Job Utilities and Services”, prepared jointly by AGC and ASC for industry recommendations.
 - C. Inspections: The Contractor will arrange for authorities having jurisdiction to inspect and test each temporary utility as required prior to use and obtain required certifications and permits.
- 1.4 PROJECT CONDITIONS
- A. Conditions of Use: Temporary services and facilities shall be clean and neat at all times and will be operated in a safe and efficient manner. Reference Specification Section 01 74 13 Part 3 Execution for detailed housekeeping requirements.
 - B. All contractors are discouraged from accessing the project or having materials and equipment delivered to the project site through residential areas unless no other route is available. Should they be required to travel through residential areas, it should be done between 7am and 7pm only or in compliance with local rules and regulations, whichever is more stringent.
 - C. The Contractor shall stop any part of the work deemed unsafe until corrective measures have been taken.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. General: Provide materials suitable for the use intended; undamaged previously used materials in serviceable condition may be used for temporary conditions.

2.2 EQUIPMENT

- A. General: Provide equipment suitable for the use intended; undamaged previously used equipment in serviceable condition may be used for temporary conditions.
- B. Electrical Systems and Outlets: Provide properly configured NEMA polarized outlets that prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters and reset buttons for connection of power tools and equipment within 100 feet of all work areas. All temporary electrical systems should be inspected and tested on a weekly basis. Contractor shall document these inspections.
- C. Electrical Power Cords: All Contractors shall provide UL tested and labeled, grounded “hard service” cords of an appropriate gauge for the intended application. Provide waterproof connectors as needed to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. All electrical cords shall be inspected on a regular basis (Quarterly at a Minimum) and identification of inspection must be visible, i.e. mark with colored tape or tag.
- D. Temporary Toilet Units: Provide self-contained, single-occupant toilet units properly vented and fully enclosed. Comply with regulations and health codes for the type, number and location. Install where facilities will best serve the Project’s needs. Toilets are to be properly maintained and cleaned. If piped hand washing facilities or a self-contained hand washing system is not readily available then hand sanitizer shall be available in each unit.
- E. First Aid Supplies: Comply with all governing regulations for type and size. Provide an AED in a readily available location known to trained users.
- F. Ladders:
 1. Contractors on site shall develop a ladder reduction program. This program should identify tasks that are repetitious and/or tasks that are longer than 15 minutes and can be done from a work platform, scaffold or mechanical man-lift.

2. Step ladders that are used on the project shall be platform or podium type. All scaffolds, ladders, working platforms, etc. shall be regularly inspected. Proof of inspection should be conspicuous and documented. All ladder users shall be properly trained. All ladders must be made safe, removed or protected from use, prior to completion of daily work activities.
 3. The use of Aluminum ladders are prohibited onsite.
- G. Scaffolds: Scaffolds should be built in their entirety and not left unfinished or in an unsafe condition. All scaffolds must be tagged to indicate the latest inspection by the identified competent person. Scaffolds should be tied into the structure as close to a 3:1 ratio as possible and repeated tie-ins shall follow OSHA guidelines. All scaffolds shall have safe access with stairs being the first choice over a ladder. Scaffolds should include netting on upper levels if there is any possibility for materials to fall over the toe boards, per OSHA guidelines.
- H. Fire Extinguishers: Provide hand-carried, portable UL-rated, 10lb, class “ABC” fire extinguishers for temporary offices and similar spaces. In other locations provide hand-carried, portable, UL-rated, class “ABC” dry chemical extinguishers or a combination of extinguishers of NFPA recommended classes suited for the exposures.
1. Comply with NFPA 10 and 241 for classification of extinguishing agent and size required by location and class of fire exposure.
 2. Provide an appropriate number of designated fire watch individuals with fully charged fire extinguishers, welding blankets and welding screens as required to limit risks associated with welding, cutting and burning or any other activity which has the potential to cause a fire. All Hot work shall be done under a permit system
- I. Drinking water: Provide adequate supplies of drinking water, containers and ice. Container shall be sanitized per OSHA guidelines. Cups and trash receptacle shall be readily available.
- J. Provide all required site signs, safety signs, temporary exit signs and warning signs as needed on the site. Maintain existing or provide temporary illuminated exit signs and fire alarm equipment needed to accommodate renovation work in areas of occupied buildings and comply with building code officials. Provide lighting in any temporary enclosed exit ways, including emergency egress lighting.
- K. Carbon Monoxide Detectors: When utilizing gas powered equipment after building enclosure a temporary carbon monoxide detector shall be provided in space where work is being performed. In addition to proper ventilation of space.

PART 3 – EXECUTION

3.1 PROJECT PLANNING

- A. The Contractor shall develop and maintain on a monthly basis (minimum) a project specific Environment, Health and Safety (EHS) plan. Upon completion and whenever modified the EHS plan shall be communicated to all relevant parties involved on the project. The plan shall also be made available on the jobsite upon request.

The plan shall be developed in its entirety and be available on site before any work commences. The plan shall be tailored to the project’s site specific safety aspects and not just the overall company safety policy

The EHS plan should, at a minimum, include or address the following items:

1. Project name, location, etc.
2. Scope of work statement
3. Designated safety representative(s)
4. Identification of, and plans to handle, all hazardous work (complete site wide Job Hazard Analysis - JHA)
5. Fall protection plans
6. Trenching and excavation plans and precautions

7. Detailed procedures on locating underground utilities (One-call, potholing, ground penetrating radar, etc.)
 8. Lockout/Tag-out procedures
 9. Tool and equipment maintenance inspection process
 10. Ladder reduction and inspection policy
 11. Hot work policy
 12. Personnel certifications
 13. Hazard communication policy
 14. Inspection policies
 15. Disciplinary policy
 16. PPE requirements
 17. Housekeeping procedures
 18. Hazardous material information
 19. Background check procedure
 20. Emergency egress procedures site workers/public
- B. The Contractor must communicate their EHS plans and expectations to all subcontractors, suppliers, etc. The Contractor shall assess the ability of all parties to perform their intended responsibilities and shall not employ an entity that cannot perform all obligations communicated. Contractor should hold monthly (at a minimum) site wide meetings with all workers to update them on pertinent information and upcoming activities.
- C. Meeting minutes, communications and other evidence of the Project Planning shall be made available upon request.
- D. The Contractor shall ensure that an adequate number of competent supervisors are employed for execution of the project in accordance with the EHS plan. Evidence of competent person shall be made upon request.
- E. The Contractor shall hold a kick-off meeting with each subcontractor, supplier, etc. to discuss the EHS plan requirements. This meeting may be held in conjunction with other project meeting(s).
- F. The Contractor shall hold daily coordination meetings with pertinent contractors to communicate key high risk activities. The Contractor shall discuss EHS topics and address any concerns or changes in the project at each weekly project meeting.
- G. The Contractor shall develop and utilize a method to identify and inform all site personnel of high risk activities to be performed on a daily basis.
- H. Contractor shall designate key project personnel to gather as a team bi-weekly at a minimum to review site safety progress, challenges, and training needs, review incidents and develop solutions for any non-compliance issues. Meeting minutes shall be documented.
- I. All equipment utilized on the project shall meet the operational and inspection criteria established by the manufacturer, be well maintained, and used only for the activities intended by the manufacturer. The Contractor shall ensure that all vehicle and equipment operators are certified to operate the assigned vehicle. Inspection information and certifications shall be made available upon request.
- J. The Contractor shall plan, communicate and control all activities to be performed in a manner that can eliminate or reduce risks to those performing the task. A focus on each task, especially fall protection, should be performed following the hierarchy of risk control. The steps include but are not limited to the following:
1. Elimination
 2. Substitution
 3. Engineering control
 4. Administrative controls
 5. Personal protective equipment

3.2 PROTECTION OF THE PUBLIC

- A. The Contractor shall perform its work in a manner that will protect the public from any hazards including falling materials and the movement of vehicles into/out of the project site. The Contractor shall establish safe pathways for the public whenever public access ways are blocked off due to construction activities.
- B. The Contractor must keep all public walkways and roadways in the vicinity of the project clean and free of construction-related hazards and debris at all times.
- C. The public shall be protected from falls of materials at all times.

3.3 SKILLS AND TRAINING

- A. The Contractor is required to have a competent person on site whenever work is taking place.
- B. Project Orientation: The Contractor shall provide each worker on the project site with a site specific project orientation prior to commencing their work. The orientation should include content specific to the project including site rules, environmental standards, safety specific standards, emergency procedures and any other information the Contractor deems pertinent. Records shall be kept of each orientation.
- C. The Contractor is responsible for providing all visitors to the project site with adequate safety instructions when entering the premises. The Contractor shall maintain records of all visitors to the project site. Contractor shall also have 10 extra sets of the sites required PPE available for visitors
- D. The Contractor shall ensure that all personnel performing specialized or high risk activities are aware of all EHS responsibilities and are adequately trained.
- E. The Contractor shall insure that EHS briefings, tool box talks and any other relevant safety training takes place for all site personnel.
- F. The Contractor's Superintendent/Competent Person shall hold a valid OSHA 30-hour training certification acquired within the previous 3-years. In addition, it is recommended that all of the subcontractors provide a foreman/superintendent who holds an OSHA 30-hour training certification.
- G. Contractor shall have a site hazardous communication plan; maintain current MSDS/SDS sheets that are site specific and ensure all workers have access to this information. Plan shall conform to OSHA's Global Harmonization System (GHS) requirements.

3.4 EHS PERFORMANCE MONITORING

- A. The Contractor shall ensure that activities are appropriately monitored and that any EHS issues that arise are being promptly identified, reported (as required) and resolved.
- B. Observations
 - 1. The Contractor shall stop any activities observed which could result in an injury or environmental damage. Corrective actions must be taken.
 - 2. The Contractor is responsible to ensure that daily checks are performed for all high risk work.
 - 3. The Contractor is responsible for recording all incidents that occur on, or are related to the project.
 - 4. The Contractor shall investigate any incidents deemed critical and determine an action plan to prevent a similar incident.
 - 5. All observations should be documented and available for review.
- C. The Contractor shall document and provide to the Owner the following environmental data:
 - 1. Recycled material data

3.5 FALL PROTECTION

- A. The Contractor should apply the hierarchy of risk control (Section 3.1.J) when planning and performing all work at height. Where work at height must be performed and physical barriers to prevent falls are not practical, as a last resort appropriate PPE (full body harness, etc.) must be used. The use of safety monitors as the only approach to fall protection is not acceptable.
- B. The Contractor is responsible to ensure that all personnel utilizing a Mechanically Elevated Work Platform shall be required to wear fall protection.

3.6 PROJECT SITE LOGISTICS

- A. The Contractor shall develop a detailed site logistics plan for review and coordination with the Owner. The logistics plan shall be displayed in the project trailer, discussed with all site personnel during orientations and updated on a monthly basis by the Contractor. The logistics plan should include the following information:
 - 1. Delineation of site fencing
 - 2. Location of all gates
 - 3. Emergency and Non-Emergency Entrances/Exits, both pedestrian and vehicular
 - 4. Evacuation procedures and muster point
 - 5. Parking areas
 - 6. Staging areas
 - 7. Dumpster location(s)
 - 8. Temporary toilet locations
 - 9. First aid station(s)
 - 10. AED location(s)
 - 11. Fire extinguisher locations
 - 12. Known underground utilities
 - 13. Other pertinent information
- B. The Contractor shall have as a Minimum the following signage at the main entrance to the site:
 - 1. Site's personal protection requirements
 - 2. Name of Contractor
 - 3. Emergency contact information
 - 4. Requirement of all visitors to sign in at construction office
 - 5. No tobacco products
 - 6. The day's high risk activities taking place
- C. The Contractor is responsible for keeping the project site in a clean and orderly fashion at all times (See Specification Section 01 74 13 Part 3 Execution). The Contractor shall provide waste receptacles throughout the project site at a minimum ratio of 1 per 20 workers. The Contractor should consider utilizing a composite cleanup crew weekly at a minimum
- D. The Contractor shall provide signs throughout the site where necessary to provide clear instruction (i.e., "No Smoking", "No Entry", "Emergency Exit", etc.) All signage shall be provided in English and Spanish. Perimeter signage shall be attached to the fencing at approximately 50 foot intervals and be maintained throughout the duration of the project.
- E. The contractor shall require all visitors to sign in and out at School office

3.7 CIVIL / GROUNDWORKS / EQUIPMENT

- A. Contractor must do their due-diligence in locating all underground/concealed utilities, both known and unknown, prior to any site work (including but not limited to temporary erosion control measures and perimeter fencing), demolition, or construction activities. Methods shall include professional locating services, ground penetrating radar and potholing (vacuum or water injection) all utilities to verify location and depth.

- B. The Contractor is responsible to ensure that all equipment is maintained, tested and inspected per the manufacturers' recommendations and to maintain records of all equipment on site. All mobile equipment must be equipped with visual and audible warning equipment and inspected per manufacturers' requirements. All mobile equipment shall be properly braked and/or chocked when parked. All mobile equipment shall be fitted with rollover protection per manufacturers' recommendations or where there is a risk of rollover or falling objects.
- C. The Contractor shall ensure that seatbelts are worn at all times while equipment is under operation.
- D. The Contractor is responsible to maintain operator certifications for all operators on the project site.

3.8 CRANES, HOISTS, LIFTING AND SLINGING Not Used

3.9 ELECTRICAL SAFETY Not Used

3.10 PROTECTIVE EQUIPMENT AND WORKER WELFARE

- A. The Contractor shall address the following items related to personal protective equipment in their site specific safety plan:
 1. Full time requirement for hardhats, eye protection, Hi-Vis vest or shirt, gloves
 2. Full face protection while chipping, grinding or working with tar kettle or as needed
 3. Hearing protection, clothing requirements, etc.
 4. Respiratory protection
 5. Other special PPE requirements
 6. Hazardous substances
 - i. Dust
 - ii. Noise
 - iii. Foul weather protection requirements
- B. The Contractor shall provide an eyewash station.
- C. The Contractor is responsible to provide first aid supplies in accordance with all governing regulations. Provide an AED in a location known to trained users.

3.11 FIRE AND EMERGENCY PLANNING

- A. While building is considered under construction install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses per OSHA guidelines.
 1. Comply with NFPA 10 "Standard for Portable Fire Extinguishers" and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations".
 2. Locate fire extinguishers where convenient and effective for their intended purpose. Quantity shall be in accordance with OSHA requirements but not less than one extinguisher per floor or work area.
 3. To limit risks associated with welding, cutting and burning, or any other activity which has the potential to cause a fire, provide an appropriate number of designated fire watch individuals with fully charged fire extinguishers, welding blankets and welding screens as required.
 4. Store combustible materials in containers in fire-safe locations.
 5. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes used for fighting fires.
 6. Provide supervision of welding operations, combustion type temporary heating units and similar sources of fire ignition.
- B. Contractor shall prohibit the use of all tobacco products in all areas of the project site.

3.12 PROTECTION OF THE ENVIRONMENT

- A. Contractor will designate an area for the wash out of concrete trucks, pump trucks and mixers catching and disposing of the extra material in a proper and environmentally sound way. Preventing contamination of the surrounding environment.
- B. The Contractor shall collect waste daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Handle hazardous, dangerous or unsanitary waste materials separately from other waste. Dispose of material in a lawful manner. The Owner requires that all contractors implement and participate in the recycling program on this project for construction debris.

3.13 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES, AND SECURITY

- A. Temporary walls or barriers inside of an existing building shall be built with non-combustible materials. Insulation shall be installed as needed for sound or conditioned areas. Weather proof materials shall be used in areas exposed to moisture or long term exposure.
- B. Maintain dust partitions as required to preclude dust and dirt generated by the work from contaminating occupied or completed spaces. Take other precautions to preclude dust from being drawn into air intake louvers and ductwork.
- C. Provide storage and/or construction parking areas as designated by Contractor on new projects and by the Owner's Representative on renovation/expansion projects. Under no circumstances will construction employee vehicles be allowed to park next to the buildings. All streets used as access will be kept clean of all mud, construction debris, etc. by the Contractor on a daily basis.
- D. At Substantial Completion clean and maintain permanent equipment that has been used during the construction period including but not limited to replacement of air filters, significantly worn parts and parts that have been subject to unusual operating conditions and lamps that are burned out or noticeably dimmed by substantial hours of use. (See Specification Section 01 74 13)

3.14 TEMPORARY UTILITIES

Not Used

Warranty requirements are as indicated in Section 017837 Schedule of Warranties. The warranties on all equipment used for temporary heating will be extended from the time of start-up to one (1) year past the date of substantial completion of the Project or longer as specified. The Contractor and manufacturers may, in lieu of providing a manufacturer's extended warranty, provide a service/replacement contract to extend the normal one year warranty period to one (1) year past the date of substantial completion of the Project or longer as specified.

END OF SECTION

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section specifies administrative and procedural requirements governing the Contractor's selection of products, materials and equipment for use in the Project.
- B. The Contractor's construction schedule and the Schedule of Submittals are included in Section 01 33 00 - Submittal Procedures.
- C. Administrative procedures for handling requests for substitution made after award of the Contract are included in Section 01 25 00 - Substitution Procedures

1.2 DEFINITIONS

- A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties", "systems", "structure", "finishes" "accessories" and similar terms. Such terms are self-explanatory and have well recognized meanings in the construction industry.
 - 1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product": includes the terms "material", "equipment", "system" and terms of similar intent.
 - 2. "Named Products" are items identified by manufacturer's product name, including the make or model designation, as indicated in the manufacturer's published product literature, current as of the date of the Contract Documents.
 - 3. "Materials" are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed or installed to form a part of the Work.
 - 4. "Equipment" is a product with operational parts; whether motorized or manually operated that requires service connections such as wiring or piping.

1.3 SUBMITTALS

- A. Product List Schedule: Prepare a schedule showing products specified in a tabular form acceptable to the Architect. Include generic names of products required. Include the manufacturer's name and proprietary product names for each item listed.
 - 1. Coordinate: Coordinate the product list schedule with the Contractor's Construction Schedule and the Schedule of Submittals.
 - 2. Form: Prepare the product listing schedule with information on each item tabulated under the following column headings:
 - a. Related Specification Section number.
 - b. Generic name used in Contract Documents.
 - c. Proprietary name, model number and similar designations.
 - d. Manufacturer's name and address.
 - e. Supplier's name and address.
 - f. Installer's name and address.
 - g. Projected delivery date, or time span of delivery period.
 - h. Lead time from order to the first possible delivery date (in work days)
 - 3. Submittal: With thirty (30) days after date of the Notice to Proceed or a Letter of Intent, which ever comes first, submit three (3) copies of an initial product list schedule. Provide a written explanation for omissions of data and for known variations from Contract requirements. At the Contractor's option, the initial submittal may be limited to product selections and designations that must be established early in the Contract period.
 - 4. Completed Schedule: Within sixty (60) days after date of the Notice to Proceed or a Letter of Intent, which ever comes first, submit three (3) copies of the completed product list schedule. Provide a written explanation for omissions of data and for known variations from Contract requirements.

5. After all requests of substitutions have been considered, and not later than thirty (30) days from the Contract Date, the Contractor shall furnish to the Architect for review a complete list of all Subcontractors and of all material and equipment to be used in the Project showing the manufacturer, supplier, trade name and model number of each. Where the Specifications allow a choice, the list shall indicate the Contractor's choice. The list shall follow the sequence of the sections of the Specifications.
6. No later than fifteen (15) days after the Notice to Proceed the Contractor shall provide to the Architect and Owner a list of all manufacturers and suppliers whose products are proposed for inclusion in the Work and, where applicable, the names of the installing subcontractors. The Architect shall promptly reply in writing to the Contractor stating whether he or the Owner has any reasonable objection to the proposed manufacturers, suppliers, or installers or shall request additional information if adequate data is not submitted with the Contractor's proposal. If the Contractor receives no written objection or request for additional information from the Architect within ten (10) days the list shall be taken as approved. The absence of any written objection to any manufacturer, supplier, or installer by the Owner and Architect shall not constitute a waiver of any Contract requirement.

1.4 QUALITY ASSURANCE

- A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.
- B. Compatibility of Options: When the Contractor is given the option of selecting between two (2) or more products for use on the Project; the product selected shall be compatible with products previously selected even if the previously selected products were also options.
 1. The Contractor and Telecommunications Contractor are responsible for providing products and construction methods that are compatible with products and construction methods of the other Contractor.
 2. If a dispute arises between Contractors over concurrently selectable, but incompatible products, the Architect will determine which products shall be retained and which are incompatible and must be replaced.
- C. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view in occupied spaces or on the exterior.
 1. Labels: Locate required product labels and stamps on a concealed surface or, on an easily accessible surface that is inconspicuous in occupied spaces where required for observation after installation.
 2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:
 - a. Name of product and manufacturer.
 - b. Model and serial number.
 - c. Capacity.
 - d. Speed.
 - e. Ratings.
 - f. Service disconnect breaker or valve.
- D. Owner's Right of Final Approval: The Owner reserves the right of Final Approval of all labor, material and equipment.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver, store and handle products in accordance with the manufacturer's recommendations using means and methods that will prevent damage, deterioration and loss, including theft.

1. Transport and handle products in accordance with manufacturer's instructions.
2. Promptly inspect shipments to ensure that products comply with requirements, that quantities are correct, and products are undamaged.
3. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.
4. Store and protect products in accordance with manufacturers' instructions, with seals and labels intact and legible.
5. Store sensitive products in weather tight, climate controlled enclosures.
6. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.
7. For exterior storage of fabricated products, place on sloped supports, above ground.
8. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
9. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation or potential degradation of product.
10. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
11. Maintain storage in a neat and clean condition at all times.
 - a. The Owner's Representative will not receive Contractor Materials, nor sign shipping bills. On-site storage shall be in areas designated by the Contractor, with the approval of the Owner.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with the Contract Documents that are undamaged and, unless otherwise indicated, unused at the time of installation.
 1. Provide products complete with all accessories, trims, finishes, safety guards and other devices and details needed for a complete installation and for the intended use and effect.
 2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other Projects.
 3. Reference in the project manual or on the drawings to an article device, product, material, fixture, form or type of construction by name, make or catalog number (product or method) whether or not followed by "or equal" establishes a standard of quality, and does not eliminate from competition other products or methods of equal or better quality by other manufacturers, where fully suitable, as approved by the Architect. Applications for approval of substitutions for the specified products or methods will be considered only upon request of the Contractor, not of Subcontractors individual trades or suppliers, and only for a specific purpose; no blanket approvals will be granted. No approval of a substitution will be valid unless it is in written form and submitted in accordance with 01 25 00 Substitution Procedures.
- B. Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include the following:
 1. Semi-proprietary Specification Requirements: Where two (2) or more products or manufacturers are named, provide one of the products indicated. No substitutions will be permitted. Where products or manufacturers are specified by name, accompanied by the term "or equal", or "or approved equal", comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.

2. Non-Proprietary Specifications: When the Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning “substitutions” to obtain approval for use of an unnamed product.
3. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with the Contract requirements.
4. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by the manufacturer for the application indicated. Overall performance of a product is implied where the product is specified for a specific application. Manufacturer’s recommendations may be contained in published product literature or by the manufacturer’s certification of performance.
5. Compliance with Standards, Codes and Regulations: Where the Specifications only requires compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes or regulations specified.
6. Visual Matching: Where Specifications require matching an established Sample, the Architect’s decision will be final on whether a proposed product matches satisfactorily. Where no product available within the specified category matches satisfactorily and also complies with other specified requirements, comply with the provisions of the Contract Documents concerning “substitutions” for selection of a matching product in another product category or seek the Architects recommendation in writing.
7. Visual Selection: Where specified product requirements include the phrase “...as selected from manufacturer’s standard colors, patterns, textures...” or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect will select the color, pattern and texture from the product line selected.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

Comply with manufacturer’s instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other work. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION

SECTION 01 73 29 CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section specifies administrative and supervisory requirements for cutting and patching.
- B. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
- C. The Contractor shall do all cutting, fitting or patching of his work that may be required to insure various parts fit together properly and are prepared to receive or be received by Work of others as indicated or reasonably implied by the drawings and specifications for the completed structure. The Contractor will make corrections as the Architect may direct.
- D. Any cost brought about by defective or ill-timed work shall be borne by the Contractor.
- E. The Contractor shall not endanger any existing or newly completed work by cutting, digging or other activity and shall not cut or alter the Work of any other Prime Contractor except with the consent of the Architect.
- F. Cutting and patching should be performed by workers skilled in the trade and sequenced to avoid delays.
- G. The Contractor shall not perform cutting or patching operations that impact the structural, functional, or aesthetic qualities of the Work.

1.2 SUBMITTALS

- A. Cutting and Patching Plan: Where approval of procedures for cutting and patching is required before proceeding, the Contractor shall submit a plan describing procedures well in advance of the time the cutting and patching will be performed and request approval to proceed. Include the following information, as applicable, in the plan:
 - 1. Describe the extent of cutting and patching required and how it is to be performed; indicate why it cannot be avoided.
 - 2. Describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
 - 3. List products to be used and firms or entities that will perform Work.
 - 4. Indicate dates when cutting and patching is to be performed.
 - 5. List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
 - 6. Where cutting and patching involves addition of reinforcement to structural elements, submit details and engineering calculations to show how reinforcement is integrated with the original structure.
 - 7. Approval by the Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of a part of the Work found to be unsatisfactory.

1.3 QUALITY ASSURANCE

- A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.
 - 1. Obtain written approval of the Architect and Structural Engineer for the cutting and patching proposed before cutting and patching the following structural elements:
 - a. Foundation construction.
 - b. Bearing and retaining walls.
 - c. Structural concrete.

- d. Structural steel.
 - e. Lintels.
 - f. Timber and primary wood framing.
 - g. Structural decking.
 - h. Stair systems.
 - i. Miscellaneous structural metals.
 - j. Exterior curtain wall construction.
 - k. Equipment supports.
 - l. Piping, ductwork, vessels and equipment.
- B. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.
- C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the Architect's professional judgment, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Retain the original installer or fabricator if possible to cut and patch any Work that remains exposed. Remove and replace any Work that is cut and patched in a visually unsatisfactory manner.
- D. Coordination: The Contractor is responsible for coordinating the Work to minimize the amount of cutting and patching.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Use materials that are identical to existing materials and that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Before cutting existing surfaces examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Make corrections before proceeding, if unsafe or unsatisfactory conditions are encountered.

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect existing construction or finishes during cutting and patching operations to prevent damage. Provide protection from adverse weather conditions for any portions of the Project that might be exposed during cutting and patching operations.

3.3 PERFORMANCE

- A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
- B. Cutting: Cut existing construction using methods least likely to damage elements to be retained or adjoining construction to provide for installation of other components or performance of other construction activities and provide the subsequent fitting and patching required to restore surfaces to their original condition. Where possible, review proposed procedures with the original installer; comply with the original installer's recommendations.
 - 1. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required

- with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed areas.
 3. Cut through concrete and masonry using appropriate cutting equipment such as a carborundum saw or diamond core drill.
 4. Comply with requirements of applicable Specification Sections where cutting and patching requires excavating and backfilling.
 5. By-pass utility services such as pipe or conduit, before cutting, where services are shown or required to be removed, relocated or abandoned. Cut-off pipe or conduit in walls or partitions to be removed. Conspicuously label any abandoned sections of pipe or conduit and, If required, support remaining sections. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.
- C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
1. Inspect and test patched areas to demonstrate integrity of the installation.
 2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 3. Where removal of walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space to provide an even plane surface of uniform appearance and color. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken area containing the patch, after the patched area has received primer and second coat.
 4. Patch, repair or re-hang existing ceilings as necessary to provide an even plane surface of uniform appearance.
- D. Cutting and patching shall be the responsibility of the trade whose work requires the cutting and patching unless specifically detailed and assigned in the Contract Documents. All patching shall be performed by qualified mechanics experienced in the specialty involved, to the standards of the project specifications. The Contractor shall coordinate all cutting and patching with the Owner's representative prior to commencement of the work.
- E. Renovation Project Procedures
1. Materials: As specified in technical sections, match existing products and Work.
 2. Employ skilled and experienced installer to perform cutting and patching.
 3. Close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity.
 4. Remove, cut and patch materials in a manner to minimize damage and to provide a means of restoring products and finishes to original condition.
 5. Refinish existing visible surfaces to remain in renovated rooms and spaces, to renewed condition for each material, with a neat transition to adjacent finishes.
 6. Where new work abuts or aligns with existing, provide a smooth and even transition. Patch work to match existing adjacent work in texture and appearance.
 7. When a smooth transition with new Work is not possible, submit recommendation to Architect for review. Terminate existing surface along a straight line at a natural line of division when possible.
 8. Where a change of plane of 1/4 inch or more occurs, submit recommendation for providing a smooth transition; to Architect for review.
 9. Patch or replace portions of existing surfaces, which are damaged, lifted, discolored or showing other imperfections.
 10. Finish surfaces as specified in individual Product sessions.

11. Cutting and patching shall be done in a manner such that the patched surfaces are compatible with the surfaces in which the repairs were made, both structurally and aesthetically as deemed appropriate by the Project Architect.
- F. New Project procedures
 1. Coordinate the Work to minimize cutting and patching.
 2. If cutting and patching becomes necessary perform work as early in the project as feasible and follow the steps for renovation projects contained herein.
 - G. Restoration: Restore existing work, including concealed work not indicated or specified to be modified, and which is damaged or otherwise affected by The Contractor's operations, to a condition equal to that, which existed before the work was commenced. Use workers skilled in reconstruction and alteration work where new construction adjoins, connects to, or abuts existing work. Join new Work to existing Work in such a manner as to make the joining as inconspicuous as possible. Obvious patching of damaged Work will not be acceptable. At the completion, ensure that the buildings and grounds are in first-class condition within the intent of these specifications, with new parts well joined to the old as required, all connections completed, and facilities in full working condition.
- 3.4 CONNECTION TO EXISTING WORK
- A. When the installation of the Work affects, and/or modifies any existing roof, the Contractor will provide roof repair of the existing roof with materials compatible with the existing roofing materials. The Contractor will test the material of the roof and certify that the materials are compatible. Where penetrations are made through existing roofing, the Contractor will strip existing material back a minimum of 2 feet and replace with all new material(s) required to form a waterproof system. If the existing roofing system is under warranty, the repairs shall be made in the manner recommended by the manufacturer, so as to preserve the existing warranty coverage.
- 3.5 CLEANING
- A. Thoroughly clean areas and spaces where cutting and patching is performed where required for construction or used as access. Leave work in an acceptable completed condition.

END OF SECTION

**SECTION 01 77 00
CLOSEOUT PROCEDURES**

PART 1 - GENERAL

1.1 SUMMARY

- A. Closeout requirements, other than the delivery of operation and maintenance manuals which are due at 50% completion, are hereby defined to include general requirements near the end of Contract time, in preparation for final acceptance, final payment, normal termination of Contract, occupancy of Owner, and similar actions evidencing completion of the Work. Specific requirements for individual units of Work are specified in other sections. Start of closeout other than the delivery of operation and maintenance manuals is directly related to "Substantial Completion," and therefore, may be either a single time period for entire Work or a series of time periods for individual parts of the Work which have been certified as substantially complete at different dates. That time variation (if any) shall be applicable to other provisions of this section, regardless of whether resulting from "phased completion" originally specified by the Contract Documents or subsequently agreed upon by Owner and Contractor.
- B. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
 - 1. Final Cleaning.
 - 2. Project record document submittal.
 - 3. Operating and maintenance manual submittal.
 - 4. Submittal of warranties.
 - 5. Punchlist Completion
 - 6. Owner Training
- C. Closeout requirements are as indicated in Section 01 78 12 - Schedule of Certifications and Letters, Section 01 78 24 - Required O & M Documentation, and Section 01 78 37 - Schedule of Warranties.

1.3 SUBSTANTIAL COMPLETION

- A. Procedures: Before requesting Architect's inspection for certification of Substantial Completion, complete the items listed below. Any exceptions or omissions from the items listed below should be explained, in writing, as part of the request.
 - 1. The Application for Payment that coincides with, or initially follows, the date Substantial Completion is claimed, indicate 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
 - a. If 100 percent completion cannot be shown, indicate a list of incomplete items, the value of incomplete construction and reasons the Work is not complete.
 - 2. Advise Owner of pending insurance changeover requirements.
 - 3. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.
 - 4. Deliver tools, spare parts and similar items.
 - 5. Extra stock
 - a. Paint: One Gallon of each type and color of paint and stain installed.
 - b. Carpet: The greater of 5% or 10 square yards of each type, color and pattern installed
 - c. Acoustical Ceiling Panels: The greater of 1% or two full boxes of each type, color, pattern or size installed.
 - d. Hard Tile: 3% of each type, color, pattern and size installed.
 - e. Door hardware: Furnish one additional complete set of each door hardware type specified.
 - 6. Make final changeover in security upon acceptance by CMSPD.

7. Complete start-up testing of systems.
8. Discontinue, change over or remove temporary facilities from the site. Also remove construction tools, mock-ups and similar elements.
9. Complete final clean up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.
10. Correction of previously identified deficiencies.
11. Prior to date of Substantial Completion Contractor to provide a list of pending claims or disputes with associated itemized cost breakdown.

B. Inspection Procedures: After completion of the above-specified items, submit written notice to the Architect-Engineer that the Work, or designated portion thereof, is substantially complete and request an inspection of same. Include a comprehensive list of items to be completed or corrected. Proceed promptly to complete and correct items on the list. Give a minimum of ten (10) days notice to allow the Architect-Engineer sufficient time to schedule and coordinate the inspection. On receipt of a request for inspection, the Architect will either proceed with inspection or advise the Contractor of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection or advise the Contractor of construction that must be completed or corrected before the certificate will be issued. The Contractor shall remedy the noted deficiencies in the work and shall send a second written notice of substantial completion to the Architect-Engineer and request another inspection. The Architect-Engineer will then:

1. The Architect will repeat inspection when requested and ensure that the Work has been substantially completed. When the Architect-Engineer concurs that the Work is substantially complete, the Architect-Engineer will:
 - a. Prepare a Certificate of Substantial Completion on AIA Document G704, accompanied by Contractor's list of items to be completed or corrected, as verified and amended by the Architect-Engineer as a result of the substantial completion inspection.
 - b. Submit the Certificate of Substantial Completion to the Owner and the Contractor for their written acceptance of the responsibilities assigned to them in the certificate. If after repeated requests (two or more) by the Contractor for the Architect to inspect the Work, it is discovered not to be "substantially complete" the Contractor shall compensate the Architect for additional inspections.
2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.4 FINAL ACCEPTANCE

- A. Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the items listed below. Any exceptions or omissions from the items listed below should be explained, in writing, as part of the request.
1. Submit the final payment request with consent of surety to final payment, releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
 3. Submit a certified copy of the Architect's substantial completion inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance and the list has been endorsed and dated by the Architect.
 4. Submit final meter readings for utilities and similar data with account # as of the date of Substantial Completion/Finalization of Commissioning or when the Owner took possession of or responsibility for corresponding elements of the Work.
 5. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 6. Submit record drawings
 7. Submit warranties, bonds, certifications and letters as called for in Sections 01 78 12 Schedule of Certifications and Letters, Section 01 78 24 - Required O & M Documentation and Section 01 78 37 - Schedule of Warranties.
 8. Re-clean areas soiled during correction of deficiencies.

9. Certify that equipment and systems that have been tested, balanced, and are operational.
 10. Submit Consent of Surety.
 11. Complete systems training and instruction of the Owner's operating and maintenance personnel.
 12. Deliver warranties per Section 01 78 36 - Warranties, and Section 01 78 37 - Schedule of Warranties.
 13. Provide the Owner with documentation by an authorized vendor for the disposal of any mercury containing materials.
- B. Re-inspection Procedure: Upon completion of the above-specified prerequisites, submit written notice to the Architect-Engineer that the work is complete and ready for final inspection on or after a specified date. Give a minimum of ten (10) days notice to allow the Architect-Engineer sufficient time to schedule and coordinate the inspection. The Architect will re-inspect the Work upon receipt of signed off punchlist and notice that the Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the Architect.
1. Upon completion of re-inspection, the Architect-Engineer will either prepare a certificate of final acceptance or advise the Contractor of work that is not acceptable or obligations not fulfilled as required for final acceptance. The Contractor shall immediately take such measures as are necessary to complete such work or remedy such deficiencies.
 2. If necessary, re-inspection will be repeated once. If after this re-inspection the work is discovered to be "incomplete" the Contractor shall compensate the Architect for additional inspections.

1.5 RECORD DOCUMENT SUBMITTALS

- A. Record Drawings: Maintain a clean, undamaged set of blue- or black-line white prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
1. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
 2. Mark new information that is important to the Owner but was not shown on Contract Drawings or Shop Drawings.
 3. Note related Change Order numbers where applicable.
 4. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets and print suitable titles, dates and other identification on the cover of each set.
 5. One set of as-built HVAC Control shop drawings shall be bound in laminated covers and mounted in the main mechanical room at the Project site. One set of MEP as-builts drawings shall be installed in a 40" long 4" diameter PVC tube with screwed covers. Tube shall be mounted on wall in mechanical room.
 6. Provide As-Built Survey by a registered North Carolina surveyor per requirements indicated in Section 01 71 23 - Field Engineering.
 7. Provide BIM Standard Section 7.E Requirements.
- B. Record Specifications: Maintain one (1) completed copy of the Project Manual, including addenda and one (1) copy of other written construction documents such as Change Orders and modifications issued in printed form during construction. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information or elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and product data.
1. Upon Completion of the Work, submit record Specifications to the Architect for the Owner's records.

- C. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Architect for the Owner's records.
- D. Maintenance Manuals: O & M manuals will be organized as indicated in Part 3 paragraph 3.7 of this Section. Submit one electronic searchable file in PDF format. Include the following types of information:
 - 1. Emergency instructions.
 - 2. Spare parts lists.
 - 3. Wiring diagrams.
 - 4. Recommended "turn around" cycles.
 - 5. Inspection procedures.
 - 6. Shop Drawings and Product Data.
 - 7. Fixture lamping schedule.
- E. Warranty/Letters/Certification Manuals

PART 2 – PRODUCTS

- 2.1 Prepare (1) one electronic copy of all information required by this section. Submit (1) one copy of all information to the architect for review, approval and forwarding to the Owner.

PART 3 - EXECUTION

3.1 CLOSEOUT PROCEDURES

- A. Operating and Maintenance Instructions: Arrange for each installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. Include a detailed review of the following items:
 - 1. Maintenance manuals.
 - 2. Record documents.
 - 3. Spare parts and materials.
 - 4. Tools.
 - 5. Lubricants.
 - 6. Fuels.
 - 7. Identification systems.
 - 8. Control sequences.
 - 9. Hazards.
 - 10. Cleaning.
 - 11. Warranties and bonds.
 - 12. Maintenance agreements and similar continuing commitments.
- B. As part of instruction for operating equipment, demonstrate the following procedures:
 - 1. Start-up.
 - 2. Shutdown.
 - 3. Emergency operations.
 - 4. Noise and vibration adjustments.
 - 5. Safety procedures.
 - 6. Economy and efficiency adjustments.
 - 7. Effective energy utilization.

3.2 STARTING SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.

- B. Notify Architect-Engineer seven (7) days prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or other conditions which may cause damage.
- D. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of responsible Contractor's personnel in accordance with manufacturers' instructions.
- G. When specified in individual Specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- H. Submit a written report in accordance with Section 01 45 00 Quality Control that equipment or system has been properly installed and is functioning correctly.

3.3 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of products of Owner's personnel prior to date of final completion or as directed by Owner.
- B. Arrange for each installer of Work requiring continuing maintenance (by Owner) or operation, to meet with Owner's personnel, at project site, to provide basic instructions needed for proper operation and maintenance of entire Work and as specifically required in the mechanical, electrical, and equipment sections.
- C. Utilize operation and maintenance manuals specified in Section 01 78 23 - Operation and Maintenance Data as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- D. Prepare and insert additional data in operations and maintenance manual's when need for additional data becomes apparent during instruction.
- E. Include instructions by manufacturer's representative where installers are not expert in the required procedures.
- F. Review maintenance manuals, record documentation, tools, spare parts and materials, lubricants, fuels, identification system, control sequences, hazards, cleaning and similar procedures and facilities.
- G. For operational equipment, demonstrate start-up, shutdown, emergency operations, noise and vibration adjustments, safety, economy/efficiency adjustments, and similar operations.
- H. For equipment or systems requiring seasonal operation perform demonstration for other season within six-(6) month.
- I. Review maintenance and operations in relation with applicable warranties, agreements to maintain, bonds, and similar continuing commitments.
- J. Trainer shall record the attendance of the Owner's staff at each demonstration and include a copy of the attendance record in the O&M manual

3.4 FINAL ADJUSTMENT OF ACCOUNTS

Submit a final statement of accounting to Architect-Engineer. The statement shall reflect all adjustments to the Contract sum including the following:

- A. The original contract sum.
- B. Additions and deductions resulting from:
 - 1. Previous change orders.
 - 2. Allowances.
 - 3. Unit prices.
 - 4. Deductions of uncorrected work.
 - 5. Deductions of liquidated damages.
 - 6. Deductions for additional submittal reviews in accordance with Section 01 33 00 - Submittal Procedures, Reimbursement from Contractor.
 - 7. Deductions for reinspections for substantial and final completions in accordance with this Section, Substantial Completion and Final Acceptance.
 - 8. Other adjustments.
- C. Total Contract sum, as adjusted.
- D. Previous payments.
- E. Sum remaining due.

3.5 FINAL CHANGE ORDER

Architect-Engineer will prepare a final change order, reflecting approved adjustments to the Contract sum which were not previously made by change orders.

3.6 FINAL APPLICATION FOR PAYMENT

Contractor shall submit the final application for payment in accordance with procedures and requirements stated in the General Conditions.

3.7 INSTRUCTIONS FOR CLOSEOUT

- A. The Prime contractor(s) will provide the following separate electronic files in a searchable PDF format. These files shall be bookmarked by specification section in accordance with sections 017824, 017812, and 017837.
 - 1. Warranty / Letters / Certifications
 - 2. Operation and Maintenance Manuals
- B. The information will be submitted to the architect for review and forwarded to CMS once acceptable.
- C. Operation and Maintenance manuals must have operation and maintenance instructions. Submittals are not acceptable replacements for operation and maintenance instructions. Operation and Maintenance manuals must also contain copies of approved Submittal Product Data and Shop Drawings. Shop Drawings should be included with the appropriate spec section number and submitted electronically with the O & M manuals.
- D. Provide following information on the cover page of the PDF:
 - 1. Name of School or Project
 - 2. Name of the Manual, i.e., Warranty & Closeout Manual or O&M Manual.
 - 3. Contractor's Name
 - 4. Contract Type i.e. Electrical Prime Contract
 - 5. Name of Architect/Engineer
 - 6. Date of substantial completion
- E. Please make sure the following conditions are adhered to:

1. All warranties must be made out to the owner, (i.e. Charlotte-Mecklenburg Board of Education) and contain the project name and physical address.
2. Contractor and installer warranties must be signed specifying project, owner and warranty period. Warranties shall commence from the date of substantial completion and not require additional registration. The document can state “from substantial completion” or give the actual architect certified date. The following are considered acceptable for manufacturers’ warranties:
 - a. An original manufacturer warranty with name of project, owner and date of substantial completion.
 - b. A manufacturer warranty accompanied by a letter from the manufacturer (or their agent with power of attorney) bearing original or electronic signatures certifying the authenticity of the manufacturer’s standard warranty naming project, school, and date of substantial completion.
3. Warranties shall include labor where specified.
4. The Contractor’s corporate seal (if a corporation) is required on documents provided in accordance with Section 01 78 36 - Warranties.
5. The commencement date for all warranties is the date of substantial completion. This date shall be listed on the warranty or shall say “from the date of declared substantial completion”. A manufacturer’s warranty on equipment shall always cover the gap from early start up to the date of substantial completion. This is a part of the contract and a cost of the work.
6. Warranties cannot contain conditional clauses (such as “this warranty is not or shall not become effective until the contractor has been paid in full”).
7. A list of required training sessions including a separate training letter and associated sign in sheet for each owner training session shall be included with the warranty closeout information.
8. Stock/Extra Materials must be transported to 3301 Stafford Dr or as directed by the Owner. A copy of the signed transmittal showing delivery of stock materials took place is to be included in the closeout documents.
9. An As-Built Survey as described in Section 01 71 23 - Field Engineering is required to be submitted and approved by the civil engineer.
10. All keys including but not limited to those listed below shall be turned over to the owner in one submission package accompanied by a signed itemized transmittal identifying the contents of the submission. A copy of the signed transmittal is to be included in the closeout documents along with the hardware suppliers “key letter” sent to the owner under separate cover when the door hardware keys were sent.
 - a. Door hardware keys in a key box (sent directly to CMS by the hardware supplier with separate transmittals)
 - b. Kitchen equipment keys
 - c. Walk-in cooler & freezer keys
 - d. Roll up door & grill keys
 - e. Elevator keys
 - f. Electrical panel keys
 - g. HVAC controls panel keys
 - h. Fire alarm panel keys
 - i. Security alarm panel keys
 - j. Sound system cabinet keys
 - k. Hose bib / wall hydrant keys
 - l. Classroom teacher’s cabinet keys
 - m. Generator Keys
 - n. Marquee Sign
 - o. Toilet Accessories

Sample Cover Page



Project

- ☐ Warranty Manual
- ☐ Operations & Maintenance Manual

Document

Contractor

- ☐ Construction Manager at Risk
- ☐ Single Prime Contractor

Type of Contract

Substantial Completion Date: _____

END OF SECTION

SECTION 01 78 36 WARRANTIES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section specifies administrative and procedural requirements for warranties required by the Contract Documents including manufacturer's standard warranties on products and special warranties.
1. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.
 2. General close-out requirements are included in Section 01 77 00 - Closeout Procedures.
 3. Specific requirements for warranties for the Work and products and installations that are specified to be warranted are included in the individual Specification Sections, and/or as indicated in Section 01 78 37 - Schedule of Warranties whichever is more stringent.
 4. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.
- B. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products nor does it relieve suppliers, manufacturers and subcontractors required to countersign special warranties with the Contractor.

All warranties are in addition to Seller's implied warranties of merchantability and fitness for a particular purpose which shall not be disclaimed by Seller. In addition to its rights to reject nonconforming goods, CMBE shall be entitled to all rights and remedies provided by the uniform Commercial Code, Chapter 25 of the North Carolina General Statutes, for breach of express warranties and implied warranties of merchantability and fitness for a particular purpose, including but not limited to consequential and incidental damages.

- C. Separate Prime Contracts: Each prime Contractor is responsible for warranties related to its own Contract.

1.2 WARRANTY REQUIREMENTS

- A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
- B. Replacement of Warranty: When a component of the Work fails three (3) times within the warranty period and the effect of the failure disables or disrupts the performance of the life safety, HVAC, sanitary or power distribution system, the manufacturer of the system(s) shall assume maintenance of the component for the balance of the warranty period plus one (1) year. If the component fails again within the now extended warranty period, the manufacturer shall replace the component with a new unit compatible with the system and reinstate a warranty equal to that of the original component.
- C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Document. The Contractor is responsible for the cost of replacing or re-building defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life. Repair damage to other building materials and finishes damaged by failure of product, material, equipment or system under warranty. Cost of repairs to be borne by the Contractor who's product caused the damage.
- D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights and remedies otherwise available under the law

nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights or remedies.

1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
- E. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification or similar commitment is required on such Work or part of the Work until evidence is presented that entities required to countersign such commitments are willing to do so.
- F. The warranty on all equipment will be extended from start-up to one (1) year past the date of substantial completion of the Project. The Contractor and manufacturers may, in lieu of providing a manufacturer's extended warranty, provide a service/replacement contract to extend the normal one year warranty period to a minimum of one year beyond the date of acceptance of the building by the Charlotte-Mecklenburg Schools. Extended warranties such as five year compressor warranties shall be extended beyond the period established by the actual start-up date of the equipment (as defined herein) to commence on the date of substantial completion as established by the architect.

1.3 SUBMITTALS

- A. Submit written warranties to the Architect prior to the date certified for Substantial Completion
 1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect within fifteen (15) days of completion of that designated portion of the Work only when occupancy is substantially ahead of original planned occupancy and not identified in the schedule contained in the Contract Documents
- B. When a special warranty is required to be executed by the Contractor or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification ready for execution by the required parties. Submit a draft to the Owner through the Architect for approval prior to final execution.
 1. Refer to individual Specification Sections for specific content requirements and particular requirements for submittal of special warranties.
- C. Form of Submittal: Organize the warranty documents as specified in 017700.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF WARRANTIES

- A. Schedule: Provide copies of warranties on products and installations as indicated in Section 01 78 37 - Schedule of Warranties. Also check other Specification Sections for warranty requirements.

END OF SECTION

SECTION 01 78 37
SCHEDULE OF WARRANTY DOCUMENTATION

Section	Item	Warranty		
		General	Installer	Manufacturer
006536	Warranty Form	1 & 2 year		

SECTION 055000 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Miscellaneous framing and supports.
 - 2. Miscellaneous steel trim.

1.2 ACTION SUBMITTALS

- A. Shop Drawings: Show fabrication and installation details.

PART 2 - PRODUCTS

2.1 METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
- C. Steel Tubing: ASTM A500/A500M, cold-formed steel tubing.
- D. Steel Pipe: ASTM A53/A53M, Standard Weight (Schedule 40) unless otherwise indicated.

2.2 MISCELLANEOUS MATERIALS

- A. Shop Primers: Provide primers that comply with Section 099600 "High-Performance Coatings."
- B. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.
- C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

2.3 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- D. Form exposed work with accurate angles and surfaces and straight edges.
- E. Weld corners and seams continuously to comply with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.
- G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

2.4 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.
- B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.

2.5 MISCELLANEOUS STEEL TRIM

- A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.
- B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.
 - 1. Provide with integrally welded steel strap anchors for embedding in concrete or masonry construction.
- C. Galvanize exterior miscellaneous steel trim.
- D. Prime exterior miscellaneous steel trim with primer specified in Section 099600 "High-Performance Coatings."

2.6 GENERAL FINISH REQUIREMENTS

- A. Finish metal fabrications after assembly.

2.7 STEEL AND IRON FINISHES

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153/A153M for steel and iron hardware and with ASTM A123/A123M for other steel and iron products.
 - 1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
- B. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.
 - 1. Shop prime with primers specified in Section 099600 "High-Performance Coatings".
- C. Preparation for Shop Priming: Prepare surfaces to comply with requirements indicated below:
 - 1. Exterior Items: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
- D. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- C. Field Welding: Comply with the following requirements:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

3.2 INSTALLATION OF MISCELLANEOUS FRAMING AND SUPPORTS

- A. Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

3.3 INSTALLATION OF MISCELLANEOUS STEEL TRIM

- A. Anchor to concrete construction to comply with manufacturer's written instructions.

3.4 REPAIRS

- A. Touchup Painting:
 - 1. Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION 055000

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes:

- 1. Mechanical door hardware for the following:
 - a. Swinging doors.
 - b. Gates.
- 2. Cylinders for door hardware specified in other Sections.
- 3. Field verification, preparation and modification of gates to receive door hardware.
- 4. Keyways.

- B. Preinstallation Conference: Conduct conference at Project site. Attendees shall include doors hardware supplier, door hardware installer, electrical subcontractor, Architect, Owner, and Owner's security consultant if applicable.

- 1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
- 2. Inspect and discuss preparatory work performed by other trades.
- 3. Inspect and discuss electrical roughing-in for electrified door hardware.
- 4. Review sequence of operation for each type of electrified door hardware.
- 5. Review required testing, inspecting, and certifying procedures.
- 6. Review required post-construction adjustment of door hardware.
- 7. Submit minutes of conference.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.

- B. Shop Drawings: Details of electrified door hardware, indicating the following:

- 1. Wiring Diagrams: For power, signal, and control wiring and including the following:
 - a. Details of interface of electrified door hardware and building safety and security systems.
 - b. Provide point to point and elevation view diagrams of door hardware and electronic hardware. Coordinate with Door Access Control Installer.
 - c. Risers.
 - d. Operational description of electrified door hardware.

2. Operation Narrative: Describe the operation of doors controlled by electrified door hardware.

C. Other Action Submittals:

1. Door Hardware Schedule: Prepared by or under the supervision of Installer, detailing fabrication and assembly of door hardware, as well as installation procedures and diagrams. Coordinate final door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - a. Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
 - b. Submit under direct supervision of a Door Hardware Institute (DHI) certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule published by DHI.
 - c. Indicate complete designations of each item required for each opening, include:
 - 1) Door Index: door number, heading number, and Architect's hardware set number.
 - 2) Quantity, type, style, function, size, and finish of each hardware item.
 - 3) Name and manufacturer of each item.
 - 4) Fastenings and other pertinent information.
 - 5) Location of each hardware set cross-referenced to indications on Drawings.
 - 6) Explanation of all abbreviations, symbols, and codes contained in schedule.
 - 7) Mounting locations for hardware.
 - 8) Door and frame sizes and materials.
 - 9) Degree of door swing and handing.
 - 10) Operational Description of openings with electrified hardware covering egress, ingress (access), and fire/smoke alarm connections.
2. Key Schedule:
 - a. After Keying Conference, provide keying schedule that includes levels of keying, explanations of key system's function, key symbols used, and door numbers controlled.
 - b. Use ANSI/BHMA A156.28 "Recommended Practices for Keying Systems" as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
 - c. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
 - d. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
 - e. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion. Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.
 - f. Prepare key schedule by or under supervision of supplier, detailing Owner's final keying instructions for locks and padlocks.
3. Templates: After final approval of hardware schedule, provide templates for doors, frames and other work specified to be factory or shop prepared for door hardware installation.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: Provide qualification Data for Supplier, Installer and Architectural Hardware Consultant.
 - 1. Provide certificate of manufacturer training acceptable to Owner for each installer performing work of this Section.
- B. Minutes of Preinstallation Meetings.
- C. Field Quality Control reports.
- D. Warranty: Special warranty specified in this Section.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of door hardware to include in maintenance manuals. Include final hardware and keying schedule.
- B. Bitting Schedule: For keying schedule for Project, reflecting decisions made in keying conference and modifications required prior to Substantial Completion. Submit directly to CMS Locksmith no less than 45 days prior to Substantial Completion. Provide copy of transmittal only to Owner's Representative and to Architect.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Supplier of products and an employer of installers and supervisors who are trained and certified by product manufacturers for installation of specified products on two-year periodic repeating basis, carrying manufacturer training identification.
- B. Supplier Qualifications and Responsibilities: A recognized architectural hardware supplier that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and that provides a certified Architectural Hardware Consultant (AHC) available to the Owner, Architect, and Contractor, at reasonable times during the course of the Work for consultation.
 - 1. Warehousing Facilities: In Project's vicinity.
 - 2. Scheduling Responsibility: Preparation of door hardware and keying schedules.
 - 3. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
 - 4. Coordination Responsibility: Coordinate installation of the electronic security hardware with the Architect and electrical engineers and provide installation and technical data to the Architect and other related subcontractors.
 - 5. Upon completion of electronic security hardware installation, coordinate with access control Installer to inspect and verify that all components are working properly.
- C. Manufacturer's Field Representative: A technical representative of manufacturer not engaged in the sale of products who is experienced in the specification, installation, and maintenance of the specified products, qualified to perform inspection specified in Field Quality Control Article.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.
- B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.
- C. Deliver keys to Owner by registered mail or overnight package service.
 - 1. Locksmith Department, Charlotte-Mecklenburg Schools, 3301 Stafford Drive, Charlotte, North Carolina 28208.

1.8 COORDINATION

- A. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- B. Electrical System Roughing-In: Coordinate with the door access control contractor, storefront contractors, and other security related contractors who have work related to door openings the layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.
- C. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

1.9 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including excessive deflection, cracking, or breakage.
 - b. Faulty operation of doors and door hardware.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
 - 2. Warranty Period:
 - a. Mechanical Warranty:
 - 1) Exit Devices: Three years from date of Substantial Completion.
 - b. Electrical Warranty:
 - 1) Exit Devices: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 DOOR HARDWARE, GENERAL

- A. General: Provide door hardware for each door to comply with requirements in this Section, door hardware sets indicated in door and frame schedule, and door hardware sets indicated in Division 08 Section "Door Hardware Schedule".
 - 1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturers' products.
 - 2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.
- B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Division 08 Section "Door Hardware Schedule" Article. Products are identified by using door hardware designations, as follows:
 - 1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Schedule" Article.
- C. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Manufacturers: Subject to compliance with requirements, provide products comparable to the scheduled products by the manufacturers specified.
- D. Source Limitations: Obtain door hardware items from a single approved manufacturer for each type of door hardware.

2.2 HINGES – SELF-CLOSING GATE HINGE

- A. Manufacturers and Products:
 - 1. Acceptable Manufacturers and Products:
 - a. SureClose ReadyFit 108
- B. Requirements:
 - 1. Self-Closing
 - 2. External Flush Mounting Brackets
 - 3. Capable of 1500 lb. point-load capacity. Self-closing gates up to 260 lbs.
 - 4. Designed for square post, steel, or aluminum gates.
 - 5. Tested to 500,000 cycles.
 - 6. Capable of gate swing of 178 degrees. Holds open at 90 degrees.

2.3 EXIT DEVICES AND AUXILIARY ITEMS

- A. Manufacturers and Products:

1. Base Bid Products: Subject to compliance with requirements, provide one of the following:

- a. Detex Advantax.

B. Requirements:

1. Provide exit devices tested to ANSI/BHMA A156.3 Grade 1 and UL listed for Panic Exit or Fire Exit Hardware.
2. Cylinders: Refer to “KEYING” article, herein.
3. Provide grooved touchpad type exit devices, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.
4. Touchpad must extend a minimum of one half of door width. No plastic inserts are allowed in touchpads.
5. Provide exit devices with deadlatching feature for security and for future addition of alarm kits and/or other electrified requirements.
6. Provide exit devices with weather resistant components that can withstand harsh conditions of various climates and corrosive cleaners used in outdoor pool environments.
7. Provide end caps for exit devices.
8. Provide exit devices with manufacturer’s approved strikes.
9. Provide exit devices cut to door width and height. Install exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect.
10. Mount mechanism case flush on face of doors or provide spacers to fill gaps behind devices. Where glass trim or molding projects off face of door, provide glass bead kits.
11. Provide hex-key dogging as specified at non fire-rated openings.
12. Provide factory drilled weep holes for exit devices used in full exterior application, highly corrosive areas, and where noted in hardware sets.
13. Provide electrified options as scheduled.
14. Rim Exit Devices: provide devices with non-tapered smart latchbolt with 90° latchbolt to strike engagement under stress and Static Load Resistance of 2000 pounds at exterior doors.
15. Top latch mounting: double- or single-tab mount for steel doors, face mount for aluminum doors eliminating requirement of tabs, and double tab mount for wood doors.
16. Provide exit devices with optional trim designs to match other lever and pull designs used on the project.
17. Provide one (1) hex/allen key for each exit device and removable mullion specified.
18. Provide exit devices with thru-bolt fasteners.

2.4 CYLINDERS

A. Requirements:

1. Provide permanent cylinders to match Owner’s existing key system, compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset, manufacturer’s series as indicated. Refer to “KEYING” article, herein.

B. Construction Keying: Comply with the following:

1. Temporary Construction Cylinder Keying.
 - a. Provide construction cores that permit voiding construction keys without cylinder removal at openings indicated by Owner as hazard areas, furnished in accordance with the following requirements.
 - 1) Split Key or Lost Ball Construction Keying System.

- 2) 10 construction control keys, and extractor tools or keys as required to void construction keying.
 - 3) 12 construction change (day) keys.
- b. Construction and operating keys shall not be part of the Owner's permanent keying system or furnished on the same keyway as the Owner's permanent keying system.
 - c. Owner or Owner's Representative will void operation of temporary construction keys.

C.

2.5 KEYING

- A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference.
- B. Provide cylinders keyed into Owner's existing factory registered keying system. Comply with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.
 1. Existing Keyway: Sargent LA keyway
- C. Requirements:
 1. Provide permanent cylinders keyed by the manufacturer according to the following key system.
 - a. Master Keying System: Cylinders are operated by a change key and a master key.
 2. Forward bitting list and keys separately from cylinders, by means as directed by Owner. Failure to comply with forwarding requirements will be cause for replacement of cylinders involved at no additional cost to Owner.
 3. Provide keys with the following features:
 - a. Material: Nickel silver; minimum thickness of .107-inch (2.3mm)
 - b. Patent Protection: Keys and blanks protected by one or more utility patent(s).
 4. Identification:
 - a. Mark permanent cylinders and keys with applicable blind code for identification. Do not provide blind code marks with actual key cuts.
 - b. Identification stamping provisions must be approved by the Architect and Owner.
 - c. Stamp cylinders and keys with Owner's unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with "DO NOT DUPLICATE" along with the "PATENTED" or patent number to enforce the patent protection.
 - d. Failure to comply with stamping requirements will be cause for replacement of keys involved at no additional cost to Owner.
 5. Cutting: Factory-cut keys.
 6. Keys to be delivered by registered mail to the Owner. Change Keys to be provided in set up key control system. Construction keys shall be delivered to the Contractor.
 7. Quantity: Furnish in the following quantities:
 - a. Change (Day) Keys: 3 per cylinder.
 - b. Master Keys: 6.
 - c. Provide 100 blank keys for use by CMS Lockshop.

8. Keying System Coordination: Before factory order is placed, hardware supplier shall consult with CMS Maintenance Department to secure formal written approval of keying system and function.
 - a. After installation of hardware and before acceptance of building, hardware supplier shall check each locked door against key symbol to make certain that correct locks and cylinders are on proper doors. For any incorrectly located cylinders, tag and relocate to proper location.

2.6 FABRICATION

- A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by Architect.
 1. Manufacturer's identification is permitted on rim of lock cylinders only.
- B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.
- C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Field verify existing doors and frames receiving new hardware and existing conditions receiving new openings. Verify that new hardware is compatible with existing door and frame preparation and existing conditions.
- C. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- D. Submit a list of deficiencies in writing and proceed with installation only after unsatisfactory conditions have been corrected.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Where on-site modification of doors and frames is required:

1. Carefully remove existing door hardware and components being reused. Clean, protect, tag, and store in accordance with storage and handling requirements specified herein.
2. Field modify and prepare existing doors and frames for new hardware being installed.
3. When modifications are exposed to view, use concealed fasteners, when possible.
4. Prepare hardware locations and reinstall in accordance with installation requirements for new door hardware and with:
 - a. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.

3.3 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.
 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
 2. Custom Steel Doors and Frames: HMMA 831.
 3. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing. Do not install surface-mounted items until finishes have been completed on substrates involved.
 1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
 2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- C. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height.
- D. Wiring: Coordinate with Division 26 Electrical sections for:
 1. Conduit, junction boxes and wire pulls.
 2. Connections to and from power supplies to electrical hardware.
 3. Connections to fire/smoke alarm system and smoke evacuation system.
 4. Connection of wire to door position switches and wire runs to central room or area, as directed by Architect.
 5. Testing and labeling wires with Architect's opening number.
- E. Lock Cylinders: Install permanent cores and during the construction period use construction key to secure building and areas during construction period.
- F. Boxed Power Supplies: Locate power supplies required for items specified in this Section, as indicated or, if not indicated, above accessible ceilings. Verify location with Architect.
 1. Configuration: Provide least number of power supplies required to adequately serve doors with electrified door hardware.

3.4 FIELD QUALITY CONTROL

A. Inspection and Testing:

1. Provide functional testing and inspection of fire door assemblies by a qualified person in accordance with NFPA 80.
 - a. Schedule fire door assembly inspection within 90 days of Substantial Completion of the Project.
 - b. Submit a signed, written final report as specified in Paragraph 1.03.E.1.
 - c. Correct all deficiencies and schedule a reinspection of fire door assemblies noted as deficient on the inspection report.
 - d. Inspector to reinspect fire door assemblies after repairs are made.
2. Provide inspection of required egress door assemblies by a qualified person in accordance with NFPA 101.
 - a. Schedule egress door assembly inspection within 90 days of Substantial Completion of the Project for the required openings.
 - b. Submit a signed, written final report as specified in Paragraph 1.03.E.2.
 - c. Correct all deficiencies and schedule a reinspection of egress door assemblies noted as deficient on the inspection report.
 - d. Inspector to reinspect required egress door assemblies after repairs are made.

3.5 ADJUSTING

- #### A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
1. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
 2. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
- #### B. Occupancy Adjustment: Approximately six months after date of Substantial Completion, Installer's Architectural Hardware Consultant shall examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.6 CLEANING AND PROTECTION

- #### A. Clean adjacent surfaces soiled by door hardware installation.
- #### B. Clean operating items as necessary to restore proper function and finish.
- #### C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.7 DOOR HARDWARE SETS


- A. The intent of the hardware specification is to specify the hardware for interior and exterior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.
- B. Discrepancies, conflicting hardware, and missing items are to be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application.
- C. Hardware items are referenced in the following hardware schedule. Refer to the above specifications for special features, options, cylinders/keying, and other requirements.
- D. Hardware Sets:

Hardware Group No. HW-01

For use on Door #(s):

001 002 003

Provide each door(s) with the following:


QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	SELF CLOSING HINGES	SURECLOSE READYFIT 108 X QTY AS REQ		
1	EA	POWER TRANSFER HINGE	AS REQUIRED	✓	
1	EA	WEATHERIZED ELECTRIFIED EXIT DEVICE	10xW 03C ER EX W (NL TRIM WITH ELEC LATCH RETRACTION)	 ✓ 630	DET
1	EA	CYLINDER	AS REQUIRED TO MATCH EXISTING	626	
1	EA	CREDENTIAL READER	BY SECURITY PROVIDER		
1	EA	POWER SUPPLY	AS REQUIRED	✓	
1	EA	WIRING DIAGRAM	AS REQUIRED	✓	DLR
	EA	BALANCE OF HARDWARE	GATE SUPPLIER		

1. THE HARDWARE SUPPLIER SHALL COORDINATE THE ELECTRIFIED HARDWARE WITH ALL RELATED TRADES.
2. GATE FUNCTION: GATE NORMALLY CLOSED AND LOCKED. PRESENTING VALID CREDENTIAL AT READER WILL RETRACT LATCHBOLT AND ALLOW FOR ENTRY. GATE ALWAYS AVAILABLE FOR FREE EGRESS.
3. CREDENTIALS, READER, AND CONNECTIONS TO THE OWNER'S NETWORK PROVIDED BY ACCESS CONTROL PROVIDER. ALL OTHER WORK PROVIDED BY ELECTRICAL CONTRACTOR.

Hardware Group No. HW-02

For use on Door #(s):
004A






Provide each door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
6	EA	SELF CLOSING HINGES	SURECLOSE READYFIT 108 X QTY AS REQ			
2	EA	WEATHERIZED EXIT DEVICE	10xW 01C - EXIT ONLY		630	DET
	EA	BALANCE OF HARDWARE	GATE SUPPLIER			

Hardware Group No. HW-03

For use on Door #(s):
004B

Provide each door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
6	EA	SELF CLOSING HINGES	SURECLOSE READYFIT 108 X QTY AS REQ			
1	EA	POWER TRANSFER HINGE	AS REQUIRED			
1	EA	WEATHERIZED EXIT DEVICE	10xW 01C - EXIT ONLY		630	DET
1	EA	WEATHERIZED ELECTRIFIED EXIT DEVICE	10xW 03C ER EX W (NL TRIM WITH ELEC LATCH RETRACTION)		630	DET
1	EA	CYLINDER	AS REQUIRED TO MATCH EXISTING		626	
1	EA	POWER SUPPLY	AS REQUIRED			
1	EA	WIRING DIAGRAM	AS REQUIRED			DLR
	EA	BALANCE OF HARDWARE	GATE SUPPLIER			

END OF SECTION 087100

SECTION 099600 - HIGH-PERFORMANCE COATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes surface preparation and the application of high-performance coating systems.
- B. Related Requirements:
 - 1. Section 055000 "Metal Fabrications" for shop priming of indicated exposed metal fabrication items with primers specified in this Section.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Coatings: 1 gal. of each material and color applied.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.6 FIELD CONDITIONS

- A. Apply coatings only when temperature of surfaces to be coated and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply coatings when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
- C. Do not apply exterior coatings in snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Sherwin-Williams Company (The); as scheduled, or comparable products by one of the following:
1. [Corotech Coatings; Benjamin Moore & Co.](#)
 2. [Devoe Paint Company; Akzo Nobel.](#)
 3. [PPG Paints.](#)
 4. [Tnemec Inc.](#)

2.2 HIGH-PERFORMANCE COATINGS, GENERAL

- A. Material Compatibility:
1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
 3. Products shall be of same manufacturer for each coat in a coating system.
- B. Colors: As selected by Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
- C. Proceed with coating application only after unsatisfactory conditions have been corrected.
1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and coating systems indicated.
- B. Clean substrates of substances that could impair bond of coatings, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce coating systems indicated.

- C. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:
 - 1. SSPC-SP 7/NACE No. 4, unless otherwise indicated.
- D. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- E. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied coatings.

3.3 APPLICATION

- A. Apply high-performance coatings according to manufacturer's written instructions.
 - 1. Use applicators and techniques suited for coating and substrate indicated.
 - 2. Coat surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, coat surfaces behind permanently fixed equipment or furniture with prime coat only.
 - 3. Coat backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 - 4. Do not apply coatings over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- B. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.
- C. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test coatings for dry film thickness.
 - 1. Contractor shall touch up and restore coated surfaces damaged by testing.
 - 2. If test results show that dry film thickness of applied coating does not comply with coating manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with coating manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

- C. Protect work of other trades against damage from coating operation. Correct damage to work of other trades by cleaning, repairing, replacing, and recoating, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

3.6 EXTERIOR HIGH-PERFORMANCE COATING SCHEDULE

A. Steel Substrates:

- 1. Pigmented Polyurethane System:
 - a. Prime Coat: Alkyd anti-corrosive, quick dry: [S-W Kem Kromik Universal Primer](#), B62WZ111 Series, at 3 to 4 mils dry, per coat.
 - b. Intermediate Coat: Polyurethane, two-component, pigmented, matching topcoat.
 - c. Topcoat: Polyurethane, two-component, pigmented, semi-gloss: [S-W Acrolon 218 HS Acrylic Polyurethane](#), B65-650 Series, at 3.0 to 6.0 mils dry, per coat.
- 2. Application: Exposed exterior steel framing and metal fabrication items as indicated on Drawings.

SECTION 260533 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Metal conduits, tubing, and fittings.
 - 2.
 - 3. Surface raceways.
 - 4. Boxes, enclosures, and cabinets.
 - 5.

1.3 DEFINITIONS

- A. GRC: Galvanized rigid steel conduit.
- B. IMC: Intermediate metal conduit.

1.4 ACTION SUBMITTALS

- A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.

1.5 INFORMATIONAL SUBMITTALS

- A. Seismic Qualification Certificates: For enclosures, cabinets, and conduit racks and their mounting provisions, including those for internal components, from manufacturer.
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 - 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
 - 4. Detailed description of conduit support devices and interconnections on which the certification is based and their installation requirements.
- B. Source quality-control reports.

1.6 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70, "National Electrical Code."
- C. Comply with NECA 101, "Standard for Installing Steel Conduits (Rigid, IMC, EMT)."

- D. Comply with NECA 111, "Standard for Installing Nonmetallic Raceways (RNC, ENT, LFNC)."
- E. Comply with NECA 605, "Recommended Practice for Installing Underground Nonmetallic Utility Duct."

PART 2 - PRODUCTS

2.1 METAL CONDUITS, TUBING, AND FITTINGS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - 1. AFC Cable Systems, Inc.
 - 2. Allied Tube & Conduit; a brand of Atkore International.
 - 3. Electri-Flex Company.
 - 4. O-Z/Gedney; a brand of Emerson Industrial Automation.
 - 5. Republic Conduit.
 - 6. Southwire Company.
 - 7. Thomas & Betts Corporation, A Member of the ABB Group.
 - 8. Western Tube and Conduit Corporation.
 - 9. Wheatland Tube Company.
- B. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. GRC: Comply with ANSI C80.1 and UL 6.
- D. IMC: Comply with ANSI C80.6 and UL 1242.
- E. EMT: Comply with ANSI C80.3 and UL 797.
- F. FMC: Comply with UL 1; zinc-coated steel.
- G. LFMC: Flexible steel conduit with PVC jacket and complying with UL 360.
- H. Fittings for Metal Conduit: Comply with NEMA FB 1 and UL 514B.
 - 1. Fittings for EMT:
 - a. Material: Steel.
 - b. Type: Compression.
 - 2. Expansion Fittings: PVC or steel to match conduit type, complying with UL 651, rated for environmental conditions where installed, and including flexible external bonding jumper.
- I. Joint Compound for IMC or GRC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

2.2 SURFACE RACEWAYS

- A. Listing and Labeling: Surface raceways and tele-power poles shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Surface Metal Raceways: Galvanized steel with snap-on covers complying with UL 5. Manufacturer's standard enamel finish in ivory unless otherwise specified.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Wiremold / Legrand (Wiremold V4000 basis of design, or V2400BD, unless otherwise specified).
 - b. Hubbell Incorporated; Wiring Device-Kellems.
 - c. Panduit Corp.
2. Provide components covers, large radius turn elbows, device plates (based on WM 4050), etc. for a complete working surface raceway system. System shall utilize entrance/end fittings. Knockout at the entry to the surface raceway shall be sized for the quantity of cabling provided.

2.3 BOXES, ENCLOSURES, AND CABINETS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 1. Adalet.
 2. Cooper Technologies Company.
 3. EGS/Appleton Electric.
 4. Erickson Electrical Equipment Company.
 5. Hoffman; a brand of Pentair Equipment Protection.
 6. Hubbell Incorporated.
 7. Milbank Manufacturing Co.
 8. MonoSystems, Inc.
 9. O-Z/Gedney; a brand of Emerson Industrial Automation.
 10. RACO; Hubbell.
 11. Spring City Electrical Manufacturing Company.
 12. Stahlin Non-Metallic Enclosures.
 13. Thomas & Betts Corporation, A Member of the ABB Group.
 14. Wiremold / Legrand.
- B. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.
- C. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.
- D. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, ferrous alloy, Type FD, with gasketed cover.
- E. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- F. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, galvanized, cast iron with gasketed cover.
- G. Box extensions used to accommodate new building finishes shall be of same material as recessed box.
- H. Device Box Dimensions: 4 inches square by 2-1/8 inches deep (100 mm square by 60 mm deep) unless otherwise noted on plans.
- I. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, Type 1 or Type 3R with continuous-hinge cover with flush latch unless otherwise indicated.
 1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
 - 2.
 3. Interior Panels: Steel; all sides finished with manufacturer's standard enamel.

J. Cabinets:

1. NEMA 250, Type 1 unless otherwise noted on the plans, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
2. Hinged door in front cover with flush latch and concealed hinge.
3. Key latch to match panelboards.
4. Metal barriers to separate wiring of different systems and voltage.
5. Accessory feet where required for freestanding equipment.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below unless otherwise indicated:

1. Exposed Conduit: GRC or IMC.
2. Rooftop: GRC or IMC.
3. Concealed Conduit, Aboveground: GRC IMC or RNC, Type EPC-40-PVC.
4. Underground Conduit: Refer to Section 260543.
5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
6. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.

B. Indoors: Apply raceway products as specified below unless otherwise indicated:

1. Exposed, Not Subject to Physical Damage: EMT, GRC or IMC.
2. Exposed and Subject to Severe Physical Damage: GRC or IMC. Raceway locations include the following:
 - a. Loading dock.
 - b. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
 - c. Mechanical rooms.
 - d. Gymnasiums.
3. Concealed in Ceilings and Interior Walls and Partitions: EMT, GRC or IMC.
4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
5. Damp or Wet Locations: GRC or IMC.
6. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4 stainless steel in institutional and commercial kitchens and damp or wet locations.

C. Minimum Raceway Size: 1/2-inch (16-mm) trade size, except as follows:

- a. 3/8-inch (12-mm) trade size for drops to recessed lighting fixtures.
- b. 3/4-inch (21-mm) trade size for underground conduit outdoors.

D. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
2. EMT: Use compression, steel fittings. Comply with NEMA FB 2.10.
3. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.

- E. Install nonferrous conduit or tubing for circuits operating above 60 Hz. Where aluminum raceways are installed for such circuits and pass through concrete, install in nonmetallic sleeve.
- F. Do not install aluminum conduits, boxes, or fittings in contact with concrete or earth.
- G. Install surface raceways only where indicated on Drawings.
- H. Do not install nonmetallic conduit where ambient temperature exceeds 120 deg F (49 deg C).

3.2 INSTALLATION

- A. Comply with NECA 1, NECA 111, NECA 605, and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.
- B. Keep raceways at least 6 inches (150 mm) away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
- C. Complete raceway installation before starting conductor installation.
- D. Comply with requirements in Section 26 05 29 "Hangers and Supports for Electrical Systems" for hangers and supports.
- E. Arrange stub-ups so curved portions of bends are not visible above finished slab.
- F. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed (two). Support within 12 inches (300 mm) of changes in direction.
- G. Change of direction for conduits or raceways 2" or larger shall be made using formed bends or pull boxes.
- H. Conduit bodies shall not be used on any service conduit or raceway.
- I. Conduit bodies shall not be used on any conduit or raceway 2" trade size or larger, except by written approval by the architect or engineer.
 - 1. When allowed by the architect or engineer conduit bodies will be mogul type.
- J. Conceal conduit and EMT within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.
- K. Support conduit within 12 inches (300 mm) of enclosures to which attached.
- L. Surface mounted conduit and EMT on exposed finished surfaces shall be installed using one or two conduit straps. Standoff type straps shall not be used for exposed conduit on finished surfaces.
- M. Raceways Embedded in Slabs:
 - 1. Conduit shall not be larger in outside wall dimension than 1/3 the overall thickness of the slab.
 - 2. Conduit shall be spaced no closer than three (3) diameters or widths on center.
 - 3. Run conduit larger than 1-inch (27-mm) trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support. Secure raceways to reinforcement at maximum 10-foot (3-m) intervals.
 - 4. Arrange raceways to cross building expansion joints at right angles with expansion fittings.

5. Arrange raceways to keep a minimum of 1 inch (25 mm) of concrete cover in all directions.
 6. Do not embed threadless fittings in concrete unless specifically approved by Architect for each specific location.
 7. Change from RNC, Type EPC-40-PVC, to EMT, GRC or IMC after rising above floor for exposed conduit. Transition shall be protected by a concrete housekeeping pad that covers the transition coupling. No exposed RNC. Exception: RNC runs that turn up inside walls shall transition to EMT no greater than 60" above the slab or at the first box encountered, whichever comes first.
- N. Stub-ups to Above Recessed Ceilings:
1. Use EMT, IMC, or RMC for raceways.
 2. Use a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.
- O. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
- P. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.
- Q. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch (35mm) trade size and insulated throat metal bushings on 1-1/2-inch (41-mm) trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.
- R. Install raceways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.
- S. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.
- T. Cut conduit perpendicular to the length. For conduits 2-inch (53-mm) trade size and larger, use roll cutter or a guide to make cut straight and perpendicular to the length.
- U. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.
- V. All empty raceways shall be left clear of debris and dry on the inside. Conduit shall be ready for installation of wire or cable.
- W. Surface Raceways:
1. Install surface raceway with a minimum 2-inch (50-mm) radius control at bend points.
 2. Secure surface raceway with screws or other anchor-type devices at intervals not exceeding 48 inches (1200 mm) and with no less than two supports per straight raceway section. Support surface raceway according to manufacturer's written instructions. Tape and glue are not acceptable support methods.
- X. Install raceway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings according to NFPA 70.

- Y. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways at the following points:
1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
 2. Where an underground service raceway enters a building or structure.
 3. Where otherwise required by NFPA 70.
- Z. Comply with manufacturer's written instructions for solvent welding RNC and fittings.
- AA. Expansion-Joint Fittings:
1. Install in each run of aboveground RMC conduit that is located where environmental temperature change may exceed 100 deg F (55 deg C) and that has straight-run length that exceeds 100 feet (30 m).
 2. Install type and quantity of fittings that accommodate temperature change listed for each of the following locations:
 - a. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F (70 deg C) temperature change.
 - b. Outdoor Locations Exposed to Direct Sunlight: 155 deg F (86 deg C) temperature change.
 - c. Indoor Spaces Connected with Outdoors without Physical Separation: 125 deg F (70 deg C) temperature change.
 - d. Attics: 135 deg F (75 deg C) temperature change.
 3. Install fitting(s) that provide expansion and contraction for at least 0.000078 inch per foot of length of straight run per deg F (0.0115 mm per meter of length of straight run per deg C) of temperature change for metal conduits.
 4. Install expansion fittings at all locations where conduits cross building or structure expansion joints.
 5. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.
- BB. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 72 inches (1830 mm) of flexible conduit for recessed and semi-recessed luminaires, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.
1. Use LFMC in damp or wet locations not subject to severe physical damage.
- CC. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.
- DD. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall. Prepare block surfaces to provide a flat surface for a rain tight connection between box and cover plate or supported equipment and box.
- EE. Horizontally separate boxes mounted on opposite sides of walls, so they are not in the same vertical channel.
- FF. Locate boxes so that cover or plate will not span different building finishes.
- GG. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.
- HH. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.

3.3 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Section 26 05 44 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

3.4 FIRESTOPPING

- A. Install firestopping at penetrations of fire-rated floor and wall assemblies. Comply with requirements in Section 07 84 13 "Penetration Firestopping."

3.5 PROTECTION

- A. Protect coatings, finishes, and cabinets from damage and deterioration.
 - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 - 2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 260533

SECTION 28 05 13 - CONDUCTORS AND CABLES FOR ELECTRONIC SAFETY AND SECURITY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.
- B. Related Requirements:
 - 1. Section 28 23 10 “Video Surveillance Cabling” for video surveillance cabling.
 - 2. Section 28 31 10 “Access Control Cabling” for access control cabling.
 - 3. Section 28 23 10.01 “Access Control Cabling – for renovations”.

1.2 SUMMARY

- A. Section Includes:
 - 1. RS-232 cabling.
 - 2. RS-485 cabling.
 - 3. Control-voltage cabling.
 - 4. Control-circuit conductors.
 - 5. Identification products.

1.3 DEFINITIONS

- A. EMI: Electromagnetic interference.
- B. IDC: Insulation displacement connector.
- C. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50 V or for remote-control and signaling power-limited circuits.
- D. Open Cabling: Passing low voltage cabling through open space (e.g., between the studs of a wall cavity).
- E. RCDD: Registered Communications Distribution Designer.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. For cable, include the following specification data for each type used:
 - a. Nominal OD.
 - b. Minimum bending radius.
 - c. Maximum pulling tension.
- B. Shop Drawings:
 - 1. System Labeling Schedules: Electronic copy of labeling schedules, in software and format selected by Owner.
 - 2. Cabling administration drawings, labeling ID, and printouts.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified layout technician, installation supervisor, and field inspector.

- B. Source quality-control reports.
- C. Field quality-control reports.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An NRTL.
 - 1. Testing Agency's Field Supervisor: Currently certified by BICSI as an RCDD to supervise on-site testing.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Test cables upon receipt at Project site.
 - 1. Prior to installation, test each pair for open and shorts.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: 25 or less.
 - 2. Smoke-Developed Index: 50 or less.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 BACKBOARDS

- A. Backboards: Plywood, A/C ¾" fire-rated and install with "A" side facing out.

RS-232 CABLE

- B. Standard Cable: NFPA 70, Type CM.
 - 1. Nine, No. 22 AWG, stranded (7x30) tinned copper conductors.
 - 2. Polypropylene insulation.
 - 3. Aluminum foil-polyester tape shield with 100 percent shield coverage.
 - 4. PVC jacket.
 - 5. Conductors are cabled on common axis with No. 24 AWG, stranded (7x32) tinned copper drain wire.
 - 6. Flame Resistance: Comply with UL 1581.
- C. Plenum-Rated Cable: NFPA 70, Type CMP.
 - 1. Nine, No. 22 AWG, stranded (7x30) tinned copper conductors.
 - 2. PE insulation.
 - 3. Aluminum foil-polyester tape shield with 100 percent shield coverage.
 - 4. Fluorinated ethylene propylene jacket.
 - 5. Conductors are cabled on common axis with No. 24 AWG, stranded (7x32) tinned copper drain wire.
 - 6. Flame Resistance: Comply with NFPA 262.

2.3 RS-485 CABLE

A. Standard Cable: NFPA 70, Type CM or Type CMG.

1. Paired, two pairs, twisted, No. 22 AWG, stranded (7x30) tinned copper conductors.
2. PVC insulation.
3. Unshielded.
4. PVC jacket.
5. Flame Resistance: Comply with UL 1581.

B. Plenum-Rated Cable: NFPA 70, Type CMP.

1. Paired, two pairs, No. 22 AWG, stranded (7x30) tinned copper conductors.
2. Fluorinated ethylene propylene insulation.
3. Unshielded.
4. Fluorinated ethylene propylene jacket.
5. Flame Resistance: NFPA 262, Flame Test.

2.4 CONTROL-VOLTAGE CABLE

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

1. Allied Wire & Cable Inc.
2. Belden Inc.
3. General Cable Technologies Corporation.
4. Genesis Cable Products; Honeywell International, Inc.
5. Southwire Company.
6. Windy City.

B. Paired Cable: NFPA 70, Type CMG.

1. One pair, twisted, No. 16 AWG, stranded (19x29) and No. 18 AWG, stranded (19x30) tinned copper conductors.
2. PVC insulation.
3. Unshielded.
4. PVC jacket.
5. Flame Resistance: Comply with UL 1581.

C. Plenum-Rated, Paired Cable: NFPA 70, Type CMP.

1. One pair, twisted, No. 16 AWG, stranded (19x29) and No. 18 AWG, stranded (19x30) tinned copper conductors.
2. PVC insulation.
3. Unshielded.
4. PVC jacket.
5. Flame Resistance: Comply with NFPA 262.

2.5 CONTROL-CIRCUIT CONDUCTORS

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

1. Allied Wire & Cable Inc.
2. General Cable Technologies Corporation.
3. Southwire Company.

- B. Class 1 Control Circuits: Stranded copper, Type THHN-THWN, complying with UL 83, in pathway.
- C. Class 2 Control Circuits: Stranded copper, Type THHN-THWN, complying with UL 83, in pathway.
- D. Class 3 Remote-Control and Signal Circuits: Stranded copper, Type TW or TF in pathway.

2.6 IDENTIFICATION PRODUCTS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Brady Corporation.
 - 2. HellermannTyton.
 - 3. Kroy LLC.
 - 4. Panduit Corp.
- B. Comply with TIA-606-B and UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.
- C. Comply with requirements in Section 26 05 53 "Identification for Electrical Systems."

2.7 SOURCE QUALITY CONTROL

- A. Testing Agency: Owner may engage a qualified testing agency to evaluate cables.
- B. Cable will be considered defective if it does not pass tests and inspections. This includes kinks or damage to the jacket, supplemental to a "passed" test.
- C. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 INSTALLATION OF HANGERS AND SUPPORTS

- A. Comply with requirements in Section 26 05 29 "Hangers and Supports for Electrical Systems" for installation of supports for cables.

3.2 WIRING METHOD

- A. Install wiring in metal pathways and wireways where exposed or the possibility of being unsupported, unless otherwise noted on the plans.
 - 1. Minimum conduit size shall be 1/2 inch. Control and data-transmission wiring shall not share conduits with other building wiring systems.
- B. Install cable, concealed in accessible ceilings, walls, and floors when possible.
- C. Wiring on Racks and within Enclosures:
 - 1. Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's limitations on bending radii, but not less than radii specified in BICSI ITSIM's "Cabling Termination Practices" chapter. Cable ties shall not be excessively tightened such that the transmission characteristics of the cable are altered.
 - 2. Install lacing bars and distribution spools.
 - 3. Separate power-limited and non-power-limited conductors as recommended in writing by manufacturer.

4. Install conductors parallel with or at right angles to sides and back of enclosure.
5. Connect conductors associated with intrusion system that are terminated, spliced, or interrupted in any enclosure onto terminal blocks.
6. Mark each terminal according to system's wiring diagrams.
7. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

- A. Comply with NECA 1 and NFPA 70.
- B. Conductors: Size according to system manufacturer's written instructions unless otherwise indicated.
- C. Do not install conductors and cables that are wet, moisture damaged, or mold damaged.
- D. General Requirements for Cabling:
 1. Maintain minimum cable bending radius during installation and termination of cables.
 2. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation and replace it with new cable.
 3. Cold-Weather Installation: Do not install cabling when temperature is below 32 degrees Fahrenheit.
 4. Pulling Cable: Comply with BICSI ITSIM, Ch. 4, "Pulling Cable." Monitor cable pull tensions. Do not exceed manufacturer's rated cable-pulling tension.
 5. Comply with Section 28 05 44 "Sleeves and Sleeve Seals for Electronic Safety and Security Pathways and Cabling."
- E. Separation from EMI Sources:
 1. Separation between open communication cables or cables in nonmetallic pathways and unshielded power conductors and electrical equipment shall be as follows:
 - a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 5 inches.
 - b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 12 inches.
 - c. Electrical Equipment Rating More Than 5 kVA: A minimum of 24 inches.
 2. Separation between communication cables in grounded metallic pathways and unshielded power lines or electrical equipment shall be as follows:
 - a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 2-1/2 inches.
 - b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 6 inches.
 - c. Electrical Equipment Rating More Than 5 kVA: A minimum of 12 inches.
 3. Separation between cables in grounded metallic pathways and power lines and electrical equipment located in grounded metallic conduits or enclosures shall be as follows:
 - a. Electrical Equipment Rating Less Than 2 kVA: No requirement.
 - b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 3 inches.
 - c. Electrical Equipment Rating More Than 5 kVA: A minimum of 6 inches.
 4. Separation between Cables and Electrical Motors and Transformers, 5 kVA or hp and Larger: A minimum of 48 inches.
 5. Separation between Cables and Light Fixtures: A minimum of 5 inches.

6. Avoid putting cables in areas susceptible to EMI.

3.4 POWER AND CONTROL-CIRCUIT CONDUCTORS

- A. 120-V Power Wiring: Install according to Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables" unless otherwise indicated.
- B. Minimum Conductor Sizes:
 1. Class 1 remote-control and signal circuits, No. 14 AWG.
 2. Class 2 low-energy, remote-control and signal circuits, No. 16 AWG.
 3. Class 3 low-energy, remote-control, alarm and signal circuits, No. 12 AWG.

3.5 CONNECTIONS

- A. Comply with requirements in Section 28 16 00 "Intrusion Detection" for connecting, terminating, and identifying wires and cables.
- B. Comply with requirements in Section 28 31 11 "Digital, Addressable Fire-Alarm System" for connecting, terminating, and identifying wires and cables.

3.6 FIRESTOPPING

- A. Comply with requirements in Section 07 84 13 "Penetration Firestopping."
- B. Comply with TIA-569-C, "Firestopping" Annex A.
- C. Comply with BICSI TDMM, "Firestopping Systems" Article.

3.7 GROUNDING

- A. For communication wiring, comply with J-STD-607-A and with BICSI TDMM's "Grounding, Bonding, and Electrical Protection" chapter.

3.8 IDENTIFICATION

- A. Identify system components, wiring, and cabling complying with TIA-606-B. Comply with requirements for identification specified in Section 26 05 53 "Identification for Electrical Systems."

3.9 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
- B. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
 1. Visually inspect cable placement, cable termination, grounding and bonding, equipment and patch cords, and labeling of all components.
- C. Document data for each measurement. Print data for submittals in a summary report that is formatted using Table 10.1 in BICSI TDMM as a guide, or transfer the data from the instrument to the computer, save as text files, print, and submit.
- D. End-to-end cabling will be considered defective if it does not pass tests and inspections.

- E. Prepare test and inspection reports.

END OF SECTION 28 05 13

SECTION 28 13 00 – ACCESS CONTROL

PART 1 – GENERAL

1.1 SCOPE OF WORK:

- A. It is the intent of this standard to provide a complete & properly operating Access Control System (ACS). Any component or item of equipment or hardware that may not be specifically shown on the drawings or specified herein, but necessary for proper system operation, shall be provided by the Contractor.
- B. Provide all necessary labor, material, plant, and equipment, including materials and equipment not specifically mentioned but necessary to complete the work in a neat and workmanlike manner, to include:
 - 1. ACS Intelligent Access Controllers.
 - 2. ACS Wiring and Cable, including Fiber Optic Systems where specified.
 - 3. Complete branch circuit wiring system for the ACS System including final connections to equipment.
- C. Refer to Section 281310 – “Access Control Cabling” for additional information.

1.2 GENERAL REQUIREMENTS:

- A. The following latest editions of the industry standards are the basis for the structured cabling system described in this document. The standards listed shall be adhered to in the same manner as if they were codes.
- B. All current state & local codes
 - 1. TIA – Telecommunications Industries Association
 - a. Articles 526, 568, 569, 606, 607.
 - 2. ANSI - American National Standards Institute.
 - 3. BISCI – Building Industry Consulting Service International
 - a. Telecommunications Distribution Methods Manual (TDMM), latest edition.
 - b. Information Technology Systems Installation Methods Manual (ITSIMM), latest edition.
 - c. Customer-Owned Outside Plant Design Reference Manual (OSPDRM), latest edition.
 - 4. EIA – Electronic Industries Alliance
 - a. RS232C – Interface between Data Terminal Equipment and Data Communications Equipment Employing Serial Binary Data Interchange
 - b. RS485 – Electrical Characteristics of Generators and Receivers for use in Balanced Digital Multi-Point Systems
 - 5. ETL – Intertek Electrical Testing Laboratories.
 - 6. UL – Underwriters Laboratories.
 - a. UL294 – Access Control System Units.
 - 7. NEMA – National Electrical Manufacturers Association.
 - 8. OSHA – Occupational Safety and Health Administration standards.
 - 1. NFPA – National Fire Protection Association.
 - a. NFPA 70, National Electrical Code (NEC).
 - b. NFPA 101, National Life Safety Code.
 - 9. Americans With Disabilities Act of 1990 (ADA).
 - 10. Division 26 Electrical Specifications.

11. Standard Industry Practices.

- C. If there is a conflict between applicable regulatory industry standards, and then the more stringent requirements shall apply. The Contractor has the responsibility to determine and adhere to the latest editions when developing the proposal for installation.
- D. All Electronic Equipment and materials are all to be UL standard testing, listing and labels shall be listed and labeled by UL or other agency that is acceptable to the AHJ and the State of North Carolina approved 3rd party testing agencies. This can be found on the state construction website.

1.3 CONTRACTOR QUALIFICATIONS:

- A. The Prime Security Contractor (SC) shall be regularly engaged or partner with sub-contractors that are regularly engaged in providing security equipment and security related services and shall have been engaged in such work for a period of not less than three years prior to bid submittal.
- B. The Prime Security Contractor or their sub-contractor performing the majority of the security system installation work shall, at the time of the bid, hold an Alarm Systems Business License issued by the State of North Carolina to perform security work within the state. Contractors who have security licenses or permits pending may not be considered acceptable for bidding on this project. All personnel employed by this contractor shall be registered with the appropriate North Carolina Licensing Board as provided for by current state statutes. Each Contractor submitting a bid for this project shall include a copy of his current Alarm System Business License.
- C. The Security Contractor shall be prepared, upon award for the work to provide the Owner, Charlotte-Mecklenburg Schools (CMS) a criminal background check for each person employed to perform security work on this project. Each criminal background check shall cover all places of residence for the previous seven years and shall be performed within the previous six months. Criminal background checks may be performed by a state or local agency or by a private company specializing in such work.
- D. The Security Contractor shall provide the name, location, and contact information for three similar projects in scope and size within the last 5 years.
- E. Contractors performing the work in the supply, installation or programming of access control equipment shall be factory authorized dealers for the manufacturer of the equipment and systems provided. Contractor shall be authorized by Open Options as a reseller. Documentation of this authorization shall be provided at the time of bid.
- F. The Security Contractor shall demonstrate the qualifications of the project manager assigned to this project
- G. The Security Contractor or sub-contractor responsible for cabling shall have a Low Voltage Wiring License issued by the NC Board of Examiners of Electrical Contractors and any other certifications as designated in the cabling specification.
- H. Security Contractor will designate an overall project manager and a project manager for each specific site that will be the points of contact.
- I. Only a North Carolina licensed locksmith shall install or work on locks, locking devices, egress control devices etc. or as permitted by North Carolina State Law. Refer to NC Code G.S. 74F-4.

1.4 WARRANTY:

- A. The Contractor shall guarantee all equipment and wiring for this system to be free of defects in workmanship & material for a period of one (1) year from the date of substantial completion. Include one (1) 6-month preventative maintenance visit per section 3.4-A. A Requirement List, plus miscellaneous preventative maintenance as required during this one (1) year period.
- B. The Contractor shall replace all portions that fail because of faulty materials or workmanship at no cost to CMS including material, labor, tax freight and freight. The contractor shall be notified of any defects and immediately repair them. Items repaired under this provision shall have an extended warranty period of (12) months beginning with the acceptance of the repair.
- C. Warranty service by the contractor shall include eight (8) hour emergency response during normal weekends and holidays. Response time shall be measured from the time the contractor is notified to the time of arrival of service personnel at the affected site to initiate repairs. The contractor shall provide a method of making these repair requests. At the time of bid, the contractor will provide a description of how they propose to execute this provision.

- D. During the warranty period, the contractor will maintain and guarantee that the adequate supply of parts is maintained at their nearest place of business.
- E. Contractor/Manufacturer shall guarantee products repairable/direct replacement for a minimum of three (3) years.
- F. Guaranteed replacement/service requirement: products used on this project must ship within 24 hours of the contractor order.
- G. At a minimum provide a one (1) year comprehensive warranty exclusive of physical/lightning damage, including advanced replacement on all ACS intelligent access controllers for the three (3) year warranty.
- H. All cabling shall have a one (1) year Contractor warranty and a 20-year manufacturer warranty.

1.5 SUBMITTALS:

- A. Shop drawing submittals are required and shall include the following for review. Submittals not containing all of the information listed below will be rejected. Deliver all required submittals within ten (10) days of the Notice to Proceed date.
- B. Before submitting a shop drawing or related material, the SC shall:
 - 1. Review each submission for conformance with all SC's means, methods, techniques, sequences and operations of construction & safety precautions; and programs incidental thereto, all of which are the sole responsibility of the SC.
 - 2. Review & coordinate each submission with other related or affected work.
 - 3. Approve each submission before submitting same.
- C. Submittals shall include the following:
 - 1. Shop drawings, product data (including cut sheets & catalog information), samples required by the Contract Documents for the networked access control cabling system.
 - a. Access Control Equipment.
 - b. Intelligent Access Controllers
 - c. Access Control Modules
 - d. Integrated and Electronic/Electromechanical Locks
 - e. Power Supplies
 - f. Card Readers
 - g. Sensors
 - h. Switches & Buttons
 - i. Surge Protection
 - j. Surface Mount Boxes
 - k. Patch Cords
- D. By submitting shop drawings, product data, and samples, the SC represents that he/she has carefully reviewed and verified materials, quantities, field measurements, and field construction criteria related thereto. It also represents that the SC has checked, coordinated and verified that information contained within shop drawings & product data conforms to the requirements of the work & of the Contract Documents.
- E. The acceptance of shop drawings, product data and samples submitted by the SC shall not relieve the SC of responsibility for adhering to the requirements of the Contract Documents. Nor shall the acceptance relieve the SC of responsibility for errors or omissions in such shop drawings, product data or samples.
- F. The review & acceptance, or other appropriate action upon shop drawings, product data is for the limited purpose of checking for conformance with information given & design concept illustration in the Contract Documents. Review of such submittals is not conducted for the purpose of determining accuracy & completeness of other details

such as dimensions & quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the SC as required by the Contract Documents. The review shall not constitute approval of safety precautions or of construction means, methods, techniques, sequences or procedures.

- G. For initial submission & for resubmission required for acceptance, submit electronic copies of each item. Combine all electronic files into one final submittal packaged electronic file.
- H. Illegible submittals will not be checked.
- I. If a submittal deviates from the drawings & project manual because of standard shop practice, substitutions (approved in accordance with General Conditions, amended) or any other reason, the Designer shall be advised in an attached separate written instrument. Deviations shall be acknowledged by Designer in writing. Unless acknowledged by the Designer in writing, the Contractor will not be relieved of the responsibility for executing the work in accordance with the Contract Documents.
- J. Designer Action:
 - 1. Designer will review all submittals & return comments promptly.
 - 2. The Designer will issue a summary review indicating acceptance; indicate items not acceptable, or indicate action needed by the contractor.
 - 3. Items “Rejected” are not permitted to be used at the project site or elsewhere where work is in progress.
 - 4. Change and/or correct submittals as required by the Designer & resubmit until all items are accepted.

1.6 DRAWINGS AND SPECIFICATIONS:

- A. It is understood that while drawings will be followed as closely as circumstances will permit, the SC is held responsible for the installation of the system according to the true intent and meaning of the drawings. Anything not completely clear in the Construction Documents will be explained upon request to the Designer. However, if conditions arise where, in the judgment of the SC, certain changes will be advisable; the SC will communicate through the proper channels & obtain review and approval of these changes before proceeding with the work.
- B. The drawings are not to be scaled. The SC must refer to the architectural drawings for building construction, dimensions and material, finish and construction method of walls, floor and ceiling in order to insure proper installation of work.
- C. Provide two copies of 11”x17” Campus/Facility drawings, indicating locations of doors, controllers, and the associated data rooms supporting the ACS equipment. The drawing shall list the Media Access Control (MAC) addresses of the ACS controllers, and a description of where the ACS controller is located. For example: D Controller #1 is located above the ceiling near Health Room #215 with a MAC address of 00-00F-E5-02-66-87 for Door #216A (Staff Parking) that connects to Data Room MC, patch panel port #45, switch port #35, card #2960-1. This shall be also supplied in PDF format and in Autodesk AutoCAD version 10 DWG format.
- D. If there is a conflict between the Drawings and the Specifications, the most stringent requirement shall apply.

1.7 QUALITY ASSURANCE:

- A. The SC shall employ qualified and certified technicians to this project that have experience with the installation of low voltage cabling infrastructures & security equipment and security related services; and provide appropriate supervision to all technicians on site.
- B. The Architect / Engineer shall have the right to reject any proposed Security Contractor that, in the opinion of the Architect / Engineer, does not have the qualifications to perform the work to the satisfaction of the Architect / Engineer.
- C. Security Contractor (SC) Qualifications:
 - 1. The SC shall employ qualified & certified technicians on this project that have experience with the installation of low voltage cabling infrastructures & provide appropriate supervision to all technicians on site. Required qualifications and certifications are as follows:
 - a. SC shall employ certified & qualified technicians to perform this scope of work.
 - b. SC shall possess a current North Carolina Electrical Low Voltage License.

- c. SC shall possess a current North Carolina Security/Burglar Alarm License.
- d. SC shall have demonstrated physical security access control experience & completed two or more access control projects, similar in size & complexity, in North or South Carolina in the last three (3) years.
 - 1. Cabling Contractor certifications shall include:
 - a) See Specification Section 28 23 10 for additional information.
 - 2. Access Control Security Contractor certifications shall include:
 - a) Technician certifications from the product manufacturer of the equipment.
 - b) Low Voltage Security/Burglar Alarm License.
 - c) Open Options equipment must be provided through a certified Open Options Dealer.
- e. Document Submittal:
 - 1. SC shall not be awarded the project without possessing the required certifications.
 - 2. SC, upon being awarded the project, shall submit all required certifications, insurance certificates, project roster, and previous experience and reference documents. This shall be submitted within ten (10) days of award of contract.
 - a) If the Security Contractor does not possess the required certifications required to perform the project upon the initial submittal, the SC will have ten (10) days from the notice from the Architect / Designer of rejection of the qualification documents to resubmit the required certifications. If at that time the SC does not submit all certifications required, the SC will not be allowed to perform the work & must be replaced by the General Contractor.
 - 3. SC shall submit the following copies of current certifications:
 - a) Open Options 'Essentials Training' Certificate (owned by Technician)
 - b) Company Certifications
 - c) Company North Carolina Electrical Low Voltage license
 - d) Company North Carolina Security/Burglar Alarm License.
 - e) List of physical access control project experience & completed two or more projects similar of size & complexity in North or South Carolina in the last three (3) years. Include reference contact information.
 - f) Project roster of technicians and staff assigned to the project
 - g) Insurance certificates.
- D. Equipment and materials of the type for which there are independent standard testing requirements, listings and labels, shall be listed and labeled by the independent testing laboratory (i.e. UL).
- E. Where equipment & materials have industry certification, labels or standards (i.e. NEMA) this equipment shall be labeled as certified or complying with standards.
- F. Material & equipment shall be new, conform to grade, quality and standard specified. Equipment and materials of the same type shall be a product of the same manufacturer throughout. Materials and equipment are to be installed per industry standards & manufacturer's recommendations.
- G. The Designer retains the right of inspection of the work at any time. Any material or work which does not comply with the specifications or current industry standards will be subject to rejection. Any such rejected work or material shall be reworked and/or replaced & made to conform with said specifications at no additional cost to the Owner.
- H. Any stoppage, delay, suspensions or forfeiture due to a rejection shall in no way invalidate any terms of the Contract, and no additional charges will be allowed by the SC.
- I. The SC site superintendent shall submit a weekly report due each Monday detailing the previous week's accomplishments; and providing a two (2) week forecast of areas where work will be performed and expected accomplishments. This report will be copied to the Owner and the Designer.

- J. The SC shall inspect all installation materials & workmanship, and ensure contract compliance for final acceptance.
- K. The SC is responsible for all damages to persons or property that occurs as a result of his fault, omission or negligence in connection with the prosecution of the work. The SC is responsible for the proper care and protection of all work performed until completion and final acceptance, whether or not the same has been covered in whole or in part by payments made by Owner.
- L. The SC must remove all debris and packaging resulting from the delivery and installation of equipment & materials. The SC must leave the premises in the same condition as found. The SC will leave all work areas clean & free of debris.
- M. Any damage done to the premises by the SC, the SC's agents, vendors or employees, will be repaired at his own expense. If the SC fails to repair any such damages, then the Owner may affect such repairs at SC's expense & offset any payments made by the Owner relating to such repairs against amounts payable by the Owner to the SC.
- N. Property of the Owner, as well as any other property disturbed in the process of work, will be restored to the original condition that existed prior to the beginning of work. Restoration shall be at the SC's expense.

1.8 RELATED DOCUMENTATION:

- A. Division 08 – Architectural (CMS A&E Guide)
- B. Division 13 – Special Construction (CMS A&E Guide).
- C. Division 25 – Mechanical (CMS A&E Guide).
- D. Division 26 – Electrical (CMS A&E Guide).
- E. Division 27 - Communications
- F. Division 28 – Electronic Safety and Security

1.9 COORDINATION:

- A. All work under this Section shall be coordinated with other trades to insure proper location of outlets and equipment connections, and to minimize conflicts with structural members, duct work, piping, cabling, etc.
- B. SC shall verify that the same locking equipment, card readers, and ACS panels are provided in similar application situations across all of the work sites (facilities) involved with this contract, minimizing the variety of access control equipment types installed, where-ever possible.

PART 2 - EQUIPMENT

2.1 MANUFACTURER:

- A. The following equipment manufacturers produce equipment or components which are included in these specifications; or which are approved for use by CMS. Products and manufacturers for the following equipment shall be limited to the following unless specifically stated otherwise elsewhere:
 - 1. Physical Security Access Controllers and Modules
 - a. Mercury Security based intelligent access controllers and access modules re-branded and sold by Open Options.
 - 2. Integrated Intelligent Locks
 - a. NOT CURRENTLY AUTHORIZED FOR CMS INSTALLATIONS
 - 3. Door Lock Power Supplies
 - a. Allegion/Schlage PS902-2RS-BBK power supply panel with enclosure and battery backup.
 - b. Allegion/Schlage PS904-2RS-BBK power supply panel (multi-door locations) with enclosure and battery backup.
 - c. Owner approved equal
 - 4. Card Readers
 - a. Aptiq MT15 card reader for traditional wall installations

- b. Aptiq MT11 mullion card reader (only for fixed mullion installations)
- c. Contractor must provide configuration card to adapt reader to current Mifare standards to keep readers compatible with latest cards provided.

2.2 INTELLIGENT ACCESS CONTROLLERS AND MODULES:

- A. The access control hardware will be a distributed intelligence, open architecture platform capable of scalability.
- B. Enclosed and assembled controllers shall be offered as a factory, pre-wired unit and must be a UL recognized assembly. If intended for mounting above the ceiling, the controller assembly shall utilize a plenum rated metal or poly carbonate enclosure.
- C. The access control hardware shall work in a hierarchical structure, by which an intelligent controller is deployed and control downstream controller modules (i.e. Reader Interface Modules, Input/Output Modules).
- D. The intelligent access controllers support the following communication protocols:
 - 1. TCP/IP (as defined by the Internet Engineering Task Force)
 - 2. RS485 (ANSI/TIA/EIA-485)
- E. The access control hardware shall be manufactured by Mercury Security Products, headquartered in Long Beach, California, USA.
- F. The access control hardware shall consist of the following part numbers:
 - 1. Intelligent Access Controllers
 - a. DController (Mercury EP-1501)
 - 2. Reader Interface Modules
 - a. NSC-100 (Mercury MR51E)
 - b. RSC-1 (Mercury MR50)
 - c. RSC-2 (Mercury MR52)
 - 3. Input/Output Modules
 - a. ISC-16 (Mercury MR16in)
 - b. OSC-16X (Mercury MR16Out)
- G. Unless otherwise noted, every access-controlled door (i.e., with a card reader) shall have a dedicated DController supporting that door and located near the door in an accessible space. Subcontrollers are not allowed unless specific approval given by CMS.
- H. Locate Intelligent Access Controller in an accessible location six (6) inches above the ceiling within a 10" x 10" x 4" plenum rated metal enclosure with a hinged door and latch. Provide one (1) 3/4" conduit from controller enclosure to associated power supply enclosure located above the ceiling. Refer to drawing of enclosure for layout and installation specifics.
- I. Certified project Security Contractor to install a CAT 6 plenum rated cable (white in color) from Intelligent Access Controller to associated security patch panel in IT/Data Closet. Cabling to be tested per 282310 Specification requirements.
- J. Provide a phenolic plate on the Intelligent Access Controller enclosure to indicate the following:
 - 1. Number of device
 - 2. Associated IT/Data Closet
 - 3. Associated Power Circuit
 - 4. MAC/IP Address of each device within the enclosure
- K. Provide a white sticker label to indicate the following:
 - 1. On the Intelligent Access Controller enclosure listing the MAC/IP Address of each device within the

enclosure

2. On the ceiling near the location of the controller enclosure
- L. The access control hardware must support credential readers that communicate via Weigand, RS-485, or clock and data communications formats.
- M. The access control hardware shall support the Open Supervised Device Protocol (OSDP).
- N. Each Intelligent Access Controller shall meet the following requirements:
 1. A minimum of 16 card readers.
 2. Unlimited card formats
 3. Up to 255 time schedules
 4. Up to 255 holidays
 5. Unlimited personnel records
 6. Unlimited number of operators
 7. Unlimited number of client connections

2.3 INTEGRATED INTELLIGENT LOCKS:

- A. Not currently authorized for CMS installations.

2.4 DOOR LOCK POWER SUPPLIES:

- A. 12-24VDC Power Supply for local device and lock power needs
 1. Shall be a UL294 certified power supply.
 2. Power supply shall come with a metal enclosure, located within 20' of associated door/portal above accessible ceiling. Enclosure to have a metal partition to separate power cabling from low-voltage cabling.
 3. Include termination strips within enclosure for cabling/wiring.
 4. Include a lock control relay board. Altronix ACM8 or equal.
 5. Include battery backup kit accessory
 6. Provide a phenolic plate on the Intelligent Access Controller enclosure to indicate the following:
 - a. Number of device
 - b. Associated Power Circuit

2.5 CARD READERS (MULTI-TECHNOLOGY):

- A. Physical credential card readers will be used to authorize users at doors/portals
 1. Card Readers will support existing XceedID 35-bit credentials used by CMS.
 2. Card Reader will have a visual indicator to identify if access granted or denied.
 3. Card Readers will have integral tamper switches, which will be interfaced with the ACS to alarm when the card reader is disassembled.
 4. Card Reader will be forward compatible to support newer smartcard technologies to support future needs.
 5. Card Reader will be compatible with HID 'SIO' technology.
 6. Mount Card Reader on a 2" x 4" weatherproof recessed junction box within wall at desired location of Card Reader. Mount 48" above finished floor (unless otherwise noted).
 7. Provide 6-22AWG plenum rated cable from Card Reader to associated Intelligent Access Controller within 3/4" conduit.

2.6 DOOR POSITION SWITCH:

A. Surface Mount Magnetic Contact for Traditional Doors

1. Contact device shall be a sealed switch
2. Shall be capable of being installed in wood and metal doors
3. Cabling shall be completely (100%) run within the door frame and associated wall, with no cable/wires exposed.
4. Provide 2-22AWG plenum rated cable Belden or approved equal) from switch to associated Intelligent Access Controller within 3/4" conduit.

B. Surface Mount Magnetic Contact for Roll-Up Doors

1. Contact device shall be a sealed switch
2. Shall use an armored cable for connecting to security system equipment
3. Cabling shall be completely (100%) run within the door frame and associated wall, with no cable/wires exposed.
4. Provide 2-22AWG plenum rated cable Belden or approved equal) from switch to associated Intelligent Access Controller within 3/4" conduit.

2.7 CABLING AND CONNECTORS:

- A. See 28 13 10 Access Control Cabling and 28 05 13 conductors and cables for electronic safety and security specifications for cabling information. If there is a specification section 27 00 00 included in the bid package all parts and pieces supersede the 28 13 10 section for all equipment and cabling.

PART 3 - INSTALLATION

3.1 GENERAL:

- A. Installation of system shall be performed under the supervision of ACS system technicians certified in the installation, operation, testing, and servicing of the type of system being installed. The ACS and related equipment shall be installed in accordance with the manufacturer's installation instructions. Supervise the installation to appraise ongoing progress of other trades and contracts, make allowances for all ongoing work, and coordinate the requirements of the installation of ACS with the General Contractor and all other trades.
 1. Access Control Tree/Directory: verify intelligent controller inputs, outputs, field devices, and cable numbers must match. Provide durable number labels on each access module, intelligent controller, and on each cable. Coordinate the Designer and Owner for exact equipment naming and numbering scheme prior to installation and configuration.
 2. Cables: Refer to 28 23 10 for additional information.
 3. Grounding: Ground new intelligent access controllers in strict accordance with the manufacturer's recommendations and per NEC requirements. Assure metal enclosures are securely grounded.
 4. Voltage: The Security Contractor (SC) shall supply power to equipment at the voltage indicated on the drawings. The SC will be held responsible for coordinating the equipment voltages, the control equipment wiring and the location and type of disconnect required to comply with the equipment manufacturer's requirements, NEC, and applicable local building codes. If equipment is supplied at a voltage other than that provided, the SC will be held responsible for making any necessary adjustments to correct the conflict, at no cost to the Owner, to the satisfaction of the Electrical Engineer. 120V power to the system headend and to all field power supplies shall be on dedicated circuits.
 5. Supports: All supports shall be installed to the satisfaction of the AHJ. Refer to 28 23 10 section for additional information.
 6. Equipment: Installed components will be color compatible, and shall be installed in keeping with the manufacturer's recommendations. All components shall be installed as indicated in the design documents and result in the views indicated. Any conflicts noted during the installation process will be immediately brought

to the attention of the CMS project manager and Engineer of record for immediate resolution.

7. CMS Information System Connection: Intelligent Controllers will be cabled to patch panels in the Telecommunications Room and patch cables provided, but not hooked up. The SC will coordinate with the CMS Information Systems Department in the actual connections to the network switches and assignments of the IP addresses.

B. General Contractor Information:

1. At the end of each work period where the space will be subsequently occupied by children, the space will be left clean and neat with all potential hazards removed.
2. It is the Security Contractor's responsibility to secure their construction materials, clean up their messes and dispose of their construction debris.
3. All work will be permitted and inspected as required by the local AHJ and all required components will be UL labeled or otherwise certified to their satisfaction.
4. This SC is responsible for all permit fees and permitting pickup, inspections, and permit closeout.

3.2 FIRESTOPPING:

- A. Refer to Section 078413 for additional information. A fire stop system is comprised of the item or items penetrating the fire-rated structure, the opening in the structure and the materials & assembly of the materials used to seal the penetrated structure. Fire stop systems comprise an effective block for fire, smoke, heat, vapor and pressurized water stream.
- B. All penetrations through fire-rated building structures (walls & floors) shall be sealed with an appropriate fire stop system. This requirement applies to through penetrations (complete penetrations) and membrane penetrations (through one side of a hollow fire-rated structure). Any penetrating item (i.e.–riser slots & sleeves, cables, conduit, cable tray & raceways) that are specifically designated for the data/video/voice infrastructure shall be properly fire stopped. The contracting discipline installing the sleeve or slot shall be responsible for sealing the area on the exterior of the sleeve or slot. The Telecommunications Contractor shall be responsible for fire stopping the interior annular area.
- C. Verify that cabling & all other penetrating elements and supporting devices have been completely installed and temporary lines & cables have been removed before the installation of fire stop.
- D. Perform all necessary coordination with trades constructing floors, walls or other partitions of building construction with respect to size & shape of each opening to be constructed and device system approved for use in each instance.
- E. Coordinate each fire stop selection with adjacent work for dimensional or other interference & for feasibility. In areas accessible to public and other finished areas, fire stop systems work shall be selected, installed & finished to the quality of adjacent surfaces of building construction being penetrated.
- F. If a Professional Engineer's UL design is not available, Telecommunications Contractor shall provide appropriate UL design for penetrations through rated walls properly fire stop penetrations. These documents shall be submitted to the General Contractor and to the UCPS Telecommunications Site Inspector.
- G. Refer to 28 13 10 Access Control Cabling Specification for additional information.
- H. Sample UL Penetration Details may be found below and on the drawings:

Construction	Wall Rating	UL Number
Single Cable thru Concrete Floor/Wall or Block Wall	2 hours	CAJ2028
Single Cable thru Concrete Floor/Wall or Block Wall	2 hours	CAJ3078
Multiple Cables thru Concrete Floor/Wall or Block Wall	2 hours	CAJ3089
Cables thru Gypsum Wall Assembly	2 hours	WL3059
Cables thru Gypsum Wall Assembly	2 hours	WL3058

Cables thru Gypsum Wall Assembly	2 hours	WL2033
Cable or Cable Bundle thru Gypsum Wall	2 hours	WL3047
Metal Pipe thru Gypsum Wall	2 hours	WL1054

3.3 GROUNDING AND BONDING:

- A. Grounding shall conform to ANSI/TIA/EIA J-STD-607 Commercial Building Grounding and Bonding Requirements for Telecommunications; NFPA 70 Article 250 for types, sizes & quantities for equipment grounding conductors; unless specific types, larger sizes or more conductors than required by NFPA 70 are indicated. Also coordinate with manufacturer's grounding requirements as minimum.
- B. For insulated conductors & connections, comply with Division 26 05 26 Specifications, Grounding and Bonding.
- C. Bond & ground equipment racks, housings, messenger cables, ladder racks, metallic raceways and armored fiber with a #6 AWG stranded green conductor. #12 AWG stranded green conductor shall be used to bond surface mounted metallic raceways. However, in plenum areas, the grounding conductor shall be a bare, solid conductor for all grounding applications. Coordinate with Electrical Contractor. Electrical Contractor to bond or ground all pathways provided by Electrical Contractor.
- D. Route along shortest & straightest paths possible, unless otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact or may damage the ground.
- E. Security systems/racks shall be grounded to the existing main telecommunications bus bar. If no bus is present the SC shall provide a new telecommunications bus bar and ground/bond all existing racks that are not properly grounded/bonded.
- F. Refer to 28 13 10 Access Control Cabling Specification for additional information.

3.4 TESTING:

- A. The Security Contractor will be responsible for testing and operating the system to the satisfaction of the Engineer and the Owner's representative. Testing shall be done in accordance with the equipment manufacturer's instructions and also as listed below by the owner. Tests shall include as a minimum a functional test of all equipment. The final test will be performed in the presence of the installation alarm technician. All deficiencies will be corrected until satisfactory results are obtained.
 1. At the individual sites completion Supplier's Technical Representative, local school staff, CMS technical staff and CMS contracted technical personnel will review:
 - a. Quality of the installation/compliance with the specification.
 - b. Functionality of the system, including testing and verifying connections to equipment of other divisions such as life safety and elevators.
 - c. As-Built information provided to the designers and a mounted 30x42 framed copy of the updated site map posted at the head end equipment wall.
 - d. Overall system documentation provided to CMS Building Services.
 - e. Refer to 28 13 10 Access Control Cabling Specification for additional information.
- B. Cabling installed by the Security Contractor shall be tested in accordance with Specification 270200 for appropriate cable type and testing methodology.

3.5 DOCUMENTATION AND COMPLETION OF WORK:

- A. Provide completed "System Device Identification Log" thirty (30) days prior to the substantial completion date.
- B. Operation and Maintenance Manual: Upon completion of the installation and testing, the Contractor shall provide the Owner with three (3) instruction manuals for the operation, installation, and maintenance of the system. Manuals shall be bound in hardback binders and shall include recommended spare parts lists and vendors, troubleshooting guides, and maintenance instructions and recommended servicing periods. A telephone number for the service and repair organization for the system shall be included in the binder. It shall also include:

1. Operating instructions specific to the installation.
 2. Device nomenclature.
 3. Device placement.
 4. Step-by Step directions for routine maintenance of the system.
 5. Descriptions of all components.
 6. Parts list by name/model/number/manufacturer/etc. and parts cut-sheets.
 7. It shall also include service and maintenance manual for each component and troubleshooting guides.
 8. A final list of all contractors and subcontractors involved in the specific installation including company names, foreman, address, and phone numbers.
 9. Provide a chart, matching the CMS format shown, of all network connected devices that includes device number, model number, serial number, MAC address, and data drop including patch panel port numbers. Refer to Figure 281300-01.
- C. The Contractor shall maintain at the site one record copy of all contract drawings, specifications, addenda, change orders and other modifications, in good order, and marked currently to record all changes made during the construction and shall maintain at the site copies of approved shop drawings, product data and operations and maintenance information.
- D. Upon completion of work, the contractor in combination with the designer as required shall deliver two (2) copies of record drawings in paper format and one (1) electronic copy in PDF format to include contract and shop drawings. All record drawings shall be “as built” and reflect the work that was actually installed. They shall be in a format and contain sufficient details (like power supply and media converter locations and power sources with circuit numbers) to permit rapid and accurate troubleshooting by a skilled technician with no previous knowledge of the specific installation.
- E. Record drawings and documents shall be provided in both printed and electronic formats. Electronic files will be submitted as both AutoCAD DWG (2012 or previous) and PDFs on media to be specified by CMS. Electronic files and the configuration files for the specific installation. In addition to the individual programs and setup files an image file of each specific installation will be provided to facilitate rapid reloading. Refer to 28 13 10 Cabling for additional requirements.
- F. Labels: Provide label on each power supply, showing source of feed, i.e. PP123-CKT 14. Provide durable number label on each controller housing, visible from ground level, and on each cable. Provide corresponding number label for cable input.
- G. As-Built Drawings: Provide as-built drawings showing name, card reader number, controller number, and location for all controlled doors and access control equipment. Drawing to include location of power supplies. Power supply feed to be labeled on drawing, i.e. PP123-CKT 14. Panelboard directory to be updated to indicate power supply fed. Drawing must be durably mounted next to cameras head-end rack.
- H. Refer to 28 13 10 Access Control Cabling Specification for additional information.
- I. Refer to 27 01 00 Communications Specification for warranty of, but not limited to, cabling and patch panel logs.
- J. Other Close Out Documentation:
1. Contractor’s Warranty.
 2. Warranty Summary sheet and original Manufacturer’s Warranty for specific items as listed in these specifications.

FIGURE 281300-01: Systems Device Listing, Security Example

Site Name: **EXAMPLE**

Contractor Responsibility					** IP Address	CMS Responsibility	
Device	Device #	Device Location	Cable ID	MAC Address	** IP Address	Switch ID	Switch Port #
Camera	Camera 10	Front Entry Door	TR1-R2-S10	00:00:00:00:00:00	000.000.000.000	TR1-Switch 3	10
PIM	PIM01	Side Entry in Corridor 200	TR2-R2-P01	00:00:00:00:00:00	000.000.000.000	TR2-Switch 2	45
Door Controller	DC02	Kitchen Entry	TR4-R1-C48	00:00:00:00:00:00	000.000.000.000	TR4-Switch 2	48
Helios	Helios	Front Entry Door	MC-R1-C40	00:00:00:00:00:00	000.000.000.000	MC-Switch 5	40
BAS 1	BAS	Boiler Room	TR3-R1-B32	00:00:00:00:00:00	000.000.000.000	TR3-Switch 2	38
BAS 2	BAS	Boiler Room	TR3-R1-B32	00:00:00:00:00:00	000.000.000.000	TR3-Switch 2	38
BAS 3	BAS	Boiler Room	TR3-R1-B32	00:00:00:00:00:00	000.000.000.000	TR3-Switch 2	38

** IP Address Responsibility is dictated by System Processes Flowchart

3.6 APPENDIX A REQUIREMENT LIST:

A. Planned Preventive Maintenance (P.M.) Requirements List for CMS access-controlled equipment.

1. School Name
2. Contractor Name
3. Technician Name
4. Date
5. Room Name and Number
6. Door Number
7. Intelligent Access Controller Manufacturer
8. Intelligent Access Controller Model Number
9. Intelligent Access Controller Serial Number
10. Access Control Module Manufacturer
11. Access Control Module Model Number
12. Access Control Module Serial Number
13. General:
 - a. Visually check complete head-end unit
 - b. Visually check head-end room for trash, proper ventilation, lighting and overall disrepair. Report findings.
14. Intelligent Controllers and Access Modules
 - a. Clean all enclosures (exterior and interior) per manufacturer (i.e. anti-static procedures)
 - b. Verify tamper switch is fully operational.
 - c. Visually inspect all cabling and terminations.
 - d. Visually inspect all lighting protection devices.
15. Card Readers
 - e. Clean all card readers per manufacturer (i.e. anti-static procedures)
 - f. Verify card reader internal tamper switch is operational
 - g. Visually inspect all readers for wear and tear, damage, replacement needs
 - h. Visually inspect all cabling and terminations.

16. Head-End:

- a. Check all connectors on the system head-end for good connections
 - b. Check for overall operation of system. Confirm with Principal or Principal's designee.
 - c. Visually inspect all computer monitors, computer keyboards and computer mice
 - d. Visually inspect UPS system
 - e. Visually inspect all lightning protection devices
 - f. Visually check all controllers and doors/portals are included in the system and are fully operational.
 - g. Visually check all controllers and doors/portals are included on the graphic maps
17. Reports – provide a detailed report to the Alarm Supervisor describing the work performed and recommendations for corrective maintenance not covered by the planned maintenance service.

END OF SECTION 28 13 00

SECTION 28 13 10 – ACCESS CONTROL CABLING

PART 1 - GENERAL

1.1 SCOPE OF WORK:

- A. Section includes:
 - 1. UTP Cabling.
 - 2. Cabling connecting equipment.
 - 3. Cable connectors.
 - 4. Racking hardware.
 - 5. Labeling requirements.
 - 6. Testing requirements.
 - 7. Warranty requirements.
 - 8. Closeout documentation.
- B. Provide all labor, materials, tools & equipment required for the complete installation of work called for in the Construction Documents.
- C. All service shall commence in accordance with the master construction schedule. The Security Contractor will provide schedule information to assist in the development of the Master Schedule.
- D. Federal, state, local codes, rules, regulations, ordinances and current industry standards governing the work are as fully part of these specifications as if herein repeated or hereto attached. If the Security Contractor should note items in the Construction Documents or Specifications, construction of which would be code violations or not adhere to current industry standards, then the Security Contractor shall promptly call the suspected violations or deviations to the attention of the Designer in writing.
- E. Security Contractor (SC) Scope of Work:
 - 1. The work covered under this section shall include furnishing & installing networked cabling infrastructure for the physical security Access Control System (ACS).
 - 2. All cables & related terminations, cross-connects, equipment, materials, support, grounding hardware and all shall be furnished, installed, tested, labeled and documented by the Security Contractor.
 - 3. The Security Contractor shall provide & install lightning protection devices on all cables exposed to lightning risks.
 - 4. The Horizontal Cabling System for Security shall consist of 4 pair Unshielded Twisted Pair (UTP) Copper Cables to each Intelligent Access Controller location (i.e. Door/Portal) and other key locations as noted on the Construction Documents (drawings). These cables shall be installed from the Intelligent Access Controller location to the designated Security/Telecommunications Room Intermediate Distribution Frame (IDF) / Telecom Room IDF existing data racks or existing wall mounted data racks or enclosures. If adequate space is not available in the existing IDFs, Security Contractor to provide additional wall mounted rack(s)/enclosure(s).
 - 5. Product specifications & installation requirements are provided under Division 28. The successful Security Contractor shall meet or exceed all requirements for the cable system described in this document.
 - 6. The Construction Drawings are diagrammatic only. They are not intended to show every detail of the construction project, every item or material that is required. It is the responsibility of the contractor submitting

proposals to provide the equipment necessary to provide a properly operating system. The intent of the Construction Documents/Drawings includes constructing complete and working system.

1.2 RELATED SECTIONS:

- A. Drawings and general provisions of the contract, including General conditions and Division 01 Specification Sections apply to this section.
- B. The requirements of Section 28 13 10 govern the work specified in this section.
- C. Refer to the following sections for related work:
 - 1. 27 01 00 – Telecommunications General Requirements - ACS Security Contractor must abide by all 27 01 00 thru 27 02 00. If there is a conflict between the two specifications the most stringent requirement shall apply.
 - 2. 27 01 10 – Telecommunications Equipment Room Fittings - ACS Security Contractor SC must abide by all 27 01 00 thru 27 02 00. If there is a conflict between the two specifications the most stringent requirement shall apply.
 - 3. 27 02 00 – Data/Voice Cabling - ACS Security Contractor must abide by all 27 01 00 thru 27 02 00. If there is a conflict between the two specifications the most stringent requirement shall apply.
 - 4. Cabling (manufacturer) shall match the provided telecommunications cabling manufacturer and connectivity manufacturer for the respective project.

1.3 REGULATORY REQUIREMENTS:

- A. The following latest editions of the industry standards are the basis for the structured cabling system described in this document. The standards listed shall be adhered to in the same manner as if they were codes.
- B. All current state & local codes.
 - 1. TIA – Telecommunications Industries Association.
 - a. Articles 526, 568, 569, 606, 607, TSP-149, TSB-140.
 - 2. ANSI - American National Standards Institute.
 - 3. BICSI – Building Industry Consulting Service International
 - a. Telecommunications Distribution Methods Manual (TDMM), latest edition.
 - b. Information Technology Systems Installation Methods Manual (ITSIMM), latest edition.
 - c. Customer -Owned Outside Plant Design Reference Manual (OSPDRM), latest edition.
 - 4. EIA – Electronic Industries Alliance
 - a. RS232C – Interface between Data Terminal Equipment and Data Communications Equipment Employing Serial Binary Data Interchange
 - b. RS485 – Electrical Characteristics of Generators and Receivers for use in Balanced Digital Multi-Point Systems
 - 5. ETL - Intertek Electrical Testing Laboratories.
 - 6. UL – Underwriters Laboratories.
 - a. UL294 – Access Control System Units.
 - 7. NEMA – National Electrical Manufacturers Association.
 - 8. OSHA – Occupational Safety and Health Administration standards.

9. NFPA – National Fire Protection Association.
 - a. NFPA 70, National Electrical Code (NEC).
 - b. NFPA 101, National Life Safety Code.
10. Americans With Disabilities Act of 1990 (ADA).
11. Division 26 Electrical Specifications.
12. Standard Industry Practices
13. All current and local codes.
- C. If there is a conflict between applicable regulatory industry standards, then the more stringent requirements shall apply. The Contractor has the responsibility to determine and adhere to the latest editions when developing the proposal for installation.
- D. All electronic equipment and materials are to be tested, listed and labeled by UL, ETL or other agency that is acceptable to the AHJ and the State of North Carolina approved 3rd party testing agencies. Acceptable agencies can be found on the state construction website.

1.4 DEFINITIONS:

- A. BICSI – Building Industry Consulting Services International
- B. EC – Electrical Contractor
- C. EMI – Electromagnetic Interference
- D. IDF – Intermediate Distribution Frame
- E. MDF – Main Distribution Frame
- F. NEC – National Electric Code
- G. NEMA – National Electrical Manufacturers Association
- H. SC – Security Contractor
- I. TC – Telecommunications Contractor
- J. UL – Underwriters Laboratory, Inc.
- K. UTP – Unshielded Twisted Pair cable
- L. IP – Internet Protocol

1.5 WORK NOT INCLUDED:

- A. Providing networking equipment.

1.6 SUBMITTALS:

- A. Shop drawing submittals are required and shall include the following for review. Submittals not containing all of the information listed below will be rejected.
- B. Before submitting a shop drawing or related material, the Security Contractor (SC) shall:
 1. Review each submission for conformance with all SC's means, methods, techniques, sequences and operations of construction & safety precautions; and programs incidental thereto, all of which are the sole responsibility of the SC.

2. Review & coordinate each submission with other related or affected work.
 3. Approve each submission before submitting same.
- C. Submittals shall include the following:
1. Shop drawings, product data (including cut sheets & catalog information), samples required by the Contract Documents for the ACS cabling system.
 - a. Cabling.
 1. Manufacturer's data sheets for the telecommunications outlets, jacks, all cross connect equipment.
 2. Horizontal cables.
 3. Specialty cables.
 4. Wire management.
 5. Over voltage protection equipment.
 6. Cabling supports.
 7. Patch cords.
- D. By submitting shop drawings, product data, and samples, the SC represents that s/he has carefully reviewed and verified materials, quantities, field measurements, and field construction criteria related thereto. It also represents that the SC has checked, coordinated and verified that information contained within shop drawings & product data conforms to the requirements of the work & of the Contract Documents.
- E. The acceptance of shop drawings, product data and samples submitted by the SC shall not relieve the SC of responsibility for adhering to the requirements of the Contract Documents. Nor shall the acceptance relieve the SC of responsibility for errors or omissions in such shop drawings, product data or samples.
- F. The review & acceptance, or other appropriate action upon shop drawings, product data is for the limited purpose of checking for conformance with information given & design concept illustration in the Contract Documents. Review of such submittals is not conducted for the purpose of determining accuracy & completeness of other details such as dimensions & quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the SC as required by the Contract Documents. The review shall not constitute approval of safety precautions or of construction means, methods, techniques, sequences or procedures.
- G. For initial submission & for resubmission required for acceptance, submit electronic copies of each item. Combine all electronic files into one final submittal packaged electronic file.
- H. Illegible submittals will not be checked.
- I. If a submittal deviates from the drawings & project manual because of standard shop practice, substitutions (approved in accordance with General Conditions, amended) or any other reason, the Designer shall be advised in an attached separate written instrument. Deviations shall be acknowledged by Designer in writing. Unless acknowledged by the Designer in writing, the Contractor will not be relieved of the responsibility for executing the work in accordance with the Contract Documents.

1.7 DRAWINGS AND SPECIFICATIONS:

- A. It is understood that while drawings will be followed as closely as circumstances will permit, the SC is held responsible for the installation of the system according to the true intent and meaning of the drawings. Anything not completely clear in the Construction Documents will be explained upon request to the Designer. However, if conditions arise where, in the judgment of the SC, certain changes will be advisable; the SC will communicate through the proper channels & obtain review and approval of these changes before proceeding with the work.
- B. The drawings are not to be scaled. The SC must refer to the architectural drawings for building construction, dimensions and material, finish and construction method of walls, floor and ceiling in order to insure proper installation of work.
- C. If there is a conflict between the Drawings and the Specifications, the most stringent requirement shall apply.

1.8 QUALITY ASSURANCE:

- A. The SC shall employ qualified and certified technicians to this project that have experience with the installation of low voltage cabling infrastructures & security equipment and security related services; and provide appropriate supervision to all technicians on site.
- B. The Architect / Engineer shall have the right to reject any proposed Security Contractor that, in the opinion of the Architect / Engineer, does not have the qualifications to perform the work to the satisfaction of the Architect / Engineer.
- C. Contractor Qualifications:
 - 1. The SC shall employ qualified & certified technicians on this project that have experienced with the installation of low voltage cabling infrastructures & provide appropriate supervision to all technicians on site. Required qualifications and certifications are as follows:
 - a. SC shall employ certified & qualified technicians to perform this scope of work.
 - b. SC shall have an RCDD and a licensed individual who possess a North Carolina Security/Burglar Alarm license to oversee the project.
 - c. SC shall possess a current North Carolina Electrical Low Voltage License.
 - d. SC shall possess a current North Carolina Security/Burglar Alarm License.
 - e. Contractor shall have demonstrated physical security access control experience & completed two or more access control projects, similar in size & complexity, in North or South Carolina in the last three (3) years.
 - 1. Cabling Contractor certifications shall include:
 - a. Technician certifications from the connectivity and cable manufacturers, to include manufacturer installed on the job. A minimum of 30% of technicians assigned to the project shall hold these certifications (for cabling only).
 - b. SC shall hold company certifications from the connectivity & cable manufacturers to include manufacturer installed on the project.
 - c. The lead technician assigned to the project shall have the following certifications:
 - 1. BICSI certified installer at the technician level.
 - 2. Technician certifications from the connectivity and cable, including manufacturer(s) installed on the project.
 - 3. BICSI Technician shall be on site whenever work is being performed.

- d. 30% of all Technicians on site at all times shall be BICSI certified installers.
- e. Cabling Contractor shall not touch or install any video surveillance equipment unless they are also the hired installer of video surveillance equipment which holds the project low voltage security/burglar alarm license for the project.
- f. Qualification Document Submittal:
 - 1. Contractor shall not be awarded the project without possessing the required certifications.
 - 2. Contractor, upon being awarded the project, shall submit all required certifications, insurance certificates, project roster, previous experience and reference documents. This shall be submitted within ten (10) days of award of contract.
 - a. Contractors not possessing the required certifications required to perform the project upon the initial submittal, the Contractor will have ten (10) days from the notice from the Architect / Designer of rejection of the qualification documents to resubmit the required certifications. If at that time the Contractor does not submit all certifications required, the Contractor will not be allowed to perform the work & must be replaced by the General Contractor.
 - 3. Contractor shall submit the following copies of current certifications:
 - a. Technician certifications.
 - b. Company Certifications.
 - c. Company North Carolina Electrical Low Voltage license.
 - d. Company North Carolina Security/burglar Alarm License.
 - e. RCDD certificate(s).
 - f. List of physical access control project experience & completed two or more projects similar of size & complexity in North or South Carolina in the last three (3) years. Include reference contact information.
 - g. Project roster of technicians and staff assigned to the project.
 - h. Insurance certificates.
- D. Equipment and materials of the type for which there are independent standard testing requirements, listings and labels, shall be listed and labeled by the independent testing laboratory (i.e. UL).
- E. Where equipment & materials have industry certification, labels or standards (i.e. NEMA) this equipment shall be labeled as certified or complying with standards.
- F. Material & equipment shall be new, conform to grade, quality and standard specified. Equipment and materials of the same type shall be a product of the same manufacturer throughout. Materials and equipment are to be installed per industry standards & manufacturer's recommendations.
- G. The Designer retains the right of inspection of the work at any time. Any material or work which does not comply with the specifications or current industry standards, will be subject to rejection. Any such rejected work or material shall be reworked and/or replaced & made to conform with said specifications at no additional cost to the Owner.
- H. Any stoppage, delay, suspensions or forfeiture due to a rejection shall in no way invalidate any terms of the Contract, and no additional charges will be allowed by the SC.
- I. The SC site superintendent shall submit a weekly report due each Monday detailing the previous week's accomplishments; and providing a two (2) week forecast of areas where work will be performed and expected accomplishments. This report will be copied to the Owner and the Designer.
- J. The SC shall inspect all installation materials & workmanship, and ensure contract compliance for final acceptance.

- K. The SC is responsible for all damages to persons or property that occurs as a result of his fault, omission or negligence in connection with the prosecution of the work. The SC is responsible for the proper care and protection of all work performed until completion and final acceptance, whether or not the same has been covered in whole or in part by payments made by Owner.
- L. The SC must remove all debris and packaging resulting from the delivery and installation of equipment & materials. The SC must leave the premises in the same condition as found. The SC will leave all work areas clean & free of debris.
- M. Any damage done to the premises by the SC, the SC's agents, vendors or employees, will be repaired at his own expense. If the SC fails to repair any such damages, then the Owner may affect such repairs at SC's expense & offset any payments made by the Owner relating to such repairs against amounts payable by the Owner to the SC.
- N. Property of the Owner, as well as any other property disturbed in the process of work, will be restored to the original condition that existed prior to the beginning of work. Restoration shall be at the SC's expense.

PART 2 - PRODUCTS

2.1 UNSHIELDED TWISTED PAIR CABLE:

- A. UTP 4 pair Plenum-rated Cable for access control: Category 6 Cable, White colored jacket. Cable must meet or exceed TIA/EIA 568-C.2 standards.
 - 1. Cable shall be rated to 400 MHz minimum.
 - 2. All cable shall conform to the requirements for communications circuits defined by NFPA 262. Cable shall be listed to NEC Type CMP (NFPA 262) for plenum installations.
 - 3. The cable shall meet or exceed the requirements as described in CENELEC EN 50288-6-1, TIA 568-C.2 Category 6, and ISO/IEC 11801 Class E.
 - 4. The cable shall meet or exceed the requirements as described in CENELEC EN50173, ICEA S-102-700, TIA 568-C.2 Category 6, RoHS Compliant Directive 2002/95/EC and ISO/IEC 11801.
 - 5. Third party performance verified.
 - 6. RoHS Compliant Directive 2011/65/EU.
 - 7. The cable shall have a flexible jacket that strips cleanly & resists kinking.
 - 8. Products:
 - a. CommScope – Ultra Media CS37P - #UN874046314/10
 - b. Panduit - PUP6004
 - c. Siemons - System 6, #9C6P4-E3-02-RXA (white)
- B. UTP 4-pair Outside Plant Cable: Category 6.
 - 1. Cable shall be rated to 250 MHz minimum.
 - 2. Shall have water / moisture blocking components to protect the cable in potentially wet areas.
 - 3. The cable shall meet or exceed the requirements as described in CENELEC EN 50288-6-1, TIA 568-C.2 Category 6, and ISO/IEC 11801 Class E.
 - 4. The cable shall have a flexible jacket that strips cleanly & resists kinking.
 - 5. RoHS Compliant Directive 2011/65/EU.

6. Solid conductors.
7. Jacket color: black.
8. Products –
 - a. CommScope, Outdoor, CS34O BLK C6 - #UN884019984/30
 - b. Siemon – OSP-#9C604-E1
 - c. Or Approved Equal

2.2 CONNECTORS AND JACKS:

A. Copper Patch cords – Category 6 – White

1. 24 AWG conductors
2. Shall meet or exceed Category 6 / Class E requirements of ISO/IEC 11801, CENELEC EN50173-1 and TIA 568-C.2.
3. ETL listed.
4. Cables shall be factory manufactured & terminated.
5. Narrow boot with strain relief.
6. Provide patch cords at the station end and all the IDF end with 10% spare of each length required for Owner's future use. Submit patch cords for Owner's cross-connect activities two (2) weeks prior to project's end.
7. Provide additional lengths as required to adhere to site conditions.
8. Products:
 - a. CommScope Uniprise:
 1. Security Room – Riser rated:
 - a. 3' - #UC1BBB2-0MF003
 - b. 5' - #UC1BBB2-0MF-005
 - c. 7' - #UC1BBB2-0MF-007
 2. (Plenum rated): 10' - #UC1BBC2-0MF010 (provide additional lengths as needed)
 - b. Panduit - TX 6:
 1. Security Room – Riser rated:
 - a. 3' - #UTPSP3YWH
 - b. 5' - #UTPSP5YWH
 - c. 7' - #UTPSP7YWH
 2. Field Device End: 10' - #UKPGR10WH/N (provide additional lengths as needed)

B. UTP Category 6 jacks - White

1. All products must meet or exceed TIA 568-C.2 Category 6 performance standards, ISO 11801 (class E), EN50173-1 (class E).

2. Meets requirements for IEEE 802.3af and IEEE 802.3at for PoE requirements.
3. UL 1863 approved.
4. Backwards compatible.
5. Modular jacks shall be unshielded, 4-pair, RJ-45.
6. Modular jacks shall terminate using 110-style pc board connectors, color-coded for T568B wiring.
7. Each modular jack shall be wired to T568B.
8. Products:
 - a. CommScope Uniprise - UNJ600-WH, #760237788(white)
 - b. Panduit – non keyed - #CJ688TGWH (white)
 - c. Siemon - #MX6-F02 (white)

2.3 FACEPLATE APPLICATIONS:

A. Recessed Applications

1. Duplex style, single gang faceplate.
2. Shall be available in 1, 2, 3, 4 and 6 vertical outlet configurations.
3. Provide faceplate with 1 spare port to allow for growth.
4. Ivory in color.
5. Shall be provided with mounting screws, label covers and label cards.
6. Provide blank dust covers for all blank ports.
7. Products:
 - a. CommScope Uniprise (color for this manufacturer is listed as ‘Misty /Cream’)
 1. 2 Port – M12LE-215 - #108333048
 - b. Panduit
 1. 2 Port-#CFPE2IWY
 - c. Siemon
 1. 2 Port-#MX-FP-S-02-02

B. Surface Mount Applications that equal Wiremold 700 or 2000 Applications

1. Duplex style, single gang faceplate.
2. Faceplates shall work seamless with the raceway to be installed.
3. Colors shall match the raceway to be installed.
4. All fittings, modules and bezels necessary shall be provided.
5. Faceplates shall accept the same manufacturer of jacks that are being installed on the project.
6. Shall be provided with mounting screws, label covers and labeling cards.
7. Provide blank dust covers for all blank ports.
8. Products:

- a. Panduit - #CFPSE4IW,
 - b. Or Approved Equal
- C. 106 Frames
- 1. Frames will mount behind standard 106 NEMA faceplates.
 - 2. Frames will accept modules for STP and UTP, and audio/video.
 - 3. Ability to snap in and out to allow for moves, adds and/or changes.
 - 4. Products
 - a. CommScope
 - 1) 2 Port-#M106FR2-262 - #106622251
 - b. Panduit:
 - 1) 2-Port - #CF1062IWY
 - c. Siemon:
 - 1) 2-Port-#MX-E2F-02

2.4 CONSOLIDATION POINT ENCLOSURES:

- A. Consolidation point Enclosure Category 6:
- 1. Plenum rated adhering to UL 2043.
 - 2. Meet or exceeds TIA 568-C category 6 standards.
 - 3. 16-gauge aluminum.
 - 4. Wall mount.
 - 5. Accepts Category 6 cabling.
 - 6. Removable cover that allows top & bottom access to cables.
 - 7. All necessary accessories shall be provided including punch down bases, connecting blocks for the Category of cable being used.
 - 8. Enclosure shall be clearly labeled according to TIA 606-A.
 - 9. Shall accommodate two 100-pair 110 connect XC wiring blocks without legs.
 - 10. Must be available in 24 port and 48 port capacities.
 - 11. Products:
 - a. Panduit # WMCPE and Panduit # GPB24-X-24 pair punch down base
 - b. Or Approved Equal.

2.5 TIE-WRAPPS:

- A. All tie wraps must be red in color.
- B. All tie wraps must be plenum rated.
- C. UL Listed and labeled.
- D. Products:
 - 1. Thomas and Betts-#TY-25M-9, or Approved Equal:

2. Panduit:

- a. 4" – #PLT1M-C702
- b. 7.4" – #PLT2S-C702
- c. 11.6" – #PLT3S-C702

2.6 DATA RACK WIRE MANAGEMENT

A. 7 foot Vertical:

- a. Provide 6" wide double-sided managers for outside end of data racks. Provide 10" wide double-sided managers for installation between two data racks.
- b. 70" x 6" x 16.6" (6" wide), 70" x 10" x 17.5" (10" wide).
- c. 38 rack units.
- d. Steel mid panels and splice plates and plastic sides. Covers on 6" wide shall be plastic, the covers on 10" shall be steel with plastic hinges.
- e. Four vertical sections with T-shaped cable guides spaced 1 ru apart.
- f. Four mid panels with attachment points for cable management accessories.
- g. Two splice plates used to assemble the top and bottom side sections.
- h. Four half-height covers that snap onto the T-shaped cable guides.
- i. Color shall be black.
- j. 6" Wide Vertical Wire Manager
 - 1. Products:
 - 1. Chatsworth Velocity Double-Sided - #13912-703
 - 2. Panduit – #PRV6
 - a) Center mount Bracket Kit #WMPVCBE
 - 3. Or Approved Equal
- k. 10" Wide Vertical Wire Manager:
 - a. Products:
 - 1) Chatsworth Velocity Double-Sided - #13914-703
 - 2) Panduit-#PRV10
 - 3) Or Approved Equal

B. Horizontal-19" width":

- a. 3.47"H x 19"W x 9.75"D.
- b. Snap on rear cover.
- c. Cable management for front and rear.
- d. 2 rack units.
- e. Plastic construction.
- f. Front cover hinge shall open 180 degrees up or down.
- g. Curved surfaces.
- h. Pass-through holes for front to rear cabling.
- i. Built in cable retainers.
- j. Products:
 - 1. Panduit - #NCMH2
 - 2. Or Approved Equal

2.7 GROUNDING:

- 1. Comply with requirements in Division 26 Section "Grounding and Bonding for Electrical Systems" for grounding conductors and connectors.
- 2. Telecommunications Main Bus Bar shall be provided by the EC.
- 3. Rack mount ground bus bar provided by the SC as denoted on the plans.
- 4. Provide horizontal rack mounted ground bus bars on each telecommunications rack that the SC is providing.

5. Products:
 - a. CPI - #10610-019
 - b. Or Approved Equal

PART 3 - EXECUTION

3.1 HORIZONTAL DISTRIBUTION CABLING:

- A. Horizontal cabling is installed in a star topology.
- B. Bridged taps and splices are not permitted as part of the horizontal cabling.
- C. All connectivity products such as patch panels & data jacks shall be of the same manufacturer (see approved products list above).
- D. All cables inside buildings shall be plenum rated. Cables routing to the exterior of buildings shall be rated for Outside Plant applications.
- E. Contractor shall install all cabling according to latest industry standards, manufacturer's recommendations & best practices. Cabling shall be installed in an orderly & neat manner. Cables shall be installed parallel and perpendicular to building lines.
- F. Horizontal cables shall terminate to the closest Telecommunications/Security Room IDF or designated cross connect area on the same floor as designated in the Construction Documents.
- G. Horizontal copper cable links shall not exceed 275 feet. If the Security Contractor discovers any copper cable run exceeding this length, the Security Contractor shall contact the designer and coordinate the best course of action to reduce the length of cable.
- H. UTP cable shall be installed so that there are not bends smaller than 4 times (4x) the cables outside diameter at any point in the cabling run and the termination area. If cables are kinked or the cable jacket is damaged during construction project, the cable will be removed and replaced with new cable at no additional cost to the Owner.
 1. Confirm all bend radius requirements with the manufacturer.
- I. Pulling tension on 4-pair UTP cables shall not exceed 25-lbf for a 4-pair UTP cable.
- J. A pull cord (nylon; 1/8 inch minimum) shall be co-installed with all cable installed in any homerun conduit & conduits exceeding 1" in diameter
- K. Cable raceways shall not be filled greater than the TIA/EIA 569 maximum fill for the particular raceway type or 40%.
- L. Where transition points or consolidation points are required, they shall be in accessible locations & housed in an enclosure intended and suitable for the purpose. Coordinate with the AHJ (authority having jurisdiction) on acceptable locations and further requirements in order for the installations to be accepted for required inspections.
- M. Slack Required:
 1. Telecommunications Room – 10-feet minimum
 2. Field Equipment Locations – 20-feet minimum
- N. Electrical contractor shall provide all raceways including conduit, outlet boxes, and sleeves, UON.
 - a. Contractor shall coordinate with electrical contractor to ensure all pathways intended for the SC are installed according to the contract documents and best aid the SC in his work.
 - b. Conduit sleeves shall align with cable tray when walls need to be penetrated to allow a continuous cabling pathway.

O. Cable trays are to be installed by the electrical contractor.

1. 18” cable trays with 1 divider are to be provided. The tray shall be divided in a 12” section and a 6” section.
2. SC to coordinate with EC and all other disciplines with their work in the location of the cable trays prior to its installation.
3. A minimum of 12” clearance above the tray and 36” clearance to access the tray from one side is required at all times.
 - a. Water piping is not allowed to route above the tray. If this is unavoidable due to the constraints of the ceiling space, a drip pan with installed drains must be installed under the piping in order to protect the cables from water damage.
 - 1) This requirement will not be required where there are no joints in branch piping less than 2” in diameter that do not have any joints in the pipes 2’ from the top of the cable tray dimensioning from each side of the tray.
 - b. The data, voice, wireless and catv cables shall occupy the larger section of the partitioned cable tray.
 - c. Intercom, video surveillance, access controls and security cables shall occupy the smaller section of the partitioned cable tray.
 - d. Mechanical controls cable shall not be installed in the cable tray, nor be supported by the cable tray or the cable tray supports.
 - e. Electrical conductors are not allowed to be routed in the tray or be supported by the cable tray. They shall not be routed parallel within 12” of the tray due to susceptibility of EMI.
 - f. Duct work and mechanical piping shall not obstruct the tray and must leave the tray accessible throughout its routing.

P. Non-continuous hangers and supports

1. Provide non-continuous hangers and supports from cabling exiting conduits to the cable trays.
2. Installation of hangers shall abide by current industry standards and manufacturer recommendations.
3. Install where cables, conductors, nor jackets will be damaged.
4. Do not bend cables, in handling or in installing to smaller radii than minimums recommended by the manufacturer.
5. Follow manufacturers and industry standards for allowable fill capacity for each hanger or support.
6. Provide support 4’-5’ on center.
7. Route parallel and perpendicular to building lines.
8. All hangers and supports shall be secured to structure and must be tied off at the bottom. If tying to existing ceiling grid, these support wires must be tagged or painted and must be distinguishable from the ceiling grids support wires.
9. Groom cables with in supports with tie-wraps.
10. No more than 12” of cable sag is allowed between supports.

Q. The ceiling cable support throughout most of the facility will be accomplished by utilizing open areas above ceilings & cable trays when available.

1. If cable trays or sleeves are available, the Security Contractor (SC) must use the cable trays and sleeves as their pathway, if sleeves and open ceiling pathways are full the contractor is responsible for the addition of additional sleeves where required, unless the SC has received formal approval from the Designer.
2. All penetrations through fire-rated walls or floors must be sleeved.
 - a. Contractor to support cabling no greater than 2’ prior to entering a sleeve and no greater than 2’ after existing a sleeve.

3. In areas where support structure is not available, cables will be supported with metallic J-brackets at regular intervals of 4' to 5'.
 4. Cables may only be supported by building structure when the cable spans do not exceed 5 foot intervals.
 5. Cables SHALL NOT be supported on top of walls, I-beams, or in areas where the cable is susceptible to damage or EMI.
 6. Cables shall not be attached to ceiling grid or light fixture wires. At no point shall cable(s) rest on acoustic ceiling grids or panels.
- R. There shall be a minimum of 3 inches of clearance between the cable support system and the ceiling tile support grid.
- S. No cables shall run exposed. In areas of no accessible ceiling & where a pathway is not being provided by others the Contractor shall provide the pathway. The pathway shall be EMT conduit in common areas; or wiremold metallic raceway in classroom/office areas. SC shall provide all necessary sleeving of walls & floors where sleeves or openings are not existing.
- T. All equipment & materials installed in plenum environment shall be UL rated acceptable for plenum environments.
- U. Horizontal distribution cables shall be bundled in groups of no more than forty (40) cables. Cable bundle quantities in excess of 40 cables may cause deformation of the bottom cables within the bundle & degrade cable performance. This includes cable bundles supported in J-hooks.
- V. Cable shall be installed above fire-sprinkler systems & shall not be attached to the system or any ancillary equipment or hardware. The cable system & support hardware shall be installed so that it does not obscure any valves, fire alarm conduit, boxes or other control devices.
- W. Contractor must ensure that TIA/EIA recommended minimum separation distances are maintained between the newly installed cabling & high-energy sources that may interfere with data transmission. Cables shall never come into contact with any ceiling grids, lighting sources, or any devices that emit EMI.
- X. Firestopping.
1. All penetrations through fire-rated building structures (walls and floors) shall be sealed with an appropriate firestop system. This requirement applies to through penetrations (complete penetration) and membrane penetrations (through one side of a hollow fire rated structure). Any penetrating items - i.e., riser slots & sleeves, cables, conduit, cable tray, raceways that are specifically designated for the security cabling infrastructure – shall be properly firestopped. The contracting discipline installing the sleeve or slot shall be responsible for sealing the area on the exterior of the sleeve or slot. The Contractor shall be responsible for firestopping the interior annular area.
 - a. Provide temporary closure at termination of ducts that have cables pulled. Seal spare ducts at terminations. Use sealing compound and plugs to withstand at least 15 psig hydrostatic pressure.
 2. Firestop systems utilized shall be dictated by this project's Professional Electrical Engineer's UL design. If a PE UL design is not available, the Contractor shall provide appropriate UL design for penetrations through rated walls and properly firestop penetrations. These documents shall be submitted to the Designer.
- Y. Cables routing under slab or outside shall be rated outside plant & provide water blockage. Upon entering the building & exiting the conduit, the outdoor cable shall be transitioned to a plenum rated cable. This will be accomplished by placing transition points within 50-feet of the cable's entry into the building.
- Z. Provide over voltage protection on both ends of cabling exposed to lighting or accidental contact with power conductors.

3.2 SECURITY ROOM (SR) / CROSS CONNECT AREA – IDF:

- A. Data Racks:

1. Contractor to utilize existing telecom racks when space is available. A minimum of 6U spaces shall remain open and unused for the owner's future equipment. Contractor to provide additional wall mounted racks / enclosures when necessary.
2. Data racks/enclosures contained within the SR and shown on the Construction Drawings are for the purpose of providing a base installation requirement in each cross connect area and for the Contractor to perform take offs for their cost estimating.
3. Unused rack equipment mounting screws shall be bagged & attached to the racks upon completion of the project.
4. All existing racks and enclosures shall be provided with a new grounding bus bar and grounding to building steel if existing racks do not have proper grounding. If the data/IDF room does not have a ground bus bar then the contractor shall provide a 6" pre-drilled ground bus bar with grounding to building steel.
5. Coordinate all placements of new racks with Owner.

B. Cable Management:

1. Horizontal Wire Management shall be provided and utilized by the Contractor. The system provided shall be comprised of equipment to manage cables on both the front & rear of the rack. The Wire Management shall protect network performance by controlling bend radius & providing cable strain relief.
2. All cable management channels shall have covers.
3. Horizontal Wire Managers shall be placed above & below each new patch panel.
4. D-Rings shall be metallic & used in areas of the Security Room or electrical room where cables are not supported by cable runway or cable tray. The D-Rings shall be minimum size of 4-inches. The Contractor shall be responsible for determining quantity and placement of D-Rings at strategic points throughout these areas.

C. Grounding and Bonding:

1. Grounding shall be installed per NEC, J-STD-607-A and manufacturer's grounding requirements as minimum
2. If there is no existing ground bus bar in the room where new racks/enclosures are to be installed, Contractor shall provide a new 6" ground bus bar.
 - a. Provide conductor to bond the ground bus bar to building steel. Size conductor per TIA guidelines.
3. Bond and ground equipment racks with a #6 AWG stranded green insulated conductor. #12 AWG stranded insulated green conductor shall be used to bond surface mounted metallic raceways. However, in plenum areas, the grounding conductor shall be a bare, solid conductor for all grounding applications.
4. Provide horizontal rack busbar at the top of each new rack / enclosure. Connect rack bus bars to wall mounted bus bar via home-run stranded #6 AWG stranded green insulated conductor.

D. UTP Cable Termination Hardware:

1. Each horizontal cabling run will be terminated using appropriate connectors or connecting blocks depending upon the cable type.
2. Horizontal networked cables will be terminated on new modular patch panels installed in the rack / enclosure which are specifically designated for security.
3. Cables shall be dressed & terminated in accordance with recommendations made in the TIA/EIA 568-B standard, manufacturer's recommendations & industry standards.
4. Pair untwist at the termination shall not exceed .5"
5. Bend radius shall not exceed 4 times (4x) the outside diameter of cable.

6. Splitting the pairs prior to termination is not acceptable.
7. Cables shall be neatly bundled & dressed into their respective panels. Each panel shall be fed by an individual bundle separated & dressed back to the point of cable entrance into the rack or frame.
8. The cable jack shall be maintained as close as possible to the termination point.
9. Each cable will be clearly labeled on the cable jacket behind the patch panel. Labels shall be machine printed & clearly visible within the bundle.
10. 4-pair Category 6 UTP cabling shall be terminated onto a 4-pair Category 6 module. All modules shall be terminated using the T568B (B) wiring scheme. The eight position module shall exceed the connector requirements of the proposed TIA/EIA Category 6 standard.
11. Modular Patch Panels shall be of the manufacturer & part number as listed in these specifications. The patch panels shall accept the Category 6 jacks specified. Mount patch panels in the data racks. Cables shall be neatly groomed with Velcro Integral cable ties. Port & panels shall be easy to identify with write-on areas. Patch panels shall be completely populated with jacks.

- a. Modular patch panels shall be the angled type.

12. Copper patch cords.

- a. Provide and install patch cords for connection from ceiling mounted outlet box to ceiling mounted security equipment cross connect.
 1. Contractor to plug the correct length of patch cord into the patch panel only. The other end will be left unconnected for Owner to provide the final connections to the Owner network electronics.
 2. Patch cords shall be onsite no later than two (2) weeks prior to when IP connectivity is needed to occur.
 3. Provide 10% spare patch cords of each needed length for Owner's future use. Turn these over to the Owner prior to close out.
- b. Provide patch cords for connections from patch panels to Owner provided switches. Do NOT install. Submit patch cords to Owner two (2) weeks prior to project completion.
- c. Provide 10% spare patch cords of each needed length for Owner's future use.

13. See labeling section of these specifications for labeling requirements.

14. Refer to Risers for locations of Patch Panels.

15. Security equipment shall not use the last 6 free rack units in the data racks. If no more than 6 rack units of free space is not available in the data racks, then the Security Contractor shall provide additional racks. Locations of additional racks will be coordinated on site with the Owner and Owner's IT department prior to installation.

3.3 WORK AREA OUTLETS:

- A. Cables slack shall be coiled in the near the access control panel or IP device neatly coiled and properly supported via j-hooks in areas of accessible ceilings. In areas where there is no ceiling and the area is open to structure, contractor shall coil the slack in junction boxes. In either case, the cable coil shall not exceed the bend radius or be secured where the cable is kinked, or the cable jacket is deformed in any way.
- B. Copper cables pair untwist at the termination shall not exceed .5".
- C. Bend radius limitations shall be observed at each termination point.
- D. The cable jacket shall be maintained to as close as possible to the termination point.
- E. Copper UTP cables shall be terminated on a white RJ45 jacks. All RJ45 jacks shall meet or exceed the TIA/EIA-568-B.2-1 standard for Category 6.

3.4 IDENTIFICATION AND LABELING:

- A. All cables, patch panels, ports, grounding conductors & junction boxes shall be labeled with self-adhesive printed labels. Cables shall be labeled on each end. Refer to TIA/EIA 606 and Owner requirements to coordinate labeling schemes. Font size on labels shall be consistent throughout the facility. Label placement on face plates shall be consistent throughout facility. Font size shall be as large as possible yet still functional for the item being labeled.
- B. All labels shall be black lettering on white labels.
- C. Labels shall be placed 6” from the termination point on each end of the cables. Labels shall be clearly visible during construction & after construction is completed.
- D. The label for the security field equipment cabling shall be as follows:
 - 1. CR#-TR#(IC#)-S-##-A-12 where “CR#” school courier number, “TR#” or “IC#” designates the Telecom Room (telecom, electrical room, etc); “S##” designates security equipment number; “A” designates the patch panel; “12” designates the port number on the patch panel (match telecommunications labeling for patch panel and port numbers.
- E. The label for the patch panel will be located on the face of the patch panel and will be tagged for ‘Security’ and alphabetical in order from top to bottom, “Security A”, “Security B”, etc. The security patch panel port will also be labeled with the MAC address of the associated IP device.
- F. The label for the rack will be TR or TR-1, TR-2, etc., indicating “TR” or “IC” telecommunications room, “1”, “2”, etc. indicates the number of the security room cross connect area.

3.5 TESTING:

- A. The Owner reserves the right to test all delivered goods, and to use a portion of any goods before the results of the tests are delivered, without prejudice to any final adjustments, rejecting the unused portion of the delivery, and making payment on an adjusted basis for the used portion. The cost of inspections & tests of any item, which fails to meet the advertised specifications, shall be borne by the contractor.
- B. All cables and termination hardware shall be 100% tested for defects to verify cabling system performance under installed conditions according to the requirements of ANSI/TIA/EIA 568-B and 526-14A. The field test equipment shall meet the requirements of ANSI/TIA/EIA 568-B.
- C. Test each copper pair & shield of each cable for opens, shorts, grounds and pair reversal. Correct grounded and reversed pairs. Examine open & shorted pairs to determine if problem is caused by improper termination.
- D. Testing equipment shall be calibrated prior to testing. (Calibration results from the manufacturer are required in the Close Out Document submittal for each tester used on the project.)
- E. Test results shall be submitted within ten (10) days of the completion of each testing phase.
- F. When repairs & re-tests are performed, the problem found & corrective action taken shall be noted, and both the failed and passed test data shall be documented and included in the final close-out documents.
- G. The Designer and/or Owner may request that at 10% random field re-test be conducted on the cable system, at no additional cost, to verify documented findings. Test shall be a repeat of those defined above. If findings contradict the documentation submitted by the Contractor, additional testing can be requested to the extent determined necessary by the Designer and/or Owner, including a 100% re-test by outside agency. This re-test shall be at no additional cost to the Owner.
- H. Copper Permanent Link Testing
 - 1. Perform testing of copper cables with tester meeting ANSI/TIA/EIA 568 requirements.
 - 2. If horizontal cables contain bad conductors or shield, remove & replace cable. “*Pass” results will not be accepted.

3. Continuity – Each pair of each installed cable shall be tested using a test unit that shows opens, shorts, polarity and pair-reversals, crossed pairs and split pairs.
 - a. Shielded / screened cables shall be tested with a device that verifies shield continuity in addition to the above stated tests. The test shall be recorded as pass/fail as indicated by the test unit in accordance with the manufacturer's recommended procedures and referenced to the appropriate cable identification number & circuit or pair number. Any faults in the wiring shall be corrected and the cable re-tested prior to final acceptance.
4. Length – Each installed cable link shall be tested for installed length using a TDR type device. The cables shall be tested from patch panel to patch panel, block to block, patch panel to outlet or block to outlet as appropriate. The cable length shall conform to the maximum distances set forth in the ANSI/TIA/EIA 568-B standard. Cable lengths shall be recorded, referencing the cable identification number and circuit or pair number. This documentation shall be in a sequential format. For multi-pair cables, the shortest pair length shall be recorded as the length for the cable.
5. Category 6 Performance:
 - a. Follow the Standards requirements established in ANSI/TIA/EIA 568-B-1.
 - b. A level III test unit is required to verify category 6 performance.
 - c. Required tests:
 1. Wire Map.
 2. Insertion Loss.
 3. Length.
 4. NEXT loss, pair to pair, measured from local end.
 5. NEXT loss, pair to pair, measured from far end.
 6. NEXT loss, power sum, measured from local end.
 7. NEXT loss, power sum, measured from far end.
 8. Return Loss, measured from local end.
 9. Return Loss, measured from far end.
 10. ELFEXT, pair to pair.
 11. ELFEXT, power sum.
 12. Propagation Delay.
 13. Delay skew.
 14. ACR.
 15. Power Sum (PSACR).
- I. Horizontal testing results are to be presented in electronic format.
- J. Tests are to be performed utilizing the graphic chart option on the cable tester. Test results will not be accepted without graph representation.

3.6 SYSTEM DOCUMENTATION AND OWNER ACCEPTANCE:

- A. The Contractor shall maintain at the site, one (1) record copy of all Contract Documents in good order & marked currently to record all changes made during construction; and shall also maintain at the site copies of approved shop drawings, product data operation and maintenance.
- B. The final inspection by the Designer and/or Owner shall be the closure of all previously listed punch list items.
- C. The Completion Date of Project is defined as the date that all documentation obligations have been met under the Construction Documents and these specifications.
- D. The final inspection by Building Standards shall be the closure of required Electrical Permits.
- E. Upon completion of the installation, the Contractor shall provide electronic files of all Close Out Document materials.
- F. Close-Out Document Submittal:
 - 1. Electronic files.
 - a. The test results shall include a record of test frequencies, cable type, conductor pair and identified in the same format required in the “Identification and labeling” section of this specification, measurement direction, reference setup, and crew member name(s). Results shall have all cables sequentially listed. The test documents shall detail the test method used & the specific settings of the equipment during the test as well as the software version being used in the field test equipment.
 - 1. Copper Test Results (Permanent Link).
 - 2. Copper Test Summary (Single Line).
 - 3. Copper Test Detail for each cable.
 - 4. Patch panel logs in editable electronic format.
 - 2. Draft (marked up) as-built drawing submitted may be requested by the Owner within 30 days of the Completion Date of Project.
 - 3. Calibration Sheets in PDF format – Include test equipment name, manufacturer, model number, serial number, software version and last calibration date. Submit sheets for each tester being used for the project.
 - 4. Patch Panel Log in PDF and Excel format – Labeling shall be consistent with the “Identification and Labeling” section of this specification.
 - 5. Electrical Permit Inspection Detail – PDF format.
 - 6. Final As-Built Drawings:
 - a. Submitted drawings shall be neat, clear and professionally produced. Do not place text over objects where the label indicator cannot be deciphered. Use care to keep the test size consistent throughout the drawings. Do not use colored ink to distinguish between symbols or lines. Provide another symbol or line type designation to represent different components. Any final as-built drawing will be subject to rejection if the Designer and/or Owner find the information on the drawings unclear.
 - b. Final drawings shall indicate all horizontal cable routes. They will also indicate final outlet locations labeled according to the “Identification and Labeling” section of this specification. Indicate final pathway locations and final locations of all equipment. Use a different line-type for each type of cable installed.
 - c. Include a legend on the first sheet indicating line-type of each cable, and any additional symbols the Contractor has added.

- d. Format shall be PDF and .dwg.
- 7. Provide facility assignment records which include patch panel logs and as-built C size (11"x22") in a laminated protective cover at each Security Room location that is specific to the facilities terminated therein.
- 8. Warranty Information:
 - a. The Contractor shall guarantee all equipment, wiring and software for this system to be free of defects in workmanship & material for a period of one (1) year from the date of acceptance by the Owner.
 - b. The Contractor shall provide a minimum period of twenty (20) years manufacturer's warranty on materials & equipment. Any manufacturer's warranty that may exceed a twenty (20) year period shall also be provided through the Contractor.
 - c. Warranty service by the Contractor shall include eight (8) hour emergency response service during normal contractor working hours; and twelve (12) hour emergency response service after normal contractor working hours, on weekends and on holidays. Response time shall be measured from the time of Contractor notification to the arrival of service personnel at the affected site to initiate repairs. The Contractor shall provide a method of requesting emergency service after normal working hours, on weekends, and on holidays appropriate to the required response time.
 - d. The Owner shall be presented with the horizontal cable materials warranties no later than ninety (90) days after project completion.

3.7 SITE CLEAN UP:

- A. All areas where work is conducted, shall be cleaned up on a daily basis.

3.8 SECURITY/IT/TELECOM ROOM CLEAN UP:

- A. All room locations must be broom and/or vacuum swept. This includes the space between the racks & the trough between the base footprint of the rack.
- B. All data racks and enclosures shall be wiped clean.
- C. All cabinet locations must be broom and/or vacuum swept. This includes the bottom space of the cabinet.

END OF SECTION 28 13 10